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Capital and Crypto Markets: Institutional Investor Behavior and Strategies

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Content

Thanks. ................................................................. 6

Introduction ......................................................... 7

Chapter 1. Theoretical and methodological foundations of the study of structural changes in the capital market and investment strategies .................................................. 16
  1.1 Structure of the market capital and the tendencies ........................................ 16
  1.2 Fundamental trends and strategies of investors in the capital market .......... 27
  1.3 Essence and place of digital financial assets in the development of investment strategies ................................................................. 44

  2.1 Squeeze the dollar stock market capitalization .............................................. 54
  2.2 Post-crisis shifts in the bond market ............................................................ 60
  2.3 New sources of shocks: low inflation and monetary policy ........................................ 71

Chapter 3. Theoretical and applied aspects of the use of assets of institutional investors .................................................. 84
  3.1 Types of institutional investors ................................................................. 84
  3.2 Asset allocation strategy for various types of institutional investors ............ 93
  3.3 Modern portfolio theory ................................................................. 102

Chapter 4. Analysis of the strategies of institutional investors .................. 107
  4.1 The current state of institutional investors in Russia .................................. 107
  4.2 Assessment of the effectiveness of the distribution of assets of institutional investors ................................................................. 109

Chapter 5. Improving the efficiency of use of investment fund assets .......... 112
  5.1 Effective investment fund strategies ......................................................... 112
  5.2 The mechanism for choosing the strategy .................................................. 115
  5.3 Liquidity risk of investment fund assets ..................................................... 118
Chapter 6. Oil and gas complex of Russia — the leading source of the formation of federal budget revenues ......... 121
  6.1 Oil and gas complex in the Russian economy .......... 121
  6.2 Prices of Russian hydrocarbons in the world market ............ 129
  6.3 Tax revenues from the oil and gas complex in the federal budget ........... 134

Chapter 7. Russian practice in stabilizing financial revenues to the state budget ......................... 141
  7.1 Suggestions and solutions to stabilize financial revenues to the Russian federal budget .......... 141
  7.2 Ways to stabilize financial revenues to federal budgets .......... 144

Chapter 8. Foreign experience in stabilizing financial revenues to the state budget ......................... 166
  8.1 Experience of the State Pension Fund of Norway ..... 166
  8.2 The Emirates experience .................................. 170
  8.3 Saudi Arabian Sovereign Welfare Fund .................. 179
  8.4 Alberta Provincial Savings Trust Fund ................. 183
  8.5 Sovereign Welfare Fund of Qatar ......................... 188
  8.6 Kuwait Sovereign Welfare Fund ......................... 198
  8.7 Sovereign Welfare Fund of Kazakhstan .................. 207
  8.8 Sovereign Welfare Fund of Venezuela .................. 227

Chapter 9. Problems of formation and use of funds of sovereign wealth funds of the Russian Federation ..... 254
  9.1 Analysis of expenditures of the federal budget of the Russian Federation .......................... 254
  9.2 Possible additional source for the Stabilization Fund ........ 261
  9.3 The macroeconomic effect of the use of sovereign wealth fund .................. 265
  9.4 Multiplier model Stabilization Fund of the Russian Federation .................. 270
## Chapter 10. Transformation of traditional behavior of global institutional investors .......................... 278

10.1 Patterns of various types of institutional investors ...... 278
10.2 Behavior model based on global risk attitude and allocative efficiency ...................... 288

## Chapter 11. Behavior models of Russian investment funds ............ 295

11.1 Key features of the behavior of Russian stock funds ...... 295
11.2 Main factors influencing the cash flows of Russian bond funds .................. 317
11.3 Efficiency of the stock and bond funds behavior ...... 323

## Chapter 12. Long-term investment strategies of global institutional investors .............................. 332

12.1 Carry trade and growing global economy .......... 332
12.2 Trading volatility: forecasting and trading strategies .... 345
12.3 Potential market of crypto assets for investment ...... 352

## Conclusion ................................................................. 361

## Appendix 1 ............................................................. 366

## Bibliography ............................................................... 387
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Dedicated to my family and loved ones.
The relevance of research. Today, Russia belongs to countries with emerging markets. Currently, the capital market of Russia does not fulfill its main function — attracting investors’ money to finance long-term projects. Forced development of the financial market can help attract domestic long-term investments in the context of sectoral sanctions from developed countries.

The most important difference between economics and the natural sciences is, perhaps, the fact that the decisions of economic agents depend on expectations and ideas about the future. Weather forecasts for tomorrow will not affect today’s weather, but investors’ forecasts for future stock prices may affect the movement of the financial market today. An example of this phenomenon is the Dutch “tulipmania” in the seventeenth century. The dreams and hopes of the Dutch investors for the excessively high return on their investments in tulip bulbs exaggerated the explosion of prices for tulip bulbs with a factor of more than 20 at the beginning of 1636, and its fall back to the original level by the end of this year. An even more recent example is the “dot-com” bubble, the rapid upward movement of stock prices on world financial markets in the late 1990s.

A more recent example is the 2008–2012 financial and economic crisis. It is hard to believe that the fall in world financial markets in 2008 by more than 50% was entirely due to economic factors. A similar comment applies to the EU debt crisis. While the budget deficits of EU countries partly explain the basics of the economy. Projections, expectations or beliefs of consumers, companies and investors about the future state of the economy are part of the “law of motion”. The economy is highly nonlinear expectations with a feedback system, and therefore the theory of expectations is an important part of any dynamic economic model or theory.

This hypothesis excludes all irrationality and market psychology in favor of economic analysis, and instead claims that expectations are in balance and realized at a certain time.

The rational expectations revolution in economics occurred before the discovery of nonlinear dynamics. The fact that chaos can occur in simple non-linear systems, and its consequences for society are predictable, sheds light on the hypothesis of expectations. In a simple (linear) stable economy, predictability prevails, and economic agents have rational expectations in the long run.

Milton Friedman (1953) argued that irrational agents would be ousted from the market by rational agents who would trade against them and earn higher profits. In recent years, however, this view has been questioned and heterogeneous agent models are becoming increasingly popular in the field of finance.
and macroeconomics. Kirman (1992, 2010), for example, is a prime example of criticism of rational modeling of economic agents.

At the same time, the reasons for the collapse of recent years in the global financial market, including in emerging markets, can be explained in terms of neoinstitutionalism.

The financial markets of developing countries can be considered derived from the markets of developed countries, since the regulatory framework, regulatory principles and institutions are entirely borrowed from the experience of developed markets. The stock market liquidity level positively and statistically significantly correlates with current and future rates of economic growth, capital accumulation and increase in labor productivity.

An efficient stock market contributes to attracting additional investments to finance projects, which leads to accelerated economic growth, mobilization of domestic savings and reduction of risks through diversification. Stock market liquidity is still a reliable indicator of future long-term growth.

Volatility of stock indexes and financial market liquidity indicators can be used as leading indicators of general economic conditions.

Modern stage of development of the Russian financial market can be viewed as an opportunity for structural reform in the face of tough budget restrictions and reduce the overall debt burden.

Strengthening the role of public companies in the financial market of Russia does not provide transparency of pricing and leads to increased segmentation of the financial services market. On the one hand, such a structure contributes financing. On the other hand, only state and quasi-state structures on non-market conditions can receive financing.

From a substantive point of view, the results of asset price forecasts indicate a sluggish recovery in the financial market after crises: the dynamics of macroeconomic indicators indicate an L-shaped trajectory, Russia’s exit from the crisis. Financial conjuncture over the forecast interval until 2020 will slowly improve.

At the same time, the parameters of the Heston model do not differ significantly for the period 2007–2016, that is, the global financial crisis has had a significant effect on the probability distribution of stock returns, because the stock market has not resumed growth so quickly. The main difference is in the average growth rate of volatility $\mu$, which became negative after the crisis in 2009 against 13–20% per year in the 1990s and early 2000s.

Statistics for the post-crisis (2009–2017) years indicate that the stock market has moved into a different mode of operation compared to the previous time period. However, analysis of empirical financial data indicates that the correlation function has a power dependence.
Previously it was assumed that the BRICS countries would become centers of new economic growth, but the recent financial crisis in China (July and August 2015) and problems in the Russian economy contributed to a shift that occurred faster than expected. In this context, ineffective strategies for the active management of Russian investment funds, limited by behavioral prejudices, will hinder the accumulation of long-term money in the economy.

The links between these prejudices and the activities of the funds are identified with the fund managers, who not only are mistaken, but also make big bets on risky assets without producing significant excess returns over stock indexes.

To study the relationship between the behavior of funds and the effectiveness of the strategy, it is advisable to compare the skills of asset selection by managers.

The results show that the funds of Russia and BRICS as a whole often do not tend to follow the internal stock indices. As a result, they do not produce significant excess returns over the corresponding indices.

This study focused on two targets: the relationship between performance measurement and the concentration of the fund's investment strategies on local risk factors and behavioral considerations.

In the past decade, starting with the global financial crisis of 2007–2008, emerging markets have attracted considerable attention from analysts and investors, as a new asset class in a portfolio.

It is important to understand the various economic and political characteristics demonstrated by Russia and other BRICS countries. Brazilians and Russians live in urban areas and above all are economies based on natural resources.

As studies of this problem show with reference to the Russian reality, a fundamental review of the development of the traditional Russian financial market is currently required, taking into account the introduction of new financial technologies that can change the financial world beyond recognition.

In order to satisfy the value preservation property, the cryptoasset asset must retain its value over a long period of time. The greatest risk is associated with the loss of the key to the purse on which the cryptoasset is stored. Therefore, many government agencies remind the public about studying the characteristics of cryptoasset before performing transactions, or simply prohibit such transactions.

In 2017, the volatility of liquid cryptoassets is 3–15 times higher than the volatility of the exchange rate of other liquid currencies. If to compare with the Russian ruble, then in December 2015, the volatility of the ruble even exceeded the bitcoin volatility and was more than 10% per day.
The Austrian school claims that the main function of money is the use of money as a means of exchange. At the same time, the secondary functions of money include the use as a means of accounting and a means of preserving value, which begin to take place with time and as liquidity increases. Thus, some cryptoassets (bitcoin, ethereum) already perform the basic function of money, according to economists of the Austrian school. We are witnessing a live social experiment that has the ability to change the existing paradigm.

Thus, the relevance of the study is due to the transition of both global capital markets and the Russian market to a new stage of development after the 2008 global financial crisis. First, fundamentally new trends have emerged in the development of the financial market and new aspects of investor behavior in the markets. New financial instruments and cryptoasset markets have emerged, which are still very poorly studied in Russian science. Secondly, it is necessary to take into account the lag in the implementation by the Russian scientific community of the results of research developed abroad in the last decade.

The experience of the global economic crisis shows that a detailed analysis is required of the main segment of the financial market — the financial market. For the purposes of this work, the term “capital market” implies a combination of the stock market and the bond market, that is, those segments of the financial market where they should apply long money with a maturity of more than a year.

The result of a theoretical analysis of the financial market should be the creation of models that would allow to predict further development trends of certain aspects of the modern financial market, such as: asset prices, volatility dynamics, the ratio between savings and investments, the overflow of shocks in financial markets (spillover effect).

Understanding certain aspects of the financial market is critical for the successful implementation of economic policy measures to develop the national financial market.

Thus, the relevance of the study of the Russian financial market due to the need:

- development of the theory and methodology of research of the Russian financial market to identify trends, patterns of investor behavior and alternative investment mechanisms as a fundamental scientific basis;
- development of the theory of alternative financial markets — markets of cryptoasset assets and assessment of the potential of the market of cryptoasset assets for safe harbor investments;
- justification of recommendations on the use of optimal methods for forecasting trends in the Russian financial market, taking into account past experience;
- identification of new patterns of application of financial theories of asset prices and models of forecasting the volatility of asset prices in the capital markets;
- assessing the impact of the global economic crisis and other financial crises on the state of the Russian financial market;
- predicting the impact of behavior patterns and investment strategies of Russian and global investors on the development trends of the Russian financial market;
- use of alternative investment strategies global institutional investors based on models of forecasting the volatility of financial assets that could be used during periods of slower growth in the global economy or in periods of shocks in financial markets.

At present, aspects of development trends and investor behavior in financial markets are explored by staff from many Russian universities and research institutes, such as:

- Institute of Economics RAS, National Research Institute of World Economy and International Relations, Institute national economic Forecasting RAS, Institute of Economic Policy. E. T. Gaidar, National Research University “State University — Higher School of Economics”, Moscow State University of Lomonosov, Financial University under the Government of the Russian Federation, Moscow State Institute of International Relations (University) of the Ministry of Foreign Affairs of the Russian Federation.

The purpose of the study is a theoretical and methodological analysis of key aspects of the financial market, the results of which can be applied in order to increase the resilience of the national economy to endogenous and exogenous shocks.

To achieve this goal, the following tasks have been set and solved:
- identify patterns of historical evolution of financial theories of asset prices and models for predicting the volatility of asset prices in capital markets;
- analyze the impact of the global economic crisis on the state of the global financial market in general, and the Russian financial market in particular, and on this basis predict possible trajectories of investor behavior;
- identify advantages and disadvantages of the most influential and currently sought-for financial theories of volatility forecasting in terms of their application to the modern financial market of Russia and the markets of cryptoassets;
- based on an analysis of the development trends of the Russian financial market and the behavior of global institutional investors, propose
optimal parameters for the implementation of the investment strategy with carry trade in the global and Russian financial market;

- consider alternative investment strategies global institutional investors based on the models of forecasting the volatility of financial assets that could be used in periods of slowing global growth or periods of shocks in financial markets;
- develop pricing and volatility forecasting mechanisms in the cryptoassets market and assess the potential of the cryptoassets market for safe-haven investments.

The scientific hypothesis of the work consists in the assumption of the special state of the Russian financial market after the currency crisis of 2014–2015. on the background of the emergence of financial technology.

The scientific novelty is confirmed by the following scientific results obtained by the author personally, submitted for defense:

1. The laws of the historical evolution of financial theories of asset prices (increased subjectivity in risk assessment) and models of forecasting the volatility of asset prices in capital markets (accounting for structural shifts in the market) have been revealed. Collected evidence of high accuracy and reliability of long memory models for predicting the volatility of price movements for various classes of financial assets. The theoretical foundations are proposed for the formation of the market value of digital financial assets as a new segment of the global financial market.

2. It is shown empirically why the Russian capital market does not fulfill its key functions in the post-crisis period (2009–2017): accumulation of “long money” in the economy and financing long-term investment projects. Despite the reduction in liquidity, sectoral sanctions and other difficulties, the stock market is represented by a fairly wide range of different bidders. The main volumes of exchange trades with shares fall on Russian financial organizations state-controlled companies. An analysis of the structure of investors on the stock exchange shows a tendency of growth in the activity of non-residents, which was not prevented even by the introduction of sectoral sanctions. In recent years, the issue of shares of Russian companies has played an imperceptible role in the general sources of investment (less than 1 %). The Russian stock market remains a source for refinancing or debt repayment, as well as for financing individual investment projects.

3. Identified behavioral features of the functioning of the market of investment funds. It has been established that the Russian funds with the highest net profit over the previous year demonstrate significant indicators of asset allocation efficiency. Approximately 5 % of Russian stock funds can successfully pick
up assets over a period of 6 years compared with the MICEX index. Most of the mutual funds managed by major financial institutions of Sberbank, VTB and Alfa-Bank in the period from 2012 to 2017 are ahead of the MICEX index in terms of profitability due to the informational advantage and the influence of the social responsibility factor.

4. It has been revealed that risk aversion and negative sentiment in the behavior patterns of Russian debt market funds vary seasonally. Cash flows to Russian bond funds are above average values in autumn and winter. Different investment abilities and behaviors can be alternative drivers of specific fund differences. For Russian bond funds, a negative relationship has been revealed between the growth in incoming cash flows and the fund’s return rates. The relationship between the size of the bond fund in Russia and the Alpha coefficient is negligible.

5. The features of the implementation of the carry trade investment strategy in the global and Russian financial markets are identified based on an analysis of current trends in the development of the Russian financial market and the behavior of global institutional investors. The yield on currency carry trade strategies is positively correlated with periods of increasing market liquidity and reflects an increase in yield relative to the previous period. During periods of economic crisis, the carry trade strategy becomes unprofitable and the risk associated with the parity of interest rates between the currencies of the two countries is realized.

Alternative investment strategies of global institutional investors based on the models of forecasting the volatility of financial assets that could be used during periods of slower growth of the global economy or periods of shocks in financial markets are considered. The periods of low volatility are similar to the periods of low beta portfolio of assets in the financial market. Most investors can gain additional returns by adjusting the volatility of the asset portfolio in the financial market if there are severe restrictions on the use of financial leverage.

The mechanisms for forecasting prices and volatility in the market of cryptoasset assets based on long memory models and analyzing statistics of Internet users’ queries in the Google search engine for terms that reveal the dynamics of their financial attitudes in the market of cryptoactivities are proposed. The bitcoin market has been assessed for performing the functions of a protective (crisis) asset. It has been established that, along with gold, Bitcoin already performs this function and will prevail over gold in the near future as the global digital infrastructure develops and investors’ confidence in the new class of financial assets.
The practical significance of the dissertation research lies in the possibility of applying the obtained results when developing programs for the strategic development of the Russian financial market and regulatory documents regulating the market of cryptoassets, as well as when searching for answers to macroeconomic forecasting questions.

The theoretical basis of the study is behaviorism, which allows considering the capital market from the point of view of ensuring the best profitability and least risks from the point of view of an individual investor.

The methodological basis of the study was the provisions of financial science, macroeconomics and econometrics. The following scientific methods of studying social phenomena were used in the work: induction, deduction, analogy, analysis, synthesis, dialectic and historical approaches to the study of the financial market, comparative analysis, and economic and mathematical modeling (regression analysis, statistical methods, time series analysis).

The formation of the research methodology was greatly influenced by the results of scientific works of foreign economists, primarily B. Bernanke, O. Blanchard, M. Gertler, D. Gale, D. Diamond, J. M. Keynes, P. Krugman.

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In addition, official documents, national legal acts of the Russian Federation, the USA, the European Union (the European Parliament, the European Central Bank, the European Council on Systemic Risks, the European Securities and Markets Authority, the European Insurance and Pension Board, the European Banking Board), the United Kingdom, Switzerland and others on financial regulatory reforms, protecting the rights of consumers of financial services, supervising systemically important financial institutions in the crisis period.

In addition, in the course of the book research, analytical information, reviews, expert reports on financial risks of the World Economic Forum, McKinsey, PriceWaterhouseCoopers and also data from Bloomberg and Thomson Reuters information systems were used.
The study materials may be useful in making forecasts of asset prices and asset volatility by the Ministry of Economic Development of Russia, the Ministry of Finance of Russia and the Bank of Russia.

On the topic of the book, the author performed 3 research projects in the role of a research leader:


Chapter 1. Theoretical and methodological foundations of the study of structural changes in the capital market and investment strategies

1.1 Structure of the market capital and the tendencies

The most important difference between economics and the natural sciences is, perhaps, the fact that the decisions of economic agents depend on expectations and ideas about the future. Weather forecasts for tomorrow will not affect today’s weather, but investors’ forecasts for future stock prices may affect the movement of the financial market today.

An even more recent example is the “dot-com” bubble, the rapid upward movement of stock prices on world financial markets in the late 1990s.

A more recent example is the 2008–2012 financial and economic crisis. It is hard to believe that the fall in world financial markets in 2008 by more than 50% was entirely due to economic factors. A similar comment applies to the EU debt crisis. While the budget deficits of EU countries partly explain the basics of the economy. Projections, expectations or beliefs of consumers, companies and investors about the future state of the economy are part of the “law of motion”. The economics of a highly nonlinear expectations system with feedback, and therefore the theory of expectations is an important part of any dynamic economic model or theory.

With the introduction of the rational expectations of Mut (1961) and its popularization in macroeconomics by Lucas (1972), the idea of rational expectations became the dominant paradigm of the formation of expectations in the economy. This hypothesis excludes all irrationality and market psychology in favor of economic analysis, and instead claims that expectations are in balance and realized at a certain time.

The revolution of rational expectations in the economy occurred before the discovery of nonlinear dynamics. The fact that chaos can occur in simple non-linear systems, and its consequences for society are predictable, sheds light on the hypothesis of expectations. In a simple (linear) stable economy, predictability prevails.

In the economics of the 1950s, Herbert Simon emphasized that rationality requires extreme assumptions about agents for collecting information and computing abilities. Alternatively, Symone strongly advocated limited rationality due to the limited computational capabilities of the agents. Modeling with the help of limited rational agents that adjust their behavior and learn from past experience, over time, leads to a complex and non-linear dynamic system.
The general assumption underlying the model of bounded rationality is that the subjects do not know the direction of economic development, but instead base their predictions from observations of the time series. An adaptive approach to learning is widely used in macroeconomics. Sargent (1993) provides an early overview of learning in macroeconomics. Most rational expectations models assume that there is one average consumer, average firm, or average investment behavior.

Milton Friedman (1953) argued that irrational agents would be ousted from the market by rational agents who would trade against them and earn higher profits. In recent years, however, this view has been questioned and heterogeneous agent models are becoming increasingly popular in the field of finance and macroeconomics. Kirman (1992, 2010), for example, is a prime example of criticism of rational modeling of economic agents.

Fig. 1.1. Evolution of financial market research instruments

About Sobienie the idea of rational expectations is that it imposes agents prediction rules and reduces the number of free parameters in dynamic economic models. The main focus is on the role of rationality in behavior and in-homogeneous expectations. The limitation of rationality contains three important elements:

- agents use simple decision rules with an intuitive behavioral interpretation;
- switching between different decision rules are made on the basis of evolutionary selection and training;
models of bounded rationality are empirically tested, both at micro and macro levels.

These heuristic methods are not ideal and should not be optimal, but in an environment that is too complex to fully understand the individual agents are looking for simple decision rules Selten (2001).

These more complex rules may be more costly due to information gathering costs than alternative heuristic prediction methods. The second form of learning takes place in each class of forecasting heuristic methods, with some parameters changing over time following an adaptive learning process. This type of learning also has behavioral interpretations and may be associated with psychology (for example, Tversky and Kahneman, 1974, Kahneman, 2003).

This example shows that in a nonlinear environment, a predictive strategy for the medium term in a boundedly rational world may be reasonable [213].

Equilibrium models of securities markets, nor the classical concept of financial market efficiency, formulated by Y. Fama, does not explain why emerging markets are panicked by negative developments in global markets.

At the same time, the reasons for the recent collapses in the global financial market, including in emerging markets, can be explained in terms of neoinstitutionalism. The financial markets of developing countries can be considered derived from the markets of developed countries, since the regulatory framework, regulatory principles and institutions are entirely borrowed from the experience of developed markets.

Among the concepts of the influence of the financial market on economic growth can be noted the hypothesis of financial fragility (financial instability hypothesis) H. Minsky.

All financial institutions, like non-financial ones, strive to maximize profits. Therefore, when there is an increased demand for assets in the financial markets, financial institutions will seek to satisfy this demand.

For financial institutions, the main way to overcome this kind of limitation may be the introduction of new tools and services. Examples include various types of derivatives.

Issuing securities backed by previously issued loans is a classic example of creating new assets from existing assets. In addition, it may be the creation of mirror credit lines between financial institutions, as well as the issuance of syndicated loans and new methods of managing their own liabilities.

As a result, financial innovations, as noted by H. Minsky, can not only stimulate economic growth, but also lead to the bankruptcy of companies in the real sector of the economy.
In accordance with the hypothesis of an effective market (ERT), if all available information can be reduced to projected annual cash flows, the price of the bond is the discounted present value of these cash flows, where the discount rate reflects the amount of risk foreseen in the forecasts.

The basic idea (GER) can be summarized in five key principles:

1. Market participants are not always rational and irrational, but they strive for more efficient behavior.
2. Market participants make non-optimal decisions and do not use the experience of past years.
3. Predictions based on past experience cannot be accurate due to the evolutionary change in financial markets.
4. The dynamics of the financial market are determined by the relationship of market participants and social, cultural, political, economic and natural conditions.
5. Survival is the ultimate driving force of market participants, which is manifested in the form of competition, innovation, and adaptation [218].

These theses describe life in the real world, but they do not constitute a unified theory and [228].

The predictions are less accurate in the social sciences, but the theory must have sufficient predictive ability to bring some benefit.

This hypothesis is a holistic theoretical construct for explaining the relationship between the growth rates of asset prices in the financial market and the GDP growth rate.

Accordingly, in those countries where the best conditions have been created for the protection of investors, the probability of its positive impact on economic growth rates is higher.

The theory of the development of financial markets and the influence of the financial market on economic growth has not yet been fully formed, although the fact of influence today is indisputable.

The relationship between the stock market and economic growth has become a popular field for research.

Luintel and Khan a (1999) explored the bidirectional links between financial development and economic growth. They found that the financial market affects economic growth. Levin and Zervos (1996), in their studies, examined the relationship between stock market development and economic growth based on empirical data, using empirical data for 41 countries of the world from 1976 to 1993. Their result showed that the level of stock market liquidity positively and statistically significantly correlated with current and future rates of economic growth, capital accumulation and increase in labor productivity.
Numerous studies have analyzed the role of the stock market in ensuring economic growth; most of them focused on specific aspects of the stock market. Later, Levin and Zervos (1998) measured the levels of development of the stock market and indicated the significant relationship between the initial level of development of the stock market and subsequent economic growth. An efficient stock market contributes to attracting additional investments to finance projects, which leads to accelerated economic growth, mobilization of domestic savings and risk reduction through diversification and [248].

The liquidity of the stock market is a reliable indicator of future long-term growth, as indicated by Levin (1996).

Many other researchers argue that there is a positive correlation between financial development and economic growth.

Atye and Jovanovic (1993) concluded that stock markets have a long-term impact on economic growth. Paudel (2005) argues that stock markets allow companies to acquire much-needed capital quickly, therefore, to facilitate the distribution of capital and investment.

Mauro (2000) concluded that the stock market is a stable, decisive factor in economic growth in emerging economies.

For the Russian economy, the fact of the influence of stock market dynamics on economic growth is controversial, which is indicated in the studies of Drobyshevsky (2016).

Behavioral financial theory (behavior finance theory), based on the use of crowd psychology in making decisions by market participants, is finding more and more supporters after the crises of 2000, 2008, 2014.

To study the latest achievements of behavioral theory in terms of the development of financial markets, we will review some popular scientific articles of researchers involved in the development of behavioral theory.

In addition, we will look at two main approaches used in behavioral finance: behavioral microfinance and behavioral macro-finance.

Over the past 20 years, some brilliant work has appeared in the field of behavioral finance: Professor Yale University F. Schiller, former Federal Reserve Chairman Alan Greenspan.

According to them, “the economic growth of recent years, accompanied by low inflation is an indicator of stability”.

At the same time, Alan Greenspan and Professor Schiller warned investors that stock prices, according to various historical measures, had risen too high.

Andrei Shleifer (professor at Harvard University) and Meir Statman (Professor at the Livi School of Business, Santa Clara University), published monographs entitled “Inefficient Markets: An Introduction to Behavioral Finance”
(Oxford University Press, 2000) and “Behavioral Finance: Recent Battles and Future”. These works answer the questions: what mistakes do investors make? What is the nature of risk and regret? How do investors form portfolios? How important is the allocation of assets? What determines stock returns?

Professor David Kahneman found that in the face of uncertainty, human decisions systematically evade the predictions of standard economic theory and [288]. Kahneman and Amos Tversky formulated the foundations of perspective theory.

Kahneman also found that human reason adopts heuristic labels, which are systematically at variance with the basic principles of probability theory and [298]. His work inspired the formation of new research projects based on psychologists and [311].

Vernon Smith is known for developing standards for several techniques that form the basis of experimental economies and [264].

The economic models used in behavioral finance are mainly based on the behavior of an individual investor.

1. The theory of behavioral microfinance examines the behavior of individual investors, which differs from the rational one provided for in classical economic theory and [260].

2. The theory of behavioral macrofinance describes anomalies in terms of market efficiency and behavior patterns.

A significant part of economic and financial theories is based on the concept that people act rationally and take into account all the available information in the decision-making process. In scientific studies, researchers confirm the numerous evidence of irrational behavior and repeated mistakes of market participants.

Classical theories of finance are mainly based on rules about how investors “should” behave, not on actual behavior and [230]. Behavioral finance is trying to identify and study the psychological phenomena in the financial markets.

Some portfolio managers using passive strategies believe that an effective market does not allow you to constantly receive income above the reference level, creating alpha.

According to statistics, active managers show results, better than benchmarks, only for 33% of times and [233]. This may explain why the popularity of index finance (ETFs) has grown dramatically over the past fifteen years. The implications of an efficient market hypothesis have far-reaching consequences.

Most of the professionals in 2014 who work with stocks and bonds believed that securities should be cheaper than current prices [2].
If markets are truly efficient, and current prices fully reflect all the information from which it follows, securities transactions in an attempt to surpass the benchmark average market rate of return are based on luck, not on skill.

Market efficiency theory has inspired thousands of studies to determine which markets are actually “efficient”.

Many studies do support the efficient market hypothesis. Three types of market anomalies were studied that contradict the hypothesis of an efficient market:

1. fundamental anomalies;
2. technical anomalies;
3. temporary anomalies [235].

The fundamental anomalies are that there are a large number of cases in which investors constantly overestimate the growth prospects of successful companies and underestimate the prices of shares of companies “losers”.

Eugene Fama and Kenneth France conducted a scientific study of stock prices quoted on the New York Financial Exchange (NYSE), American Financial Exchange (AMEX) and Nasdaq from 1963 to 1990 [3].

All shares were divided into 10 groups according to the ratio of price to book value (P/B) and ranked annually. Stocks with a low P/B ratio exceeded the stock returns with high P/B by a value from 21.4% to 8% for different groups. Numerous studies have shown that low P/B rates can be a signal for an increase in stock value.

Low earnings per share (P/E) is another attribute that tends to signal the purchase of certain securities. Numerous studies, including the work of David Dreman, have shown that low P/E stocks tend to outperform high P/E stocks.

In addition, stocks with a high dividend yield tend to surpass market average and [245].

Technical anomalies are related to the fact that past values of securities quotations can be used to predict future securities quotations.

Sometimes, technical analysis reveals inconsistencies in terms of an efficient market hypothesis. General technical analysis strategies are based on indicators of relative strength and moving averages, as well as on the calculation of support and resistance levels.

Most research focused on the use of technical analysis in asset management proves that prices quickly take into account new information, and that the methods of technical analysis themselves probably will not have any advantage for investors who use them. However, supporters continue to argue the validity of some technical strategies.

Temporary anomalies are most common and the so-called “January effect” can be identified separately. Historically, the stock market as a whole shows a high yield during January.
Robert Haugen and Philip Jorion noticed that the “January effect” is perhaps the most famous example of abnormal behavior in financial markets around the world.

This effect is significant because it has not disappeared, despite the fact that it has been widely known over the past 25 years (according to arbitration theory, the anomaly should disappear, as market participants are trying to make purchases in advance).

In addition, recent studies have revealed that stocks show higher returns in the last 4 and first 4 days in each month relative to other days.

Some researchers believe that this effect is due to the logic of changes in liquidity at the end of each month due to cash flow (wages, mortgages, credit cards, etc.).

In fact, the theory of an efficient market and the theory of an anomalous market can be applied in different periods of time and [249]. In reality, markets are neither efficient nor completely anomalous and [220]. In inefficient markets, experienced investors can significantly outperform less experienced investors. Many believe that large-cap stocks, such as GE and Microsoft, tend to be very informative for the market as a whole.

The real estate market and the venture capital market are one example of an inefficient market due to information asymmetry between players and [240]. In order for an effective market hypothesis to be applicable, three conditions are necessary:

1. Perfect rationality. When people are intelligent, they have the ability to reason and make profitable decisions. However, rationality is not the only incentive for human behavior. In fact, this may not even be the main driver, as many psychologists believe that human intelligence often obeys human emotions. People use their minds only to achieve or avoid emotional results.

2. Self-interest. Many studies have shown that people are imperfectly selfish. If they were, charity could not exist.

Personal interest may prevent people from doing unselfish activities such as volunteering, helping those in need, or serving in the army and [248]. It is impossible to exclude the craving for self-destruction, which can manifest itself in the form of suicide, alcoholism or substance abuse and [257].

3. Completeness of information and [297]. Some people may have complete information in certain areas. In the investment industry, there is an infinite amount for training. Even the most successful investors cannot master all the disciplines. Many economic decisions are made in the absence of perfect information and [299].

For example, some economic theories suggest that people, when making major purchases, take into account the monetary policy of a central bank.
Naturally, some people know exactly where to find this data, how to interpret and how to apply, but most do not know what the central bank does.

Like market efficiency, human rationality rarely manifests in the form of absolute forms. People can not be completely rational, as well as completely irrational and [252].

They possess various combinations of rational and irrational characteristics that change over time and [236]. They can benefit from various degrees of knowledge in various fields of activity and [239].

Behavioral theory takes into account the reflexivity of markets. The term “reflexivity” means cyclical connections between cause and effect. Reflexive relationships are bidirectional and influence each other, and it is difficult to determine what is the cause and what the consequence.

In economics, “reflexivity” means the self-reinforcing effect of the actions of market participants, in which rising prices attract buyers. At the same time, buyers’ actions move prices even higher until this process becomes unstable. The same process works in the reverse order and leads to a catastrophic collapse in prices for financial assets during crises.

Reflexivity was considered as the problem of science as a whole by Karl Popper (1957), who called it the “Oedipus Effect”. Reflexivity is a problem for science, because if a prediction can lead to changes in the system on the basis of which it is made, it becomes difficult to evaluate scientific hypotheses by comparing predictions.

It can be said that “reflexive prediction” was considered in detail in economics by Grünberg, Modigliani (1954) and Simon (1954) [6].

The well-known investor and philosopher George Soros, influenced by the ideas put forward by his teacher Karl Popper (1957), became the founder of the theory of reflexivity of financial markets. In addition, he believes that his understanding of market behavior is a major success factor in a financial career.

Reflexivity is contrary to the theory of equilibrium, which states that markets are moving towards equilibrium. Short-term fluctuations are only random noise, which is soon neutralized by the markets and [259].

In the theory of equilibrium prices in the long run, equilibrium is influenced by the fundamentals that remain unchanged and [279].

Proponents of the theory of reflexivity argue that prices actually influence the institutional foundations of markets.

Model of perfect competition, in fact, built on the canons of Newton’s physics. It determines the balance between demand and supply to which asset prices tend.
The principal mistake of the classical theory is that this equilibrium theory does not take into account that real prices deviate from the level of theoretical equilibrium in a random way.

The basic idea of the theory is that social phenomena have a different nature than natural ones.

The reflexive relationships inherent in financial markets lead to the emergence of new trends that affect not only market prices, but also the fundamentals that are designed to reflect market prices. The theory of reflectivity of financial markets consists of two mutually opposite for the reasons for the emergence and influence on the market factors:

1. Economic (credit schemes);
2. Socio-psychological.

After the crisis of 2008, the second factor became much more significant than the first, as central banks began to make mass interventions on financial markets on an ongoing basis.

Thus, a crisis is a natural consequence of the growth in lending and market fundamentalism in general.

The reduction in the Fed rate on federal funds to 0.25 % and the launch of QE 3 quantitative easing programs led to an unprecedented scale of lending.

If we return to the experience of the 2008 crisis, we will see that from 1997 to 2006, US citizens, re-laying at home, received more than $ 9 trillion in cash over their own capital.

Many economists point out that moral hazard (an increase in the likelihood that insurance will change the behavior of an insured person towards increased risk) was the main cause of the 2008 crisis.

J. Soros also notes fraud on the part of financial market participants, since the foundation of the current economic crisis looks like a typical financial pyramid.


Rather, short-term incomes of market participants turned out to be more important for the political elite than the future of the next generations.

In addition, the losses of the largest investment banks made the financial markets nervous, which caused an increase in volatility and [247].

Hedge funds that use market neutral strategies and high leverage to work with minor market price fluctuations, during the 2008 crisis, abandoned their neutrality strategy and suffered significant losses [248]. As a result, the capital of commercial banks quickly declined, and it became difficult to estimate the size of potential losses for customers and partners.
Six months later, the crisis spread from the housing market to the lending industry (credit cards, car loans and commercial real estate). So the crisis has become global, thanks to the globalization of financial markets.

The modern global institutional structure favors, to a greater extent, the US economy, and to a lesser extent, other developed economies located at the center of the financial system. Therefore, in the zero years of the twenty-first century, the process of moving capital to “safe havens” became noticeable.

In principle, all this process described above, which began with the appearance of the first signs of panic in the financial markets, is a real crisis. Therefore, from the point of view of solving the question of the significance of the paradigm proposed by Soros, it is important to understand how “reflexive connections lead to the emergence” of precisely this “self-developing historical process”.

The main disadvantage of the theory of reflexivity of financial markets is that it is unsuitable for predicting changes in asset prices. At the same time, this theory can be used to predict new crises in the global economy.

The theory of reflexivity of financial markets can be compared with the Heisenberg uncertainty principle in quantum physics, that is, it can be the basis for explaining the processes in the economy of financial markets from the point of view of the microworld.

As we described above, the processes occurring in financial markets, primarily depend on behavioral factors, and therefore are governed by the laws of behavioral finance or social psychology and [242].

The economic situation until 2020 is developing in line with the events of post-crisis recovery, depending on the Fed rate hike cycle. The magnitude and depth of the cycle may vary. Global growth may remain very weak. At the same time, the growth trend in the largest economies is significantly weaker than in recent decades, as a result of a slowdown in the growth rates of labor productivity and an unfavorable demographic situation and [243].

The growth potential of real GDP in developed countries is gradually decreasing. The global financial crisis and productivity growth fell to levels below the 1950s–1970s.

In addition to structural problems in the Eurozone economy, many emerging markets are not insured against migration of structural imbalances from developed economies. As a result, the GDP of emerging economies is expected to increase at a slower pace than the average growth rate until 2008.

The global economy is not immune from the risks of slowing or declining growth in Europe and China over the next five years.

In the short term (1–3 years), the change in US GDP will be directed towards a gradual increase to the level of 2.0%.
Indicators of leading indicators of the Eurozone look much worse.
At a press conference on January 22, 2015, the ECB officially announced a new round of quantitative easing from March 2015 to September 2016 in the amount of 60 million euros per month.

Considering that even with the inflation targeting mode, artificially low interest rates can lead to the irrational use of capital over time and [250]. Many low-profit projects, both public and private, can become viable with ultra-low financing costs.

Low interest rates can also distort the results of decisions on the choice of optimal sources of financing. The business will expand the use of borrowed funds instead of attracting equity financing.

Perhaps now we are witnessing a similar phenomenon: at the expense of borrowed funds, the buyback of shares is taking place, financed by own capital.

In the euro area, the economy is trying to recover from the recession caused by the effects of the global financial crisis, which is accompanied by a sovereign debt crisis and the vague reaction of European politicians in the context of a renewed recession in 2014.

This increased the risk that the economy could go into recession. ECB forecasts reflect expectations that inflation may return to target levels in the near future. But this led to fears of deflation in the Eurozone, as happened in Japan in the period 1998–2002. and occurs in some peripheral countries.

Deflation is not a baseline scenario. Although it seems strange that the level of economic activity in the Eurozone is still at about 1% below its previous peak level in 2008, when the global financial crisis began.

1.2 Fundamental trends and strategies of investors in the capital market

Financial markets become more integrated after the crisis of 2008–2009. In developing countries, against the background of liberalization, there has been a tendency to an increase in the volume of operations in stock markets and, consequently, in currency markets. Such economies began to enjoy the interest of global investors due to high growth rates, a gradual decrease in inflation rates and economic liberalization [203].

This had an impact on the balance of demand and supply of national currencies, and eventually became the cause of the correlation between stock indices and exchange rate dynamics. Global investors and portfolio managers are trying to understand the relationship between two groups of financial assets: foreign exchange and stocks, which also contain foreign exchange risk.

Most empirical studies emphasize the relationship between stock and currency markets [209]. Experts note that the relationship between these markets is
often unstable. Any change in stock index quotes caused by exchange rate fluctuations complicates the choice of the optimal investment strategy [239]. In addition, the mean reversion principle applicable in the long-term timeframe can lead to errors in choosing the time for a transaction [236].

There is also evidence that volatility can greatly change the relationship if structural jumps are not reflected in the GARCH model. However, many researchers argued that the degree of constancy of volatility can be taken into account when using the autoregressive model of long memory (IGARCH).

The effect of volatility overflow between national stock indexes and the national exchange rate is observed in both directions. As a shock in the foreign exchange market can cause a change in the rate of the national currency, and vice versa, a sharp devaluation of the currency is reflected in the stock market.

The analysis focuses on the markets of Russia, China, Brazil and India in 2009–2016 yy. Two of these BRICS countries (India and Brazil) used a floating exchange rate regime during this period, China is only going to switch to free exchange rate formation, and Russia has virtually canceled the currency corridor and switched to inflation targeting mode since the beginning of 2015 d. Similar relationships in the USA were also analyzed.

It is not completely clear whether there is a permanent long-term memory of volatility that is disrupted during structural shifts in the stock and currency markets. The presence of a long memory in the analysis of volatility plays an important role, since it is understood that recent trends in the markets can be used to predict future asset prices, which is of paramount importance to investors. In addition, the presence of structural shifts usually increases the variance of the constancy of volatility [112]. Earlier, a long memory effect was found on eight Eastern European stock markets without taking into account structural changes [134]. But nowhere has the constancy of long memory been analyzed on the basis of the FIGARCH methodology for BRICS countries, taking into account the influence of structural changes.

Economic theory assumes the existence of two main channels explaining the relationship between the stock and currency markets: the traditional channel of the trade balance and the channel of the market portfolio. In the first case, the exchange rate affects the balance of competitiveness of domestic and foreign goods, which is reflected in the trade balance. Further, growth in real output affects the current and future cash flows of domestic companies, especially those that are export-oriented [15]. Thus, a positive correlation between these two assets is maintained [236].

And the channel of the portfolio balance is explained by the demand and supply of financial assets. Increased demand for stocks causes demand for
the national currency, which ultimately leads to its appreciation. Conversely, if the exchange rate changes due to some external shocks, then investors use this situation to buy or sell stocks. There is a direct connection between two variables [238].

As a rule, the vast majority of empirical research on the relationship between currency dynamics and stock prices is focused mainly on developed markets. A significant positive impact of the stock market on changes in the exchange rate of all European countries, except Germany, was discovered on the basis of daily stock quotes [16].

The results of a study of the American market showed that the high exchange rate of a specific country against the dollar mainly affects the volatility of national indices, but reduces the volatility of the US stock market. Also identified the relationship between stocks and exchange rates in Japan [17]. It was argued that there is a relationship between the volatility of stock price in the six sectors of industry in Japan [214]. At the same time, the volatility of stocks in these sectors increases with the increase in exchange rate volatility.

The volatility of the exchange rates of the three US trading partners (Canada, EU, and Japan) and the US stock market was also studied [18]. The findings suggest that the effects of volatility overflow are high only during periods of strong economic shocks [19].

Experts argue that interest rates and currency fluctuations are the main factors determining the volatility of market prices of shares [20]. Thus, on weekly data, exchange rate volatility was investigated in four developing countries. It was determined that the volatility of stock indices depends on the average values and the dispersion of stock prices [21].

The presence of structural shifts in the markets is a typical problem when forecasting daily prices for financial assets. It is clear that the stock markets of the BRICS countries were seriously shocked after the global financial crisis of 2008 Structural changes can lead to a prolonged increase in the level of volatility [218]. In order to identify structural shifts, a modified iteration method was used for the cumulative sum of squares (ICSS algorithm) [22].

The ICSS algorithm assumes that the unconditional variance of the time series is constant over a period of time up to a price shock. After the shock, the variance in the price of the financial asset gradually returns to the previous average. This process can be repeated in time, producing discontinuities in dispersion [212]. Assuming the time series values are \( \{x_t\} \) with zero mean value and standard deviation, we can use the following formula [23]:

\[
A_{IT} = \sup_k \left\| I_{T-k}^{0.5} G_k \right\|;
\]  

(1.1)
\[ G_k = \lambda^{-0.5} \left[ C_k - \left( \frac{k}{T} \right) C_T \right], \quad \text{where } C_k = \sum_{t=1}^{k} \tau_t^2; \]  
\[ \lambda = \gamma_0 + 2 \sum_{l=1}^{m} \left[ 1 - l (m + 1)^{-1} \right] \gamma_l; \]  
\[ \gamma_i = T^{-1} \sum_{t=i+1}^{T} (\phi_i^2 - \gamma^2) (\phi_{i-1}^2 - \gamma^2), \quad \text{where } y^2 = T^{-1} C_T, \]  
where: sup is the function of finding the exact upper bound of the set; 

\( T \) — time; 
\( G_k \) — component of the ICCS algorithm; 
\( k = 1, \ldots, T; \) 
\( C_t \) — the sum of the squares of deviations from the mean; 
\( \lambda \) — average number of events; 
\( \gamma_0 \) and \( \gamma_l \) — components of the FIGARCH process; 
\( l \) and \( m \) — coordinates defining the function of the Bartlett window; 
\( \tau_t \) — value of the time series \( t; \) 
\( \sigma_t^2 \) — standard deviation of the value for the time series \( t. \) 

According to [238] we set the delay parameter \( m = 0.75 T^{1/3}. \) 

Using this modified algorithm, we recognize multiple structural shifts in conditional variance models using dummy variables. Each dummy variable corresponds to a price shock in the market. Suppose the presence of a long memory in the volatility of the stock index and national currency and we will use the FIGARCH model proposed by Bailey [24] and tested on the example of Eastern European markets [25] (indicator characterizes the overflow effect of volatility between stock and currency markets): 

\[ \sigma_{(r),t}^2 = \omega + \beta (L) \sigma_{(r),t}^2 + \left( 1 - \beta (L) - \alpha (L)(1-L)^d \right) e_t^2 + \phi \xi_t^2 + \sum_{j=0}^{k} \omega_j DUM_j, \]  

Based on the form of the distribution of the obtained values, we will use Student’s \( t \)-test. 

The initial data set includes the series of daily stock indices and national currencies of four emerging market countries: Brazil (IBOVESPA), India (BSE 500), Russia (MICEX), China (SHA), and the corresponding values of the exchange rate of the national currency to the dollar. Also used as a NASDAQ and the EUR/USD rate. 

The data cover ranges from 03/03/2009 to 03/03/2016 for all stock indices and national currencies, since after the global financial crisis of 2008. The fundamentally new character of the links between stock indices and currencies of the BRICS countries appeared. Used national exchange rates against the euro.
1.2 Fundamental trends and strategies of investors in the capital market

Fig. 1.2. Dynamics of the rate of national currencies of the BRICS countries against the euro, % (Source: Bloomberg)

Fig. 1.3. Daily stock index fluctuations in India
(Source: here and below — the author’s calculations)
Chapter 1. Theoretical and methodological foundations of the study of structural changes in the capital market and investment strategies

Fig. 1.4. Daily stock index fluctuations in Brazil

Fig. 1.5. Daily fluctuations in the stock index of Russia

Fig. 1.6. Daily fluctuations in the stock index of China
1.2 Fundamental trends and strategies of investors in the capital market

Fig. 1.7. Daily fluctuations of the Indian rupee to the euro

Fig. 1.8. Daily fluctuations of the Brazilian rial to the euro

Fig. 1.9. Daily fluctuations of the Russian ruble to the euro
Ljung test shows the serial dependence of the volatility of all assets, except for the stock index of Brazil and the Chinese yuan. This indicates that the FIGARCH model may be suitable for this conditional variance of processes.

Dickie–Fuller and KPSS are used to evaluate the stationarity of processes. These tests show that all rows are stationary and therefore suitable for further examination.
As a rule, sudden changes in asset prices are the result of various domestic and international events that cause inappropriate behavior of various groups of investors. To identify them, it is advisable to use the ICSS-algorithm. This algorithm is suitable for detecting sudden changes, and was tested by us.

### Table 1.1. — Volatility time series analysis

<table>
<thead>
<tr>
<th></th>
<th>BSE 500</th>
<th>IBOVESPA</th>
<th>MICEX</th>
<th>SHA</th>
<th>INR</th>
<th>BRL</th>
<th>RUB</th>
<th>CNY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td>0.076</td>
<td>0.023</td>
<td>0.057</td>
<td>0.028</td>
<td>0.008</td>
<td>0.022</td>
<td>0.037</td>
<td>-0.009</td>
</tr>
<tr>
<td><strong>Deviation</strong></td>
<td>1.218</td>
<td>1.488</td>
<td>1.559</td>
<td>1.565</td>
<td>0.649</td>
<td>0.933</td>
<td>1.115</td>
<td>0.611</td>
</tr>
<tr>
<td><strong>Asymmetry</strong></td>
<td>1.227</td>
<td>0.115</td>
<td>-0.281</td>
<td>-0.708</td>
<td>0.081</td>
<td>-0.174</td>
<td>4.047</td>
<td>0.040</td>
</tr>
<tr>
<td><strong>Herke-Bera</strong></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Ljung-Box</strong></td>
<td>0.165</td>
<td>0.641</td>
<td>0.363</td>
<td>0.041</td>
<td>0.130</td>
<td>0.000</td>
<td>0.000</td>
<td>0.880</td>
</tr>
<tr>
<td><strong>KPSS</strong></td>
<td>0.58</td>
<td>0.35</td>
<td>0.17</td>
<td>0.11</td>
<td>0.09</td>
<td>0.67</td>
<td>0.58</td>
<td>0.11</td>
</tr>
</tbody>
</table>

*Source: author’s calculations*

Daily fluctuations of most assets began to grow from 2014. The increased uncertainty in asset markets was caused by a combination of conditions [26]:

- escalation of conflicts in Ukraine, Syria, Libya;
- economic crises in emerging markets associated with a stronger dollar;
- increased uncertainty of the interest rate policy of the US Federal Reserve.

The growing volatility of the ruble dynamics and, accordingly, the MICEX stock index was affected by the increased isolation of Russia on the world stage due to political and economic sanctions [27].

The results show that the effect of overflowing volatility from the foreign exchange market to the stock market is most characteristic of our country. This conclusion suggests that investors in the domestic stock market are very vigilant and react quickly to bad news regarding the exchange rate. This effect is also characteristic of the markets of India and Brazil (the Chinese market is not subject to this effect).

Investors in emerging economies always remember that profits earned on the stock market may be reduced or even lost in the event of a sharp depreciation of the national currency. Investors in the US stock market [28], on the contrary, are not worried about changes in the dollar exchange rate: for them, the volatility overflow indicator not meaningful. It has different values for the
stock market and the foreign exchange market, which confirms the presence of multidirectional two-way flow of volatility during structural shifts in the market.

The assumption of the presence of a long memory of volatility, distorted by structural shifts, is confirmed for all stock markets studied in the work. Fractal parameter $d$ is relatively low in the model presented. This means that Daily fluctuations are not a stable parameter, which goes against the postulates of the perfect market hypothesis. In all analyzed economies (except Chinese), the flow of volatility from the foreign exchange market to the stock market is much higher than the flow in the opposite direction [275].

The results indicate the existence of a bidirectional side effect, with the effect of the exchange rate on the stock market in 2009–2016 yy. was much stronger than the opposite effect. For the Russian stock market, this effect turned out to be the most noticeable, because investors in domestic stocks are most cautious and react sharply to the bad news background from changes in the ruble exchange rate.

In addition, it is shown that Daily fluctuations can be predicted using the FIGARCH model, if structural shifts are incorporated into the model. Structural shifts only distort the asymmetry coefficients in this model of long memory [265]. The results of the study could be useful for institutional and individual investors, as they may have an advantage in the market, using long memory models with embedded structural shifts to predict volatility in financial markets.

After the crisis of 2008, the volatility (spillover effect), which reflects the systemic risks of the entire modern financial system, became particularly noticeable in the financial markets. There are various models that consider the interaction between different types of markets as a key element in creating a crisis and developing a chain reaction [185]. Much of the literature is devoted to analyzing the relationship between the yields of government bonds. Government bond yields include country risk information. Therefore, an important issue is the convergence (divergence) of the yield of government bonds in Europe. In addition, the time structure of the yield itself provides important information on how to assess individual countries by level of economic development over time [111].

In this example, we are interested in analyzing the flow of volatility between countries and propose a simple model for estimating volatility in continuous time in the Eurozone. The model is based on an important assumption: Daily interest rate fluctuations are stochastic, which is based on conclusions from interest rate studies [19].

Currently there is a competition between two classes of models of the temporal structure of rates. First, these are macroeconomic models based on expectations of inflation and economic development [211]. This group
of models often uses the reduced form of a temporary structure, where the structure of bond yields is expressed by three factors: level, slope, and curvature. These models have been very successful in predicting the temporal structure of rates \([2; 3; 4]\). In addition, they showed that the level, slope and curvature of the zero-coupon yield curves of government bonds also depend on systemic risk.

The second class of financial models is based on the pricing of derivative financial instruments and portfolio risk management. The best-known non-arbitrage models are the structure of rates \([138]\). This class of models focuses on the structure of rates at a specific point in time in order to provide accurate predictions of the prices of derivative financial instruments and provide an acceptable level of aggregate risk for the portfolio.

Despite impressive advances in forecasting the temporal structure of rates in macroeconomics and financial economics, there is still a large gap between these two classes of models. In general, not enough attention is paid to analyzing the potential of bilateral feedback between the yield curves and macroeconomic indicators \([216]\). This is especially true for financial modeling, which does not take into account the impact of macroeconomic policies on the yield curve of government bonds. In order to predict, we introduce a reference model, which is a hybrid model of Heston, taking into account stochastic volatility \([229]\).

Due to their simplicity, the models are able to catch changes in the volatility of profitability to predict future values of profitability \([263]\). The model was tested not only on bonds with a fixed maturity, but also on bonds with various maturities. The good accuracy of the model is based on an important feature \([269]\). The assumption of the stochastic nature of the volatility of government bonds in eurozone countries allows us, on the one hand, to simplify the analysis, and on the other hand, to understand the current interactions between countries \([239]\).

The good accuracy of the model for predicting profitability leads us to further research. Empirical and mathematical results show a strong correlation between the estimated parameters of instability and instability in the yield of government bonds. There are three periods of instability from 2004 to 2014: the subprime mortgage crisis in the United States, accompanied by a sharp decline in oil prices \([178]\), the collapse of Lehman Brothers and the eurozone sovereign debt crisis.

We analyze the dynamics of specific volatility of government bonds, which is one of the key parameters of the model \([237]\). This parameter allows us to understand not only the phenomena of convergence (divergence) between countries, but also the level of their macroeconomic instability \([222]\). The results of the empirical analysis indicate a strong relationship between the
financial instruments of France and Germany, on the one hand, and Italy and Spain, on the other. In addition, as shown in other empirical studies [300]. Daily fluctuations behave differently in the study period. At the same time, only in Italy and Spain (and other PIGS countries) Daily fluctuations remain elevated against the background of the sovereign debt crisis (2011–2012).

Our empirical analysis shows that expansionary monetary policy had a strong influence in reducing the instability of the countries studied between 2011 and 2014. It is worth noting that the empirical results obtained in this work confirm and reinforce some of the important findings that have already been noted in some studies of macroeconomic models [264]. The fact that both financial and macroeconomic models produce very similar results not only confirm the validity of the results, but also the usefulness of combining the two methods.

The analysis of stochastic volatility using the Heston model can be described by the formulas below.

Our interpretation of the parameters of the stochastic volatility model (1) – (2) provides for the analysis of bonds from different countries with the same maturity.

Next, we define the probability density function of the process:

$$M(x,\nu, t, x_1, t_1) = \int_{0}^{\nu} p f(x,\nu, t, x_1, t_1) d\nu, \quad t_1 > t. \quad (1.6)$$

In our particular case, the limiting probability density function ($M$) can be obtained by the formula:

$$M(x,\nu, t, x_1, t_1) = \frac{1}{(2\pi)^n} \int_{\mathbb{R}^n} \left\{ e^{-nk^T(x-x_1+(t_1-t)\mu)} e^{-\nu^2/2} e^{\nu(\mu-k_1(k))} \right\} dk$$

$$\left\{ e^{-2\nu^2\theta(t_1-t)} e^{\nu_k(\nu_1+\nu_2)(k)} e^{-2\nu^2\theta \ln(1+\nu_k(\nu_1+\nu_2))} e^{(-2\nu^2\theta(t_1-t)-1)} \right\} dk. \quad (1.7)$$

We use daily values of bond indices with maturity in 3 months. These indices represent different geographical areas of the eurozone and characterize key economies [226]. The analyzed time period: from December 17, 2010 to July 27, 2016.

There are several stages of change in profitability:

1. The debt crisis of the Eurozone since the end of 2010, accompanied by an increase in yields on Italian and Spanish bonds.
2. The peak of the crisis came in December 2011, when the yields of bonds of Spain and Italy (and some other countries) greatly exceeded the rates in other European countries.
3. The sharp decline in rates in the peripheral countries of the eurozone in the second half of 2012 and the consolidation of the rates of the Nordic countries around zero (or lower) levels.

4. The period of negative interest rates from mid-2015.

To estimate the parameters of the model, a time window is used for each of the five data series. In particular, the model parameters are calibrated every month during the year, i.e. = 260. After the end of each month, we add 22 new daily observations and discard 22 old ones. Thus, the length of the time interval used in the calibration is kept constant.

Daily fluctuations in government bond yields a very good description of macroeconomic uncertainty. Many European countries whose bonds showed a sharp increase in volatility also showed greater economic vulnerability and uncertainty [270].

We see a sharp increase in volatility, first in Germany, then in other countries. The bubble peaked at the end of 2010, when the European Central Bank intervened by injecting liquidity and lowering the refinancing rate [5]. The actions of the ECB have led to a rapid decrease in the volatility of Eurozone bond yields. This situation remains unchanged until the first quarter of 2011, when the daily fluctuations in government bonds in Italy and Spain rose sharply due to the sovereign debt crisis. At the same time, daily fluctuations in the yield of Spanish government bonds continued to grow in the first months of 2014. Similar results were obtained in an empirical study [260].

The financial crisis has become a prime example of the materialization and spread of systemic risk. In addition, in the euro area, systemic risk generated a spillover effect that exacerbated the problems associated with the sovereign debt of the eurozone countries. High daily fluctuations can cause some side effects occurring in other sovereign countries.

The study revealed a high level of correlation (75%) between the daily fluctuations in bond yields of Germany and France, which indicates a strong bilateral interaction between public finances, which confirms the findings of a recent study [9]. Germany has a significant amount of Italian and Spanish sovereign bonds on its balance sheets. As well as the negative correlation between the daily fluctuations of the EONIA rate and the daily fluctuations in the yields of Spanish and Italian government securities suggests that the ECB’s monetary policy successfully influenced the troubled countries of the Eurozone.

We presented a modified model of Heston. The model is practically applicable, which allowed us to obtain the conditional probability density function [266]. We conducted an empirical analysis of time series to test the proposed model of stochastic volatility in order to assess and predict the volatility
of the yield of bonds of the eurozone countries (Germany, France, Italy and Spain) with maturity in 3 months.

An empirical analysis has shown that the model reflects changes in the volatility of returns, and predicts the future values of bonds. The ability to carry out a model calibration procedure to obtain parameters and their modification was evaluated on time series, which confirmed the reliability of the results obtained.

In addition, the model confirmed some known phenomena of convergence and divergence among the yields of Eurozone countries. Our results have confirmed some early empirical studies [3; 10].

The fact that daily fluctuations in government bond yields in Eurozone countries can be predicted using the modified Heston model can mean the usefulness of this tool for institutional and individual investors in European fixed income instruments [263].

The financial asset price model (CAPM) assumes that the relationship between the beta coefficient and income is linearly positive. At the same time, empirical verification of the CAPM model in studies of Black, Jensen and Scholes (1972), Fam and Macbeth (1973) and Haugen and Heins (1975) confirmed that the risk-return function is relatively flatter than the model predicts.

The expected rate of return of an asset can be expressed as follows:

$$ E(R_i) = R_f + \beta_i \left( E(R_m) - R_f \right), \quad (1.8) $$

where is the risk-free rate of return, is the coefficient of sensitivity of the asset to changes in the market as a whole, is the expected return on the portfolio.

Twenty years later, Fama and French (1992) showed that, taking into account the correction for the size effect, the relationship between beta and income for the period from 1963 to 1990 is not linear. Various subsequent studies have confirmed this hypothesis and even suggested that the attitude may be negative Black (1993), Haugen and Baker (1991, 1996, 2010), Falkenstein (1994), Clark, de Silva and Torley (2010) and Baker, Bradley and Worgler (2011).

Evidence of the inability of the CAPM theory was found by the following researchers in developed and emerging markets: Blitz and Van Vliet (2007), Frazzini and Pedersen (2011), Baker and Haugen (2012) and Blitz, Pang and Van Vliet (2013).

In addition, both Blitz and Van Vliet (2007) and Baker, Bradley and Worgler (2011) found other anomalies using simple asset volatility instead of more complex options.

Other studies have found that abnormally low volatility is characteristic of the stock market, as well as for some other asset classes, which can be called the effect of volatility [256].
At the same time, numerous studies prove that the CARM theory can be modified.

Examples of modifications are given below:
1. The inclusion of a zero coefficient beta CARM (Black, 1972).
2. Adding macroeconomic factors (Chen, Roll and Ross, 1986).
3. Adding the human capital factor (Jagannathan and Wang, 1996).
4. Adding factors of consumption of material values to the ratio (Lettau and Ludwigson, 2000), the risk of consumption (Jacobs and Wong, 2001) or the growth of consumption (Jagannatan and Van, 2007).
5. Adding conditional assets to the pricing model (Ferson and Schadt, 1996).
6. Modification of the model based on stochastic volatility (Campbell, Giglio, Polk and Turley, 2012).

These studies also claim that the above problems can be solved by expanding the model without having to abandon the fundamentals.

Note also that the effect of volatility is one of the most significant anomalies that have been identified in the scientific literature.

Phama and French (1993) proposed a 3-factor model in which capm is supplemented with price size and cost factors in order to explain these anomalies [241].

Since CAPM is mathematically proven, the empirical inconsistency of CAPM should be related to the violation of one or more of these assumptions in practice:
1. There is no leverage and the possibility of short sales.
2. Investors avoid risk and maximize expected utility.
3. There is only one investment horizon.
4. Information is distributed freely and without distortion.
5. Markets are perfect, that is, all assets are absolutely divisible and completely liquid, there are no transaction costs, no taxes.

Although there is much empirical evidence in the literature about the existence of a volatility effect, there seems to be no consensus about the reason why such influence exists.

Taking the CAPM assumptions as a starting point, we provide a consistent framework for various explanations of the volatility effect [281].

Stochastic stock price dynamics is usually described as a multiplicative Brownian motion and has a lognormal probability distribution function for a stock price change. However, numerous observations show that the tails of the probability distribution function decay more slowly than is typical for a lognormal distribution, that is, the so-called “thick tails” effect occurs.

In particular, a lot of attention was paid to the effect of “power” tails. The geometrical model of Brownian motion has two parameters: displacement?,
Which characterizes the average growth rate and volatility, which characterizes the noise of the process. There are empirical data and studies that indicate that volatility characterizes a stochastic process, which tends to a mean value. Various mathematical models with stochastic volatility have been discussed in the literature [9; 101; 123; 115].

The most empirically validated model of Heston, where the squares change the volatility of stock prices, is a random process known in the financial literature as the Cox-Ingersoll-Ross process and in mathematical statistics as the Feller process.

Using the Fourier and Laplace transformations, we solve the Fokker-Planck equation to find the probability distribution function of stock returns depending on the time and initial value of the variance [271].

Thus, we obtain the limit values of the probability distribution function of returns.

We can compare the results of applying the Heston model with the Dow Jones index for the 20-year period of 1982–2001. The classic Heston Model includes only four fitting parameters and is suitable for forecasting returns over a time period from 1 to 250 trading days.

The probability density function of profitability has the form of a one-dimensional Fourier integral, which is easily calculated numerically or analytically [261].

At long time intervals, it becomes a function of profitability and time, which can be expressed through the Bessel function.

The empirical data of the Dow Jones index show that the forecast based on the Heston model is scaled to seven time intervals.

The original article [118] solved the option pricing problem based on the Heston model. Numerous subsequent studies [134; 118] prove that the Heston model coincides with the empirical data much better than the Black-Scholes theory and modifications of the Heston model.

However, the main issue has not been resolved: the dynamics of asset prices in the stock market actually expresses the Heston stochastic process or not.

Dragulescu proposed a single set of four parameters in order to keep the model as simple as possible with the minimum number of parameters. He suggested that the stock price can be represented as a function of time $T$ and obeys the stochastic differential equation of Brownian motion.

The basic model of Heston's stochastic volatility can be described by formulas (1.2) and (1.3):

$$dS_t = \mu S_t dt + \sqrt{\nu_t} S_t dW^S_t; \quad (1.9)$$

$$d\nu_t = \chi \left( \theta - \nu_t \right) dt + \xi \sqrt{\nu_t} dW^\nu_t; \quad (1.10)$$

$$dS_t = \mu S_t dt + \sigma_i S_t dW^i_t, \quad (1.11)$$

Chapter 1. Theoretical and methodological foundations of the study of structural changes in the capital market and investment strategies
where \( t \) is time, \( \mu \) is the parameter of price shift, \( W_t \) is the standard random Wiener process, \( \sigma_t \) is volatility. Then the probability density function has the form of the Fourier integral:

\[
P_t(x) = \frac{1}{2\pi} \int_{-\infty}^{+\infty} dp_x e^{ip_x x + E(p_x)}.
\]

(1.12)

To test the model for financial data, we use the Dow Jones Industrial Average closing prices for 30 years from January 1, 1987 to December 31, 2016 from the Yahoo site. The data contains 7566 items that form time series. We do not use data for short days, such as before holidays [256]. For further calculations, variable values are needed:

1. Relaxation time for one year 11.35; for one day 0.045.
2. Parameter return to the average for one year 0.022; for one day — 0.0000862.
3. The parameter of the probability density function for one year is 0.618; for one day — 0.00245.
4. Volatility for one year 0.143; for one day — 0.000567.

Thus, even if the average growth rate of a stock index is positive, there is a substantial probability of about 20%.

The value of the above parameters may change with time.

This interval includes the crises of 1987, 2001, 2008. Parameters can change significantly if we use a different interval.

At the same time, the parameters of the Heston model do not differ significantly for the period 2007–2016, that is, the global financial crisis has had a significant effect on the probability distribution of stock returns, because the stock market has not resumed growth so quickly.

The main difference is in the average rate of increase in volatility? Which became negative after the crisis in 2009 against 13–20% per year in the 1990s and early 2000s.

Statistics for the post-crisis (2009–2017) years indicate that the stock market has moved into a different mode of operation compared with the previous time period.

An alternative point of view says that volatility cannot be characterized only by the rate of relaxation [226].

However, analysis of empirical financial data indicates that the correlation function has a power dependence. In addition, the Heston model can be improved by including earlier relaxation periods [216].

Exponential tails in the probability distribution of stock returns have a parabolic dependence for small time periods and a linear relationship for large
time periods. Thus, the linear and parabolic distribution is a feature of the model with stochastic volatility [207].

At the same time, the central part of the probability distribution is undoubtedly well described by a log-normal distribution.

Although the Heston model was tested on the Dow Jones industrial index, it is possible that it can also be used to predict prices for other assets, in particular: foreign currencies, commodity futures, cryptoassets.

1.3 Essence and place of digital financial assets in the development of investment strategies

The emergence of cryptoassets began with the creation of bitcoin. Bitcoin was created by Satoshi Nakamoto, who published on October 31, 2008, an analytical article titled “Bitcoin: Peer to E-Cash System”. The project was implemented open source and released in January 2009. Other cryptocurrencies began to appear since 2011.

In 2013, some websites started accepting bitcoins. Expedia began to accept bitcoins in June 2014, Microsoft — in December 2014. The first bitcoin ATM was installed in October 2013 in Vancouver, Canada.

Cryptoasset is digital data whose membership can be confirmed by a digital signature and the existence of which can be proved using an independent system. Cryptocurrency is an independent system, and cryptoassets are dependent systems, the price of which can be expressed in cryptocurrencies.

Independent systems have 3 simple properties:
1. The presence of the basis and method of identification [284].
2. Availability of basic domestic capital.
3. Kernel code responsible for network consensus must be open, workable, and executable by at least one popular open source operating system.

Any system that follows these requirements can be considered as an independent cryptocurrency-based system.

If these requirements are not met, then there is no way to prove the ownership and the existence of a cryptoasset. A cryptoasset in the form of domestic capital, which is an integral part of an independent system, can be defined as a cryptocurrency.

Since independent systems are decentralized databases, any arbitrary data can be written in such a way that any cryptoasset can be registered and transmitted without any restrictions.

Independent systems have 3 simple properties:
1. Availability of registration using an independent system and method of identification [285].
2. The digital protocol must be written in code or in text form.

3. The digital agreement of the shareholders must be written in code or in text form.

The accumulation of cryptoassets in the world leads to a new type of economic relations and a new economic system of production, which can be called cybernomy.

A feature of bitcoin generation is that the reward will decrease to zero until the ceiling of Bitcoin emission of 21 million bitcoins is reached. In other words, bitcoin has an emission limit [288].

Wallets or accounts on crypto exchanges are used to store all cryptoassets. The first wallet program was released in 2009 by Satoshi Nakamoto as an open source.

Ownership of bitcoins implies that a user can spend bitcoins associated with a specific address. For this, the payer must sign transactions using the corresponding private key, which is a file.

If the secret key is lost, then other evidence of ownership cannot be applied, thus the cryptoasset asset becomes unusable and its value becomes zero. For example, in 2013, one of the users claimed that he lost 7,500 bitcoins worth $7.5 million when he accidentally threw a hard drive with his private electronic key.

To understand the features of bitcoin pricing, one should consider how supply and demand is formed in this market. Firstly, the offer is limited and amounts to 21 million bitcoins. At the same time, the proposals will fall down until the emission stops at the end of 30s of the 21st century. The goal of reducing the growth rate of supply is to create a shortage in the market.

Bitcoin's issue process is based on Milton Friedman's ideas. Friedman argued that “the most important quantity that monetary authorities can effectively control and for which they are responsible is the monetary base”.

This prevents what Friedman describes as “opportunistic behavior” and can be “an effective insurance against large monetary irregularities”. Although the bitcoin issue process deviates slightly from the program that Milton Friedman developed, the bitcoin monetary base is known at any given time [258]. The emission of new bitcoins is halved every four years, until the size of the bitcoins in circulation reaches 21 million, then the emission will stop.

Money prompted society to abandon the barter system and allowed people to further specialize in certain economic activities [255].

Understanding the characteristics of money needs to be assessed in order to find out whether Bitcoin really fulfills these requirements.
In order to be legal, any currency must meet three requirements and act:
1. a medium of exchange;
2. a means of accounting;
3. a measure of value [256].

2015 was the key to recognizing bitcoin as a currency. In the works of Yermak (2013) and Law and Wan (2014) for the first time it was proposed to classify bitcoin as a currency. In 2015, the European Union went so far as to recognize cryptocurrency as a currency. In some countries, bitcoin is now recognized as a commodity or financial asset. In Russia, the final status of bitcoin and cryptoasset assets in general has not yet been determined.

Currently, bitcoin is in limited circulation among the population: the number of people who own or have experience in bitcoin operations is gradually increasing. As of September 2017, the number of bitcoin wallet users reached 16.7 million. This number exceeds the population of most individual countries of the world, such as Burkina Faso, Kazakhstan, Niger, Guatemala and many European countries outside the euro zone.

Fig. 1.12. Number of wallet users of bitcoin (Source: https://blockchain.info/charts)

Researcher Yermak (2013) cited the daily volume as an important indicator of measuring the ability to exchange bitcoin. In 2013, the average daily transaction volume was in the range of 20–30 thousand dollars and was markedly unstable. In September 2017, this volume was in the range of 270–1200 thousand dollars, while the volatility of its change decreased several times.
The issue of trust for traders and investors in bitcoin with the presence of a technological barrier that will eventually disappear due to the replacement of generations. At the moment there are two ways for consumers to get bitcoin. They can be engaged in mining or buy it through the exchanger or exchange.

In the first case, a complex computer system is required, which is constantly working on solving complex problems.

In the second case, an understanding of the properties of bitcoin, an understanding of the operation of the virtual wallet, the availability of bank details for transfer and the implementation of the exchange or purchase of bitcoin is required.

Researchers Law and Wang (2014) talked about the lack of understanding of value for the average consumer. For example, if one product costs $1.00 and another product costs $2.00, then the consumer can easily say that one product is twice as valuable as another. As of September 2017, the approximate bitcoin price is $4,200, the price of the broadcast (the second most capitalized cryptocurrency) is about $310. Do average users can explain why bitcoin is more expensive than the air almost 13 times.

This problem is exacerbated by the bitcoin dynamics volatility.

If you take quotes of futures for one bitcoin from the five most popular bitcoin exchanges, then there are opportunities for arbitrage transactions, since the difference between the prices for the purchase on different exchanges can exceed 10% (see table). While the bid-ask spread between them can go up to 7%.

Table 1.2. — Bitcoin dollar price on the 10 largest cryptoexchanges as of 09/12/2017

<table>
<thead>
<tr>
<th>Exchange</th>
<th>Contract</th>
<th>Volume, USD</th>
<th>Price BTC, USD</th>
<th>Exchange share, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Bitfinex</td>
<td>BTC/USD</td>
<td>127,088,000</td>
<td>4265.80</td>
<td>7.96</td>
</tr>
<tr>
<td>2 OKCoin.cn</td>
<td>BTC/CNY</td>
<td>72,406,900</td>
<td>3923.96</td>
<td>4.53</td>
</tr>
<tr>
<td>3 BTCC</td>
<td>BTC/CNY</td>
<td>65,445,400</td>
<td>3922.31</td>
<td>4.10</td>
</tr>
<tr>
<td>4 Huobi</td>
<td>BTC/CNY</td>
<td>63,393,600</td>
<td>3931.08</td>
<td>3.97</td>
</tr>
<tr>
<td>5 bitFlyer</td>
<td>BTC/JPY</td>
<td>55,842,400</td>
<td>4243.20</td>
<td>3.50</td>
</tr>
<tr>
<td>6 Bittrex</td>
<td>OMG/BTC</td>
<td>47,806,100</td>
<td>4322.14</td>
<td>2.99</td>
</tr>
<tr>
<td>7 Bithumb</td>
<td>BTC/KRW</td>
<td>46,362,900</td>
<td>4224.97</td>
<td>2.90</td>
</tr>
<tr>
<td>8 Bitstamp</td>
<td>BTC/USD</td>
<td>41,634,600</td>
<td>4263.83</td>
<td>2.61</td>
</tr>
<tr>
<td>9 GDAX</td>
<td>BTC/USD</td>
<td>36,106,800</td>
<td>4275.05</td>
<td>2.26</td>
</tr>
<tr>
<td>10 HitBTC</td>
<td>BCC/BTC</td>
<td>35,748,200</td>
<td>4289.55</td>
<td>2.24</td>
</tr>
</tbody>
</table>

Source: https://bitvol.info
If price volatility increases, it becomes increasingly difficult to find a fair price of cryptocurrency.

Thus, the divergence of prices for bitcoin on stock exchanges can be a serious problem for using bitcoin as a measure of value [239].

At the same time, it can be noted that the bitcoin volatility has noticeably decreased after 2015. In 2017, the 30-day volatility was no more than 8%, while before this period it reached 16%.

To satisfy the value preservation property, bitcoin must retain its value for a long period of time [229]. The greatest risk is associated with the loss of the key to the purse on which the cryptocurrency is stored. Bitcoins without a digital key become useless [227]. Therefore, many government agencies remind the public about studying the features of cryptocurrency before performing transactions, or simply prohibit such transactions [287].

In 2017, Bitcoin volatility is 3–4 times higher than the volatility of the exchange rate of other liquid currencies. If to compare with the Russian ruble, then in December 2015, its volatility even exceeded bitcoin volatility and was more than 10% per day.

The Austrian school claims that the main function of money is the use of money as a means of exchange. At the same time, the secondary functions of money include the use as a means of accounting and a means of preserving value, which begin to take place with time and as liquidity increases [257].

At present, the functions of using bitcoin as a medium of exchange are limited, and the functions of the measure of value and the measure of accounting are not fully realized. Although bitcoin has the ability to get them in the future.

Thus, bitcoin performs the main function of money, according to economists of the Austrian school.

We are witnessing a live social experiment that has the ability to change the existing paradigm.

Cryptoassets are one of the fastest growing asset classes at present. There are several protocols that define the principles of cryptocurrency, as well as several protocols that provide for the creation and accounting of cryptoassets. The new asset class and the corresponding economic system do not have a theory to evaluate as a result of the lack of clear terms and lack of understanding how to assess risks and assess growth potential. International credit ratings S & P, Fitch, Moody’s are based on IFRS and many criteria do not apply to cryptoassets. This article defines some basic conditions for assessing corporate assets and basic approaches to risk assessment, and also offers a decentralized solution for evaluating cryptoassets without the need for an audit procedure.
At the beginning of 2016, according to coinmarketcap.com, there are 46 liquid cryptoassets with a transparent capitalization from 10 thousand to 53 million US dollars created on the basis of the Ethereum platform and others.

Table 1.3. — 10 largest capitalization cryptoasset assets on 01/21/2017

<table>
<thead>
<tr>
<th>Asset</th>
<th>Platform</th>
<th>Market cap, USD</th>
<th>Volume, USD</th>
<th>Weekly price change, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MaidSafeCoin</td>
<td>Omni</td>
<td>53,504,819</td>
<td>385,665</td>
<td>21.28</td>
</tr>
<tr>
<td>2 Augur</td>
<td>Ethereum</td>
<td>49,296,170</td>
<td>81,531</td>
<td>3.72</td>
</tr>
<tr>
<td>3 Iconomi</td>
<td>Ethereum</td>
<td>34,749,453</td>
<td>212,907</td>
<td>11.40</td>
</tr>
<tr>
<td>4 Golem</td>
<td>Ethereum</td>
<td>20,454,408</td>
<td>101,444</td>
<td>47.07</td>
</tr>
<tr>
<td>5 DigixDAO</td>
<td>Ethereum</td>
<td>18,563,600</td>
<td>14,007</td>
<td>2.75</td>
</tr>
<tr>
<td>6 Tether</td>
<td>Omni</td>
<td>14,951,720</td>
<td>2,457,100</td>
<td>0.00</td>
</tr>
<tr>
<td>7 Ardor</td>
<td>Nxt</td>
<td>13,945,733</td>
<td>99,707</td>
<td>33.17</td>
</tr>
<tr>
<td>8 Xaurum</td>
<td>Ethereum</td>
<td>8,329,618</td>
<td>10,858</td>
<td>5.16</td>
</tr>
<tr>
<td>9 Storjcoin X</td>
<td>Counterparty</td>
<td>7,924,155</td>
<td>20,000</td>
<td>27.07</td>
</tr>
<tr>
<td>10 SingularDTV</td>
<td>Ethereum</td>
<td>7,257,360</td>
<td>1,698</td>
<td>17.26</td>
</tr>
</tbody>
</table>

Source: https://coinmarketcap.com/assets/views/all

Traditional methods of assigning credit ratings by international agencies S&P, Fitch and Moody’s have the following disadvantages with regard to the assessment of cryptoassets:

1. Analysis of IFRS and GAAP statements cannot be applied to systems based on the blockchain.
2. Requires asset centralization. Decentralized structures are based on the intrinsic value of the underlying assets (tokens), and not on the debt system. Although some of the existing methods may be applicable for some centralized classes of cryptoassets.
3. The non-issuing nature of cryptoassets and the lack of state registration do not allow an assessment.
4. The presence of the right field. Existing blockchain systems are independent of the legal system.
5. Rating is impossible programmatically.
6. There is influence from the state.
7. There is a subjective opinion.

Existing methods for estimating the value of cryptoassets [123] do not provide an opportunity to obtain the indicators necessary for making an investment decision. Currently required methods for calculating the following indicators:

- capitalization of the cryptoasset market;
- transaction volume;
platform performance;
people’s approval;
cyber attack resistance rating;
simple compliance approach.

The above drawbacks create a demand for a new reporting system, which will allow to evaluate cryptoassets and create a favorable investment climate.

Cryptoasset has advantages over traditional assets.

1) Efficiency (no taxation, no transactional limits, no need for regulation, operations are fast: from 1 second to 10 minutes depending on the underlying technology, minimal transaction costs, no need for real estate to operate the system, does not require compliance [135].

2) Transparency (the base code is fully open source, all operations are recorded on the blockchain chain forever) [238].

3) Understanding (programmable and autonomous based on the laws of mathematics) [178].

4) Undisputed ownership (individual key, cannot be executed by the counterparty without the contract holder’s private key, the holder can choose to execute the algorithm regardless of nationality, place of residence, nation, religion, gender) [77; 89].

At the same time, we highlight the following risks inherent in all cryptoassets:

1. The risk of unprotected cryptographic code. It is almost impossible to fight this risk, since the existing financial infrastructure is built on key encryption principles [10].

2. The risk of losing access to a cryptoasset due to the loss of keys. As noted above, any ownership of a cryptoasset is the possession of corresponding private keys [253]. Keys are usually stored in simple files and can be encrypted. This risk can be reduced through the use of password managers, specialized equipment, wallets, time-locked wallets, software testaments, and Zen-brain exercises that allow owners to remember or lose information that cannot be recovered. Thus, this risk remains the most important for owners of cryptoassets and can be lowered only with the help of additional applications [11].

3. The risk of theft of cryptoasset. This risk can be completely avoided by storing the keys on a computer that has never been connected to the Internet [12].

4. The risk of regulatory action in one or more jurisdictions. Cryptoassets are the subject of close attention from regulatory agencies around the world. Regulators will not be able to block or prohibit physical access to cryptoassets, but individual actions can cause panic in the market and lead to significant losses in the value of cryptoassets relative to traditional currencies. This risk
can be reduced by hedging using cryptoassets based on traditional currencies or commodities [13].

5. Different digital currencies and assets may have different characteristics [259]. For example, Ripple cryptocurrency has a different transaction registration system than bitcoin. A constantly improving method of rating cryptoassets will gradually reduce these risks [14].

Growth prices for cryptoassets are determined by the following criteria: resiliency, CAP balance, cost effectiveness, transaction performance, network scalability, decentralization class, anonymity, cryptographic protection, welfare distribution principles, storage capabilities, transparency, emission policy [15].

At the same time, we can state that it is impossible to achieve an exhaustive and objective assessment. But one can distinguish the objective and subjective part of the assessment [214].

The objective components of valuation are as follows:

1) **Compliance.** Reflects the availability of mandatory and recommended infrastructure.

2) **Reporting.** Reflects the degree of compliance with the requirements of standard reports of a decentralized system.

3) **Liquidity assessment** [219]. The daily turnover of cryptoassets is estimated in comparison with the market capitalization [16].

4) **The result of the interaction.** Reflects the approval of the entire blockchain community.

5) **Course dynamics.** The most revealing monthly growth rate. Ultimately, this is the most important component that shows potential return on investment [17].

In order to make the proposed rating more representative, it is necessary to determine the features of the different stages of the life cycle and types of cryptoassets.

During the life cycle of a system, different criteria are important [239]. We propose to distinguish the stages of the life cycle of the evaluated system. Each stage must have a different weight count. We can formulate the following stages of the life cycle: project, non-public system, pre-public system and public system [18; 19].

At the project stage, a code was created that is not tied to any cryptocurrency, but this is an excellent period for an initial investment, if you get access to potential investors.

A prerequisite for predicting the emergence of a cryptoasset is a scientific foundation and a team of founders. The trigger event is the release of white paper and the proof of the concept [237].
At the stage of a closed system, investors can become individual individuals. The trigger event is the creation of a network or the registration of a token.

At the pre-public stage, an assessment of the market value of a cryptoasset appears, but it will be inaccurate as long as the market is not sufficiently liquid. The stage ends after the audit of crowdfunding.

At a public stage, a cryptoasset asset is listed and daily liquidity appears.

A good understanding of the stages of the life cycle is the key to understanding potential risks. We offer a set of different weights for calculating the rating level at different stages of the life cycle.

Transparency is very important for making investment decisions. Developers of a decentralized system should understand that a less transparent system is less likely to have a positive investment decision. Traditional financial analysis is based on the publication of quarterly reports and annual audits [20]. This approach does not make sense for cryptoassets.

To solve the problem of unified reporting, you can use xBRL10 as a basis. In the US, xBRL is an official business reporting standard that is actively developed and supported by business and government. Although xBRL is very difficult to understand, it can be used to report cryptoassets.

There are 3 types of reporting [21]: critical reporting, important reporting and recommended reporting.

Critical information allows you to calculate market capitalization and provide evidence that the organization is still functioning:

1) Blockchain-based identifiers that could uniquely identify the reporting entity [137].
2) The block of evidence needed by a potential user to verify the reporting data [177].
3) The current number of tokens at this stage (including tokens that may be created by users of the system in the future).
4) Weighted average price (VWPA). Since any reporting provider may report data generated in this way, the aggregators are not able to calculate it.

Important reporting allows you to understand the current state of a cryptoasset and compare it with other cryptoasset [277]:

1) The current state of the cryptoasset system.
2) The limit to create new tokens.
3) Cryptoasset cash flows (The number of generated tokens, the reward structure, transaction costs and the number of recycled tokens).
4) The execution of transactions include the number of transactions and the volume of mainly tokens.
5) Analytics of accounts of owners of cryptoassets (amount, total amount of funds, distribution structure and Gini coefficient).
6) The speed of monetary circulation.
7) The current profitability of the cryptoasset.

Recommended reporting is necessary in order to understand the economics of a cryptoasset. The transaction structure may include data on amounts, profitability of asset creation, transactions, and account registration.

These parameters are necessary to understand how the network works. Investors can make more accurate decisions.

We calculate the expected value \((ES)\) and value of assets at risk \((VAR)\) as a measure of risk.

\(VAR\) for a random variable \(x\) with the distribution function \(F(x)\) is defined as:

\[
VAR \alpha(X) = \inf \{x \mid F(x) \leq \alpha\}, \tag{1.13}
\]

where, \(\inf\) is the exact lower bound of the set.

The expectation \((ES)\) is defined as:

\[
[X \mid X > VAR \alpha], \text{ where } \alpha \in (0;1). \tag{1.14}
\]

In [223] proposed a formula for finding the mathematical expectation of the price of a cryptoasset based on the GARGH12 approach, which is tested on historical data and can be used for our purposes.

\[
E[Z_t \mid Z_t > z_{t,\alpha}] = z_{t,\alpha} \left( \frac{1}{1 - \xi} + \frac{\zeta - \xi}{(1 - \xi) z_{t,\alpha}} \right), \tag{1.15}
\]

where \(z_{t,\alpha} = VAR_{t,\alpha} \), \(t\) is the moment of time, \(\alpha \in (0;1)\), \(Z_t\) is a function of white noise, and \(u\) is the magnitude of the excess level.

This decentralized solution can be used to predict the cost of assets, while it uses only the market data available in the public domain, and does not require a traditional for investment analysis audit reporting procedure [247].

2.1 Squeeze the dollar stock market capitalization

Russia cannot yet implement the strategy for creating the International Financial Center in Moscow. The Moscow Exchange as a whole holds the leading position in the center of the organization of trade equity instruments of Russian issuers. After the merger with the Russian trading system at the end of 2011, the share of the total share of trading in the Moscow Stock Exchange increased from 41% to 48% in 2016. Over the same period, the shares of the London Stock Exchange (from 48.8% to 43.7%) and other exchanges (from 10.0% to 8.5%) fell [248].

In 2016, the Russian stock market showed record growth rates among all stock markets in the world. During the year, the RTS index grew by 52.3%, and the MICEX index — by 26.8%. The faster growth of the RTS index, which reflects the price of shares in dollars, was determined by the factor of strengthening the ruble in 2016. Other factors behind the growth of Russian stock indices: high oil prices, inflow of non-resident investments against the backdrop of a stronger ruble and a high level of the key rate of Russian banks, and investors’ expectations regarding economic recovery [228].

The Russian stock market has again shown that it is related to markets with high volatility. In 2016, the stock market continued to recover from the 2008 recession. The most significant event of the year was the recovery of the MICEX index above the pre-crisis level recorded in May 2008.

In 1997–1998, after a decline of 73.0%, the MICEX index recovered in just 8 months, and after a decline in 2008 by 68.2%, its recovery took more than 92 months (11.5 times longer), which was associated with slower rates of price recovery on oil and a weak devaluation of the ruble. The recovery of the RTS index (after the 2008 crisis), which expresses the value of investments in Russian issuers’ shares in foreign currency, was slower due to a significant depreciation of the ruble and low oil prices in the long term.

The rapid recovery of the MICEX index after 1998 was facilitated by a 5-fold devaluation of the ruble. The RTS index recovered within 5 years after the peak of the crisis.

The full recovery of the Russian stock market took place only in the second half of 2003, after Russia was assigned a sovereign credit rating at the investment level (Moody’s — 2003, Fitch — 2004, and S&P — 2005).

The access of Russian issuers to cheap foreign borrowing, along with the rise in oil prices in the mid-2000s, ensured the rapid growth of the Russian stock market and corporate bonds.
After the 2008 crisis, the recovery of the MICEX index took about 8 years. The devaluation of the Russian ruble continued for a longer period of time and was not so significant. For the period from May 2008 to February 2017, the ruble depreciated 2.4 times.

The RTS index, 8 years after the peak of the crisis, grew by only 44.7% of the pre-crisis level. Future prospects for the recovery of the RTS index are uncertain. Following the logic of the recovery of the stock market after the 1998 crisis, this requires the restoration of oil prices above $80–90 per barrel.

In the history of the stock market, the most long-term recovery after the crisis was after the Great Depression of 1929–1933, the index of the largest American companies Dow Jones Industrial Average (DJIA) has been recovering for more than 25 years. In 2015, this record broke the Japanese index NIKKEI-225, which has been recovering for over 27 years. Its value in 2017 was about 49.1% of the maximum monthly value in 1989. After falling since June 2008, the Bovespa Brazilian stock index for 105 months reached a 91.8% pre-crisis maximum.

After the 2008 recession, the Shanghai Stock Exchange (China) index reached only half of the peak.

Of all the BRICS countries, indices of India and South Africa recovered faster [274]. The indexes of the Johannesburg Stock Exchange (JTOPI) and the Indian Stock Market (BSE Sensex) hit a new high of 44 and 70 months, respectively.

At various trading platforms, both in Russia and in the world, a tendency towards a reduction in market transactions for trading in equity instruments of Russian companies has become noticeable.

This causes an increase in the liquidity risk premium [279]. The volume of market transactions in shares of Russian companies on all stock exchanges decreased from $1.1 trillion in 2011 to $0.3 trillion in 2016 (primarily in overseas venues), including from the Russian trade organizers — from 0, $6 trillion to $0.2 trillion.

This is consistent with the global trend, where the value of exchange-based stock market transactions also declined during this period. European exchanges showed a decline in volumes by 13–16%, Singapore Exchange — by 3.2%, NYSE — by 0.9%, Canadian stock exchange TMX Group — by 0.7%. The largest decline was demonstrated by the exchanges of China and Kazakhstan (from 40 to 80%). The reduction in liquidity of organized trading platforms can be explained by the flow of liquidity to over-the-counter ECN platforms and crypto currency exchanges [219]. Among the Russian factors for reducing liquidity, the most significant are the freezing of pension savings in the period 2014–2016 and subsequent pension reform.
The shortage of long-term money in the domestic market of equity instruments in Russia to switch to the mechanism of funding transactions through loans through repos with shares on the Moscow Stock Exchange.

As of the end of 2016, the number of listed companies was reduced to 245 (from 293 in 2012). Among the reasons we can single out the transformation of previously public companies into closed after their purchase by strategic investors [259].

![Fig. 2.1. Number of public companies listed on the Moscow Stock Exchange [21] (Source: author’s calculations)](image.png)

The unused potential of the exchange in attracting new companies to the listing is evidenced by the fact that in 2016, out of approximately 1,140 joint-stock companies in which the central depository of NSD holds a nominal holder’s account, only 246 companies account, or 21.6% of the NDRs served, included in the listing of the Moscow Stock Exchange [22].

Against the background of anti-Russian sanctions, it was not possible to break the downward trend in the number of issuers of equity instruments on the Moscow Exchange listing [23].

The merger of the MICEX and the Russian trading system at the end of 2011 contributed to the growth of the derivatives market segment (FORTS) as a result of the liquidity inflow to this market segment due to the expansion of the list of its participants.

The outrunning growth was characteristic of the repo market in recent years due to the expansion of borrowing funds against the pledge of equity instruments and the inclusion in the list of securities accepted as collateral for Bank of Russia repos [24].
After the 2008 crisis, several major bidders failed to fulfill their obligations under repurchase transactions with shares [25]. As a result, the central counterparty institution was introduced in this market segment. This made it possible to reduce the credit risks of counterparties in this class of transactions.

Currently, there is no public information on how risk management is performed, especially within brokerage companies and banks. Brokerage companies do not disclose in their reports the amount of leverage and the risks of non-fulfillment of their obligations to unqualified investors [27].

The gradual introduction of sectoral sanctions in the period from July 2014 to August 2017 and the reduction of the long-term sovereign foreign currency credit rating by international rating agencies S&P and Moody’s below the investment level contributed to a gradual decrease in the liquidity of the Russian stock market [31].

In 2016, the Bank of Russia suggested that the inflow (outflow) of investments from non-residents on the Russian stock and bond market depends primarily on changes in the level of global risk appetite.

The fall in the volume of market transactions with equity instruments is a serious problem of the Moscow Exchange [38]. The only tool is that currently popular with private investors and can have a positive impact on the volume of market transactions is the individual investment account (IIA).

The government-controlled companies (KGC) began to acquire a prominent role as counterparties on the Moscow Stock Exchange. Their share in the total volume of transactions on the Moscow Stock Exchange with shares increased from 10% in 2005 to 22% in 2017. This is largely due to the mechanism for supporting the stock market through Vnesheconombank, as well as the increasing role of the Bank of Russia repos after the introduction of sectoral sanctions. Later, this mechanism was replaced by repos through the central counterparty, where the liquidity providers to the market are large banks with excess liquidity at the expense of funds in the accounts of the largest budget beneficiaries.

Thus, we can conclude that, despite the reduction in liquidity, sectoral sanctions and other difficulties, the exchange-based stock market is represented by a fairly wide range of different bidders. The main volumes of exchange trades with shares fall on private Russian financial organizations, as well as state-controlled companies [56]. Some shifts in 2016 in the structure of transactions in favor of private intermediaries rather indicate that the exchange managed to build a more diversified refinancing mechanism for the banking system, and the market itself became more stable. Analysis of the structure of investors on the stock exchange shows a tendency of growth in the activity of non-residents, which was not prevented even by the introduction of sectoral sanctions.

2.1 Squeeze the dollar stock market capitalization
In 2016, the issue of shares of Russian companies played an imperceptible role in the general sources of investment (less than 1%). The Russian stock market remains a source for refinancing or debt repayment, as well as for financing individual investment projects.

Therefore, the Russian stock market over the past 10 years does not contribute to the accumulation of real assets of companies and is not a driver of economic growth.

In 2016, a unique event for the Russian market took place: despite the growth of stock indices, there was the most rapid decline in the activity of transactions with derivative instruments, where the underlying assets are stocks and indices.

Indicators of stock turnover with futures on stock assets reached a peak in early 2016 and then began to decline rapidly amid the stabilization of the ruble and the growth of Russian companies’ shares, which reduced interest in hedging with the help of derivatives market instruments.

Transition from charging a fixed commission for a transaction to remuneration set as a percentage of its volume (in October 2016) reduced the efficiency of operations in the derivatives market for strategies implemented with the help of robots.

As a result of the stabilization of the exchange rate by the Bank of Russia, trading activity on the derivatives market of the Moscow Exchange has shifted towards transactions in commodity derivatives [94]. The share of transactions in commodity assets, in particular, the growth in the activity of transactions in oil futures and gold, has noticeably increased.

The Bank of Russia intends to complete in 2018 the transition to regulating the activities of non-bank financial organizations on the basis of capital adequacy ratios. The reduction in the number of professional participants in the securities market from 633 in 2015 to 449 in 2016 was the result of this policy of the Bank of Russia [87]. This trend is generally consistent with the Bank of Russia’s activities to reduce the number of credit institutions in Russia [64].

The merger of the MICEX and RTS exchanges had a positive significance for raising the level of liquidity in all accounts of trading participants, and also improved financial stability in the conditions of the overflow of exchange trading volumes to OTC sites in the world.

After the merger in 2011, 59.0% of the shares of the exchange belonged to the Bank of Russia and several other state-controlled structures, and 41.0% belonged to Russian participants of exchange trades and other residents.
The downward trend in the share of the stock market in total stock turnover has causes:

1) high risks against the background of low profitability of investments in securities of Russian issuers;
2) high volatility of exchange rates and financial assets compared with emerging markets in general;
3) dependence on Bank of Russia operations to refinance the banking system;
4) permanent freezing of pension savings;
5) the limitations of other sources of domestic savings.

Over the past six years, in the total volume of stock exchange transactions on the Moscow Stock Exchange, the share of the capital market has decreased from 13% in 2010 to 3% in 2017.

Table 2.1. — Market share in the total volume of trading of the Moscow Exchange, %

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Capital market</td>
<td>13.2</td>
<td>10.3</td>
<td>6.5</td>
<td>5.3</td>
<td>4.1</td>
<td>3.2</td>
<td>3</td>
<td>3.6</td>
</tr>
<tr>
<td>Secondary trading</td>
<td>3.4</td>
<td>2.9</td>
<td>2.8</td>
<td>2.8</td>
<td>1.7</td>
<td>1.3</td>
<td>1.2</td>
<td>1</td>
</tr>
<tr>
<td>Placement market</td>
<td>1.8</td>
<td>0.8</td>
<td>0.6</td>
<td>0.6</td>
<td>0.4</td>
<td>0.4</td>
<td>0.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Money market</td>
<td>33.9</td>
<td>41.3</td>
<td>48.3</td>
<td>49.1</td>
<td>39.7</td>
<td>33.5</td>
<td>41.6</td>
<td>41.3</td>
</tr>
<tr>
<td>REPO</td>
<td>31.5</td>
<td>38.3</td>
<td>45.8</td>
<td>46.2</td>
<td>35.6</td>
<td>28.3</td>
<td>36.9</td>
<td>36.9</td>
</tr>
<tr>
<td>Credit market</td>
<td>2.4</td>
<td>3.1</td>
<td>2.5</td>
<td>2.9</td>
<td>4.1</td>
<td>5.1</td>
<td>4.7</td>
<td>4.5</td>
</tr>
<tr>
<td>Fx market</td>
<td>38.1</td>
<td>29.3</td>
<td>31.6</td>
<td>34.7</td>
<td>44.4</td>
<td>48.6</td>
<td>41.1</td>
<td>43.9</td>
</tr>
<tr>
<td>Spot</td>
<td>18</td>
<td>15.8</td>
<td>16.6</td>
<td>12.8</td>
<td>15.1</td>
<td>16.2</td>
<td>13.3</td>
<td>10.3</td>
</tr>
<tr>
<td>Swap</td>
<td>20.1</td>
<td>13.4</td>
<td>15</td>
<td>22</td>
<td>29.3</td>
<td>32.5</td>
<td>27.7</td>
<td>33.6</td>
</tr>
<tr>
<td>Derivatives market</td>
<td>14.8</td>
<td>19.1</td>
<td>13.5</td>
<td>10.8</td>
<td>11.9</td>
<td>14.7</td>
<td>14.4</td>
<td>11.2</td>
</tr>
<tr>
<td>Commodity market</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
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</table>

*Source: author’s calculations*

We can note the success in improving the exchange infrastructure:

1) NSD received the official status of “acceptable depository” in accordance with the rule of the US Securities and Exchange Commission No. 17f7. This makes it possible to store the assets of the largest American institutional investors.

2) Correspondent relations were established with the two largest international settlement systems (Euroclear and Clearstream), which made it easier for non-residents to access the Russian valuable market.
In 2017, on the basis of NSD data, nominal accounts were opened only (to 1,140 companies), only about 5.0% of all Russian public joint-stock companies.

In the Russian market, it is not so difficult to identify the most significant risks in the medium term: this is currency risk.

As a rule, the devaluation of the ruble occurs according to one scenario. The decline in oil prices and capital outflows create a sudden depreciation of the ruble exchange rate, after which a period of 7–8 years ensues, when the ruble exchange rate remains stable and even strengthens. However, the problem is that a sudden devaluation devalues ruble savings.

To a large extent, stock prices of Russian companies depend on oil prices. The coefficient of determination (R2) between absolute monthly values of the RTS index for Brent oil from September 1995 to February 2017 is 0.80, which indicates a very close relationship between these indicators [44]. In many ways, the price of oil affects the exchange rate.

In the coming years, there is no reason to expect an increase in oil prices, since demand and supply in the oil market are volatile.

High interest rates on transactions with ruble assets and the absence of significant restrictions in the area of currency regulation contribute to the growth of carry trade on the Russian stock market.

Despite the relatively high share of non-residents in the ownership structure of shares and bonds of Russian issuers, the use of the carry trade strategy is limited due to the low liquidity of the Russian stock market.

2.2 Post-crisis shifts in the bond market

In 2016, the value of bond issues in Russia reached a level above 16 trillion rubles, the average annual growth over the past 10 years has been in the range of 10–20%.

During this period, the Ministry of Finance felt the need to finance the budget deficit, but did not significantly increase the size of the ruble public debt, which contributed to an increase in the volume of loans to public companies, as well as to subjects of the Russian Federation and municipalities against the background of sectoral sanctions.

During 2016, there was a noticeable increase in the issue of debt instruments on the Moscow Exchange. Borrowings of Rosneft bonds played a significant role in the growth of volumes of placed corporate bonds.

The main drivers of growth were the needs of business and government in financing current expenditures and investment projects in the context of sectoral sanctions, as well as increased demand for ruble assets against the background of improved correction of the Russian ruble.
Despite the presence of almost 400 issuers in the listing, the primary market for corporate bonds on the Moscow Stock Exchange is highly concentrated, with a predominance of government-controlled companies.

The share of the largest issuers for the period from 2010 to 2016 accounted for the majority (over 65%) of the issue of corporate bonds.

It turns out that the ruble debt market over the past seven years has served as a mechanism for obtaining relatively cheap long-term money in the market, mainly for large companies with state participation in capital.

Among corporate issuers of Eurobonds 2016, there are mainly metallurgical companies (Polyus Gold, Rusal and Severstal) and Alfa-Bank.

In 2016, the total value of ruble corporate bonds was estimated and Eurobonds were at about the same level of 135–139 billion dollars.

In 2016, issuers in the field of innovations began to appear on the primary bond market.

Currently, the success of placing new issues of corporate bonds, as well as volatility in the secondary market depends on the liquidity of the banking sector.

Liquidity in the market was shaped by various factors. There are several periods:

1) 2001–2004 Period of moderate liquidity [84]. Demand for ruble corporate bonds was supported by domestic sources of financing and funds of non-residents frozen after the default of 1998.

2) 2004–2008 Carry trade strategy after assignment of investment grade credit ratings from international rating agencies, as well as stabilization of the ruble.

3) 2008–2011 Crisis and recovery. The Bank of Russia and the Ministry of Finance of Russia kept the liquidity level of the banking system at the expense of targeted sources of centralized funds.

4) 2011–2016 Refinancing of the Bank of Russia and deposit auctions of the Ministry of Finance of Russia against the background of excess liquidity [77].

5) 2016 — the present. Expenditure of the Reserve Fund.

During this period, ruble bonds turned (along with deposit auctions of the Bank of Russia) into a liquidity sterilization mechanism [70].

In addition, the following trends are characteristic of the current stage of development of the ruble market:

1) Reduction of non-market placements (in 2017, they accounted for about 30% of the total new issues of corporate bonds versus 55.9% and 46.7% a year and 2 years earlier). This contributes to increasing liquidity in the secondary corporate bond market and the formation of a qualitative zero-coupon yield curve for bonds.
2) Lengthening the urgency of issues. The increase in the duration of initial offerings was due to the growing uncertainty in the Russian market and the desire to receive funds now for a longer period. The average duration of bonds placed in 2017 was about 3.5 years versus 3.0 years in 2016.

3) Demand for standard debt instruments. In 2017, Sberbank placed two-year structured bonds for only 37% (RUB 222.2 million) of the total loan amount. Alfa-Bank has issued a 43% issue of structured corporate bonds. At the same time in the secondary market securities have liquidity.

4) Reducing the ruble risk of investors in the local market. At the end of June, VEB re-placed the dollar local issue of bonds in settlements in rubles. At the same time, the issue was placed without a premium to the dollar Eurobond of the bank, issued before the introduction of sectoral sanctions.

5) The narrowing of the spreads to the sovereign curve. At the time of the introduction of sectoral sanctions, investors were counting on a 1-echelon premium on corporate securities of more than 200 bp. (duration 1–5 years), and in 2017 the spread narrowed to 70–100 bp.

6) Low demand for securities of the second and third echelons. Despite the growth in attracting volumes, there is no recovery of investor interest in the bonds of banks of 2–3 echelons. The tendency to reduce the demand for banks’ bonds was formed against the backdrop of a tough policy of the Bank of Russia in matters of banking regulation and supervision and the potential defaults of Vneshprombank, AKB Peresvet, Tatfondbank, Nomos Bank.

7) Bonds for the public. On April 26, 2017, the Ministry of Finance began selling OFZ for the population (series 53001) in the amount of 15 billion rubles, which was implemented during the first 26 days. The second issue of the series 53001 was increased to 30 billion rubles.

In the structure of transactions on the secondary bond market on the Moscow Stock Exchange, a dominant share is occupied by repos — about 97%. And only about 1% of transactions with corporate bonds were made at an anonymous auction, that is, they had market status. While in 2005 the share of repos amounted to about 30%, market transactions were concluded in 12% of cases. The low share of market transactions with corporate bonds interferes with the transparency of the calculation of market and fair value when pricing these instruments.

Over the past 10 years, the role of the repo market has gradually increased due to the increased use of corporate bonds in refinancing [36].

While in the market of subfederal bonds, there was a noticeable significant decrease in the volume of repos compared with previous years [38].

In recent years, the Bank of Russia has determined the shares of various groups of counterparties when trading bonds in the Moscow Exchange turnover [39].
From 2011 to 2016, the Bank of Russia itself and large banks with state participation played a prominent role. The Bank of Russia carried out transactions with bonds in 2012 in the amount of more than 35%, while “state banks” about 29%.

As the refinancing against bonds pledged through repos with the central counterparty proceeded, the influence of the Bank of Russia Bank decreased, and the share of state banks increased, giving them the function of liquidity agents in the Russian banking system [44].

Thus, the Russian ruble bond market serves to attract resources primarily to state-owned companies in the money market against the security of bonds. The share of non-residents is gradually increasing, despite sectoral sanctions, and is about 15%.

An important criterion for the efficiency of the Russian debt market market is the direction for the further use of the funds raised. During the period from 2000 to 2015, only about 7% of the funds raised from the issue of bonds went into investments in fixed assets.

This means that, like the stock market, the bond market does not have a significant impact on the size of investment in fixed assets and economic growth. The main directions of use of funds from the issue of bonds is the increase of working capital and the prolongation of debt [47].

In 2016, the volume of increase in sovereign debt by the Ministry of Finance of Russia due to the issuance of OFZs significantly exceeded the amount of their repayment. Thus, debt instruments have become a real source of financing the budget deficit. At the expense of the OFZ instrument, 0.5 trillion rubles was raised.

The Ministry of Finance of Russia plans that government borrowing in the form of OFZ emissions can become the main source against the background of the devastation of the Reserve Fund and the National Wealth Fund.

There are three stages in the development of the ruble debt market:

1) Until 2008. The budget surplus period (OFZ-PD and OFZ-AD issues bought pension funds and bank funds using a carry trade strategy).

2) From 2009 to 2011. Period of budget deficit. (OFZ-PD issues were bought by banks with a small premium to the market).

3) After 2011. The arrival of non-residents. (Issues OFZ-PD, OFZ-PK were in demand from non-residents, OFZ-IN, from internal institutional investors).

The investment attractiveness of investments in OFZs is characterized by the fact that the yield changes in relation to inflation, that is, the level of real return on the portfolio. Rosstat’s positive data on the decrease in inflation, observed in 2016 and 2017, contributed to the exit of the Cbonds-GBI OFZ portfolio to a positive real yield.
In 2017, with an annualized inflation rate of around 4% per annum, the average yield to maturity of long-term OFZs was about 8%. If we consider the period from 2010 to 2017, then the average real return on investment in OFZ remains negative.

It turns out that in recent years, the public debt market has begun to occupy a more significant place in financing the budget deficit.

At the same time, like the corporate bond market, the OFZ market is a mechanism for short-term borrowing. The main purpose of the purchase is the possibility of using government securities as collateral. At the beginning of 2017, the share of repos in the value of all exchange transactions in government securities reached a level of over 96%.

The innovation of the central depository, associated with the opening of accounts of a nominal holder for foreign settlement and clearing organizations, in early 2013 contributed to an increase in the share of non-residents to 28%.

At the same time, in 2015, under the influence of sectoral sanctions, the share of non-residents significantly decreased to 19%. But in January 2017, their share began to rise again against the backdrop of the start of carry trade operations by global investors [58].

The consolidated budget of the regions and the budgets of extra-budgetary funds in 2016 were imposed almost without a deficit. A year earlier, similar budgets had a deficit of about 0.22% of Russia’s gross domestic product in 2015.

At the same time, the budgets of the constituent entities of the Russian Federation in 2016 were imposed with a deficit of 2.4 billion rubles (while in 2015 the deficit was more than 108 billion rubles).

Against this background, according to official sources, the volume of debt of the constituent entities of the Russian Federation in 2016 increased by 34 billion rubles, the debt of municipalities increased by 23.0 billion rubles.

Thus, subfederal and municipal borrowings in Russia have been growing in recent years, despite the stable situation with the corresponding budgets [55].

Table 2.2. — Sub federal loans

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<tr>
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<td>0.74</td>
<td>0.51</td>
<td>0.21</td>
<td>0.33</td>
<td>0.61</td>
<td>0.53</td>
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<td>0.33</td>
<td>0.37</td>
<td>0.15</td>
<td>0.01</td>
<td>0.06</td>
<td>0.24</td>
<td>0.21</td>
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<td>budgets of</td>
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<tr>
<td>Issue of</td>
<td>0.08</td>
<td>0.17</td>
<td>0.24</td>
<td>0.07</td>
<td>–0.1</td>
<td>0.06</td>
<td>0.12</td>
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<td>0.04</td>
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<tr>
<td>Other</td>
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<td>0.07</td>
<td>0.17</td>
<td>0.26</td>
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<td>0.3</td>
<td>0.13</td>
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Source: author’s calculations
The volume of placed bonds in 2016 amounted to 160.5 billion rubles, that is, increased compared to the level of the previous year (about 100 billion rubles). The largest issuers in 2016 were: the Moscow Region — 25.0 billion rubles, the Yamalo-Nenets Autonomous Region — 20 billion rubles, the Krasnoyarsk Territory — 18.2 billion rubles.

The secondary market of sub-federal bonds is gradually becoming more liquid: the maximum liquidity in 2017 was shown by bonds of the Krasnoyarsk Territory, the volume of transactions with which amounted to more than 8% of the total volume of transactions with all regional bonds [49]. Also noticeable turnover had bonds of the Moscow region, Moscow, Nizhny Novgorod region and the Krasnoyarsk Territory. At the same time, the share of 10 most actively traded issues accounted for more than 40% of the total turnover on subfederal securities on the Moscow Stock Exchange.

In 2017, the spread of subfederal papers with a sovereign curve narrowed to 50 bp., which makes the papers more attractive against the background of the issuer’s credit risk at the level of sovereign risk.

In April 2017, the Ministry of Finance of Russia placed the first issue of federal loan bonds specifically for individuals with a maximum volume of 15 billion rubles.

The nominal value of the national OFZs was 1,000 rubles, the repayment period was 3 years, only Russian tax residents can invest in such OFZs — such parameters were in the published draft order of the Ministry of Finance. The size of the investment of one individual will be in the range from 30 thousand to 25 million rubles in one issue. The coupon will be paid every six months, while it will increase as it approaches the maturity of the bonds. These papers will be registered, only the right of inheritance will be assigned to the owners. They will not have a secondary market, the Ministry of Finance will single-handedly set prices and coupons according to OFZ.

The Ministry of Finance proposes to adhere to the rule of establishing a coupon on public bonds in such a way that the investor will receive an income over a three-year period of ownership of the security by an average of 0.5% per annum more than the traditional OFZ with a similar maturity. The current benchmark yield on the first issue of “people’s bonds” is about 8.5% (from 7.5% per annum — for the first year of ownership, up to 10.4% — for the last year of ownership). To buy and sell new OFZs, it is enough for an investor to have an account in agent banks. The Ministry of Finance chose only two banks (Sberbank and VTB 24).

The idea of issuing such securities has been discussed in the Government of the Russian Federation over the past 5 years, but has been postponed until now. The main purpose of issuing bonds for the public is to increase financial
literacy and the conversion of public funds invested in traditional instruments of wealth accumulation (deposits and real estate).

As of January 2017, the ruble deposits of the population in banks were placed 18.5 trillion rubles: of these, only 22.6% have a placement period of 1 to 3 years, in nominal terms this amounts to 4.181 trillion rubles. At the same time, the main volumes of ruble deposits are placed just in agent banks: in Sberbank — 9.11 trillion rubles, in VTB 24 — 1.234 trillion rubles.

The amount of funds invested in real estate for the purpose of subsequent sale is difficult to estimate. But due to the uncertainty about the further rise in prices in this market and the gradual increase in real estate taxes, investment demand for real estate has been declining in recent years.

The credit risk of investing in “public bonds” over the next three years is minimal, since the entire public debt of Russia is at a historically low level and sovereign funds have not yet been exhausted. At the same time, the bank deposit is insured against bank failure in the amount of no more than 1.4 million rubles, and now the Bank of Russia continues to implement the policy of mass revocation of licenses from unreliable banks. From this point of view, bonds for the public should be of interest to investors with funds in the amount of more than the amount insured by the state, placed on ruble deposits in commercial banks without state participation.

Moreover, if we take the current benchmark yield at 8.5%, as the most likely in the future until 2020, the majority of ruble deposits in Russian banks have lower rates and do not stand up to competition [30]. At the same time, the maximum deposit rates for 3 years at agent banks are below the average for the market: at Sberbank — 5.5 % per annum, at VTB 24 — 7.26 % per annum.

At the same time, agent banks will perform their functions for a commission, the level of which can significantly change the real investment returns for the population. Konstantin Vyshkovsky, Director of the Department of Public Debt and Government Financial, clarified this issue on March 6, 2017: the maximum commission will be 3%, it will consist of two parts: the first part is paid before the purchase of bonds, the second after its sale [85].

It turns out that the maximum amount of commission (3%) can equalize the investor’s benefit in “national OFZs” up to the level of the deposit rate in Sberbank for 3 years (5.5%) and lower it below the similar rate in VTB 24. No bank rates have been published yet — agents, you can’t say for sure.

In addition, there is an interest rate risk for all OFZs with a fixed coupon. It consists in the fact that in the event of a further reduction in the Bank of Russia key rate (at present — 10%, with inflation in 2016 — 5.4%), interest rates on ruble bonds will also be subject to a decrease.
Taking into account the Bank of Russia plans to reduce inflation to 4% by 2020 and the high level of OFZ yield for developing countries minus inflation for the same period (as of March 13, 2017 — 4.3%), the potential for further reduction of the key rate during this period time is saved.

It is also worth noting that from January 1, 2015 there is the possibility of opening an individual investment account (IIS), which can also be used to invest in a wider list of securities, including traditional OFZs (after the adoption of the law, the maximum deposit will be increased up to 1 million rubles). This investment tool will be more convenient for savings of up to 1 million rubles due to the provision of tax deduction and the absence of agent agent banks (as is the case when investing in “public bonds”), even if the nominal returns of traditional OFZs are lower (for 0.5% below the “national OFZ”). But for investors with funds from 1 to 25 million rubles, it is not applicable.

It is possible that investing in OFZs for the population may also become an alternative to foreign currency deposits against the background of the recent strengthening of the ruble against the US dollar (17% at the end of 2016), the rates for which are at a level not higher than 2.5% per annum.

The new tool of the Ministry of Finance, regardless of the result of investment, will indeed contribute to the formation of financial literacy and increase confidence among the general population. For the Ministry of Finance, additional borrowing in the amount of 60 billion rubles a year over time can help in financing the federal budget deficit and replacing external sources of borrowing, which depend on political sanctions, with internal sources [88]. At the same time, agent banks, in any case, will have the opportunity to increase their customer base and attract both new and new customers for the purchase of government bonds.

Already in April, the full parameters of the placement and redemption of “people’s OFZs” will be known, as well as the actual demand for this instrument by the population. After that, it will be possible to make a more accurate forecast of the net income and risks of an individual when investing savings in this financial instrument.

Studies on the time structure of the bond market and the time structure of the inflation risk premium show the importance of forecasting inflation and the business cycle for modeling government bond yields. Thus, studies of foreign experts indicate that the definition of the inflation risk premium requires the forecasts of the professional community regarding inflation expectations and consumption growth rates that the inflation risk premium can be calculated on the basis of this information even during a period of sharp inflation expectations.
Below is a theoretical model for predicting the temporal structure of government bond yields for an investor who has inflationary expectations from the central bank and the professional community.

Currently, there are several hypotheses describing the temporal structure of government bond interest rates. The earliest is based on the fact that long-term interest rates are based on the expectations of short-term rates, i.e. are derived [213]. It is called the expectations hypothesis.

Fundamental work [301] is devoted to modeling the structure of the curve of rates on government bonds based on this hypothesis abroad. The hypothesis suggests that the term premium is a value equal to all government bonds with the same maturity. This value can be calculated by the formula:

$$E_t h(t, t + 1, m) - r(t, 1) = \Phi, \forall m,$$

where:
- $E_t$ is expectation operator;
- $r$ is term premium; $\Phi$ is the martingale;
- $t$ is initial moment of time; $m$ is maturity.

The expectations hypothesis allows explaining and predicting the change in the shape of the zero-coupon yield curves of government bonds, based on three premises [267]:
- yields on bonds with different maturities vary unidirectionally;
- the yield curve may have a positive slope if short-term interest rates are below long-term, and a negative slope when short-term interest rates are higher;
- Since interest rates tend to return to the average value of a premium, the average value of short-term interest rates should have less volatility.

The hypothesis of liquidity preference assumes that the interest premium over the term is constant over time, but depends on the period to maturity of the bond: $\Phi(t, \ldots, m) = (M)$. With increasing maturity, the liquidity premium increases:

$$E_t h(t, t + 1, m) - r(t, 1) = \Phi,$$

$$\Phi(m) > \Phi(m - 1) > \Phi(m - 2) > \ldots,$$

where:
- $E_t$ is expectation operator;
- $r$ is term premium, $\Phi$ is martingale, $t$ is initial moment of time; $m$ is the maturity.

In addition, there is a theory of the preferred environment, which does not depend on the fundamental macroeconomic basis for determining the forward premium for a term [137].

The time structure of securities yield observed in the market is the result of economic decisions made by many independent decisions.
Knight’s ambiguity regarding inflation expectations explains the positive slope of the bond curve. You can consider the uncertainty of inflation expectations as a result of a misunderstanding of market participants in the monetary policy of the central bank. The monthly forecast of the inflation expectations of the professional community can be used to simulate inflation uncertainty [238].

The nominal interest rate for government bonds in the quantitative (cardinal) approach to the theory of utility is determined by the formula:

\[ R_{tt} = E_t \left[ -dM^S_{0,t} / M^S_{o,t} \right], \tag{2.3} \]

where: \( M^S_{0,t} \) is marginal utility of the bond;
\( E_t \) is price change expectation.

It is important to consider that the constancy of inflation expectations leads to an increase in the steepness of the premium curve for inflation uncertainty. In a stable economic system, the inflation premium has two components: for inflation expectations (the temporal structure has a negative slope) and for inflation risk (the temporal structure has a positive slope). In the case of shocks in the economy, the premium for inflation uncertainty for long-term bonds is less than for short-term ones, which leads to a negative slope of the time structure of the rates curve.

In a state of equilibrium, an unexpected rise in inflation expectations can lead to three consequences:

- unexpected fall in the real nominal value of bonds;
- reducing the accuracy of the predictive model of inflation expectations;
- revision of the forecast of consumption growth expectations.

The combination of factors (1) and (2) leads to an increase in the inflation risk premium. In the yield of federal loan bonds OFZ, one can distinguish between a premium for inflation expectations and a premium for inflation uncertainty.

Inflation expectations are based on information from the Bank of Russia and surveys of the professional community. On the medium-term forecast horizon, inflation expectations are published in the Reuters and Bloomberg information systems. Consensus forecasts for various periods of the 2014–2015 crisis (February 2014, December 2014, February 2015, June 2015) can be used to estimate the annual values of the dispersion of OFZ return for forecasting horizons from 1 year to 30 years [278]. Then the formula will be:

\[ D(x) = a \cdot \frac{\sum (x - \bar{x})^2}{n}, \tag{2.4} \]

where: \( a \) is forecast horizon in months;
\( x \) is the forecast of an individual respondent;
\( n \) is sample size [29].
The responses of participants in the consensus forecasts regarding inflation expectations indicate that the temporal structure of the variance [270]. These forecasts coincide with the change in the time structure of the inflation uncertainty premium [6; 8; 9].

It is advisable to consider the form of the zero-coupon yield curve, which the Moscow Exchange daily calculates, as an indicator of the current state of the OFZ market structure [10; 11; 12].

The periods of increased dispersion of the predicted rates of return coincide with the periods of macroeconomic instability (1998, 2008, 2014) and are characterized by an increase in the distrust of institutional investors to the models used previously [8,13]. Inflationary expectations usually reach a peak of uncertainty at the beginning of a recession [9,14].

If you look at how the OFZ curve changed after some stabilization of the Russian ruble exchange rate in February 2015, then there is a noticeable decrease in the risk of inflation uncertainty after the beginning of the period of a decline in the Bank of Russia key rate [31].

At the time of this writing, the zero-coupon yield curve is becoming more and more flat, being under pressure from expectations of a further reduction in the Bank of Russia key rate and inflation expectations of the professional community.

The rise in inflation uncertainty explains the shape of the government bond yield curve during the period of changing monetary policy conditions [84]. The temporal structure of inflationary expectations at such times takes on a negative slope, and the nominal yield curve of bonds has a flat shape. In fig. 2.1–2.4, it is shown that the downward form of the inflation expectations curve is compensated by the ascending form of the inflation uncertainty curve [75]. This means that bonds include a large premium for inflation uncertainty in their price. Thus, the growth of quarterly consumption rates with an increase in inflation uncertainty remains insignificant. Inflation uncertainty significantly affects the time structure of the government bond market [15].

The low level of inflationary uncertainty explains the upward slope of the government bond yield curve, which is characteristic of a stable state of the economy [38]. The periods when investors lose confidence in their models for forecasting inflation expectations and expectations of consumption growth rates coincide with the periods when asset prices (including government bonds) are falling. This means that government bonds are not an effective tool to hedge against the risks of economic stagnation [10; 16], as well as Knight’s uncertainty risks [11; 17].

Market participants form a positive slope of the government bond yield curve due to a positive premium for the tenure of bonds [45]. This premium is
time-varying and becomes high during periods of growing Knight’s uncertainty, increasing noticeably during periods when the Bank of Russia’s emergency measures are implemented in 2008 and 2014 [238].

The high level of stability of inflation expectations leads to a decrease in the variance in forecasts of inflation expectations, causing the accumulation of a significant premium to bond yields in the long term. The analysis of the time structure of the Russian government bond market from 1998 to 2015 led to the conclusion that it is inflationary uncertainty that explains the fact that long-term interest rates are higher than short-term in a stable economy.

In addition, the dynamics and interrelations between indicators of the debt market in 2015, which have changed significantly compared with the pre-crisis ones [56], are revealed. It is noted that this change in interest rates on the market is less consistent with the expectations of the professional community with a competitive market pricing mechanism.

The expectations of market participants have become more consistent with the hypothesis of their rationality, in particular, the horizon of inflation expectations has expanded, the predictability of interest rate responses to changes in money supply by the Bank of Russia has increased [59].

### 2.3 New sources of shocks: low inflation and monetary policy

The period from 2018 to 2020 will be a test for the global economy: GDP growth is slowing down, economic stimulation tools have been exhausted or have shown their inefficiency, the EU cannot eliminate structural problems in the economy.

To understand this, we will try to find out and evaluate the main factors influencing the economic development and financial markets of Russia: global and domestic. Global rates include the US dollar, oil prices, the growth rate of the US economy, and the most unpredictable factor — the dynamics of the US stock market.

The internal factors can be attributed to the extent of influence: Russia’s foreign policy (primarily, relations with the EU), the decline in Russia’s investment attractiveness and, as a result, the development of a potential crisis in the credit market in 2018–2020.

It has been established that the dollar index is subject to cyclicity16, the dollar strengthening peaks are formed every 15–17 years, as it was in 1984, in 2001, and will probably be in 2016–2017.

In the period of the last peak, which occurred in 2000–2001, the US dollar against the euro reached a minimum of 0.8225. Thus, using the extrapolation method, we can assume that EURUSD will drop to its lowest point of 0.8000–0.9000 in 2016–2017. At the same time, given the acceleration of the growth
of the dollar closer to the peak, we can assume the movement of the EURUSD rate in 2015 to the level of 1.10–1.15.

The decline in prices for oil and other raw materials began in mid-2014. There are several possible reasons for this. This is an increase in supply in connection with oil production from shale rocks, dumping by the Gulf countries and other political ones. In this study, it is difficult to assess the degree of influence of the listed reasons.

In addition, the strengthening of the US dollar, discussed above, was in itself a strong reduction factor, as was the case in mid-2001, then the price declined by about a third before starting a long-term sharp rise.

Next year, this factor will also have a downward movement, if you do not take other political factors that may suddenly arise shortly, due to the fact that political uncertainty has increased markedly.

In order to assume the development of financial markets in 2015, we will look at how cumulative GDP has changed over the period of this US dollar strengthening cycle from mid-2001 to December 2014. The accumulated GDP for the specified period increased from 770 to 870, that is, by about 13%.

Below we will try to suggest where another crisis may occur.

![Graph of Cumulative US GDP from mid-2001 to December 2014](source: World bank, bloomberg.com)

If we compare the dynamics of growth of GDP and the US stock market over the same period, it becomes noticeable how the formation of a bubble in the US stock market occurs. From mid-2001 to December 2017, the DJIA grew from 11,000 to 23,000, that is, by about 110%.

The stock market overtook the dynamics of GDP by more than 4 times. In simple terms, the income of the US population grew 4 times slower than
the investment of investors in the capital of the best companies registered in the USA [18].

A decrease in US GDP closer to zero (0–0.5 %) may lead to a sharp drop in shares of American companies. Therefore, much of the next year will depend on the monetary policy of the Federal Reserve System.

As for domestic factors of influence, they will only be of secondary importance, as long as Russia remains dependent on global markets.

1) A gradual decline in Russia’s share in the EU raw materials market and the global market will continue. This can be beneficial as well as harm the Russian economy [66].

The political situation around the export of raw materials will have a significant impact on the economy and financial markets of Russia.

There are distinctive features of the current political situation regarding the export of raw materials:

1. low profile of the EU. In contrast to the events of 2006 and 2009, the supply of Russian gas to European markets during the conflict in Ukraine was not interrupted by an arbitrary decision of the parties. The cessation of supplies from Russia took place after the start of negotiations, and so far has not led to disruptions in supplies to Europe. This suggests a greater flexibility of the parties (or even the potential for compromise) in terms of resolving gas problems;

2. the change in global gas flows does not take into account the geopolitical importance of the emerging gas transmission network. EU countries can get new opportunities to maintain pressure on Russia. Due to the fall in Russian revenues from sales in the EU and the opening of the Nord Stream pipeline to Germany, Russia can behave more confidently.

The formation of a new Eurasian gas supply system, where, thanks to integration between hubs, the influence of monopolism and the average length of routes are significantly reduced. Between the hubs of the EU gas network, strong relationships have been established that allow access to the resources of the entire network, despite the business structure and regulatory documents.

In the future, Russia will remain a key supply center in this network, although its influence should decrease in the next 3 years.

2) A decrease in sovereign ratings will lead to a deterioration in economic growth and another wave of sales in the Russian stock market [94]. Perhaps this will happen in early 2015 (January and March) and will cause an increase in bond and loan rates.
In addition to political factors, a trigger for crisis phenomena in Russia could be a decline in international ratings below the investment level (BBB-) 21. The fact is that many investment funds have limitations in their investment policy on investments in speculative securities [84]. Downgrading Russia will lead to an outflow of investment and an increase in borrowing rates.

After the outbreak of hostilities in Ukraine, in April 2014, Russia’s sovereign rating was lowered by one notch, while Ukraine’s sovereign rating was lowered several times to the garbage level.

3) The most likely outcome of the situation in the Russian economy could be a credit crisis (an increase in loan rates, or a complete lack of credit).

If you look at the situation in 2008, when after the bankruptcy of Lehman Brothers there was a credit crisis in Russia [54]. It all started with the growth of credit rates in the interbank market (MIACR) for a period of six months from 8 % to 25 % for 3 months. Then the crisis spread to the real sector, and the consequences were felt by the broad masses.

Now this rate is at the level of 10–11 %. Growth rates above 15 % can be considered the beginning of the credit crisis, which will instantly affect the stock market, and with a lag of 3 months on economic indicators.

All of these factors will influence the dynamics of economic growth and the Russian stock market [52]. At the same time, crisis phenomena in Russia (for example, a credit crisis) may begin due to both external causes (for example, the fall of the American stock market) and internal (political decisions or actions of the Central Bank of the Russian Federation).

In order to prevent the development of a crisis situation in 2015, government agencies should start implementing the policy of stimulating the banking sector and the devaluation of the national currency in advance, as did the central banks of developed countries.

A significant part of the federal budget revenues are taxes and duties collected from oil and gas companies. The amount of income depends on the dynamics of changes in asset prices in commodity markets.

In 2014, there was a sharp devaluation of the national currency, which peaked in December and began to have a positive effect on the current balance of payments of Russia [67].

But taking into account that the rates of duties and taxes largely depend on the dollar value of the exported oil, the revenues of the federal budget should be significantly reduced compared with the predicted values of last year.

In addition, a sharp change in commodity markets may lead to a decrease in the export of petroleum products and gas to countries from Russia [64].
While this is not observed. On the contrary, at the end of 2014 [24], oil supplies from Russia to European countries remained unchanged, while in Asian countries, 41 million tons increased to 51 million tons.

In addition, it should be borne in mind that an increase in the share of oil and gas revenues in the budget will automatically lead to an increase in the dependence of the budget on the oil market situation and an increase in budget policy risks [78]. Therefore, the task of the Government of the Russian Federation comes down to maintaining stability with a gradual decrease in this share [76].

Presumably, it is the stability of the physical volumes of Russian oil and gas exports that will be the main factor affecting budget revenues. Both an increase in exports and a sharp decline can pose risks for Russia's fiscal policy [82].

In accordance with the budget for 2015, 25 the total budget revenues are planned at the level of 14,564 billion rubles: of these, a significant share (46.8 %) is oil and gas revenues — 6,818 billion rubles.

Based on the above, budget revenues primarily depend on:
1. The US dollar exchange rate to the Russian ruble.
2. The price of oil in US dollars.
3. Volumes of oil production [87].
4. Volumes of oil exports [65].
5. Export duty rates and mineral extraction tax [53].

Thus, the task is reduced to finding the correction factors \( a \) and \( b \) on the basis of the above factors influencing the income from the extraction and sale of petroleum products and gas.

Since the factor of the size of the export duty on oil has a significant weight in the structure of oil and gas revenues of the federal budget.

Gas quotations are strongly correlated with oil prices. Most of the long-term contracts of Russian gas exporters imply that gas export prices are directly dependent on natural gas exchange prices with a time lag of about 6–9 months. At the same time, European and Asian exporters (Norway, the Netherlands, Qatar) sell gas mainly at exchange rates.

This means that until June-September 2015, Russian exporters will sell gas at inflated dollar prices, which will allow them to receive super-profits when converting currency earnings into rubles [59].

It is quite logical that in the conditions of a sharp decline in exchange prices for gas it becomes more profitable for consumers to buy gas from those exporters with whom contracts have been concluded based on exchange quotations.

According to Gazprom, 33 physical volumes of gas exports in January 2015 decreased by 25 %, which proves the replacement effect of Russian exporters.
In the process of leveling gas and contract prices for gas that Russia uses in its calculations, various elements of the strategy of behavior of gas importing countries from the European Union are possible:

1. The maximum replacement of gas purchases at contract prices and the use of our own gas reserves from storage facilities approximately until July of this year.
2. Filling of storages since July of the current year at the expense of Russian gas or supplies from other sources. Since Russian gas is likely to become cheaper at this time, the increase in monthly average import volumes may amount to 25% compared with the same months of 2014.
3. If the political interests of the European Union prevail over economic ones, then the decline in annual gas exports will be more significant.

In our opinion, when modeling, it is worthwhile to consider the scenario of maintaining average monthly export volumes until July 2015 at the levels of January 2015. After that, the importers are expected to again increase the volume of gas purchases to the monthly average levels of last year.

Taking into account the peculiarities of taxation of gas revenues (the rates of export duties and taxes on gas production are not significantly affected by the dynamics of exchange gas prices), the formula for calculating the coefficient $b$ is as follows:

$$b = \frac{\sum R_n \cdot P_{n-6} \cdot N_p}{12}, \quad n = [1…12], \quad (2.5)$$

where:
- $R$ is coefficient of change of the average monthly rate of the US dollar against the Russian ruble;
- $P$ is coefficient of change of the average monthly prices for URALS oil;
- $N$ is coefficient of change of the average monthly volumes of gas exports;
- $n$ is number of months.

We assume the following assumptions:

1. The adjusted price for Urals oil from March to December 2015 is $50 per barrel.
2. Adjusted US dollar rate from March to December 2015 — 65 rubles per dollar.
3. The coefficient of change in the volume of oil exports in January 2015 (compared with January 2014) was 1.06335.
4. The coefficient of change in the volume of oil exports for February-December 2015 (compared with February-December 2014) is 136.
5. The rate of change of export duty on petroleum products is calculated on the basis of data compared to the level budgeted for 201,537.
6. The rate of change in gas exports in January 2015 (compared with January 2014) was 0.7538.
7. The coefficient of change in the volume of gas exports for February–June 2015 (as compared with February–June 2014) is 0.75; for July–December 2015 (compared with July–December 2014) is equal to 1.

In accordance with the main directions of the budget policy of the Ministry of Finance [39], the budget for 2015 contains the following forecast values:

1) The average annual price for Urals oil is $ 96 a barrel.
2) The average annual exchange rate of the US dollar is 37 rubles per dollar.
3) Oil and gas budget revenues at the level of 6,818 billion rubles [40]. Taking into account the preservation of structural proportions, revenues from the production and export of petroleum products were projected at 5,420 billion rubles, and revenues from gas production and exports at the level of 1,398 billion rubles.

We get the amount of losses of the federal budget of 2015 from the export and production of petroleum products in the amount of 967 billion rubles and a positive effect on gas exports in the amount of 94 billion rubles, which indicates the positive impact of the current situation on revenues from gas production and export in 2015. Taking into account the above described lag in reducing gas prices, the negative impact on budget revenues will take place in predominantly 2016.

At the same time, the most significant risk of reducing budget revenues, taking into account the EU policy aimed at reducing dependence on Russian exports, is the factor reducing the volume of exports of Russian oil products and gas from the European Union [42].

In accordance with the described model, under current assumptions and factors of influence, we get a decrease in federal budget revenues of 874 billion rubles. Since the federal budget for 2015 laid the forecast for oil and gas revenues at the level of 6,818 billion rubles, the decline will be no more than 13 % of all oil and gas revenues, which will change the income structure and can benefit the Russian economy in the future.

The modeling of shortfalls in budget revenues in 2015 confirmed the strong dependence of the oil and gas revenues of the budget system on the prices of assets in commodity markets. At the same time, our calculations show that in the current year revenues from gas production and export may even grow due to the specifics of concluding long-term contracts by Russian exporters [44]. At the same time, ruble revenues from the extraction and export of petroleum products will nullify the positive impact and lead to a cumulative decline in federal budget revenues by 874 billion rubles, which will not exceed 6.5 % of all projected federal budget revenues.
Thus, the share of oil and gas revenues in the budget structure may decrease from 46.8% to 40.3% of all revenues. Taking into account the unstable conjuncture of commodity markets, this will positively affect the strengthening of the stability of budget revenues in the future.

In recent years, issues of reducing Russia’s dependence on commodity exports have often been discussed. Taking into account the peculiarities of the institutional development of Russia [43], it is precisely the crisis that can be an opportune moment for restructuring the economy in the direction of increasing the share of innovative goods and technologies in the structure of production and export.

Dynamic models of general equilibrium (dynamic stochastic general equilibrium) models are based on neo-Keynesian economic theory [47]. Traditionally, they represent a modern means of analyzing the influence of monetary and fiscal policy [48]. DSGE models can also be used to predict inflation, GDP, and interest rates. In addition, within the DSGE-models, one can compare the effectiveness of the implementation of the economic policy of the authorities.

Since the beginning of the zero years of the twenty-first century, they have been used by most central banks, including the European Central Bank, the US Federal Reserve System, the Bank of England, the Bank of Canada, the Bank of Russia, and others.

Explaining the key features of the time structure of interest rates is a problem for standard models. Macroeconomic models [1; 2] have difficulty in rationalizing the average time period for applying the expectations hypothesis. At the same time, empirical data indicate a close relationship between bond yields and macroeconomic indicators [3; 4]. In addition, the relationship between the slope of the zero-coupon bond yield curve and economic growth projections has been proved [278].

Monetary Policy Transmission Mechanism [270] describes a channel connecting credit conditions changes and macroeconomic variables. The article proposes a mechanism based on the dynamic stochastic general equilibrium model (DSGE) for predicting the temporal structure of OFZ rates based on their conditions for the dynamics of monetary policy and macroeconomic variables.

In addition, it is assumed that the factor of endogenous growth of vertical innovation [7; 8] can also be included in the standard neo-Keynesian DSGE model. This model has several distinctive features.

First, households are susceptible to uncertainty about long-term growth prospects [9].

Second, the Central Bank sets short-term nominal interest rates based on the Taylor rule.
Thirdly, the expected economic growth is associated with the decisions of the business of producing goods and services.

Fourth, the uncertainty factor of business activity changes over time [53]. When calibrating, time series are aligned with macroeconomic variables, such as consumption, production, investment, unemployment, inflation, and wage dynamics. This model quantitatively explains the return to average, volatility and nominal yield of bonds. Bond yields can be predicted using spreads between forward contracts [10] or using a linear combination of forward rates [11].

For successful modeling of bond yields, the following assumptions should be made. First, the channel of endogenous growth creates long-term risks due to innovative solutions of firms [12]. Secondly, the presence of nominal connections helps to assess the relationship between expected growth and inflation expectations [57]. Third, a change in the uncertainty of economic growth leads to a time-varying risk premium for bonds.

The model of monetary policy and asset prices based on Taylor’s rule ceased to be effective after the transition to quantitative easing and maintaining low interest rates for a long time [60].

The modern model of the relationship between the dynamics of endogenous inflation and the dynamics of consumption growth [13] influences the decisions of producers of goods and services.

The article discusses asset pricing models in the framework of the theory of liquidity preferences [14], which take into account the long-term risks arising in the economy.

Given the positive results achieved in the listed sources of literature, it is possible to expand the existing paradigm for studying the time structure of interest rates.

The dynamic stochastic general equilibrium model (dynamic stochastic general equilibrium), in contrast to the static models studied in the general theory of equilibrium, shows the development of the economy based on the preferences of economic agents.

For example, households optimize consumption and labor. Firms typically maximize profits.

Technological constraints on agent decisions may also include the costs of adjusting their inventory, labor relations, or the price of their products.

Agents should be subject to exogenous monetary and fiscal constraints and may vary depending on the political process.

Currently, two competing scientific schools dominate.

1. The school of real business cycles is based on the neoclassical growth model, subject to flexible prices. She studies how real economic shocks can cause fluctuations in the business cycle.
2. Neo-Keynesian models suggest conditions for monopolistic competition [70]. They cannot immediately respond to changes in macroeconomic variables.

The European Central Bank uses the Smetanin-Wouters model to analyze the economy of the eurozone as a whole. The models contain three types of decision-making agents:
1. Households.
2. Firms.

The parameters of the equations are estimated using Bayesian statistical methods in such a way that the model roughly describes the dynamics of GDP, consumption, investment, prices, wages, employment and interest rates in the eurozone economy. To accurately reproduce the behavior of some variables, the model includes various types of frictions and shocks. The following formula is used to model GDP:

\[
y_t = a_1 y_{t-1} - a_2 mc_i + a_3 y_t^* + \varepsilon_t^*,
\]

where:
- \( y_t \) — the gap in the release of goods and services relative to the average level at time \( t \);
- \( mc_i \) — the monetary policy index is calculated by the formula:
  \[
  mc_i = a_4 r_t + (1 - a_4)(-z_t),
  \]
- \( y_t^* \) — world output gap relative to the average level at time \( t \);
- \( \varepsilon_t^* \) — demand friction at time \( t \);
- \( r_t \) — deviation of the real interest rate relative to the equilibrium at time \( t \);
- \( z_t \) — deviation of the real rate from the equilibrium value at time \( t \);
- \( a_{1,2,3,4} \) — coefficients of inertia of the release gap; coefficient of influence of monetary policy on the release of goods and services; coefficient of the impact of demand on the release of goods and services; coefficient of the impact of monetary policy on real interest rates [74].

After calibration of this model, we obtained the optimal values of the model parameters (Table 2.3).

The complexity of DSGE-modeling of the Russian economy lies in the high volatility of the dynamics of the Russian ruble exchange rate and the complexity of its forecasting, which, in fact, is a mathematical derivative of oil prices. While forecasting oil prices on the basis of mathematical models is a futile exercise: oil supply depends on political agreements and the accuracy of following them, the demand for oil is largely regulated by backup storage facilities.
Table 2.3. — Values of parameters of DSGE-model of Russia

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constancy of the variance of GDP</td>
<td>0.70</td>
</tr>
<tr>
<td>Impact of monetary conditions on the real economy</td>
<td>−0.20</td>
</tr>
<tr>
<td>Influence of foreign demand</td>
<td>0.48</td>
</tr>
<tr>
<td>Importance of interest rate in monetary policy</td>
<td>0.45</td>
</tr>
<tr>
<td>Price inertia</td>
<td>0.55</td>
</tr>
<tr>
<td>Impact of costs</td>
<td>0.18</td>
</tr>
<tr>
<td>Share of domestic products</td>
<td>0.71</td>
</tr>
<tr>
<td>Smoothing inflation expectations</td>
<td>0.37</td>
</tr>
<tr>
<td>Interest rate inertia</td>
<td>0.61</td>
</tr>
<tr>
<td>Impact of deviation of expected inflation from target level</td>
<td>0.65</td>
</tr>
<tr>
<td>Effect of deviation of GDP from steady state</td>
<td>0.34</td>
</tr>
<tr>
<td>Effect of exchange rate devaluation on sustainable</td>
<td>0.35</td>
</tr>
<tr>
<td>Flexibility of the foreign exchange market</td>
<td>0.11</td>
</tr>
<tr>
<td>Smoothing currency expectations</td>
<td>0.35</td>
</tr>
</tbody>
</table>

*Source: compiled by the author*

Fig. 2.3. The key rate of the Central Bank of the Russian Federation (2008–2016) (Source: compiled by the author according to the Moscow Exchange [75]. URL: http://www.moex.ru)
In the study period, a noticeable increase in the correlation between the key rate of the Bank of Russia and the rates on the bond market is noticeable. During 2016, the zero-coupon yield curve aligns; it acquires a positive slope inherent in a “healthy” economy. At the same time, the negative relationship between economic growth and inflationary expectations suggests that long-term bonds have lower returns, when long-term growth is expected to be low. That is, the zero-coupon yield curve OFZ acquires a negative slope [16].

To understand the negative long-term relationship between growth and inflation, consider a positive shock. A prolonged increase in labor productivity reduces real marginal costs over a long period of time and leads to a decrease in inflation [82]. In general, the model of endogenous growth in consumption and inflation has already been described in sufficient detail [17].

The slope of the nominal bond yield curve is a strong predictive factor of economic growth and inflation during a certain business cycle.

The growth channel plays an important role in explaining the average time spread with an increase in the maturity of a bond [84]. In addition to generating long-term growth risks, endogenous growth is also important for assessing the negative long-term relationships between inflationary expectations and economic growth [18; 19].
The model described above allows us to make a forecast of economic indicators. The current tendency to strengthen the US dollar can presumably continue until 2018–2019, based on the long macroeconomic cycles identified in recent years characteristic of the world economy after the signing of the Bretton Woods agreement [20]. Therefore, we believe that the proposed forecast values are quite accurate and will have a maximum deviation of ±5%.

Thus, we managed to adapt the DSGE model widely used in developed economies for the Russian one. The relationship between monetary policy parameters and government bond market returns was studied.
Chapter 3. Theoretical and applied aspects of the use of assets of institutional investors

3.1 Types of institutional investors

The capital market is a market in which the redistribution of medium- and long-term capital (for more than 1 year). The instruments of redistribution are medium- and long-term securities (cash flow from investor to issuer) and medium- and long-term loans (cash flow from lender to borrower). Commercial banks, securities companies (investment banks), financial development institutions, etc., act as professional financial intermediaries engaged in the redistribution of free monetary resources [8; 9].

The structure of the financial market is still the subject of discussion of specialists. Markets are distinguished on a regional basis, on the urgency of transactions, on the terms of circulation of financial instruments, on the organizational forms of operation, etc. Based on functional differences (or depending on the economic content of the operation), the global financial market, both national and international, is divided into two main sectors:

1) the global money market and
2) the global capital market. Money Market is divided into [2]:
   1. The interbank market (i.e., the interbank deposit market), which is a set of transactions between banking institutions for the provision of mutual short-term unsecured loans of up to $1 million;
   2. accounting market — accounting of bills of exchange of private and public sector (treasury) management, as well as other short-term liabilities (other commercial papers).

Capital market is divided into [2]:
   1. credit market (takes into account the mechanism of crediting);
   2. stock market (divided into stock market and bond market).

On the stock market there is a circulation of money documents (stocks) certifying the property right of the owners of these documents in relation to the person who issued these documents. Shares are treated as equity securities. Debt securities are circulated on the bond market, giving their holder an unconditional right to guaranteed fixed cash income or to changeable cash income determined by agreement [2].

The financial market is the use of net income as capital in the sphere of circulation, and not in the sphere of production. It is the investment of this income in the instruments of circulation, and not in the material means of production and the hiring of workers associated with them [2]. In the framework
of the global financial market there are: 1) the national financial market and 2) the international financial market.

The concept of the securities market includes [2]:
1. The concept of a security as a specific object of the market.
2. The concept of a specific market participant (subject of the market).
3. The concept of actions of market participants with a security (relations in the process of circulation of a security).

The securities market as a capital instrument is a source of net income and the multiplication of capital invested in a security. Its financial nature follows from the fact that the investor does not take any labor (active) participation in the creation of this income or capital gains. The security he bought is self-increasing capital relative to the investor. Having invested money in certain securities, the investor is sure that this money, however, now in the form of a special instrument of the securities market, will bring him net income [2].

Intermarket participants are persons who take part in work or serve the work of several markets at once, including the securities market. Such persons usually include various groups of investors who simultaneously invest their funds not only in securities, but also in other capital (profitable) assets, for example: currency, real estate, etc. Intermarket participants also include informational, consulting, rating agencies and others [2].

Intramarket participants are persons who work mainly (mainly) or exclusively on the securities market. They are usually divided into [2]:
- non-professional market participants;
- professional market participants.

Professional participants in the securities market are individuals who carry out professional activities in this market. Professional participants have the right to work in this market only if they have a special license (permission) for the implementation of a certain type of professional services in this market [2].

Professional traders provide services for the conclusion of sales transactions in the securities market. These are brokers, dealers and management companies.

Infrastructure organizations are such professional participants who serve the process of making and executing market transactions in securities or generally serve any process of changing ownership of securities. These include stock exchanges, including other market organizers, registrars, depositories, and clearing (settlement) centers [2].
- Brokers in the securities market are organizations that enter into transactions for the purchase and sale of securities for their clients at the expense of the clients themselves;
- Dealers in the securities market are organizations that sell and buy securities on their own behalf and at their own expense based on their announced prices;
- Management companies are organizations engaged in the trust management of securities and customer funds invested in them;
- Registrars are organizations whose task is to maintain lists (registries) of holders of securities;
- Depositaries are organizations that must store and/or account for securities of market participants;
- Clearing organizations are organizations that carry out settlement services for participants in the securities market;
- Market organizers, including the stock exchange, are organizations that contribute (create the necessary conditions) to transactions in the securities market.

Nonprofessional market participants are issuers and any investors operating in the securities market. These include those who have placed most of their capital among securities, and those who have invested only a small fraction of their funds in securities [2].

From the point of view of the source of financial resources on the securities market, three groups of investors can be distinguished [6; 19]:
1) population (individuals, i.e. individuals);
2) corporate investors;
3) institutional investors.

As financial intermediaries, institutional investors perform the following important functions for the economy:
1) efficient allocation of financial resources;
2) accumulation of savings;
3) reduction of information costs;
4) reduction of investment control costs;
5) risk diversification.

The list of financial intermediaries is quite wide, today there is no consensus among scientists as to which financial intermediaries are institutional investors. Russian scientists interpret the term “institutional investor” widely, and refer to them as deposit and non-deposit intermediaries. V.I. Kolesnikov emphasizes that “institutional investors are various financial and credit institutions that perform operations with securities (commercial and investment banks, insurance companies, pension funds)”. This approach is based on the fact that “many of these institutions combine the funds of various investors (legal entities and individuals) and are looking for opportunities to invest in profitable securities".
However, in international practice a narrower understanding of this term is used. “When discussing the consequences of the growing role of institutional investors in the US stock market, the main attention is paid to pension funds, mutual funds, insurance companies, and investments made by the departments of trust operations of banks. These organizations collectively own more than half of the share capital issued by US corporations”. In most cases, the authors of works devoted to the study of institutional investments are limited to listing financial intermediaries, which, in their opinion, should be attributed to institutional investors. For example, in works written by experts of the Bank for International Settlements, institutional investors are collective investment vehicles (pension investment schemes), pension funds (insurance funds) and insurance companies. According to V. Kornev, the concept of “institutional investor” is much broader than the “collective investment institution” and includes the following institutions: insurance companies, pension funds and collective investment institutions [6; 19].

There are the following essential signs of institutional investors. Institutional investors:

1) combine the funds of many investors, both individual (population) and corporate investors;
2) manage the accumulated resources as a single portfolio;
3) make long-term portfolio investment in securities;
4) do not carry out deposits.

At the same time, the term “institutional investor”, which came from practice, is largely synthetic. It mostly describes financial intermediaries of a non-deposit kind, although it is increasingly difficult to classify financial institutions according to their functional basis. For example, many banks can provide trust management services for collective funds, which is also true for insurance companies. And the services offered by insurance companies and private pension funds, for example, pension insurance, overlap [6; 19].

According to the definition from the dictionary, an institutional investor is a legal entity and trust structures that have long-term large cash balances by the nature of their activities and usually invest them in securities, other financial assets, real estate on a professional basis. Institutional investors include: insurance companies, investment and pension funds, charitable foundations, money funds of trade union organizations, pension and investment plans established by employers for their employees, incentive payment plans. In the long term, the share of institutional investors in equity capital, financial assets and trading operations in the securities market is constantly growing. Their activity is a significant mechanism for turning retail savings into wholesale, and wholesale...
investment into securities [8; 9]. According to one of the classifications, institutional investors are divided into [16]:

1) Pension funds;
2) Hedge funds;
3) Insurance companies;
4) Investment Trusts;
5) Private investment companies;
6) General funds of bank management;
7) Mutual (investment) trusts;
8) Mutual funds (mutual funds);
9) Endowment Funds;
10) Sovereign Wealth Funds.

**Table 3.1. — Global assets under management, 2008, billions of USD**

<table>
<thead>
<tr>
<th>Type</th>
<th>Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private wealth</td>
<td>32,800</td>
</tr>
<tr>
<td>Pension funds</td>
<td>24,000</td>
</tr>
<tr>
<td>Mutual funds</td>
<td>18,900</td>
</tr>
<tr>
<td>Insurance companies</td>
<td>18,700</td>
</tr>
<tr>
<td>Real estate</td>
<td>10,000</td>
</tr>
<tr>
<td>Foreign exchange reserves</td>
<td>7,341</td>
</tr>
<tr>
<td>Sovereign wealth funds</td>
<td>3,800</td>
</tr>
<tr>
<td>Hedge funds</td>
<td>1,500</td>
</tr>
<tr>
<td>Private equity funds</td>
<td>2,500</td>
</tr>
<tr>
<td>REITs (Real estate investment trust)</td>
<td>0,764</td>
</tr>
<tr>
<td>ETF (exchange-traded fund)</td>
<td>0,900</td>
</tr>
</tbody>
</table>

In the global structure of assets under management the largest share in 2008.

1) Conventional funds (pension funds, mutual funds and insurance companies) whose assets at the end of 2008 are amounted to about 61.6 trillion dollars;

2) Alternative funds (hedge funds, private equity funds, index funds as a type of OFBU in the framework of investment banking and sovereign funds), which during the same period generated about 8 trillion dollars;

3) Private investment funds (private wealth funds), whose assets amounted to 32.8 trillion.

Conventional Funds. In 2008 conventional funds fell by 19% to 61.7 trillion dollars, assets of pension funds amounted to 24.0 trillion dollars, assets of mutual investment funds — 18,900 billion dollars, assets of insurance funds — 18.7 trillion USD is by far the largest source of conventional funds. In 2008 their assets accounted for half of the global assets of the funds. They were
followed by the United Kingdom, 9%, Japan and France, 6% each of the global assets of the funds. Of the large countries, the USA has the highest asset ratio of funds in percent of GDP (217% in 2008), followed by the United Kingdom (204%), Switzerland (174%) and the Netherlands (147%). Due to the growth of the economies of the countries of the Asia-Pacific region in recent years, many companies that manage the assets of funds, have shown increased interest in investing in countries such as China and India, which have great potential [11; 12; 15; 17].

Pension funds. Assets of pension funds at the end of 2008 amounted to 24 trillion dollars remains the largest market for pension funds with assets of 15.3 trillion dollars, which is more than half the global volume. In 2008 The UK was the second largest center (11% of the global total), followed by the Netherlands (3%). The large amount of pension assets in the United States is mainly a reflection of its substantial volumes of the domestic market. Pension market of Great Britain pensions in 2008 accounted for 99% of GDP in 2008. It is financed to a greater extent than most of the economies of other major European countries.

In the period from 2000 to 2009. The total volume of assets of pension funds in the world as a whole is growing and increased from $ 6.2 billion in 2000, to 11.28 billion dollars in 2009. The average percentage of growth in the period from 2005 to 2009 amounted to 6.1%.

In 2008 The assets of insurance companies’ funds amounted to about 18.7 trillion. About four-fifths of this total was obtained on the basis of long-term insurance and general insurance, including health, property, real estate and accident insurance. Over the past decade, insurance funds have grown faster in Europe than in the United States. Assets of life insurance companies grew faster than assets of companies engaged in other types of insurance. The investment of insurance companies in the UK amounted to about 2.6 trillions dollars, which is much higher than in any other European country [11; 12; 15; 17].

Mutual fund assets in 2008 fell by 28% and amounted to 18.9 trillion dollars. At the same time, a significant decrease occurred in the second half of the year. This was due to the flow of investments of investors in investments in cash, which were regarded as safer and less risky. This was preceded by an increase in mutual fund assets over the previous two years by 20% and 23%, respectively. Most mutual funds are created only in a number of countries. The United States today is the largest source of funds of funds, representing more than half of the global total. In 2008, the volume of UK mutual funds fell by 44% to $ 505 billion. To some extent, this decrease was due to the fall in the value of the pound against the US dollar. Other important centers are France, Luxembourg, Australia, Italy and Japan.
In the period from 2003 to 2007, assets of mutual funds increased from 14,036.33 to 26,130.686 billion dollars in 2009, their total assets fell to $22,964.267 billion.

Institutional clients create most of the funds. However, there are significant differences between countries. In France, for example, the retail sector accounts for more than half of the funds. Institutional investors are the largest source of funding in the US, UK and Japan.

In 2008, the volume of alternative funds amounted to about 8 trillion USD. These include hedge funds, private equity funds, exchange traded funds and sovereign wealth funds.

In 2008, the volume of assets of hedge funds under management decreased by almost 30% and amounted to $1,500 billion. A similar largest decline in history was associated with a number of negative factors, such as growth in buybacks and liquidation of funds. A further drop in assets managed by hedge funds by more than 20% in 2009, especially in the USA, was due to the suspension of redemptions at the end of 2008. The decline in assets of funds during 2008 was due to a significant outflow of assets. At the regional level, the suspension of redemptions affected the fall in assets in Europe and in emerging markets, in the United States and Japan, the fall in assets of funds was affected by investment losses. The highest rate of liquidation of funds was observed in Asia. In 2008, the number of hedge funds fell by 10% to about 10,000. Most of the closures of funds fell on the latter part of the year.

Approximately three-quarters of these funds were hedge funds managed by one manager (one management company), the rest were hedge fund funds. After New York, London was the second largest global hedge fund management center. In the period 2002–2008 its share in the global hedge fund industry doubled to 18%. London is the largest European center for managing hedge funds. At the end of 2008, four-fifths of European hedge fund investments, with a total value of $300 billion, were managed from the UK, with an overwhelming majority of them managed from London [11; 12; 15; 17].

After New York, London was the second largest global hedge fund management center. In the period 2002–2008, its share in the global hedge fund industry doubled to 18%. London is the largest European center for managing hedge funds. At the end of 2008, four-fifths of European hedge fund investments, with a total value of $300 billion, were managed from the UK, with an overwhelming majority of them managed from London [11; 12; 15; 17]. After New York, London was the second largest global hedge fund management center. In the period 2002–2008, its share in the global hedge fund industry doubled to 18%. London is the largest European center for managing hedge funds.
As of December 31, 2009 under the management of the 25 largest hedge funds were 519.7 billion dollars. JP Morgan Chase ($ 53.5 billion), Bridgewater Associates ($ 43.6 billion), Paulson & Co. were among the largest asset managers (32 billion dollars), the company Brevan Howard (27 billion dollars) and the company Soros Fund Management (27 billion dollars) [18].

According to estimates, the volume of private equity funds in 2008 amounted to about 189 billion dollars. Compared with 2007 their volume fell by 40%. In the second half of 2008, their investment activity slowed down, which was associated with a fall in stock markets and investors moving away from investments in risky assets. At the same time, despite the financial crisis and the decline in private investment, by the end of 2008, the volume of assets managed by private investment funds increased by 15% to $ 2.5 trillion. There was also an increase in unrealized portfolio investments. The funds that were supposed to be spent on investments amounted to about 1 trillion USD. Some of these funds were supposed to be invested in equity in troubled companies during the economic downturn or to finance new investments [11; 12; 15; 17].

According to the report of the company IFSL, in 2008 assets under the management of sovereign wealth funds increased by 18% and amounted to 3.9 trillion. The losses incurred by sovereign wealth funds for some of their investments during the year were more than offset by the inflow of new funds. The sovereign wealth funds also had additional funds in the amount of 5,500 billion dollars invested in other investment schemes, such as pension reserve funds and development funds. The 18 percent average annual growth observed over the past three years may slow down over the next few years due to the volatile commodity prices, in particular, oil prices, and as a result of the global economic downturn, which can lead to a slowdown in the accumulation of foreign exchange reserves in Asian countries. Despite this, the company IFSL predicts an increase in the volume of assets of sovereign funds. London is an important center in the management of assets of sovereign wealth funds. The volume of managed assets is difficult to estimate due to the lack of accurate data [11; 12; 15; 17].

Currently, the role of sovereign wealth funds in the world is increasing. They are batteries of a large amount of financial resources. So, in the period from September 2007 until November 2010 the total aggregate volume of their assets increased from 3.190 billion dollars to 4.1108 billion dollars. At the same time, the average total assets of the funds amounted to $3.704 billion [3].

Index funds (ETFs) as a type of OFBU in the framework of investment banking (investment banking) are passively managed open funds traded on the stock exchange. Index funds provide a wide range of opportunities in the stock, bond and commodity indices markets. Most index funds consist of a
basket of securities that are sold at about the same price as the underlying assets. In 2008 assets of index funds amounted to about 710 billion dollars, which was 11% below the 2007 level. By July 2009 their volume nevertheless rose to $858 billion [11; 12; 15; 17].

Private Investment Funds (Private Wealth Funds) Merrill Lynch Capgemini World Wealth Report 2009 Annual Report estimated the amount of private investment funds managed in 2008 at the level of 32.8 trillion dollars. Compared with the previous year, their volume fell by 20%. The economic crisis led to a similar drop in the volume of assets of funds, a decline in the stock and real estate markets led to this. These factors were more pronounced in the USA than the rest of the world. At the same time, in its Global Wealth 2009 report, the Boston Consulting Group estimated the amount of private investment funds in 2008 at the level of 92.4 trillion dollars. This value in 2008 compared to 2007 fell by 12% [11; 12; 15; 17].

The global funds industry is almost as large in size as the international banking system, but unlike this system it is even more concentrated. In 2008, the volume of assets managed by the global fund industry fell by 19% to $61,600 billion. Pension fund assets amounted to 24.0 trillion dollars of the total. $18,900 billion was invested in mutual funds and 18.7 trillion dollars — in insurance funds. In sum, with the assets of alternative funds (sovereign wealth funds, hedge funds, private investment funds and index funds) and funds of large individual private investors, the assets of the global fund industry amounted to the end of 2008 about 90 trillion dollars, having fallen by 17% over the previous year.

The reason for the fall in assets of funds in 2008 was a collapse in stock markets, low activity in the field of investment activity, a decrease in the inflow of new funds and investors [11; 12; 15; 17].

The decline in 2008 was followed by years of growth, during which assets managed by funds have more than doubled. Despite losses on some types of investments, the global fund industry has suffered much less from the financial crisis than the banking sector. Nevertheless, the economic recession may affect the long-term strategy of the funds: they may become more cautious when choosing and implementing their investment strategy in the coming years [11; 12; 15; 17].

The United States remains the largest source of funds of funds, which accounted for more than half of conventional assets under management in 2008 or more than 30 trillion dollars. The UK was the second largest center in the world and the largest in Europe with a turnover of about 9% of the world total. Estimated IFSL, in addition to the assets of the global industry of funds, which amounted to more than 90 trillion dollars in 2008, money market funds
also had large funds, the assets of which were estimated at between $6 billion and $7 billion [11; 12; 15; 17].

Along with the USA and Japan, the UK is one of the largest fund management markets in the world. It is a major financial center and attracts the financial assets of large foreign funds. London is the leading international fund management center [11; 12; 15; 17].

At the end of 2009, the total assets of industry funds were about $27 trillion, which was slightly below the level of 2007, when the assets were 29 trillion dollars [13].

At the end of June 2010, the value of the assets of the funds fell to 25 trillion dollars. Most of the assets of the funds were located in the United States, while Great Britain and Luxembourg accounted for 8 percent of the total assets of the funds, and France and Brazil accounted for about 5 percent each. Together, these five countries account for about 75 percent of the global funds industry. Among other countries, Germany, Italy, Switzerland and Spain are prominent [13].

3.2 Asset allocation strategy for various types of institutional investors

Currently, a lot of scientific literature is devoted to one or another issue of the work of institutional investors. The problems associated with the distribution of assets of institutional investors in various investment instruments are mainly dealt with in foreign literature, since the Russian market is still developing, and not all aspects can be applied to it. First of all, it addresses issues related to the optimal ratio of the share of different instruments in the investment portfolio and the use of different asset allocation strategies (K. Schweizer, 2011) and (U. F. Sharp, 2007).

Domestic financial management has a number of publications on the effectiveness of the functioning of institutional investors in Russia, for example, the monograph of A. Abramov “Investment Funds: Profitability and Risks, Portfolio Management Strategies, Investment Objects in Russia”. This relevant work, published in 2005, describes the situation in the field of institutional investors in the early 2000s of the third millennium. At the same time, the global liquidity crisis, which began in 2008, markedly changed the attitude towards the performance of institutional investors and liquidity risks in general. In this paper, many provisions are supplemented and new results are obtained from the point of view of scientific novelty.

For example, the works (A. E. Abramov, 2002; V. D. Milovidov, 2006) set forth in sufficient detail the investment strategies used by Russian investment
funds, among which the strategies for the investment object, terms, currency and average funds required to implement the strategy.

Among foreign studies on this topic, it is worth noting the book by Stuart Macrarie “How to create and manage a hedge fund: a professional’s guide”. This is the largest in terms of volume, however, it is already quite long-standing in English, including the main problems associated with the operation and the strategies of resource allocation of institutional investors. In addition, there is a book by Al Janabi “Integrating Liquidity Risk Factor into a Parametric Value at Risk Method”, which describes in detail the problem of assessing liquidity risk and its impact on the investment fund asset allocation strategy.

Some researchers suggest that professional market participants use the cyclical nature of economic and political processes in the economy when forming an investment fund strategy (A. Greenspan, 2009) and even suggest certain models (P. Krugman, 2003).

Meanwhile, the asset allocation strategy of an investment fund can be considered from the point of view of managing the life cycles of an organization (I. Adizes, 1983; R. Ackoff, 2003; I. Ansoff, 1994).

In individual works of well-known economists (B. Bernanke, 2002; I. Yu. Varyash, 2009; Y.M. Mirkin, 2005), one can find prerequisites for the formation of logical interrelationships between the stages of development of the financial market in a particular country and asset management strategies institutional investors.

An investment fund’s asset ALLOCATION strategy is an action plan that identifies priorities in terms of riskiness, profitability and efficiency, assets investment tools, methods and mechanisms for achieving priorities and a sequence of steps to achieve strategic goals.

The main task of the strategy is to obtain maximum profitability for investors of an investment fund with certain risk parameters (specified in advance).

Investment funds are financial intermediaries that attract participants’ funds through issuing financial instruments or entering into contracts, merging them and investing on a diversified basis in securities and other objects for profit, and allocating the value of net assets in proportion to the shares owned by the fund’s investors. The investor has the right to claim the property of the investment fund.

In the case of the sale of financial instruments that make up the portfolio of an investment fund, the proceeds go to the investment fund.

There are also credited dividends, coupon income and other payments of issuers of financial instruments. When the investor leaves the investment fund, he is returned the amount of money corresponding to the value of his share in the assets of the fund.
As a special type of financial market participants, investment funds help investors increase the efficiency of their investments and save on costs by creating a wide pool of investors. By combining the investments of a large number of investors, investment funds use the effect of "economies of scale", that is, reducing various costs of managing financial resources and transaction costs when buying and selling financial instruments and other investment objects.

With the help of institutional investors, minority shareholders receive more favorable conditions for entering the capital market and financial instruments for investment.

So, real estate objects are usually not available for individual minority shareholders, and combining the finances of many minority investors into a single pool in one investment fund allows you to invest in various instruments.

Investment funds provide diversification of investments of investors, which allows them to get a real economic effect in the form of maintaining the level of profitability of investments while reducing the risk of investment losses.

Diversification of investment objects between the markets of financial instruments of different types of countries allows reducing the risks of investors caused by the likelihood of adverse events in the economy or political life of a particular country.

Most institutional investors in developed countries maintain a high level of liquidity of financial instruments issued by them, giving investors the right to make investments in securities of institutional investors in cash on demand.

Methods to maintain liquidity depend on the type of investment fund. Open investment funds ensure the liquidity of the financial instruments issued by them by fulfilling obligations to repurchase these financial instruments from owners on demand.

Liquidity of financial instruments of closed institutional investors is ensured by maintaining the liquid secondary market for these securities.

The most developed in Russia were mutual investment funds, general funds of banking management and mortgage cover funds, which are investment funds of a contractual type, which are not legal entities.

The property constituting a mutual investment fund is transferred to the trust management of a specialized management company on the basis of a trust management agreement, in accordance with civil law. The management company carries out trust management of the mutual investment fund by performing any legal and actual actions in respect of its constituent property, and also exercises all the rights certified by the securities constituting the mutual investment fund.
Joining of legal entities and individuals to the trust management agreement for a mutual investment fund is carried out by purchasing investment shares of this mutual investment fund.

A stock of an investment fund or share is a security that confirms the right of its owner to a share in the property constituting an investment fund, and also gives him the right to demand from the management company competent trust management of the investment fund and to receive monetary compensation at the end of the trust a fund with all owners of investment units or shares of an investment fund.

Investment units are not issued securities, therefore in the legislation on investment funds the term “issuer” in relation to investment units, as well as in the bill of exchange legislation in relation to the process of issuing a bill of exchange, does not apply. However, the definition of a mutual fund emphasizes that investment units are issued by its management company.

The forms of institutional investors vary according to the civil legislation of the country of registration. Significant differences can be noted between investment funds that do not have tax benefits, and investment funds registered in offshore jurisdictions, and, accordingly, usually have a simplified regulatory procedure and simplified requirements for financial and tax reporting submitted to state bodies.

The institutional structures of institutional investors can be combined in various ways and can include a management company and one or more onshore or offshore institutional investors. An investment fund may have several classes of shareholders; shares may be issued whose owners, for example, have special voting rights, have no voting rights.

Corporate income is often taxed twice. Initially, an investment fund pays a tax on the fund’s net profit, then the fund’s shareholders pay a tax on income from dividends received. Corporations pay up to 35 percent of their net income as income tax. If a corporation earns $100, then tax payments will be 35 percent or $35, which means that investors will receive $65 as dividends. When a company pays $65 to investors, they pay up to 39.6 percent or $25.74 as federal income tax (for US citizens).

A partnership is a form of organization of an investment fund that does not include taxation of the net profit of the fund. Instead, the net income of an investment fund relates to investor income. In fact, all income characteristics (short-term gain or loss, long-term gain or loss, tax-free income, treasury income, passive losses, etc.) are retained, but investors are taxed on the basis of each partner's share in the investment fund.

Offshore investment funds are usually organized in the form of a corporation. The fund is located in a country with preferential tax treatment.
An investment fund may be a mirror structure, calculated for both onshore and offshore investors. A limited partnership receives investments from investors registered in tax zones, and an offshore corporation may attract investments from other jurisdictions. Two funds are launched simultaneously and have the same shares in the total investment fund.

Many types of assets cannot be transferred from the balance of one fund to the balance of another. Legislation on futures transactions requires that all transactions be made on an organized market at market prices. If the number of contracts sold does not equal the number of contracts purchased, or if the prices of sales and purchases differ from the average market prices, then the transaction is considered to be not legal.

Many financial instruments and most derivative financial instruments are difficult to transfer from the balance of one fund to the balance of another.

Often the problem of comparing the balance sheets of two mirror funds (offshore and onshore) is solved with the help of complex investment structures. Offshore investors do not want to invest in US-based investment funds due to double taxation. American investors do not want to invest in offshore capital, because this complicates their tax returns.

The solution is to create offshore and onshore investment funds, but at the same time all trading operations with securities and other assets will be carried out by an offshore fund.

Managing a successful investment fund is one of the most profitable forms of money management. To organize a new investment fund from scratch, the manager will have to deal with a lot of organizational costs. Below we would like to describe the main items of organizational costs. These items may change depending on the country of registration and location (salaries and rent), the number of employees, the style of the fund and the investment philosophy, as well as other factors.

To organize the management company and the investment fund itself, first of all they must be registered. However, it is extremely important to consult a lawyer and an accountant at an early stage in the use of fund assets [1].

As a rule, a management company is first organized. The structure of the investment fund must be organized before the investment of the general partner of the fund.

Both companies must select a professional lawyer and administrator in order to be able to register. The cost of a lawyer and administrator is almost always lower than the fee for his own lawyer and administrator.

The organizational structure of an offshore fund does not have to comply with the requirements of the tax laws of any country. The organizers of
the investment fund must agree with the competent lawyer and accountant three key documents: a partnership agreement, a risk disclosure document, and a subscription agreement. A partnership agreement defines the rights and obligations of each partner, including the conditions for entry and exit from the fund, the right to transfer investments to other partners.

This document establishes the procedure for calculating indicators for reporting, sets the amount of remuneration of the management company and indicative rates of return on an investment fund.

The risk disclosure document replaces the prospectus for the non-public placement of the fund's financial instruments. The purpose of the document is to inform investors of all possible risks that may affect investments.

In addition to the subscription agreement, an investment fund requires each investor to provide information about himself (age, contact information, education, current work), information about previous investment experience and financial position (previous experience with private placements, knowledge and sophistication, income, wealth), and affiliation information.

To create an investment fund and management company, the founders must determine fixed and variable costs. Revenues will be determined on the basis of capital management fees [3].

The cost of creating two internal business units (located in the US), including the documents necessary to attract investment, is in the range of 6,000 to 30,000 dollars. Often, the most competent lawyers working in prestigious law firms have experience in creating investment units and know business and legal issues.

As part of this work, the return on asset management of an investment fund is the total return on each asset of an investment fund as a result of its use, which directly depends on the efficiency of use of the assets of the fund as a whole.

The income of the management company of the investment fund is a commission, which usually represents a certain percentage of the total assets and a percentage of the income earned from the use of the assets. The revenues of the management company depend on the size of management fees and incentive premiums.

Typically, the management company receives as a remuneration 1–3 percent of the assets of the investment fund and 10–30 percent of the net income.

Assets under management include own funds and attracted funds of investors. The relationship of these indicators will be described below.

Based on the figure above, an investment fund can reach a break-even point (subject to competitive compensation, and also if the founders are a bargaining staff) at approximately $9 million under management. However, it is more important that investment returns lead to an increase in assets under management.
The possibility of applying an investment fund strategy for a certain size of assets under management is called scalability.

When an investment fund becomes large enough, incomes start to decrease, management can return some of the investment to their owners.

The choice of the optimal size of an investment fund cannot be determined on the basis of maximizing the net profit of the management company.

When insiders have significant investments in an investment fund, any return of capital to investors affects their interests more than twice. When the income of the management company decreases, incentive premiums also decrease. In addition, investment fund insiders receive lower returns on their investments.

Many large owners of capital are looking for young investment funds, because they believe that newly formed funds often provide the highest return on investment for five years.

The situation is much more complicated than it may seem. Based on marketing analysis, it is possible to calculate the most attractive periods for investments in certain investment funds, depending on the investment strategy.

Administration of an onshore investment fund includes all those functions whose performance ensures the operation of the investment fund. Administration includes the following: preparation of trade documents, safekeeping of financial instruments, issuance and supply of financial instruments, receiving money from investors and interaction with investors, marketing, accounting and business management.

Over the years, there have been many judicial precedents for determining in which jurisdiction an investment fund operates. There is a concept of safe secretion. The fund manager must follow the guidelines of the US Treasury and Tax Court [6] for the main office of the fund to be considered an offshore office.

Some aspects of tax legislation affect the interests of institutional investors. Hedge funds must select a fiscal year. It is convenient to choose a tax year that does not coincide with the calendar one at the beginning. At the end of the year, banks and brokers must publish a balance sheet. In addition, if an investment fund could establish a financial date that does not coincide with the financial calendar of other financial institutions, this would help it to be in a better position to effectively use price anomalies at the end of the year. At a minimum, the fund would be able to raise funds on favorable terms.

Every business must declare particular recognition of income and expenses. In accordance with international financial reporting standards, investment funds should use the accrual method, that is, income or expense should be recognized as soon as there are grounds for recognizing it with reasonable probability.
Meanwhile, the selection of the optimal organization structure for managing an investment fund largely determines the efficiency of business development and the efficiency of management organization.

Writing a business plan is an effective way to organize business processes when creating a new business. The creation of an investment fund and a management company can be carried out by drawing up one general business plan or two separate business plans.

The business plan of an investment fund is significantly different from a business plan for organizations in the industrial or service industry. We would like to show the components of a typical business plan of an investment fund, as well as specific drafting options. And also I would like to note how business plans can help coordinate the interaction between the investment fund and the management company. Usually the structure of a business plan is as follows:

2. Presentation.
3. Overview.
4. Promotion strategy.
5. Market conditions.

The business plan provides a choice of directions for the development of the company. A business plan is particularly important for a new business, which must make strategic decisions and shape the characteristics of the development of the fund. In fact, a business plan is useful for any business, because it helps to solve key strategic issues, plan a development strategy, and respond quickly to changing external conditions.

A business plan can be a means of communicating with investors or partners. For a new business, a plan can be a marketing tool to attract investors, lenders, and potential customers.

For a ready-made business, this may be a formal dialogue between the management of the fund and the board of directors. In the case of the formation of a new business unit, a business plan can help formalize a request for funds from sources of capital.

A brief overview of the company should describe the structure of the business in terms of regulatory legislation. This section should include information about the management of the company, as well as about certain people who should be selected to manage the new structural unit. The overview may contain a description of the rest of the staff in more general definitions, listing the requirements for staff qualifications. If the company has business partners (joint ventures, strategic alliances, etc.), a brief overview may include a description of these partners.
In addition, the business plan should include the following sections. The business plan promotion strategy section of a business plan describes the flow or expected first products of a company. If a product requires a description, this section should include a description at the level of detail necessary to explain key aspects of the product to readers of the plan.

This section should describe research efforts, especially if they affect future products. The market analysis section should describe the microeconomic conditions of the product market. This includes defining the market to focus and excludes related products in a reasonable way. It also includes a description of potential customers for the product, pricing and competition in the market, and a list of risks to companies in this market.

From the point of view of modern management, the main company created is a management company. The investment fund itself is the product that the management company produces [9].

Currently, more and more attention is paid to writing a business plan, the cost of services for drawing up a business plan is also increasing, which is explained by the increasing importance of this tool for organizing an investment business.

A development plan (marketing plan) allows an investment fund to foresee market changes. The best investment funds seek to obtain up-to-date information about investors, market leaders in investments and market conditions, as well as organize the work of individual departments to create a product that meets potential expectations and needs of the client. The basis of this activity is the development of a marketing plan (development plan) and its successful implementation.

Quickly identify new development goals and potential risks to an investment fund are not so much a ready-made development plan, but a process of its creation and planning as a whole. A systematic assessment of market conditions and domestic needs allows you to abstract routine tactical decisions and look at the market holistically.

Virtually each of the existing markets is a complex system consisting of smaller markets and segments. These segments can be divided into even smaller market niches.

The lack of a quality development plan leads to an incorrect positioning by the investment fund of its products in certain segments of the market. As a result, it spends serious efforts to find consumers, while not being able to fully meet their needs.

“The main purpose of the strategic plan is to determine the strategic direction of development, formulate a set of operational objectives, and lay the
foundation for the formation of marketing tactics” [13]. This is a very important step in the process of developing a plan, as it requires careful study of market attractiveness and competitive advantages.

It is important to understand that for the effective use of investment fund assets, when distributing assets, it is necessary to consider not only the investment fund development strategy, but also the features of the organizational structure.

3.3 Modern portfolio theory

Currently, the most promising methodological basis for the use of assets by investment funds is a modern portfolio theory.

Funds are invested for a certain period of time, which is called the holding period (holding period). After the end of the ownership, the investor sells securities that were purchased at the beginning of the period, after which either uses the income received for consumption, or reinvests the income into various securities (or does both at the same time) [16].

Markowitz’s approach should be considered as a discrete approach, the investment period is denoted \( t = 0 \), and the end of the period is denoted \( t = 1 \). At \( t = 0 \), the investor must decide to purchase specific financial instruments that will be in his portfolio until \( t = 1 \).

Since a portfolio is a set of various financial instruments, in essence, its solution is equivalent to choosing the optimal distribution of assets from a set of possible portfolios. Therefore, this problem is often called the problem of choosing a tool for investment or the problem of forming a trading idea.

When making a decision at time \( t = 0 \), the investor should keep in mind that the profitability of financial instruments (and, consequently, the profitability of the use of assets) in the coming period of ownership is unknown. However, the investor has the opportunity to estimate the expected (or average) profitability of various assets based on certain assumptions, and then invest in paper with an acceptable expected return and risk.

Markowitz believed that this may be unreasonable, because a typical inexperienced investor, although he wants the profitability of his investments to be maximum, but at the same time wants the profitability to be guaranteed or as certain as possible.

This means that the investor, trying to simultaneously increase the expected profitability and reduce uncertainty (that is, risk), has two conflicting and impossible goals at the same time, which must be balanced if the purchase decision is executed at \( t = 0.17 \).

Markowitz’s approach to decision making is an opportunity to adequately address both of these goals. The consequence of two conflicting goals is the
need to apply different methods of diversification through the purchase of other assets, and several financial instruments. A further discussion of Markowitz’s approach to investment is made with a more specific definition of the concepts of initial and final welfare.

From this equation, it can be noted that the initial value of the assets ($W_0$) multiplied by the sum of a unit and the level of profitability of using the assets equals the welfare at the end of the period ($W_1$), or the final welfare.

In this case, the investor must make a decision as to which tool to use at the moment $t = 0$.

Markowitz proved that an investor must predict the rate of return associated with any of these portfolios, a random variable. It has its own characteristics, the first is the expected (or average) value, and the second is the standard deviation.

Markowitz wrote that “an investor must base his decision on the choice of using assets solely on expected yield and standard deviation”.

Therefore, the investor must evaluate the expected return and standard deviation of each asset use, and then select the “best” of them based on the ratio of these two parameters.

Mathematical calculation may allow you to make the right choice. The expected return can be presented as a measure of potential reward related to a specific portfolio, and the standard deviation can be represented as a measure of riskiness related to that portfolio.

Thus, after each portfolio has been analyzed for potential reward and risk, the investor should select the portfolio that is most appropriate for him.

In this case, the standard deviation often does not adequately describe the risk of an undervalued security, since it ignores the fact that most of the increment or decline in the value of a security falls on the positive expected yield of the security. Interestingly, simple mathematical operations can reduce the allocation shifted to the right to normal.

Markowitz’s proof can be challenged, since most experts view mathematical normality as the main characteristic of ordinary stock returns. The return on some types of financial assets is neither normal nor “lognormally” distributed.

For example, derivatives, an option to buy allows the investor to make a profit in the case of a positive return of the relevant stock, but at the same time avoid losses in the case of its negative return. In essence, an option to buy stops the allocation of stock returns at the point where losses start.

Accordingly, the yield of the option to buy is not normally mathematically distributed. In addition, some securities have options included in them. For example, revocable bonds allow issuers to redeem them at their discretion. A qualified investor does this when the interest rate changes in his favor.
The standard deviation shows the magnitude of the volatility of a financial instrument price or yield. But an investor may want to evaluate an investment using some value as a target, for example, profitability at the level of a market index, or just a number, such as 0%. However, the use of loss risk poses potential problems.

At the same time, the possibility of obtaining results exceeding the target yield is ignored. An alternative to using these indicators of riskiness is direct accounting of profits when evaluating investments. Alternatively, it can be assumed that the investor analyzes potential investments, not only on the basis of their expected returns and standard deviations, but also in terms of the magnitude of their positive changes.

Therefore, the risk becomes multidimensional, as it includes both standard deviation and bias. If two investments have the same expected return and the same standard deviation, then preference is given to an investment that has positive impulses of price change. At the same time, a measure of risk allows to show accurate results in any circumstances.

Standard deviation has proven its effectiveness in most situations faced by financial market participants. In cases where it is not suitable, alternatives should be sought based on the type of distribution of profitability and in terms of the difficulties that they bring to the analysis.

Using the information processing tools available to the investor at that time, it was almost time consuming to calculate the effective set for even a few hundred financial instruments.

After the appearance of cheap and powerful computers in the 1980s, as well as the development of complex risk models, it became possible to determine an effective set for several thousand financial instruments in a few minutes.

The necessary computer equipment and software are available for virtually any investment institution. In fact, this process became so simple that it even acquired its own terminology.

Portfolios are optimized based on complex mathematical algorithms and are reduced to the optimal ratio of assets at the current time, which is also called rebalancing, which means that investors are using optimization techniques.

Instead, they mainly rely on a certain set of rules and patterns. Investment strategists are well aware of the Markowitz concept of asset allocation and of available technologies, as they are graduates of business schools in which these concepts are considered in detail.

At the same time, most investors simply do not feel comfortable using quality methods, since these decision-making methods emphasize the importance of intuition and subjective decisions.
Financial instrument analysts should take responsibility for generating quantitative forecasts of expected returns and risks.

The increasing efficiency of financial markets forces institutional managers to process more information about more financial instruments and more speed than ever before [27].

The magnitude of the noise level in the market simply shows that the market model does not very accurately explain the profitability of financial instruments. In other words, when the market index increases by 20% or decreases by 10%, the yield of the security is not necessarily 24% or -8%, respectively.

Thus, if the profitability of a financial instrument is 10% instead of 24%, then the difference of 14% is a random error. Random error can be considered as a variable that has a distribution of probabilities with zero expectation and standard deviation.

The problem of choosing the use of assets is formulated and aimed at the investor, who must choose from an effective set a portfolio of financial instruments that represents the optimal combination of expected return and standard deviation, based on the investor's preferences regarding risk and return.

Often the wording or description inadequately describes the situation faced by the majority of investment funds that manage the money of institutional investors.

Often, institutional investors, such as, for example, pension and savings funds, hire investment advisors to invest their financial assets. Often, asset managers usually specialize in one particular class of financial assets, such as ordinary shares or fixed-income securities.

Clients set certain benchmark performance criteria for financial advisors.

Passive asset management strategies buy and hold those securities that correspond to a certain level of profitability. Their portfolios are called index funds. They do not use effective set modeling and do not take into account investor's preferences for risk and return.

Active strategies usually form portfolios that provide returns that exceed the yield of established benchmarks permanently and by a sufficient amount.

The main danger for the implementation of an active strategy is the lack of information. Even the most capable of them make numerous mistakes when choosing financial instruments.

Since the results of investment decisions on an active allocation strategy are often uncertain, their returns relative to the benchmark change over time. Active risk and active expected return can be excluded by creating an exact copy of the index in the benchmark portfolio.
Active strategies imply that managers take active risk when their portfolio is different from the benchmark. Professional managers take an active risk when they expect active yield growth.

The process of making investment decisions requires assumptions about the ability of the manager to analyze the profitability of financial instruments. Based on the expected active return and active risk, you can build a combination of the highest active return per unit of active risk and the lowest active risk per unit of expected active return.

Successful investment strategies will be above and to the left of the effective set of their less qualified colleagues.

Often, various combinations of active risk and active profitability are used, which the manager considers to be equivalent.

The optimal combination of active risk and active profitability of a manager is that point on the effective set, in which one of the indifference curves relates to this set.

We can consider this point as the desired level of aggressiveness of a manager in implementing his forecasts of financial instruments profitability.

Managers who use active investment strategies with a higher degree of risk avoidance usually choose a portfolio with a lower level of active risk, and managers who are less likely to avoid risk will choose a portfolio with a higher level of active risk.

Thus, all investment funds use an asset management strategy. And as we found out, it is precisely the strategy of using assets that mainly affects the efficiency of the functioning of an investment fund as an organization.
Chapter 4. Analysis of the strategies of institutional investors

4.1 The current state of institutional investors in Russia

Russian investment funds showed profitability below the level of interest rates on bank deposits, 136 large funds out of 356 that were in the estimated aggregate could outrun inflation [57].

The best investment funds of the consumer sector in 2010 showed a yield of 26–30 % per annum. The best bond funds showed a yield of 20–25 % per annum.

The most interesting instruments turned out to be long-term OFZ and Euro-bonds (the yield of the latter for the year exceeded 20 % in dollars) with more than 10 years of duration. Due to the improved credit ratings of Russian companies, the ruble bond market also managed to outpace shares in growth and inflation rates.

Russian investment funds let investors down. Only three investment funds showed a result above zero (the return was about 7 %).

At the same time, the outflow of funds from equity funds for the year amounted to 10.52 billion rubles. Against this background, bond funds were able to attract an almost comparable amount — 10.28 billion rubles, which suggests the need to create convenient mechanisms for switching strategies within one investment fund, which allows saving time and transaction costs due to the lack of the need to transfer funds from one fund to other.

Recently, the tendency to withdraw institutional investors from the Russian jurisdiction has begun to progress, which indicates a poor investment climate.

Investment funds start from the beginning of 2012 began to systematically get rid of the shares of Russian companies. The following fact even becomes noticeable: some funds draw up a return of funds to investors, while, of course, a renegotiation of an agreement with foreign investment funds, which, in fact, are managed by the same persons, can occur.

In 2012, the situation associated with the development of the European debt crisis, an increase in the US budget deficit, which would cause infrastructure problems and problems of regulating the exchange rate of the Russian currency, was constantly injected.

In Russia, it has become more difficult to earn compared to other countries. The most successful participants in the investment market are ETF funds that use modern asset allocation mechanisms.

The traditional fund no longer looks preferable and today investors are avoiding such investments, since these market participants do not earn additional profits to investors and take high management fees.
The trend of outflow of funds from the Russian market continues. Analysts say no.

In early 2013, a rally was observed on the Russian stock market, caused by the strengthening of the ruble exchange rate and record-low inflation rates. Perhaps this was facilitated by the fact that from June 1, 2012, the Ministry of Finance auctions were transferred to the MICEX-RTS exchange.

Access to the auctions of the Ministry of Finance get more Russian banks. The next step in reforming the infrastructure may be to reduce the requirements for bidders. Capital requirements and ratings of auction participants were reduced, the number of participants increased 2–3 times, that is, in fact, this mechanism became an analogue of repo operations of the Central Bank for a period of 1 to 12 months (475 banks have access to repos of the Central Bank) supplemented the system of lending instruments of the Central Bank.

The main consequence of these measures should be the introduction of the principle of security of auctions, which led to a decrease in the spread between the repo rates of the Central Bank and the rates on auctions of the Ministry of Finance.

These measures allowed to increase the demand for government securities by 10–15% in the primary and secondary markets in 2012.

The investment attractiveness of the country increased by 8 percentage points compared with 2011 — this is the highest figure in the world.

Investment funds in general operating in Russia continue to demonstrate confidence in the Russian market. According to the statements, 80% of them plan to expand their activities in the country, or to keep it at the same level.

According to analysts, 64 over the course of 5 two years, the largest flow of investment will be directed to the mining and oil and gas industries. In addition, the information technology sector can attract foreign investment in Russia. At the same time, the country’s orientation towards the development of the mining industry discourages investors due to the high correlation with the prices of resources on world markets.

The crisis in the eurozone in 2012 did not significantly affect investor sentiment, they have not lost confidence in the Russian market and positively assess the growth prospects of the Russian economy. Indicators of developing countries are noticeably better than the results of developed ones.

Thus, the current state of the market of institutional investors in 2012 in Russia was at a fairly good level compared with the investment funds of other countries, while Russia's accession to the WTO may carry certain risks. At the end of this chapter, we will provide an assessment of the asset ALLOCATION efficiency of institutional investors and suggest ways to improve it. To do this, you first need to consider the typology of investors institutional investors in general.
4.2 Assessment of the effectiveness of the distribution of assets of institutional investors

Profitability and riskiness are the most simple and understandable for investors indicators used to assess allocative efficiency. However, these indicators can be the results of luck or incomparable risk level.

Various risk-adjusted portfolio performance indicators were designed to evaluate this third factor, which plays the most important role for potential investors, as well as for the management companies themselves that develop remuneration schemes for managers.

The ability to monitor the market is determined by how successfully the manager changes the structure of asset allocation depending on current market conditions. An example of successful market tracking is the case when in a falling market the share of shares in a portfolio decreases and the share of bonds and free funds increases. Thus, market tracking can result in an increase in the beta of asset allocation in a growing market or a decrease in the beta of asset distribution in a falling market.

The risk associated with investing in an investment fund is that the rate of return of the fund fluctuates over time. The stronger these fluctuations in the period under review, the higher the risk. The profitability of asset allocation is influenced by two groups of factors. The first group is related to general market fluctuations that affect all assets.

Systematic risk is measured by the asset allocation beta, which measures the sensitivity of the return on asset allocation to a market index.

Most studies use absolute performance indicators, comparing the profitability of actively managed asset allocation of an investment fund with the profitability of passive asset allocation, that is, tied to a specific market index, with the same level of risk.

According to this method of measuring the effectiveness of investments, the financial results of asset allocation are neutral if historical returns on asset allocation behave as CARM predicts. Significant positive alpha Jensen says the presence of the ability to select stocks from the manager of an investment fund. This means that the returns on its asset allocation are systematically higher than the returns that CARM predicts for a given level of systematic risk.

As a reference, Jensen views the asset market line. He defines alpha as the difference between the actual return on asset allocation and its expected return, based on a risk-free rate, on the level of the systematic risk of asset distribution, and on the yield on the market distribution of assets for the period in question.
In this case, the aforementioned linear relationship is broken, which leads to errors in the assessment of alpha. For example, if a manager expects growth in the financial instruments market, he will try to increase the asset allocation beta in order to earn higher returns.

In this case, the beta estimated by the CAPM model will be overestimated compared to the average beta of this asset allocation. This will lead to an under-valuation of Alpha Jensen, and the researcher may conclude that the manager has no ability to select stocks, although in fact they do.

Also, when ranking portfolios for such alpha, one may mistakenly prefer a manager who did not change the structure of asset distribution, but does not have the talent for selecting stocks, a manager who knows how to predict market movements and successfully select assets for purchase.

A fund with a large Sharpe ratio, other things being equal, will be more attractive for an investor than a fund with a lower value. A small value of the coefficient suggests that the return on investment does not justify the accepted level of risk. A negative Sharpe Ratio would indicate that investing in risk-free assets would generate more revenue.

Information coefficient (information ratio). The information coefficient, in contrast to the value added indicator, takes into account the risk factor with which this anomalous return is obtained.

The information factor is a fairly popular indicator for evaluating the financial results of US funds. But Russian rating agencies do not use it.

All of these methods for assessing the effectiveness of portfolio management are derived from the provisions of G. Markowitz's modern portfolio theory and the model of W. Sharp's portfolio.

Recent studies in the financial market environment have questioned the validity of using the variance of returns as a measure of portfolio risk, since in the real market the allocation of rates of return does not match the normal distribution. Thus, the use of dispersion as a measure of risk does not allow for its adequate assessment.

The author has attempted to develop a methodology for evaluating the effectiveness of portfolio management using this approach.

In other words, the portfolio manager should strive to increase the proportion of shares during periods of rising financial risk appetite (reducing the share of conservative instruments, such as treasury bonds and fixed income instruments) and reducing the share of risky instruments during periods of falling quotes (increasing the share of risk-free instruments).

At the same time, we should not forget that the high profitability of a portfolio manager may in reality be nothing more than luck in several transactions.
Thus, the systematic correct reactions of the manager to the market movements are the proven evidence of the professionalism of the portfolio manager.

The approach to assessing the effectiveness of managing a portfolio of financial instruments is based on two key factors characterizing the efficiency of portfolio management:

- accuracy of allocation of tools with the highest potential of profitability at the established risk level;
- stability of return on investment ideas and portfolio decisions.

Currently, there are several approaches to assessing the effectiveness of the distribution of assets of institutional investors. The main indicators used in the assessment: profitability, riskiness, indicators of alpha and beta assets distribution.

For the purposes of this work, we will use only absolute indicators, since they are published in official open sources and funds that operate in one country are compared. For the ranking of Russian institutional investors, it is advisable to use the indicators of the yield of the investment fund, which are published in the public domain.

Thus, the conditional rating level for assessing the distribution of assets of an investment fund is calculated using the formula:

\[ E_f = I \cdot R / 100 \% \]  

where:  
- \( E_f \) — asset allocation efficiency;  
- \( I \) — average annual yield in percent per annum over 3 years;  
- \( R \) — riskiness in percent.

Given the current global nature of the development of the industry of institutional investors, the main investment cash flows are directed to funds with moderate and low risk levels, which at the same time show a high efficiency of asset allocation.

Thus, in the course of the study the following conclusion was obtained. Investments in the majority of Russian institutional investors are not economically justified, since their asset allocation efficiency is relatively low.

Against the background of increasing uncertainty of the modern economy, it is advisable to flexibly modify the strategy of an investment fund to increase the efficiency of the distribution of assets of institutional investors.

Based on the assessment, conclusions were drawn about the systemic inefficiency of the functioning of institutional investors in Russia with a risk level of up to 35% and suggested ways to improve the efficiency of their functioning.
Chapter 5. Improving the efficiency of use of investment fund assets

5.1 Effective investment fund strategies

This chapter examines aspects of ways to improve the efficiency of asset allocation of an investment fund according to the principles of portfolio theory and modern concepts of managing liquidity of an investment fund, as well as the effect of these aspects on the asset allocation efficiency of institutional investors.

In modern conditions, the successful functioning and development of institutional investors to a decisive degree depends on an adequate assessment by the founders and investors of the fund of prospects for attracting funds to the industry of institutional investors as a whole.

The crisis component of economic development, as well as underestimated risks, can lead to irreparable financial losses of institutional investors. Increased volatility increases the probability of default on individual securities. Therefore, an important direction of the development strategy of institutional investors is to increase the level of reliability of institutional investors.

The financial crisis of 2008–2009, which destroyed the models of the liberal economy, increased the systemic risks of the financial sector. To ensure the effectiveness of investment fund management, risk management, due diligence, and stress testing should be constantly implemented.

The depth of the observed crisis and the systematic nature of the problems that have arisen suggest that the foundations of the financial global architecture were affected. The crisis of financial globalization increases the uncertainty of the movement of financial capital.

Improving the level of reliability of institutional investors should be one of the main directions of development of the post-crisis economy. In this regard, the responsibility of regulators, shareholders and personnel of institutional investors is more responsible for correctly determining the direction of development of an investment fund and the formation of its strategy.

The concept of strategy itself has very diverse definitions in the scientific literature. Depending on the objectives of the study, the definition of a strategy can be both general and detailed.

The investment fund strategy shows the vector of its positive development in order to meet the economic needs of investors, subject to regulatory requirements and current trends in the competitive environment.

From the point of view of realizing private goals of strategic development (to achieve maximum efficiency, profitability, competitiveness of an investment
fund and maximize value), it is advisable for shareholders and investment fund personnel to build management systems based on matrix and cognitive models of financial behavior and advanced management technologies.

In order to concretize the functional expectations of various subjects of financial relations to the concepts of “financial stability” and “reliability”, which are related to investment funds, a triune approach to understanding by managers, investors and regulators should be used. In this regard, the information base for determining the level of financial stability are the static and dynamic indicators of the investment fund with a certain frequency of their compilation. The procedure for determining the sustainability of an investment fund is called a due diligence. Financial stability of an investment fund is characterized by the sufficiency of its own capital, its profitability, the level of leverage, the level of profitability of capital, and liquidity.

The distribution strategy as the main component of the corporate strategy of financial behavior of an investment fund is aimed at achieving a certain level of profitability, liquidity and drawdown of investment fund portfolios. The purpose of the marketing strategy: the growth of the investment fund market share, the development and introduction of financial innovations and technologies, the development of qualitatively new investment products and the increase in their capacity. The target criterion of the information strategy is the formation of the information space of the investment fund.

We would like to highlight the main types of strategies currently used:

1. **Maximize profitability.** It is most often used at the initial stage of the distribution of the fund's assets, since it serves mainly to form a successful investment history. This strategy allows you to enhance the effectiveness of the marketing component of the investment fund.

2. **Strategy to attract investors.** Sometimes there is a special period of distribution of the assets of an investment fund — a road show. This strategy implies large expenditures on marketing and maintaining the fund's profitability at a certain low-risk level.

3. **Minimize risk.** This strategy is used during periods when there is no need to raise additional funds and allows you to keep the previously achieved financial results at the desired level. It is advisable to use in periods of uncertainty and increased risk.

Of particular interest in the development of the concept of development is the development of a financial strategy for the sustainable development of an investment fund. Investment strategy investment fund. We highlight the following areas of investment strategy of an investment fund: credit policy, deposit policy, liquidity management policy, risk management, interest rate asset
management policy. The search for optimal ratios between the profitability of business processes and the level of accepted risks is carried out within the framework of the theoretical concept of investment management.

The profitability parameters of the active operations of the investment fund are the volumes of investment products of the investment fund, whose profitability is determined by the scenario of the development of the macro-economic situation. The important factors of an investment fund’s operations are the amount of its own capital, factors of maintaining liquidity, risks and limits that determine the volume and structure of financial instruments.

The effectiveness of an investment fund as a socially significant financial institution depends on the degree of satisfaction of the needs of investors as financial services. In this regard, the modern concept of investment fund asset allocation implies the need to reorient the investment goals of the investment fund to achieve long-term goals: the growth of managed assets and the increase in the value of the investment fund staff by providing customers with greater value in the form of investment services.

Increasing equity capital allows an investment fund to reduce the share of expenditures on fund development and fund management. On the part of investors, the growth of assets of institutional investors reduces the cost of investing in investment funds.

Solutions in the process of managing the return on equity of an investment fund are a choice of alternative, effective ways to achieve the financial goal of increasing the welfare of investors by resolving the conflict of agency relations between owners and investors. As a result, qualitative criteria for assessing the efficiency of the distribution of assets of an investment fund: an increase in the efficiency of the capital structure by reducing costs and leverage.

The efficiency of the distribution of assets of an investment fund in the conditions of instability of financial markets is associated with the successful implementation of forms of joint-stock relations. The formation of a system of institutions capable of increasing investment capital is an important prerequisite for the successful development of the national economy. Evaluation of the comparative effectiveness of these models of corporate governance is associated with an analysis of the system of behavior of insiders and outsiders, who by their existence have proved their viability.

Implementing the target asset allocation function of an investment fund allows you to effectively manage the activities of the investment fund as a whole, systematize information and technological processes, accelerate the introduction of innovative products, manage risks, improve external
and internal interactions within the chosen business model, providing long-term competitive advantages of an investment fund to obtain investment income. The effectiveness of the distribution of assets of an investment fund during a period of high volatility depends on the successful development of various strategic management.

### 5.2 The mechanism for choosing the strategy

Based on the above assessment, we would like to describe a scientific approach to improving the asset allocation of institutional investors using a tool that allows you to quickly move from one strategy to another, depending on the development cycle of the organization and market conditions.

Investors who invest in Russian investment funds usually understand the risks that are characteristic of institutional investors in developing countries, but they are more and more often directing their funds to funds located in BRIC countries and countries in the Asia-Pacific region because the reliability of managing these funds is at a higher level.

The historical profitability of asset management of an investment fund is not an exceptional factor when choosing an investment fund for investment, since this indicator often depends significantly on market conditions, or with a well-chosen management strategy. While the reliability of a fund is an indicator peculiar to a certain fund or a group of funds located in one jurisdiction, and is a more stable factor. It is advisable for Russian investment funds to increase the reliability of managing their assets with the help of approaches used in modern risk management and investment management. According to Al Janabi [79], the most significant risk for institutional investors in a period of financial instability is liquidity risk, since it is quite unpredictable and difficult to calculate and monitor.

In our opinion, investment funds it is advisable to use the switch asset allocation strategy, in this case, the results of the investment fund will significantly depend on the efficiency of its work.

In the case of positive dynamics of stock markets and investors’ propensity for greater risk, it is advisable to use the most risky strategies. In a crisis situation (October–December 2008), it is necessary to fully switch to a risk-free bond allocation strategy.

If you look at the dynamics of the value of a share of the Gazprombank Bond fund, which uses a low-risk asset allocation strategy, it can be noted that during the 2008 crisis, the value of a share decreased by only 15%, while the cost of stock indices decreased threefold, and the cost structural products could be reduced to zero.
If you look at how the value of the shares of a bond investment fund managed by the same MC (Gazprombank-Second Tier Shares), which uses the most risky asset allocation strategy from all Gazprombank funds, behaves, it can be seen that periods of growth of stock indices and a favorable economic situation.

Taking into account the results of our research based on a correlation analysis, we note that the use of a conservative strategy is justified with a tolerable risk level of no more than 35%, if the possibility of opening a bank account at
a fixed percentage is not taken into account as an alternative. With a risk level of more than 35%, it is clearly seen that it is economically feasible for investors to invest in risky strategies of institutional investors.

Thus, we can clarify the conditions for the use of the main asset allocation strategies of institutional investors currently used, as follows:

1. The profit maximization is effective at the initial stage of development of an investment fund in the presence of a favorable market situation.
2. The strategy of attracting investors is expedient at the initial stage of development of an investment fund in the presence of a positive history of the fund and a favorable market situation.
3. Minimizing the risk can be applied:
   - at the regressive stages of development after long periods of growth;
   - in case of a crisis situation in the markets;
   - to maintain a positive history of asset allocation before the stage of attracting investors.

For a quick and well-coordinated transition from one asset allocation strategy to another, the fund’s management should develop a set of transition measures. The rate of implementation of the strategy will largely depend on the profitability of the entire fund.

The time of application of a strategy can be on average from 1 to 3 years. But in the presence of force majeure, the use of the strategy can be suspended immediately. A complete shutdown of the investment fund is not advisable (for open and interval funds), since investors may begin to worry about their funds.

Given the presence of a significant liquidity risk, investment funds need to consider its factors when moving from one asset allocation strategy to another. At the same time, the exogenous liquidity factor (the main risk factor for most institutional investors) cannot be completely avoided, since it does not depend on the behavior of a particular investment fund, but depends on market conditions.

For the Russian ruble market, the liquidity deficit has become typical since October 2011. Probably, a similar situation will persist over the next few years. Therefore, when switching investment fund asset allocation strategies, it is necessary to compare the volumes of investment fund asset portfolios with respect to the capacity of the respective markets.

Selling a significant stake in a shortage of liquidity can often not be feasible without a loss for several days. Thus, you can initially lay the risk of liquidity (for example, 10%) in the implementation of the transition to a conservative strategy. The reverse transition is more convenient, the liquidity risk in disbanding the distribution of assets of bonds is less noticeable. The general rule in the case
of a liquidity shortage in an investment fund is a more difficult transformation of the strategy of asset allocation under the influence of common factors and a correspondingly longer transition period between two different strategies.

Based on the findings, we propose to consider the following practical and targeted recommendations for managing institutional investors and investors (at the stage of selecting an investment fund).

To improve efficiency, we suggest that managers use the approach described above to assess allocative efficiency (based on profitability and asset allocation riskiness) of the functioning of institutional investors.

In addition, we recommend using a scientific approach to improving the asset allocation of institutional investors with a tool that allows you to quickly move from one strategy to another, depending on the development cycle of the organization and market conditions, and also use the switch strategies to improve the allocative efficiency of the investment fund.

Investors are advised not to consider funds with historical returns of less than 38% for investment, since the study made conclusions about the systemic inefficiency of institutional investors in Russia with a risk level of up to 35%.

5.3 Liquidity risk of investment fund assets

At present, the liquidity factor is the most significant in the management of investment organizations; therefore, the work records and manages the liquidity risk of an investment fund as an important factor in asset allocation strategies.

When managing an investment fund, it is advisable to monitor the change in the volatility of the assets being managed in order to have an idea of the potential future losses of the fund. Losses in the value of investment asset allocation can occur not only due to price fluctuations. In case of an urgent need to sell large volumes of assets in financial markets, the prices of transactions in which financial positions may be closed will necessarily differ from current market prices. The explanation for this is the presence of transaction costs in the market, the value of which depends on the liquidity of the market.

The financial institution inevitably faces the question of how to determine and calculate the market liquidity. A financial institution is not exposed to liquidity risk only if it plans to hold a portfolio until full repayment of its assets (of course, if financial assets have maturity or expiration dates).

After the bankruptcy of large institutional investors in the nineties of the twentieth century and the collapse of LTCM in 1998, interest in measuring and managing liquidity greatly increased and, in fact, the financial paradigm of asset management changed.
Prior to the global financial crisis, the dominant view was that instability in financial markets is characteristic only of developing economies with their inconsistent monetary and fiscal policies and underdeveloped financial markets. Thus, an increase in the share of emerging market financial instruments in the distribution of assets led to this crisis.

The functioning of the pricing mechanism in financial markets sheds light on the nature of liquidity. In case of excess of demand over supply, the market may respond with an increase in price.

In reality, the financial market functions differently than the theoretical model. Therefore, a new financial paradigm is needed to regulate the liquidity of financial markets.

Currently, Tomson Reuters and Bloomberg news agencies, taking into account the development of information technologies, are gradually developing an analysis of market liquidity and occupy this niche in the market. In spite of this, the data necessary for the analysis of liquidity, as a rule, are absent in public reports on the state of the market.

Thus, we examined the features of assessment and management of market liquidity risk, which is inherent in the majority of actively managed institutional investors (in particular, those using leverage).

Thus, in this chapter the following research results are obtained:

1. The features of the application of asset allocation strategies of investment funds at different stages of the organization's life cycle are revealed. In relation to investment funds, the concept of strategic management of organizations of I. Adizes has been adapted, its application allows to increase the efficiency of asset allocation of institutional investors at various stages of development of investment funds, primarily at the heyday and aging stage.

As a result of the research work, the following recommendations were made for managing institutional investors:

- for investors belonging to the first riskiness group (conservative investors), one should adhere to a conservative strategy (potential yield — up to 15%) with the possibility of switching to a growth strategy in periods of improved market conditions;
- for investors belonging to the second risk group (moderate investors), one should adhere to the growth strategy (potential yield — 16–55%) with the possibility of switching: to the speculation strategy — during periods of improved market conditions or reduced liquidity risk; on a conservative strategy — in periods of deteriorating market conditions (crises), increased liquidity risk or negative phases of the development life cycle;
for investors belonging to the third risk group (speculative investors),
one should adhere to the speculation strategy (potential profitability —
from 55% and higher) with the possibility of switching: to the growth
strategy — during periods of increased liquidity risk or negative phases
of the development life cycle; on a conservative strategy — in periods of
deteriorating market conditions.
Chapter 6. Oil and gas complex of Russia — the leading source of the formation of federal budget revenues

6.1 Oil and gas complex in the Russian economy

The enormous natural energy potential of Russia, which is an invaluable asset of the country, has made it possible to create one of the world’s largest energy complexes in the country. As the largest country in the world, Russia has 2.8 % of the population and 12.8 % of the world’s territory [29]. The share of Russia in world reserves accounts for an average of almost 45 % of potential and 30–35 % of explored geological planetary reserves of natural gas, 12–13 % of forecast resources and about 12.5 % of oil reserves, about 20–24 % of world proven reserves of coal, about 32 % of brown coal reserves and 14 % of world uranium reserves [1; 29; 30]. In 2009 Russia ranked 5th (74.2 billion barrels) in terms of proven oil reserves and 1st place (44.38 trillion cubic meters) in terms of proven gas reserves [21].

By explored oil reserves, Russia belongs to the leading oil-producing countries. As of January 1, 2008 On the state balance of the Russian Federation there were 2,687 oil, gas and oil and gas condensate fields. Among them were observed 10 unique fields (with reserves of category A + B + C1, more than 300 million tons each), 72 large fields (with reserves from 60 to 300 million tons), 177 medium and more than 2000 small fields. About 80 % of the current oil reserves (1552 deposits) are put into development, the rest are prepared for development (159 deposits) and are under development (757 deposits). At the same time, 219 deposits have been mothballed. By 2008 the operating stock of oil wells increased to 158.4 wells.

At the same time, an extremely uneven distribution of fuel and energy resources on its territory remains an important problem for Russia: over 80 % of their reserves are located in Siberia and the Far East, while the majority of the population lives in the European part of the country [29; 30].

In terms of proven gas reserves, Russia is in first place in the world. As of January 1, 2009 free gas reserves of categories A + B + C1 in the country totaled about 47.8 trillion.

At the same time, more than 213 proven reserves of free gas in Russia were concentrated in the Yamalo-Nenets Autonomous District. Gas reserves of category C2 reached a level of 19.7 trillion cubic meters. Thus, the balance reserves of natural gas in Russia amounted to about 67.5 trillion cubic meters. Geographically, about 62 % of the balance reserves are located in the West Siberian NGP, while about 60 % of the balance reserves of gas are located in the Yamal-Nenets Autonomous District. About 12 % of gas reserves are concentrated in
the East-Siberian oil field, about 14% on the shelf of the Arctic and Far Eastern seas, about 1% in the Caspian Sea in the European part of Russia — about 11% of the balance reserves of natural gas of the Russian Federation [29; 30].

Prospective gas resources of category C3 amount to about 29.8 trillion cubic meters, of which the West-Siberian oil and gas field accounts for 73%. The estimated gas resources of D1 + D2 amount to about 121.5 trillion cubic meters, of which about 42% are concentrated in Western Siberia, about 24% in the East Siberian oil-bearing field, about 25% on the shelf of the Arctic and Far Eastern seas, about 7% in the European part of the country. The peculiarity of the raw material base of the gas industry in Russia is that the reserves with a high degree of concentration are located in separate fields.

In general, the State balance of Russia has 867 fields, of which 27 fields are unique (which amounts to 34.4 trillion cubic meters or 72% of explored and 13.9 trillion cubic meters or 68% of previously estimated reserves), 86 deposits are large (75–500 billion cubic meters of reserves, accounting for 22% of proven reserves), 753 deposits are small and medium (which is 6% of the country’s proven reserves) [29; 30].

In the period from 2000 to 2008, the operating stock of oil and gas wells has steadily increased, increasing from 150.8 to 158.4 oil wells and from 6.4 to 9.5 gas wells, respectively.

In the period from 2000 to 2008, the length of trunk pipelines and gas pipelines also grew, increasing from 46 to 52.5 thousand km of oil pipelines and from 152 to 163.5 thousand km of gas pipelines, respectively. The number of coal mines during this period, on the contrary, decreased from 109 to 96 mines. The number of coal mines in the period under review increased from 119 in 2000 to 148 in 2008, as a result of which the total capacity of coal mines and cuts increased from 267.5 million tons in g in 2000 up to 376.1 million tons per year in 2008 The installed capacity of power plants in the period from 2000 to 2008 increased from 212.6 to 225.5, including the installed capacity of thermal power plants increased from 146.8 to 154.7, the installed capacity of hydro-power plants increased from 44.3 to the installed capacity of nuclear power plants increased from 21.7 to 23.7.

The length of high-voltage transmission lines increased from 153.3 to 154.5. The number of refineries increased slightly, only by 3 refineries, from 25 in 2000 up to 28 in 2008. The total capacity of the refinery during the period under consideration varied. In general, since 2000, till 2008 it grew from 257 to 272.6 million tons/year, respectively. In 2000–2005 the length of the main oil pipelines remained unchanged and was 15 thousand km. Since 2006 it began to increase from 15.3 to 19.2 thousand km in 2008.
The fuel and energy complex of Russia occupies a leading position in the
country’s economy and in the world. Russia, together with the United States,
China and Saudi Arabia, is among the top three countries in the production
and consumption of energy resources.

In 2009 Russia ranked first in the world in oil production (10.032 mil-
lion barrels per day), ahead of Saudi Arabia (9,713 billion cubic meters),
USA (7,196 billion cubic meters), Iran (4,216 billion cubic meters) and China
(3,790 billion cubic meters).

In terms of natural gas production (527.5 billion cubic meters), Rus-
sia was in 2nd place in the world, behind the United States (593.4 billion
cubic meters).

Oil consumption in Russia in 2009 amounted to 2695 thousand barrels per
day. In terms of oil consumption, Russia ranked 4th in the world, behind the
United States (18686 thousand barrels / day), China (8625 thousand barrels /
day) and Japan (4396 thousand barrels / day). In terms of natural gas consump-
tion in 2009 (389.7 billion cubic meters) Russia ranked 2nd in the world, behind
the United States (646.6 billion cubic meters).

In the period from 1985 to 2009. oil production ranged from 302.9 (1996)
to 569.5 (1987) million tons per year. In the period from 1987 to 1996 there was
an annual decline in oil production.

However, since 1998, its production volumes began to increase annually. In
the period from 1985 to 1991, oil consumption was at the level of 243–253 mil-
lion tons per year. Since 1989 there was a decrease in oil consumption from
252.8 million tons per year to 123.7 in 1998. In subsequent years, oil consump-
tion was approximately at the 1998 level.

In 2009 about 1.2 % more oil was produced than in 2008.

In the period from 1985, till 1990 gas production increased from 376.3 to
531 million tons of oil equivalent. However, in the period since 1992, till
1997 there was a decrease in gas production from 524.5 to 463.7 million tons
of oil equivalent. From 2001 to 2008 there was a growth trend in gas produc-
tion from 473.6 to 541.5 million tons of oil equivalent. At the same time in
2009 gas production level was 87.67 % of the 2008 level. Gas consumption
ranged from 305.9 (1997) to 379.9 (2007) million tons of oil equivalent.

Coal production ranged from 103.9 (1998) to 189.0 (1988) million tons of
oil equivalent. Coal consumption ranged from 200.8 (1988) to 82.9 (2009) mil-
lion tons of oil equivalent. The production and consumption of atomic energy,
hydropower, and geothermal energy were important.

Atomic energy consumption varied in the range from 22.5 to 37 million
tons of oil equivalent, the consumption of hydropower increased from 1985 to
1995 from 36.1 to 40.1 million tons of oil equivalent, and then ranged from 35.6 to 40.8 million tons of oil equivalent.

Primary energy consumption varied from 602.3 to 875.6 million tons of oil equivalent. Geothermal energy consumption has begun to increase since 2003. Compared to 2003 by 2009 cumulative capacity increased from 23 to 82.0.

In the period from 1985 to 2009 primary energy consumption ranged from 875.6 (1989) to 602.3 (1997, 1998) million tons of oil equivalent. At the same time in 2003 primary energy production reached more than 1619 million tonnes.

This amounted to over 87% of the production of fuel and energy resources in 1990. Domestic consumption in 2003 it was 1054.6 million tons or 74.6% of the 1990 level.

As can be seen from the table, during this period the structure of the produced fuel and energy resources changed somewhat, but still the main share was oil and gas.

During 1990–2003, she remained constantly high. In 2003, 37.8% of production accounted for oil, 44.9% for gas, 11.9% for coal, 3.1% for hydropower, 2.9% for nuclear energy, 1% for other types of energy. At the same time, domestic consumption accounted for 65.1% of the total production of primary fuel and energy resources (FER).

It should be noted that in the period from 1990 to 2008 production of primary fuel and energy resources from mining and production decreased from 1862.0 to 1793.6 million. Oil and gas condensate production decreased from 516.2 to 487.6 million tons.

Gas production varied, but in general over the period increased from 640.6 billion cubic meters in 1990 up to 663.6 billion cubic meters in 2008. Coal mining varied, but in general over the period decreased from 395.4 million tons in 1990 to 326.1 million tons in 2008.

Electricity generation at thermal power plants varied in the range from 563.7 to 797.5 billion kWh, in hydroelectric power stations — in the range from 157.7 to 179.1, and in nuclear power plants — in the range from 99.5 to 163.0. The volume of oil and condensate at the refinery in the period from 1990 to 1998 decreased from 298.4 to 163.7 million tons. Then followed its growth from 163.7 million tons in 1998 to 236.3 million tons in 2008.

The graph, based on the data of the report [21] shows that in the period from 1985 to 2009 oil production in Russia, on average, was about 2.5 times higher than its consumption. Moreover, in the period from the beginning of the mid-1980s to the beginning of the 1990s, the level of production and consumption of oil was higher than in the subsequent period from the beginning to the end of the 1990s.
Since 2000 the level of oil production in Russia began to grow again, while oil consumption remained at the level of the 1990s.

The average volume of crude oil production in Russia in the period from 1985 to 2009 amounted to 8,678 thousand barrels per day. The average volume of crude oil consumption in Russia for the same period was 3,503 thousand barrels per day.

Domestic gas consumption in Russia in January 2011 amounted to 54,854.9 million cubic meters. Gas exports amounted to 24,363.9 million cubic meters. Production of basic petroleum products in January 2011 amounted to: production of motor gasoline — 3,013.8 thousand tons, production of diesel fuel — 6,127.1 thousand tons, production of fuel oil — 6,153.5 thousand tons, production of aviation kerosene — 643.7 thousand tons.

Coal mining amounted to 27,199.7 thousand tons. Coal exports amounted to 6,849.5 thousand tons. Electricity generation in January 2011 amounted to 102,200 million kWh, of which the production of heat energy amounted to 79,300 million kWh.

Russia is one of the largest energy exporters in the world. In 2004 oil exports accounted for 53% of its production, and gas exports 30.5%. This provided more than 50% of foreign exchange earnings to the country [3]. Hydrocarbon exports are constantly growing. Since 1994 till 2003 it has almost doubled. Moreover, oil exports are growing at a higher rate than exports of petroleum products and natural gas. Compared to 1994, oil exports increased from 89 to 177 million tons or 1.98 times, exports of petroleum products — from 39 to 74, i.e. 1.89 times, and gas — from 87.7 to 152.4 million tons., i.e. 1.73 times. Proceeds from the export of hydrocarbons in constant prices for 1994–2003 more than doubled.

The largest share of revenue comes from oil exports. Over the same period, it increased from $11.5 to $38.8 billion, or almost 3.37 times at current prices. In the prices of 2000 growth over this period was from 16.4 to 41.1 billion dollars or more than 2.5 times.

At the same time, total Russian exports varied: in 1998. it decreased from $85.0 to $71.3 billion, in 1999 increased to 71.8 billion dollars, but in general in the period from 1997 to 2000 it increased from 85.0 in 1997, up to $102.8 billion in 2000. The export of products of the fuel and energy industry varied: in 1998, it decreased from $40.3 to $29.5 billion, in 1999 increased to $31.2 billion, but in general in the period from 1997 to 2000, it increased from 40.3 to 54.2 billion dollars. By 2000, the share of fuel and energy complex in Russia’s total exports increased from 47.4% to 52.7%.

In 1990–2008, exports of fuel and energy resources from Russia increased from 698.5 million tons up to 813.2 million tons. The share of energy exports in
their production and production for the period varied, but generally increased from 37.51 to 45.3%.

Crude oil exports varied, but generally increased from 238.4 million tons in 1990 to 243.1 million tons in 2008. Exports of petroleum products varied, but generally increased from 41.7 million tons in 1990 to 117.9 million tons in 2008.

Exports of natural gas varied, but generally increased from 217.7 billion cubic meters in 1990 up to 195.4 billion cubic meters in 2008. Coal exports varied, but generally increased from 56.0 million tons in 1990, to 95.6 million tons in 2008.

As observed by researchers [41], in the period 2000–2008, Russia has experienced a steady growth in the production and export of all types of hydrocarbon fuel and energy resources (oil, oil products, gas). Thus, over the period, revenues from gas exports increased from 16.6 to 69.1 billion dollars, oil — from 25.3 to 161.1 billion dollars, and oil products — from 10.9 to 79.9 billion dollars. During these years, such large-scale projects for the construction of export energy infrastructure were implemented to increase the reliability of supplies and transit of Russian energy resources to Europe, as [41]:

1) Blue Stream gas pipeline (16 billion cubic meters of gas per year, 2005);
2) the first stage of the Baltic pipeline system (65 million tons of oil per year, 2006);
3) Yamal-Europe gas pipeline (33 billion cubic meters of gas per year, 2007);
4) the first stage of the oil pipeline “North” (8.4 million tons of oil products per year, 2008).

In order to diversify the directions of export supplies of Russian energy resources, the implementation of new infrastructure projects was launched, including:

1) the Nord Stream gas pipeline (55 billion cubic meters of gas per year) [41];
2) the Eastern Siberia-Pacific Ocean oil pipeline (80 million tons of oil per year).

The first phase was commissioned in December 2009. Also, preliminary agreements were signed on the construction of the South Stream gas pipeline (30 billion cubic meters of gas per year), the Caspian gas pipeline (20 billion cubic meters of gas per year), and the Burgas-Alexandroupolis oil pipeline (35 million tons of oil per year), decisions were made to build the second stage of the Baltic pipeline system (50 million tons of oil per year), to expand the capacity of the Caspian pipeline consortium [41]. The researchers [41] emphasize that the launch of the first part of the ESPO is an important event not only for Russia, but also for the Asia-Pacific region.

This is due to the fact that this pipeline system opens up for our country access to a new large regional market, whose demand for oil is continuously
increasing. In addition, after the construction of the Primorsky Oil Refinery, it will be possible to supply petroleum products to the markets of the Asia-Pacific countries. This is the second major regional project in the field of diversification of export markets after the launch of the LNG plant on Sakhalin in February 2009 [41].

In the Energy Strategy of Russia for the period until 2030, approved by the Government of the Russian Federation on November 13, 2009. The main priorities of the modern foreign energy policy of Russia were formulated. As noted by researchers [41], in the history of Russia this was already the third document of this kind. The current energy policy of the Russian Federation is based on the following fundamental principles:

1) Using the potential of the national fuel and energy complex as a geopolitical lever, “airbag” and a source of competitive advantages in certain areas in the field of global and regional policy.

2) Tight control by the highest authorities and, above all, the presidential structures and the government apparatus over energy policy and the decision-making process in this area.

3) Preservation of national control over major oil and gas companies, hydrocarbon deposits and transportation (pipeline) infrastructure.

4) State support for the expansion of leading Russian energy companies in foreign markets.

5) The use of oil and gas revenues of the state budget to maintain socio-political stability in the country and transfer the country’s economy to the rails of modernization and technological development [41].

The fuel and energy complex occupies a leading place in the country’s industry. In 2005, the share of the fuel and energy complex in the total volume of industrial products was about 32 %, with the share of the electric power industry accounting for 10.51 %. A large share of production in the fuel and energy complex is provided by the oil industry. In 2005 it accounted for more than 16 % of the cumulative gross industrial output. The share of the oil refining industry was about 3 %, the share of the gas industry — 1.2 %, the share of the coal industry — 1.0 %.

The share of commodity fuel and energy sector in terms of industry in Russia in 1990–2003 increased from 11.2 to 27.0 %. The share of fixed assets of the main type of activity increased from 31.3 % in 1990, to 58.8 % in 2003. The share of the net financial result increased from 27 to 44.3 %. The share of investments in fixed assets increased from 40.4 % to 60.6 %.

In the period from 2000 to 2008 the production and production of primary fuel and energy resources increased by 26.6 % from 1,417.2 to 1,793.6 million
Electricity production increased by 18.4% from 876.0 to 1037.2 million tons. Oil production increased by 50.7% from 323.5 to 487.6 million tons, gas production increased by 13.6% from 583.9 to 663.6 million tons, coal production increased by 26.2% from 258.3 to 326.1 mln. tons.

The level of profitability of the products of the fuel and energy complex exceeds the profitability of the economy as a whole and of industry. Particularly high rates in the fuel and energy complex in the gas, oil and petrochemical industries. So, in 2003 profitability of industrial products of the fuel and energy complex was 16.9%, profitability of the fuel industry — 18.8%, profitability of the oil industry — 20.7%, profitability of the refining industry — 19.1%, profitability of the gas industry — 20.5%.

High profitability of fuel and energy complex is achieved due to its stable operation. The share of the financial result of the fuel and energy complex in the industry from 1992 to 2003, constantly increased and reached 44.3% in 2003.

The main value of the net financial result falls on oil production (28.7%) and gas (4.1%). Even in 1998, when the Russian economy was in default, the fuel and energy complex as a whole worked effectively.

The successful operation of the oil-producing, oil-refining and gas industries within the fuel and energy complex is supported by continuous investments. In 1996–2002, the fuel and energy complex accounted for 18.2% to 25.7% of all investments in the economy and about 60% of all investments in fixed capital in industry.

In the period from 1990 to 2007, investment in fixed assets of the fuel and energy complex has steadily increased from 27.2 billion rubles in 1990 up to 1,408.3 billion rubles in 2007. Including their growing dynamics was observed in the areas of oil, gas, coal and fuel and energy minerals in general.

The fuel industry dominated in the fuel and energy sector in terms of attracted investments, accounted for 48.3% of all investments in industry, or about 20.5% of all investments in the economy. The vast majority of investment goes to the oil industry. In 2003 they accounted for about 13.3% of all investments in the economy. The share of gas and oil refining, respectively, accounted for 4.9 and 1.5% of all investments.

In the period from 1990 to 2005, the balanced financial result of Russia increased from 155.8 to 3004.4 billion rubles, the balanced financial result of the fuel and energy complex increased from 27.4 to 970.4 billion rubles. At the same time, the share of the fuel and energy complex in the balanced financial result in the Russian economy and in total exports in 1990–2005, increased by 2.8 times.

Commercial products in the period from 1990 to 2005 increased from 556.0 to 1,362.5 billion rubles or 0.3 times. At the same time, commodity
products of the fuel and energy complex increased from 62.2 billion rubles in 1990 to 4,291.9 billion rubles in 2005 or 3.6 times.

Tax revenues to the federal budget of the Russian Federation increased from 118.5 billion rubles in 1995 up to 1,719.3 billion rubles in 2005, i.e. 7.3 times. Investments in fixed assets of the fuel and energy complex at the expense of all sources of financing in current prices increased from 31.7 to 806.1 billion rubles or 2.7 times.

In the period from 1980 to 2008, resources of fuel and energy, total distribution increased from 1,683.3 million tons to 1801.2 million tons.

In 2001–2004, customs duties in the gas industry increased by 5–6 times. This shows that the fuel and energy complex has worked steadily and consistently deducted a large amount of taxes to the federal budget. Every year, tax revenues from the fuel and energy sector are growing.

In this case, since 2004, Tax revenues from oil exports are an important source of formation of the sovereign wealth funds of the Russian Federation.

In the period from 2004 to 2008, MET revenues to the federal budget of the Russian Federation increased from 424.1 to 1604.7 billion rubles. MET revenues from oil exports to the federal budget of the Russian Federation increased from 355.1 in 2004, to 1,493.0 billion rubles in 2008.

Thus, the fuel and energy complex of Russia has worked steadily. The Russian economy occupied the leading positions in the production and export of the main types of fuel and energy resources, primarily oil and natural gas. The export of hydrocarbons is constantly making a profit. The share of taxes on the export of hydrocarbons (MET and customs duties) made a significant contribution to the aggregate revenues of the federal budget and the country’s economy.

### 6.2 Prices of Russian hydrocarbons in the world market

Proceeds from the export of Russian hydrocarbons (oil, oil products and natural gas) have long been a key factor in financing economic growth and forming the budget of Russia. As a result, the stability of the modern Russian economy largely depends on the conjuncture of world prices for hydrocarbons, primarily oil.

This is primarily determined by the situation in the European market, which is the main trading platform for Russian oil and gas products. They are based on the Urals export oil grade (“Urals”), which is a mixture of different quality oils. It is formed as a result of pumping oil from different fields along the country’s system of oil pipelines.

The price level of Urals crude oil, which is emerging on the European oil market, largely determines the amount of revenue from hydrocarbon exports.
It is directly related to the price level of Brent crude oil (“Brent”), which is produced in the British sector of the North Sea and is a marker price for all oil sold on the European market.

At the same time, the dynamics of the price of Urals oil and the nature of its fluctuations changed markedly after the introduction of the OPEC90 price corridor in March 2000. It was installed in the range of 22–28 dollars per barrel for the price of the so-called “oil basket” OPEC.

Price regulation was envisaged due to a change in production and supply quotas for OPEC countries if the price of the “basket” falls below the lower limit of the corridor within ten trading days in a row. Similar actions should be taken when the upper limit is exceeded after twenty trading days.

In the period from 1997 to 2011, the dynamics of Urals oil varieties had ups and downs. July 4, 2008 the maximum value of Urals oil was equal to $ 137.61 per barrel. This was followed by a strong fall in prices. By January 2009 price dropped to $ 34.2 per barrel. Then followed a gradual increase in price. As of February 25, 2011 the price of Urals crude oil was $ 104.69 per barrel.

As of March 11, 2011 the price of Urals oil was 115.1 dollars per barrel and is projected to continue to increase. In addition to the growth of Russian revenues from oil exports, such an increase in the price of Urals oil may affect the increase in inflation and the growth of budget expenditures.

Brent oil price dynamics had a similar dynamics, slightly exceeding the price of Urals oil. The excess of the Brent oil price over the Urals oil price is shown in the figure.

As can be seen from the figure, during periods of growth in the price of Urals oil, the excess of the Brent price over the Urals price increased, and vice versa, during periods of decline in the Urals oil price, the excess of the Brent price over the Urals price decreased.

Compared to the end of the 70s, Urals oil prices are currently subject to stronger fluctuations. Until the early 90s the price of Urals oil did not exceed $20 per barrel. However, since the late 90s there has been a growing trend.

Another significant factor in this period was the smaller price variability, both in absolute values and in relative indicators. But at the same time, relatively smooth price changes have changed to its steep ups and downs, mainly within the boundaries of the price corridor. Third, there was a relatively rapid recovery in the decline in the price of Urals oil. Moreover, even noticeable price reductions did not reach the levels critical for the Russian economy. The average monthly price of oil “Urals” as a result of the introduction of the “corridor” of prices until March 2004 (inclusive) exceeded three times the record level of $30 per barrel, which was previously reached in 1982, or more than 20 years ago.
However, this price trend lasted a short period. Since May 2004 the price of oil “Urals” exceeded the upper limit of the corridor, equal to $28 per barrel and by the end of 2005 rose to $60 per barrel. This affected the further change in the characteristics of the Urals oil price dynamics, the average price of which for the period from 03.2000 to 01.2006 rose to 31.3 dollars per barrel.

Currently, the price of oil “Urals” continues to remain at very high levels. This is stimulated by the high price of OPEC “basket” oil, which since December 2, 2003 continuously exceeded the upper limit of the price corridor [8; 9]. Thus, the introduction of OPEC oil price regulation in general had a positive effect on the price dynamics of Russian oil.

At the same time, this led to a definite change in the closeness of the correlation between the price of Urals oil and the price of Brent oil.

The dynamics of the “oil basket” OPEC influenced the policy of action and strategy of the organization. OPEC was based on the international conference in Baghdad, which was held September 10–14, 1960. The first participants in this organization were five countries: Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. Then in 1960–1975, 8 more countries joined OPEC: Qatar, Indonesia, Libya, United Arab Emirates, Algeria, Nigeria, Ecuador and Gabon. Ecuador left OPEC in December 1992, and in January 1995, Gabon was excluded from it. Currently, OPEC includes 11 countries: Saudi Arabia, Iran, Iraq, Kuwait, Qatar, the United Arab Emirates, Libya, Algeria, Nigeria, Indonesia, Venezuela [43].

As researchers correctly note [42], the task of OPEC was to present a unified position of oil-producing countries in order to limit the influence of the largest oil companies on the market. At the same time, from 1960 to 1973 in reality, OPEC could not change the balance of power in the oil market.

The situation changed in the first half of the 1970s, when the Western world faced increased inflationary pressure and a shortage of raw materials. At the same time, there was a strong shortage of oil: the United States, back in 1950 the former were self-sufficient, now they had to import about 35% of oil. At the same time, OPEC began to firmly defend its position on the principles of profit sharing on the oil market [42].

It is necessary to agree with the researchers [42], who assert that the rapid strengthening of the leading role of OPEC in world oil exports has created prerequisites for revising the existing Arab concession agreements with oil companies regarding reference prices and profit distribution. At the same time, the refusal from the fixed US dollar exchange rate and the subsequent weakening of the American currency began to play a significant role. In October 1971, OPEC began the process of nationalizing the assets of MNCs, which was almost
completed by the end of 1973. With the transition to the OPEC countries of control over resources and production, they had the opportunity to determine the price of oil. MNC companies have lost the ability to influence market conditions on the supply side, but retained control over transportation, processing and marketing [42].

As correctly noted in [42], the regulation of the world oil market is carried out through the mechanism of setting, as a rule, 2 times a year, the total oil production limit for OPEC member countries, adjusting this limit taking into account the situation on the world market, and distributing the total limit members and monitoring compliance with quotas [42].

We agree with the researcher [42], who claims that because of the sharp increase in oil demand and the growing importance of the Middle East as the leading oil-bearing region of the world, oil exporting countries (OPEC) were able to seize pricing levers from international oil companies. So, in the 50s and 60s, in conditions of the excess of oil supply over demand, the cost of oil products determined the prices for crude. At this time, taking advantage of the comparative shortage of oil, OPEC managed to make a genuine oil revolution. As a result, the prices of petroleum products began to be dictated by the prices of the original product. In 1980, oil prices have risen by at least 10 times since 1970 [42].

At the same time, such a revolution, which was organized by OPEC, had some drawbacks. As correctly noted in [42], the rise in oil prices caused a slowdown in economic development. Also, the mass introduction of energy saving measures and the replacement of oil with other types of energy raw materials began, and countries that produced relatively expensive oil, which prevented them from competing with OPEC earlier, could become serious competitors to the oil cartel. Thus, the growth of oil production outside OPEC countries led to a fall in the share of OPEC in world oil production from 55% in 1974 to 38% in 1982 [42].

The way out of this situation could be either lower prices and the return of old markets, or maintaining incomes by setting favorable prices. The use of the option of establishing favorable prices assumed the creation of a deficit through a concerted reduction in oil production. In March 1982, the OPEC member countries chose this decision, setting a production limit of 18 million barrels per day and production quotas for each individual country, except for Saudi Arabia. She was assigned the role of the system controller by changing the volume of domestic production [42].

It was assumed that the quotas will be a temporary measure. At the same time, this system of measures can be successfully applied at the present time. As rightly pointed out by researchers [42], for the first time in history it was not companies, but states that organized a cartel that had a real impact on world
prices. So, in 1985, when OPEC sharply increased oil production to 18 million barrels per day, a real price war began. Over the course of several months, crude oil has more than doubled in price, from $27 to $12 per barrel [42].

After the “collapse” of oil prices in 1986, the situation in OPEC was very unstable. As rightly noted in [42], the periods during which the participants of this organization managed to pursue a single market policy alternated with a sharp weakening of discipline within OPEC, when many participating countries increased the level of production and export to meet current financial needs, violating the agreed policy quotas and prices and disregarding the danger of market destabilization. At the same time, such a situation was reflected in the weakening and amplifying effect of OPEC on the market and the related price fluctuations over a wide range: from less than $10 to $40 per barrel. Due to the limited ability of OPEC to control global oil production, the free market has come to the fore, and the oil industry has been shaken by price fluctuations on an unprecedented scale [42].

An interesting fact noted in [42] is that the history of the oil industry is full of examples of supply management attempts, starting with Standard Oil Trust, the Texas Railway Commission, up to the Seven Sisters, OPEC and the cooperation of the largest oil producing countries with OPEC. As noted in [42], there are two prominent examples of oil supply management systems that have failed because of a too long fixation of the price of oil that does not correspond to the long-run balance between demand and supply. The first of these examples is related to the maintenance of the “Seven Sisters” cartel during the first 12 years of OPEC’s existence, the price of oil, which did not exceed two dollars per barrel. At the same time, there was a rapid growth in demand, after which supply did not keep up. As a result, the 1973 energy crisis erupted.

The second example, analyzed in detail in [42], is related to the implementation of OPEC under the control of Saudi Arabia in 1982–1985 the policy of maintaining the official sale price at $28 per barrel, while demand was narrowing and new sources of oil supply appeared around the world. All this inevitably led to the collapse of prices 1985–1986 [42].

An interesting fact, correctly noted in [42], is that in this connection, the idea of developing a specific form combining the advantages of free market pricing and supply management methods emerged. At the OPEC conference in March 2000, an oil price corridor was introduced and an oil price correction mechanism was adopted, according to which supplies should increase or decrease if the average price of a basket of seven grades of oil goes beyond $22–28 per barrel in 20 days. At the same time, it was proposed, when prices went beyond the corridor, to automatically (without convening a conference)
increase or decrease OPEC supplies by 500 thousand barrels per day. To this end, OPEC experts should be held every 20 days to analyze data from the monitoring of the oil market and make decisions appropriate to the situation.

In the event of the insufficiency of such a change in quotas for holding prices in the corridor, an emergency OPEC conference should have been convened. In this case, over time, the corridor boundaries could be adjusted [42].

Thus, the policy of the OPEC member countries could have a significant impact on the pricing on the world oil market.

For its part, as correctly noted in [42], consumers in the global oil market often actively use demand management. Within the International Energy Agency (IEA), various mechanisms have been developed to limit oil consumption in crisis situations. Thus, energy and oil saving technologies are being actively developed.

To reduce dependence on oil, significant efforts are being made to diversify the energy balance. It is necessary to agree with the opinion expressed in [42], where the activities of the IEA are considered successful. Thanks very significant taxes on petroleum products, member countries have achieved success in improving the energy efficiency of economies, and strategic reserves protect against the effects of interrupted oil supplies. As a result, the share of oil in the IEA member countries may be at about 4 percent of the value of imports, while in the early 1980s it reached 13 percent [42].

The prices of different grades of oil in the world market have similar dynamics. Thus, a high closeness of ties is also observed when the Urals price correlates with the purchase price of US refineries for imported crude oil.

The price of Urals oil is decisive for the prices of Russian oil products and significantly affects the price of gas. Closeness of correlation in the period from 1994 to 2006 amounted to oil products 0.97, gas, respectively, 0.87.

Estimates of the tightness of correlations taking into account the lags, performed in [11], give similar values. As shown in this paper, many industrial products on the world market have significant correlations with the price of oil.

### 6.3 Tax revenues from the oil and gas complex in the federal budget

The price of oil “Urals” has a direct impact on the volume of foreign exchange earnings and tax revenues from the export of Russian hydrocarbons.

Gross foreign exchange earnings from the export of Russian hydrocarbons substantially depend on the price level of Urals grade oil.

The tightness of the correlation of foreign exchange earnings from exports of Russian hydrocarbons with the price of Urals grade oil shows the following
R2 indicator values: 0.787 for oil before the introduction of OPEC prices “corridor” and 0.945 after prices were introduced, 0.849 for cumulative foreign exchange earnings before the introduction of the OPEC “corridor” prices and 0.951 after the introduction of the “corridor” prices.

As can be seen from the table, the total foreign exchange earnings have a closer correlation with the price of Urals oil than the revenue components. Moreover, the introduction of the OPEC price corridor led to an increase in the narrowness of the correlation between the price of Urals oil and foreign exchange earnings from hydrocarbon exports.

In turn, the dynamics of the actual total tax revenues of the federal budget for the periods up to (01.1996–02.2000) and after the introduction of the OPEC price corridor (03.2000–01.2006) are largely determined by the price dynamics of Urals crude. The tightness of correlations after the introduction of the corridor increased from 0.23 to 0.90.

In the period after the introduction of the price corridor, there was a high correlation of correlation (calculated according to [3; 7]) between the values of the considered indicators (0.27 before and 0.93 after the introduction of the price corridor). This indirectly indicates the significant impact of export prices on hydrocarbons and on their foreign exchange earnings on federal budget revenues.

The greatest influence on the dynamics of export prices of both oil and oil products, have a mineral extraction tax (MET) and export duties, because they are directly related to world oil prices. Part two of Article 338 of the Tax Code of the Russian Federation defines the tax base for the mineral extraction tax as the value of the extracted minerals.

Article 340 of the Tax Code of the Russian Federation determines the value of mined minerals either on the basis of the prevailing sales prices, or by calculation. Part two of Article 342 of the Tax Code of the Russian Federation sets the rate of mineral extraction tax equal to 16.5% in the production of hydrocarbons. Thus, MET obligations should be determined on the basis of actual sales prices [12].

However, from January 1, 2002 till December 31, 2006 a temporary method is used to determine the value of mined minerals, introduced by article 5 of the Federal Law of August 8, 2001 [13]. According to this temporary method, the tax rate on MET is set in a fixed amount in rubles (before 2005 — 347 rubles per ton, from January 1, 2005 — 419 rubles per ton).

At the same time, this tax rate is applied with a coefficient (Cc) characterizing the dynamics of world oil prices. Previously, a different formula was proposed for calculating the severance tax, but it was not introduced. Thus, the
calculation of the severance tax is based on the export price of oil, regardless of the actual sales prices of oil by taxpayers.

The draft federal law [16] proposed a new scale of export customs duties on oil, as well as an increase in the mineral extraction tax. He envisaged a more substantial withdrawal of income of oil companies, starting with the price of $20 per barrel. For this, firstly, an additional interval had to be introduced at the price of oil from $20 to $25 per barrel with a rate of 45%, and secondly, the marginal rate of customs withdrawals from the price of oil in excess of $25 per barrel increases from 40 to 65%.

In November 2005, the FTS of Russia recommended calculating the MET rate, taking into account the Cp coefficient at the level of 1964 — 3,139 rubles per ton based on the average price of Urals oil on the Mediterranean and Rotterdam markets at $51.55 a barrel, the average value of the dollar/ruble rate set by the Central Bank of the Russian Federation for all days of the tax period at 28.7567; the value of the coefficient Kc equal to 4,6881 [17]. In 2006, Temporary MET method is preserved.

The adjustment of the scale of customs duties on oil exports and the tax on additional income from the extraction of minerals (hydrocarbons) had a significant impact on the increase in tax revenues of the federal budget. When the price level of Urals grade oil is about $40 per barrel, the state would have to withdraw in the form of customs duty 6% of the export earnings of the oil company.

Such a tax increase with an increase in oil prices on the world market, causing a decrease in their revenues (for example, at a price of about $60–65 per barrel, Revenue becomes equal to one MET only), generated new proposals for establishing the MET tax rate. In particular, “Assoneft” since 2006 proposed to change the formula and scale of the mineral extraction tax, which would be applied in excess of $40 per barrel (the price at which the revenue side of the budget for 2006 was calculated), namely, a reduction factor of 0.8, which partially compensates for the loss of revenues of oil companies. Proposed by Assoneft the MET tax rate is presented.

Starting January 1, 2007 amendments to the Tax Code of the Russian Federation came into force, establishing a reduced MET tax rate for fields developed by 80% or more [29; 32]. The distribution of revenue from the sale of oil, important for determining the mineral extraction tax, at different levels of oil prices in 2007 is presented. As can be seen from the table, the higher the base price of Urals oil, the greater the profit margin.

At the same time, customs duties have a significant impact on profit margins, accounted for about half of the base price of Urals oil. Changes in customs duties on oil and oil products in 2007–2008.
The highest customs duties in Russia are set on oil, lower — on gas-oil, light and medium distillates, even lower — on heating oil. In 2008, the amount of customs duties varied. The average level of the price of Urals oil in 2008 amounted to 689.24 dollars/ton, the average level of customs duties amounted to 355.23 dollars/ton.

Currently, Chapter 26 of the Tax Code of the Russian Federation “Mineral Extraction Tax (MET)” defines the procedure for calculating the mineral tax in the following way. The mineral extraction tax is differentiated depending on the tax rate applied in different cases, as well as in monetary terms. In accordance with Art. 334, 335 of the Tax Code of the Russian Federation, taxpayers for the mineral extraction tax are organizations and individual entrepreneurs recognized by users of subsoil. Registration as taxpayers is carried out:

1. At the location of the subsoil plot provided to the taxpayer for use. (territory of the subject of the Russian Federation on which the site is located);
2. At the location of the organization (place of residence of an individual) if mining operations are carried out on the continental shelf of the Russian Federation, in the exclusive economic zone of the Russian Federation, outside the Russian Federation in territories under the jurisdiction of the Russian Federation or leased.

To the number of objects of taxation, according to Art. 336, 337 of the Tax Code, include:

1) Minerals extracted from the depths of the Russian Federation;
2) Minerals extracted from waste (losses) of extractive industries, if such extraction is subject to separate licensing;
3) Minerals extracted from the subsoil outside the Russian Federation in the territories under the jurisdiction of the Russian Federation (as well as leased).

The main types of minerals include:

1. Anthracite, black coal, brown coal and combustible slates.
2. Peat.
3. Hydrocarbon raw materials (oil, gas condensate, natural and combustible gas and other gases).
5. Useful components of complex ore.
6. Gorno-chemical non-metallic raw materials (apatite, phosphate ores, salts, sulfur, spar, earthen paints, etc.).
7. Raw materials of rare metals (indium, cadmium, tellurium, thallium, gallium, etc.).
8. Non-metallic raw materials (gypsum, anhydride, chalk, limestone, pebbles, gravel, sand, clay, facing stones).
9. A conditional product of piezo-optic raw materials (topaz, jade, jadeite, rhodonite, lazurite, amethyst, turquoise, agate, jasper, etc.).
10. Natural diamonds, other precious stones (diamonds, emerald, ruby, sapphire, alexandrite, amber).
11. Concentrates and other intermediate products containing drag. metals (gold, silver, platinum, palladium, iridium, rhodium, ruthenium, osmium).
12. Salt natural and pure sodium chloride.
13. Groundwater containing minerals and medicinal resources.

At the same time, a number of mineral resources are not recognized as an object of taxation. According to article 336 of the Tax Code of the Russian Federation, the following is not recognized as a taxable object:

1. Common minerals and groundwater extracted by an individual entrepreneur and used for personal consumption;
2. Extracted geological collection materials;
3. Minerals mined during the formation, use, reconstruction and repair of protected geological objects;
4. Mineral resources extracted from dumps or wastes (losses) of the mining and related processing industries;
5. Drainage groundwater that is not counted on the state balance of mineral reserves extracted during the development of mineral deposits or in the construction and operation of underground structures.

The tax base in accordance with Art. 338–340 of the Tax Code of the Russian Federation is independently determined by the taxpayer as the cost of the extracted minerals, with the exception of oil, dehydrated, desalted and stabilized, associated gas and natural gas from all types of hydrocarbon deposits. The tax base for the extraction of oil, dehydrated, desalted and stabilized, associated gas and natural gas from all types of hydrocarbon deposits is defined as the amount of mineral resources extracted in physical terms. The tax base is determined separately for each extracted mineral. In respect of minerals for which different tax rates are established or the rate is calculated taking into account the coefficient, the tax base is determined for each tax rate. In accordance with Art. 341 of the Tax Code, the tax period is the calendar month.

The tax amount is calculated as the percentage of the tax base corresponding to the tax rate. The amount of tax on dehydrated, desalted and stabilized oil, associated gas and natural gas from all types of hydrocarbon deposits is calculated as the product of the corresponding tax rate and the tax base value. The amount of tax is calculated at the end of each tax period for each mineral
extracted. The tax is payable to the budget at the location of each subsoil area provided to the taxpayer for use. At the same time, the amount of tax is calculated based on the share of the mineral extracted in each subsoil area in the total amount of the extracted mineral of the corresponding type (as amended on 27.07.2010 N 229-FZ).

The tax amount calculated for minerals mined outside the Russian Federation is payable to the budget at the location of the organization or place of residence of an individual entrepreneur (as amended by 07/27/2010 N 229-FZ). According to Article 344, 345 of the Tax Code of the Russian Federation, the tax is paid no later than the 25th day of the month following the expired tax period. The obligation to submit a tax return arises from the tax period in which the actual mining began. Tax return is submitted no later than the last day of the month following the expired tax period. The tax return is submitted to the tax authorities at the location (place of residence) of the taxpayer.

However, this should take into account not only the tax rate, but also the level of prices for hydrocarbons. The development of the revenue part of the federal budget for each specific year is directly related to the forecast of hydrocarbon prices for the next two-year period: for the year of budget preparation and for the year of its execution. It is clear that before the official adoption of the budget, all changes in export prices and receipts from the export of hydrocarbons can be technically taken into account.

But, subsequently, significant negative deviations should actually be compensated for by the proceeds from the sovereign wealth fund. Such a scheme requires a constant assessment of the possible behavior of the oil price on the world market over a two-year period. The current practice of developing a federal budget takes into account the forecast of the price of Russian oil on the world market.

The price is the starting point for determining the estimated price of oil (the so-called “cut-off price”), according to the level of which the expected real revenues to the budget are set. At the beginning of 2004, “cut-off price” was equal to $20 per barrel [19], i.e. at the level of the lower border of the price corridor, with an average price of more than $26 per barrel. In 2005, cut-off price was $20 per barrel [20], in 2006 — $27 a barrel [21]. From January 1, 2006 in accordance with the Federal Law of October 12, 2005. No. 127-FZ cut-off price was raised to $27 per barrel. In this regard, it was necessary to assess the impact of reducing the price of Russian export oil below the border at $20 per barrel.

As can be seen, the assignment of “cut-off prices” are very conservative decisions. Nevertheless, one could expect that if the Urals oil price level remains high on the world market, the cut-off price will rise. Further strengthening of
the sovereign wealth fund can be given the opportunity to set the “cut-off price” at a few dollars per barrel lower than the average price of Russian export oil projected for the coming year.

This would make it possible to increase the base of cash receipts in the revenues of the federal budget. At the same time, despite numerous forecasts, due to the risk of increasing inflation and the growing dependence of the federal budget of Russia on the external economic situation in the world, a further increase in the “cut-off price” was not made even in the context of continued oil prices [40].
Chapter 7. Russian practice in stabilizing financial revenues to the state budget

7.1 Suggestions and solutions to stabilize financial revenues to the Russian federal budget

Planning for the federal budget for each regular year is based on the expected price of Russian oil on the world market. The little predictable volatility of world oil prices, along with such factors as inflation, can significantly affect the level of financing of individual items of the federal budget to be executed, and create the threat of its deficit.

The first type of risk is systematic non-diversifiable risk; the second is budget planning risk, which is unsystematic diversified risk. The presence of risks of non-performance of the budget requires the use of appropriate management methods.

As the transition from phase to phase changes the degree of damage from the occurrence of risk. So, in the phase of rejection of risk, the damage is minimal, and in the post-risk phase, it is maximum. As can be seen from the table, depending on the phase, different risk management methods are used.

All of them are aimed at preventing losses and dissipating the risks that are carried out in the phase before the occurrence of the risk itself.

When planning the federal budget for export Russian oil, he considered it possible to establish a cut-off price of 10–12 dollars per barrel. It was supposed to be the boundary for budget revenues, which is permissible to use for current budget expenditures. All revenues to the state from the sale of export oil at higher prices were recommended to be considered as excess profits, which should have been sent to the stabilization fund.

A different scheme for the formation and use of the stabilization fund was proposed by the Ministry of Finance of the Russian Federation [17]. According to this version, it is formed at the expense of part of the taxes received from the sale of all resources on the world market at elevated prices. At the same time, the cut-off price was to be determined as the average price of each resource over the past 10 years. The purpose of the fund was to be the financing of investment programs within the country. However, this orientation largely changes the purpose of the actions of the stabilization fund. The task of protecting a country’s budget from a negative conjuncture is replaced by the condition for maintaining investment programs, regardless of the state of the remaining items in the country’s budget.

The Ministry of Finance of the Russian Federation considered another scheme for the formation of a stabilization fund [18]. It involves the accumula-
tion in it of funds in foreign currency and their expenditure on the repayment of external debt.

The IET employees [10] proposed a draft law “On the stabilization fund”, a method of forming a stabilization fund at the expense of the share of tax revenues of the federal budget, and conditions for transferring funds from the stabilization fund to the budget.

The final choice of the method of stabilizing budget revenues was made by President of the Russian Federation V. V. Putin in 2001 in the budget message to the Federal Assembly of the Russian Federation. He recommended the establishment of a stabilization fund at the expense of revenues from oil exports. In 2002 The Russian government has created a financial reserve, which was formed on a residual basis. It includes all the additional income received at a cut-off price of $22.5 per barrel. This allowed in 2003, pass the peak of payments on the external debt of the country, amounting to more than $17 billion [20].

The volume of the Stabilization Fund from the very beginning of the discussion about its creation was subjected to various adjustments. Initially, the Ministry of Finance of the Russian Federation established it in 2003, in the amount of 8.7% of GDP or 1,140.1 billion rubles [21]. Later, the volume of the Stabilization Fund was reduced to 5.25% (688 billion rubles) [22]. According to experts of the Ministry of Finance of the Russian Federation, he could ensure the fulfillment of the obligations of the federal budget for three years at an oil export price of $15 per barrel [23].

In the future, the Ministry of Finance of the Russian Federation further reduced the size of the fund to about 5% of GDP (668.1 billion rubles) [24; 25], and in 2004 Finance Minister A. Kudrin proposed to fix the required amount of the fund at 4.55% of GDP. In this case, its absolute size in 2005 would have risen to 842.4 billion rubles, in 2006 — Up to 962.1, and in 2020 — up to 3.633 billion rubles [26]. The calculations justifying such a size of the Stabilization Fund have not been published.


In accordance with the explanatory note to these laws, the Government of the Russian Federation adopted the following formula for calculating funds to
be credited to the Stabilization Fund of the federal budget during periods of favorable foreign economic conditions [30]:
\[
SF = R1 \cdot (S1 - S1 \text{ bases})/S1 + R2 \cdot (S2 - S2 \text{ bases})/S2 + R3 \cdot (S3 - S3 \text{ bases})/S3, \quad (7.1)
\]
where: SF is the amount of funds to be transferred to the Stabilization Fund in the current month;

- R1 — receipts in the current month in the federal budget of the export customs duty on oil;
- R2 — receipts in the current month in the federal budget of the export customs duty on petroleum products;
- R3 — receipts in the current month in the federal budget mineral extraction tax on oil;

- S1, S1 bases — the rate of export customs duty on oil calculated at the base level of the price of oil, respectively, acting in the current month;
- S2, S2 bases — the rate of export customs duty for oil products, calculated at the base price for oil, respectively, acting in the current month;
- S3, S3 bases — respectively, the current MET rate for oil, calculated in the current month and calculated at the base oil price.

Subjects for discussion were the rules and procedures for filling and disbursing funds of the fund. Thus, it was proposed to use the funds of the Stabilization Fund not only to finance federal budget expenditures, but also on infrastructure projects [31].

In accordance with the legislation, operations with the funds of the Stabilization Fund were to be conducted on a separate subaccount of the Ministry of Finance of the Russian Federation [29]. The funds to be credited to the fund were to be transferred to the accounts of the General Directorate of the Federal Treasury of the Ministry of Finance of the Russian Federation, opened with the Central Bank of the Russian Federation, according to certain rules [30]. Initially, the Ministry of Finance of the Russian Federation developed two options for a possible increase in the volume of the Stabilization Fund of the Russian Federation.

He proceeded from the minimum and maximum possible for obtaining export customs duties on oil and oil products and the mineral extraction tax on oil.

The development center proposed its concept of filling the Stabilization Fund [32]. It consists in the fact that the declared volume of the fund is achieved at the expense of budget surpluses during 2004–2006.

Thus, in an alternative concept, it was implicitly assumed that the budget would be executed with a zero balance at the set cut-off price. The resulting surplus was associated solely with export earnings when the average annual price (2004 — 22; 2005 — 22.5; 2006 — $23 per barrel) was exceeded over the cut-off price.
However, none of the concepts has been implemented in practice. December 31, 2004 the volume of the Stabilization Fund amounted to 522.3 billion rubles [33], and on January 1, 2006 was projected at 1,237 billion rubles [34]. The fund’s assets were scheduled to be held in foreign currency (US dollars, euros and pounds sterling) in the debt instruments of ten foreign countries [35].

The statutory minimum Stabilization Fund of 500 billion rubles has not been tested for adequacy of replenishment of the federal budget in the event of unfavorable pricing conditions for Russian oil on the world market. Therefore, it is possible that in a critical situation a sequestration of a number of articles of the federal budget may be required.

This situation developed in 1997, when the volume of expenditures proposed for sequestration amounted to 108.2 trillion. rub. [35], i.e. 20.4% of the total federal budget expenditures in 1997 or 4.6% of GDP. However, the draft law of 1997. It was not approved because the principles of the formation and use of funds from targeted budget funds were violated; there was no socio-economic assessment of the consequences of introducing sequestration and reducing financial assistance to the subjects of the Russian Federation [37]. Subsequently, the required size of the Stabilization Fund was proposed to estimate both in terms of value and as a percentage of GDP.

For the first time a proposal to determine the size of the Stabilization Fund as a percentage of GDP was made by the author in the article [38].

It seems to us that determining the volume of the Stabilization Fund as a percentage of GDP was more expedient, since it allows eliminating inflation and, thus, more reliably estimating the required amount of the fund in the planned year. The neglect of this fact led to the loss by the Stabilization Fund of 23 billion rubles in 2004 [40].

7.2 Ways to stabilize financial revenues to federal budgets

Ways to stabilize budget revenues (the creation of funds and special reserves) are widely used in foreign practice in connection with the protection of the country’s economy from price fluctuations in the world market. Therefore, an analysis of the experience of countries where they have already been created helps to work out rational ways to solve the problem of improving budget planning in Russia. This is significant given the dependence of the Russian federal budget on oil prices on the world market.

Sovereign wealth funds appeared in the early 50s, but only now they have become the object of close attention of economists, politicians, scientists. One of the reasons for this increased attention to these funds is the large amounts of investment in sovereign wealth funds. So, for example, in 2007. The Abu
Dhabi Investment Authority (Adu Dhabi Investment Authority (ADIA)) acquired a 4.9% stake in Citygroup, a Qatar fund — 6.4% stake in Barclays, a China fund — 10% stake in Morgan Stanley, a Singapore fund — 11% of shares in UBS. The Abu Dhabi Investment Authority (ADIA) is the largest in the world in 2010. It is also one of the largest institutional investors in the world.

In some cases, funds are mixed according to the nature of their use. Thus, in the Republic of Kiribati in 1956, the Revenue Equalization Fund (RERF) was established as a trust fund for future generations after the expected depletion of a phosphate deposit [5–8].

The Oil Fund (Oil Fund) of Kuwait was established in 1960, in the form of the General Reserve Fund for accumulating funds from the budget surplus resulting from high revenues from oil exports. It was used to finance all types of government spending [9].

In 1976, The Reserve Fund for Future Generations was also established in Kuwait. Initially, the Fund was formed on the basis of 50% of the total reserves of the Fund at the time of creation of the fund and 10% of the annual income of the state, as well as income from the assets of the Fund. The income of the Fund does not depend on fluctuations in oil prices, and currently amounts to 10% of all government revenues and all revenues from own investments.

Since the creation of the Reserve Fund for future generations, the General Reserve Fund has begun to perform stabilization functions, as well as service the public debt and be used for public investment.

In 1976, the Alberta Heritage Savings Trust Fund was established in the Canadian province of Alberta. Part of the resources of this fund is spent on savings for future generations, and part is used to finance current government programs and public services. Similar in structure and objectives, the fund operates in the state of Alaska (USA) and in the state of Papua-New Guinea [10].

In Alaska (USA) there are actually two funds: a savings fund — the Alaska Permanent Fund (Alaska Permanent Fund) and a stabilization fund — the Constitutional Budget Reserve Fund.

The Alaska Savings Permanent Fund was established in 1976, as a trust fund for future generations. Its main goal is to create an investment base that can provide income to future generations when oil reserves are exhausted. The fund is formed at the expense of at least 25% of deductions from the total volume of payments for the use of mineral resources, royalties, bonuses received by the state of Alaska. The income of the fund does not depend on oil prices and the situation in the public sector [10].

The Stabilization Constitutional Budget Reserve Fund of the State of Alaska was created in 1990, to compensate for the fall in state budget revenues, including
to finance cash gaps during the fiscal year. Fund revenues are not related to changes in oil prices. Their volume is established annually by the State Congress as part of tax revenues and royalties, as well as fund income from investments.

In Oman, the creation of the State General Reserve Fund (State General Reserve Fund) in 1980, was caused by the need to accumulate funds for future generations instead of oil revenues. However, fund resources were often used for current government spending. Since 1989 the Fund receives all the oil revenues received at prices higher than $15 per barrel. In 1990, The Emergency Fund (Contingency Fund) was established, later renamed the Oil Fund (Oil Fund). Its goal is to finance investments in the oil sector. The fund is formed under the same conditions as the State Fund for General Reserves [11].

In Chile, the Copper Stabilization Fund was created in 1985 to regulate the real exchange rate and state budget revenues, regardless of fluctuations in the currency earnings from copper exports. Its peculiarity is that it is based only on the income of the state-owned copper company (CODELCO), i.e. Receipts to the fund, in fact, are an additional tax for the company. The amount of income to the fund is calculated by the Government of Chile, depending on the excess of the actual current price of copper under export contracts over the base long-term price.

In 1993, the Oil Stabilization Fund was established in Colombia. Its distinguishing feature is decentralization, i.e. Receipts to the fund are distributed to the territorial budgets and to the state oil company in accordance with the rule established in advance. A similar system operates in Venezuela.

In Venezuela, the Investment Fund for Macroeconomic Stabilization (Investment Fund for Macroeconomic Stabilization) was established in November 1998, when world oil prices reached their minimum. Its goal is to protect the economy and the state budget from fluctuations in oil prices. The Foundation has become part of the Venezuelan government's program to stabilize public finances and improve the management of the state oil company, Petroleos de Venezuela. The fund’s funds are formed when the current oil price exceeds the cut-off price (reference value) based on the five-year average oil price level. Financial resources are used to compensate for the decrease in revenues while reducing revenues from oil exports. The funds are received by the central government, regional authorities and the state oil company itself. In the fund for each of the three beneficiaries, financial resources are deposited in accordance with their shares in the fund (according to the results of 2000, the shares were 10, 37 and 53% respectively) [12].

In Nigeria, the Petroleum Trust Fund (Petroleum Trust Fund) was established in 1995 with the goal of generating additional state budget revenues to finance health care, education, and other state social services.
The creation of physical reserves of oil is widely used by importing countries. For this purpose, artificial ones are specially constructed or natural storage tanks are used. As a result, these countries receive significant economic benefits: due to the accumulation of oil with a decrease in world prices and its direction into the country’s economy with rising prices. This allows you to dampen the growth of oil prices. Strategic oil reserves in 2002 amounted to more than 216 million tons.

Oil reserves in the countries of the world are created in the form of oil and/or petroleum products. However, storing the latter is more difficult. The organization of storage of reserve stocks is carried out according to the following schemes:

1) directly by the state (government stocks);
2) specially created organizations agencies (agency stocks);
3) oil companies at the expense of obligations for the reservation (company stocks);
4) the use of combined approaches.

The state reserves of oil are created in the USA, Japan, Germany, Italy, Ireland and a number of other countries. In total, they make up 26% of all strategic oil reserves in the IEA member countries (International Energy Agency). By the end of 2004 the formation of a state reserve of petroleum products was also being prepared in Ukraine [13]. China has also announced the creation of strategic oil reserves [14]. An interesting history of the formation of strategic oil reserves of the IEA. The International Energy Agency (IEA) is an autonomous body within the Organization for Economic Cooperation and Development (OECD).

It was created in 1974 on the initiative of US Secretary of State G. Kissing-er. IEA members are 27 countries: Australia, Austria, Belgium, Great Britain, Hungary, Germany, Greece, Denmark, Ireland, Spain, Italy, Canada, South Korea, Luxembourg, The Netherlands, New Zealand, Norway, Poland, Portugal, USA, Turkey, Finland, France, Switzerland, Sweden, the Czech Republic, Japan, as well as the European Union. A number of countries are currently exploring the possibility of joining the IEA [52].

As correctly stated in [52], in 1973–1974, in the period before the onset of the energy crisis, in industrialized countries, energy security issues were not included in the category of priority problems. The rapid growth of cheap oil imports, especially in the early 1970s, gave obvious economic advantages. The largest oil companies were the main actors on the world oil market. In addition, in the event of problems with supply shortages, the United States, which had significant free capacity, could always enter the market with
additional supplies, which gave the industrialized countries of Europe and the Far East, as well as the United States of America itself, a comfortable sense of oil security [52].

As correctly noted in [52], economic growth in industrialized countries has led to even more rapid growth in oil consumption, which was aggravated by the lack of adequate energy saving measures, as well as the lack of development of alternative energy sources. In turn, low oil prices reduced the attractiveness of investment in the oil industry and contributed to a decrease in production capacity. The hasty introduction of environmental protection laws also laid down the burden on the production of oil and other major sources of energy, which also contributed to increased tensions in the markets [52].

Thus, it is necessary to agree with the conclusion presented in [52] that the oil market has gradually transformed from a buyers market to a sellers market. At the same time, as correctly noted in [52], oil-producing countries united in the Organization of Petroleum Exporting Countries (OPEC), were seeking greater control over the national oil wealth and, consequently, greater revenues from oil production [52]. This contributed to an increase in prices, the transfer of wealth from industrialized countries to countries — oil producers, inflation and increased tension in financial markets. Moreover, the source of additional oil entering the market was mainly the Middle East. In these circumstances, it was impossible to rule out that oil-producing countries may find that their oil wealth, the cost of which has continuously increased, can be used not only in economic interests, but also as a weapon for achieving political goals in completely unrelated areas of international relations [52].

During the crisis of 1973–1974, the worst concerns of industrialized countries came to fruition when, in October 1973, most OPEC member countries took concerted action to restrict oil production from 20.8 million barrels per day to about 15.8 million barrels per day. The disappearance of free production facilities located outside OPEC countries, combined with a reduction in production, led to disruption of vital oil supplies to industrialized countries and the inability to prevent price hikes [52]. As rightly pointed out in [52], the solution to the problem of insufficient supply was on the shoulders of oil companies and the governments of industrialized countries. Under these conditions, the main problems were lack of information and organizational weaknesses. Governments, moreover, had additional political difficulties which were connected with the conflict between the national interests of different countries, which impeded joint actions to resolve the general crisis [52].

It is necessary to agree with the opinion expressed in [52] that all the above-mentioned events made evident the high degree of dependence of industrialized
countries on oil imports and their vulnerability to economic losses and political pressure caused by the threat of the use or actual implementation of an interruption in oil supplies. Thus, we can summarize the fact that industrial countries faced the problem of practically lack of control over one of the most important goods used by economies, as well as inadequate readiness to take joint actions to resolve economic and political vulnerability [52].

As was rightly noted in [52], the aggravation of the energy situation, the rise in prices for energy resources posed difficult problems for the economies of the leading countries of the world. Among these problems were the following: the energy efficiency of the scientific, technical and industrial potential and its connection with the growth of labor productivity; change in the fuel and energy balance; restructuring of energy-producing and energy-consuming industrial structures, as well as the related spheres of the economy; the need for significant investment in energy and environmental compliance; the use of government leverage to strengthen its own national energy base in the context of tensions with oil-producing countries and the instability of political regimes in a number of these countries [52].

As narrated in [52], in February 1974, An energy conference was convened in Washington with the participation of leading Western countries. The delegation of the United States made a proposal to redistribute the available oil supplies during times of crisis and prolonged shortage of oil. This proposal reflected the position that “we cannot expose our security and economy to the action of forces beyond our control” [52].

In 1974, Most OECD member countries decided to establish the International Energy Agency (IEA). Member States of the Agency agreed to take joint measures in the event of significant disruptions in the supply of oil [52].

Also, the IEA member countries agreed to share energy information to coordinate their energy policies and to cooperate in the development of energy programs. These provisions are embodied in the Agreement on the International Energy Program (IEP), which formed the basis for the creation of the Agency. The following tasks were defined in the MEP [52].

1) Strengthen and improve the system to combat disruptions in oil supply.
2) Development of the basics of conducting a rational energy policy in the framework of cooperation with non-Agency countries, promoting its implementation, cooperation with industry, international organizations.
3) Creating a permanent information system for the international oil market.
4) Improving the structure of world energy supply and demand through the development of alternative energy sources and increasing energy efficiency.
5) Promoting the integration of environmental and energy policies [52].

As correctly noted in Ref. [52], the main goal that the IEA founders set for themselves was to ensure energy security, with particular emphasis on oil security. In the event of significant interruptions in the supply of oil of international character, the founders of the IEA created a contractual system for the physical distribution of oil (the Distribution System in Crisis Situations). The IEA distribution system was created to work in case of major disruptions in oil supply — at least 7% [52].

The main elements of the distribution system include the formation of reserves, restriction of consumption, as well as the physical redistribution of oil flows. An important part of the System is its information support [52].

As indicated in [52], a 90-day reserve is needed to maintain economic activity during a supply crisis. Having the advantage of a buffer period, IEA member countries can rely on their energy resources, despite a significant decrease in oil supplies, regardless of whether the IEA distribution system is activated or not [52].

If the IEA Distribution System is activated, countries will be allowed to reduce their reserves to some estimated level, which will reduce the pressure on all countries, although this reduction in reserves is not mandatory. The amount of oil supplies available to any of the IEA countries depends on the level of reserves in other consumer countries, as well as on the availability of sufficient reserves in that country itself. Therefore, the success of Member States in maintaining stocks is important to the safety of the entire Community [52].

As rightly pointed out in Ref. [52], the IEA collects information and publishes data on the amount of oil reserves in OECD member countries. Oil reserves include crude oil (including strategic reserves), oil being processed, gas condensate and petroleum products.

Another important element of the distribution system is “preparation and effective use of measures to limit consumption in case of interruption of oil supplies”. The effectiveness of actions depends on the characteristics of consumption in each of the countries, legislation and other factors [52].

These obligations are formulated as achieving goals expressed as a reduction in consumption by a certain amount, expressed as a percentage [52]. As described in detail in [52], after detecting a fact of a decrease in the level of supply above the threshold value and receiving confirmation in accordance with the procedure described in Article 19 of the Agreement, the distribution system formally takes effect. Organizationally, the management of the distribution system is transferred to the Emergency Management Organization.

The coordinator works with the support of the IEA Secretariat and the Industrial Supply Advisory Group (ISAG). Each country will have a National
Organization for Redistribution in Crisis Situations (NESO), which controls the internal distribution of oil supplies, including oil reserves. Disputes between sellers and buyers of oil can be resolved through arbitration by the IEA Center for Conflict Management [52].

IEA has also developed additional measures to combat oil supply disruptions. They include [52]:

1) quick and coordinated use of stocks;
2) measures to reduce oil consumption;
3) short-term switching to other fuels;
4) an increase in local production;
5) obstruction of unusually large and urgent market purchases of governments and private companies.

As described in detail in Ref. [52], the IEA has developed a procedure that allows governments to quickly come to an agreement on coordinating the use of oil storages and other priority measures with significant interruptions if it is deemed necessary to relieve the tension on the oil market. Decisions on the activation of the Distribution System are made by the Secretariat, a politically neutral group of international officials [52].

The founders of the IEA believed that the decision to activate the distribution system should be primarily technical and administrative. At the same time, a political “fuse” is foreseen, since the final authority lies with the Board of Governors, which by a qualified majority may overturn the decision on the activation or deactivation of the Distribution System [52].

Thus, it is necessary to agree with the observation given in [52] that if the Distribution System is activated, the consumption and import of each of the countries fall under the relevant international distribution rules and in fact countries give up the right to unilaterally determine the amount of oil consumed [52].

It is necessary to agree with the remark made in [52] that the IEA’s policy on ensuring energy security over the thirty years of its existence has undergone a significant evolution. Initially, it consisted mainly of measures of restriction of consumption, together with the obligation to place oil supplies available in a crisis situation between member states. One of the lessons of the second oil crisis was that, even if the shortage of oil does not reach the threshold of 7%, activating the distribution system, disrupting the oil supply can cause enormous economic damage [52].

As indicated in [52], the steady growth of strategic oil reserves from 1974 to 1980 contributed to a change in the emphasis of the IEA policy. Instead of redistribution with a shortage of available oil, they began to give priority to the
coordinated use of strategic reserves. The governments of the IEA member countries agreed that in most cases timely delivery of oil from strategic reserves is a quick and effective means of restoring interrupted supplies and limiting economic damage, especially in the early stages of a crisis [52].

In 1984, the Agency made a formal decision on this problem, establishing clear procedures for member countries on the use of strategic reserves in crisis situations, accompanied by a significant reduction in oil supplies, regardless of whether the IEP Crisis Management System is activated or not [52].

At the same time, as correctly noted in [52], a change in emphasis reflected an increase in government confidence in the ability of the market to independently redistribute stocks. This ability continued to grow during the 1980s. Markets have become more flexible and transparent. Due to the rapid development of interactive information systems, price changes were immediately transmitted to market players around the world [52].

Given these fundamental changes in February 1995, the IEA made an important decision, according to which, when developing a program of action in the event of a disruption of energy supplies, member countries will first consider market-oriented measures before activating the system of redistribution of oil in crisis situations [52].

At the same time, membership in the IEA is open only to countries participating in the Organization for Economic and Social Development (OECD). The candidate country must assume obligations in accordance with the Long-Term Cooperation Program and the IEA Common Objectives, as well as participation in the Oil Distribution System in Crisis Situations. In addition, it is necessary to leave the international organizations, “whose goals are contrary to the interests of the IEA” [52].

As rightly mentioned in Ref. [52], the Committee on Relations with Non-IEA Countries, which has become increasingly important in recent years, is the body in which the IEA’s strategy for the outside world is developed.

This committee also formulates elements of the organization’s external coverage. Long-term policies naturally include the promotion of energy conservation and energy efficiency, as well as the development of alternative energy sources such as coal, natural gas, nuclear energy, hydropower and renewable energy sources [52].

The leading developed countries in the framework of the International Energy Agency are pursuing a coordinated energy policy aimed at preventing the interruption of oil supply in the emerging global oil market, to maintain a situation in which oil supply constantly exceeds demand for it and supply sources are sufficiently diversified [52].
Although the experience of the NRC is not a direct topic of this study, for a deeper understanding of the topic, the author decided to cite a number of data on the functioning of the NRC, based on research and information, very detailed and analyzed in as reference information. In particular, in the preparation of this paragraph, information was used, very deeply, in detail and interestingly presented in [47; 48; 50; 51].

As one of the largest oil consumers in the world, about half of which comes from imports, China made a decision in early 2000. on the creation of a national system of strategic reserves. Their initial goal was to provide oil in case of sudden interruptions in external supplies, but in recent years, the PRC government also began to consider the NRC in order to stabilize the domestic oil market during a period of sharp price hikes and fluctuations in world markets [47].

In 2004, construction of the first strategic oil reserves repositories was launched in the cities of Dalian (Liaoning Province), Qingdao (Shandong Province), Ningbo and Zhoushan (Zhejiang Province) [47]. The first four storage bases of the strategic reserve of China, located in Joushan (Zhoushan), Dzhaney (Zhenhai), Dalian (Dalian) and Huangdao (Huangdao) were fully commissioned in 2008. The total reserves amounted to 16.4 million cubic meters of oil, which is approximately 14 million tons [43].

According to the plans, by 2010, strategic oil reserves in China were supposed to be 12–15 million tons — equivalent to monthly oil imports, and by 2020 their volume should be increased to the volume of 3-month imports. By 2020, China plans to increase its strategic oil reserves to an average volume of oil imports in 90 days, which is 85 million tons [43].

Along with this, in 2008, CNPC announced the commencement of construction of a commercial oil reserve with a capacity of up to 1 million cubic meters in the Shanshan district of the Xinjiang Uygur Autonomous Region. As expected, this base will contribute to the stable development of the PRC’s regional economy. Thus, it is obvious that China decided to use the experience of Japan in creating a two-tier NRC system — state and commercial reserves [47].

The United States began to create its own oil reserve as a fund of deposits and today remains practically the only country where reserves are registered by law. The first strategic oil reserve in the United States was created in 1912 by consolidating six mothballed oil fields as state property [51]. After the Arab oil embargo in 1973–74, these deposits were put into development. In 1923, the decision of President Harding created the National Oil Reserve in Alaska (National Petroleum Reserve — Alaska) with an area of 7.7 million hectares for use only in case of an urgent need for a national scale. Currently, it is rather a
reserve and is under the jurisdiction of the Bureau of Land Management of the Department of the Interior [51].

After the adoption by the US House of Representatives of the Energy Strategy, in which it was supposed to begin development of deposits in Alaska, this issue caused fierce disputes and as a result did not pass the Senate. At the same time, in strategic terms, the reserves here are small: according to various estimates, from 3 billion up to 6 billion barrels. With the current level of consumption of this volume, America will last less than a year [51].

In 1975, the United States adopted the Law on Energy Policy and Energy Saving, which provided for the creation of a Strategic Oil Reserve (SNR) as a separate government agency. The goal was to create a reserve of oil in the volume of 1 billion barrels (about 160 million tons). The storage facilities of the CHP are located off the coast of the Gulf of Mexico, in the states of Texas and Louisiana, where there are natural salt caves suitable for storing oil, and there is a well-developed infrastructure of the oil industry (refineries, sea terminals, ports, etc.) [48].

US strategic oil reserves are stored in salt caverns formed in deep massive salt formations beneath most of the coast of Texas and Louisiana. Caverns are safer and more accessible for storage and cost 10 times less than ground tanks, and 20 times less than mines in hard rocks [48]. The choice of storage facilities on the coast of the Gulf of Mexico was also made because their position is convenient for connecting a commercial oil transportation network in the USA. Oil from LBW can be delivered through the internal pipeline system to almost half of the refineries of the United States or loaded onto tankers or barges for transportation to other refineries [48].

The capacity of SNZ caverns varies from 6 to 35 million barrels; An ordinary cylindrical cavern holds 10 million barrels. One storage cave is of such a size that the Sears Tower Chicago building can easily fit in it. About 50 such huge underground caves have been created for the SNZ. Salt caverns along the coast of the Gulf of Mexico have been used for oil storage by petrochemical enterprises for many years. When the US government decided to create strategic oil reserves in the mid-1970s, it acquired salt caverns previously created to store the first 250 million barrels of crude oil. It was the fastest way to start creating a buffer stock of crude oil after the oil shocks of the 1970s. To store oil more than 250 million barrels, the Department of Energy has created additional caverns [48].

Salt caverns are created in underground salt formations using a process called “solution mining”. The process involves drilling a well in a salt formation, then pumping significant volumes of fresh water to dissolve the salt. When
creating caves for SNZ, the dissolved salt was removed as saline and either pumped into absorbing wells, or, more commonly, pumped through pipelines a few miles from the coast and dumped into the Gulf of Mexico. With careful monitoring of the fresh water intake process, salt caverns of very precise dimensions can be created. For each barrel of crude oil, 7 barrels of water were spent for storage in salt pits of the LNP to create a storage tank [48].

Besides the fact that it is the cheapest way for long-term oil storage, the use of deep salt cavities is one of the most environmentally friendly methods. At a depth of 2,000 to 4,000 feet, the salt walls of the cave storage facilities are self-healing. Rock pressure makes salt walls as hard as rock, and if a crack develops in the walls, it almost instantly closes [48].

An additional advantage for storage in deep salt caverns is the natural temperature difference between the upper and lower parts of the cave (about 2 feet apart), which contributes to the continuous circulation of crude oil in the caverns, which maintains its constant quality. The fact that oil floats in water is the basis of the mechanism used for pumping and pumping oil from the LBW caves. To extract crude oil, fresh water is pumped into the bottom of the cave, which pushes the crude oil to the surface. After the oil has been recovered from the SNZ caverns, it is sent through pipelines to various terminals and refineries throughout the country [48].

The filling of the storage with oil began in 1977, and in 10 years the SNR reached the current level of reserves — 550–590 million barrels. Total storage capacity is 700 million barrels [48]. Founded in 1975 after the oil embargo of the OPEC countries, the United States CPH initially had to contain at least 750 million barrels of crude oil as an insurance against future import restrictions (the maximum size was subsequently reduced to 700 million barrels when geologically unstable storage locations) [48].

The initial intention was to fill the LCH mainly due to the purchase of crude oil on the open market. Fears about the United States’ vulnerability to new restrictions on oil supply forced the federal government to purchase the bulk of oil for ESP in the late 1970s and early 1980s, when world oil prices exceeded $30 US per barrel. This is the main reason for the fact that the average price of oil in reserves today exceeds $27 US per barrel [48].

Due to the growing deficit of the federal balance sheet, the Clinton administration in 1994 suspended purchases of crude oil in open markets. Oil imports to the United States continued to grow, while the protection provided by the reserve (reserves of less than 600 million barrels) was steadily weakened [48]. In 1995, the filling of the U.S. DTH was suspended, and the budget funds allocated to the SNR were used to reconstruct and extend the life of the storage
facilities until at least 2025. The cost of all facilities and the oil stored in them amounted to more than $20 billion, of which the cost of oil is $16 billion [51].

In February 1999, The Clinton administration announced a new plan for the resumption of the replenishment of strategic oil reserves at the expense of federal oil obtained as royalties from deposits in the central part of the Gulf of Mexico. The initiative was developed for approximately 28 million barrels of oil, which were sold from reserves in 1996 and 1997 mainly to cover the budget deficit. The oil received through the royalty system is due to the US government from operators that operate on the leased fields of the outer continental shelf owned by the federal government. The US Mineral Resources Management Service is responsible for collecting royalties. Traditionally, this service collected royalties from federal oil and gas fields leased out as cash, but in 1998 she began to test the effectiveness of collecting royalties in the form of products or in other words to obtain crude oil. This mechanism has been adopted to begin re-filling of the DCH [48].

In May 2001, The Bush administration has developed a concept for a national energy policy. This policy prescribed the replenishment of LBD through the use of the program “royalties in the form of products”, and in November 2001, President Bush announced his intention to fill the reserves to their full volume of 700 million barrels. On several occasions, the Department of Energy has revised its supply schedule for reserves, postponing them for several months, a year or more. In such cases, companies that are required to contract oil to the federal government agreed to increase the amount of oil supplied to reserves at a later date without additional costs to taxpayers. This allows you to save more oil for consumers in the market during periods when supplies are limited [48]. Oil reserves in the US strategic reserve (SPR) at the end of February 2011 amounted to 726.5 million barrels [44].

As you know, US strategic reserves are state-owned. All costs of maintaining the activities of the SNR are borne by the federal budget. Decisions on the use of stocks are made in each case by the president of the country. The situation is considered to be an emergency and requiring the use of a reserve if there is a large physical shortage of oil (in terms of volume and duration), which has led to a sharp rise in prices for petroleum products, which is dangerous for the country’s economy. The maximum oil withdrawal from the SNR was initially set at 4.1 million barrels per day [51].

January 19, 1991 Together with international efforts to resist the Iraqi invasion of Kuwait, President George W. Bush issued a decree on the first ever emergency withdrawal of oil from the ESP. The Department of Energy has implemented a plan to seize and sell 33.75 million barrels of crude oil — the share of the
The United States agreed with the International Energy Agency. The withdrawal took place on schedule and without any serious complications. However, between the initial authorization and the final sale, world oil supplies and prices stabilized, and the United States reduced the sales amount to 17.3 million barrels, which were sold to 13 companies [48].

In 1993–2000, the main priority was to maintain the continued availability of reserves, at least until 2020, through programs to extend the life of the equipment. This included the replacement or upgrading of pumps, pipelines and other key components of the LHC in the Gulf Coast region [48].

November 13, 2001 President George W. Bush ordered the LOD to be filled to their maximum capacity, approximately 700 million barrels, while continuing to use the Royalty-in-Kind program, held jointly by the Ministry of Energy and the Ministry of the Interior. The “royalty in the form of products” program is applied to oil that is due to the US government from producers operating on leased fields of the outer continental shelf owned by the federal government. These producers are required to provide from 12.5 to 16.7% of the oil they produce to the US government. The government can either demand the receipt of the oil itself, or get the equivalent of its dollar value [48].

In early March 2011 The presidential administration of the United States has accepted the question of the need to use part of the strategic oil reserves as a result of rising fuel prices due to a decrease in the supply of “black gold” from the Middle East [49].

It is also interesting to consider the experience of using the northeast stocks of US domestic fuel. This is a buffer stock of boiler fuel for heating homes and businesses in the northeastern United States, its volume is 2 million barrels. Created in 2000, the utility fuel was conceived as a buffer stock, which could supplement the supply of industrial fuel in the event of a serious disruption of the supply of household fuel to this region, which is highly dependent on fuel supplies [48]. Of the 7.7 million households in the United States that use heating oil to heat their homes, 5.3 million households, or about 69%, are located in the northeastern part of the country, which makes this region particularly vulnerable to interruptions in the supply of heating oil [48].

On July 10, 2000, President Clinton issued a decree to create a stock of 2 million barrels of household fuel as part of the NWS in the northeastern United States. The intention was to create a buffer stock sufficient in volume to allow commercial companies to compensate for supply disruptions or regulate fuel in harsh winter conditions, but not so large as to repel suppliers from the natural reaction of price increases as a result of rising demand. For northeastern consumers, an adequate supply of 10 days is approximately 2 million
barrels, which is the amount that can be delivered by ships carrying fuel from the Gulf of Mexico to the New York port in the required time [48].

Immediately after the presidential decree of July 10, 2000, the Department of Energy, acting through the Center for Defense Energy Support, issued a requirement to exchange crude oil from LBL for 2 million barrels of distillate fuel to build reserves and create storage facilities in the north-east. The exchange using crude oil SNC was chosen due to insufficient funding to create reserves of utility fuel [48].

On July 19, 2000, the Center for Defense Energy Support issued a decree for companies wishing to provide fuel storage tanks, fuel reserves, or both. On August 17, 2000, contracts for the storage of 2 million barrels in New Haven, Connecticut, Woodbridge, New Jersey, New York port were granted. On August 29, 2000, the Department of Energy announced contracts with Equiva Trading Co and Morgan Stanley Capital Group for the supply of 2 million barrels of oil fuel [48].


The northeast stock of utility fuel was considered ready. Although the lack of supply of heating oil in the winter of 2000–2001. It was not observed, the existence of the northeastern stock of municipal fuel was a reliable support for millions of Americans. Recognizing this, the coming to power of the George W. Bush administration has increased the importance of this reserve. March 6, 2001 The Secretary of Energy officially announced to Congress that the Bush administration would establish this reserve as a permanent part of measures to maintain the country’s energy readiness, separating it from SNZ [48].

In May 2001, President Bush issued provisions for the National Energy Policy, where he once again confirmed this reserve as a means to help ensure adequate supply of heating oil in the case of colder than usual winters. On August 6, 2001, the Department of Energy announced that Minister of Energy Abraham approved the relocation of 150,000 barrels of buffer reserves of heating oil to the Motiva Terminal in Providence, Rhode Island. In accordance with the government agreement with the company “Equiva Trading Co.”, providence reserves may be expanded in the future to 250 thousand barrels [48].

“The accumulation of domestic fuel reserves at Providence gives us a third geographic point from which we can supply fuel to households and commercial enterprises in the event of insufficient supply”, Abraham said. “Providence has a particularly advantageous location, as it expands our supply capabilities to the Boston area and gives us additional fuel loading options for land and maritime transport” [48].
According to researchers [47], “if initially the main purpose of creating strategic oil reserves (NRC) was to maintain economic activity during periods of crisis of oil supply through the use of reserves, then today large countries see the NRC as a lever to influence oil price adjustment. The experience of recent years has shown that a crisis reduction in the supply of oil by 3.5–4% entails an inadequate increase in its value by 1.5–2 times, while oil intervention by oil from the NRC on the world market allows to restrain price increases. As the experience of the International Energy Agency (IEA) showed, the sale of part of the strategic reserve during energy crises is an effective lever of influence on the price policy of OPEC and world oil prices in general” [47].

As researchers rightly point out [47], if initially only those countries that strongly depended on external oil supplies created strategic reserves, then a new function of the NRC appeared, which began to attract the attention of oil-exporting countries: to strengthen its energy security, many countries of the world Regardless of the structure of the fuel and energy complex, they began to seriously think about the creation of the NRC. Thus, such oil-producing states as Malaysia, Kuwait, and Jordan have already begun to form the NRC. For example, Russia — one of the “giants” of the world market for oil production and exports — recently announced the creation of its oil reserves. It should be noted that such a tendency fundamentally changes the classical concept of the NRC, which in the future can be significantly affected by reformatting the world oil market [47].

The strategic reserves of France are about 17 million tons of petroleum products and crude oil. Most of these reserves are stored at state bases, but about five million tons are distributed in private tank farms. Private tank farms can use this fuel only with the permission of the government. The total strategic reserve of the country can last for 98 days of uninterrupted supply of customers [45]. State strategic reserves of oil are also available in Hungary [46].

State oil reserves are in Japan. As early as 1975, a law was passed on the oil reserves of Japan, providing for the formation of state (NRC) and commercial (industrial) emergency oil reserves. Initially, state oil reserves amounted to about 320 million barrels (this is equivalent to 90–100 days of consumption). These reserves are managed by the state-owned Japan National Petroleum Corporation (JNOC) and distributed to 10 storage sites. In addition, Japanese companies are also required to maintain a reserve with a volume sufficient for 70 days of consumption, including both oil and petroleum products. Accordingly, in the amount of state and commercial reserves of Japan will be enough for 5 months of consumption. As a result, Japan occupies a leading position in the world in terms of the provision of strategic reserves of energy resources [47].
In 2006, The Ministry of Economy and Industry of Japan announced a 40% increase in emergency supplies of up to 450 million barrels of oil in order to strengthen its energy security. For the first time the buildup of oil reserves in Japan was undertaken in 1989. In accordance with the report of the Ministry of Economy and Industry of Japan, the increase in reserves was associated with an increased threat of destabilization of energy supplies against the background of high world prices and a volatile political situation in a number of exporting countries. According to experts, the increase in the NRC of Japan will take at least 10 years and at current prices will cost the state more than a billion. At the same time, the amount of reserves that private oil companies are required to have will be reduced by 10–15% [47].

Japan has already opened its oil reserves twice, but only from the stocks of private companies. For the first time it happened in 1991 due to the crisis in the Persian Gulf, the second time — in 2005, after Hurricane Katrina in the United States [50]. When the situation in the energy sphere is exacerbated, commercial reserves are primarily realized, i.e. stocks of the fuel and energy sector. There were a total of three periods when Japan resorted to this measure: from March 1979 to August 1980 (the height of the second oil crisis), from January to March 1991 (Iraq’s seizure of Kuwait and Operation Desert Storm) and September to December 2005 (aftermath of a hurricane in the USA). The operational aspect of the realization of a strategic oil reserve is how quickly oil from storage tanks can be delivered to refineries. The term for the implementation of stocks from state-owned storage facilities varies from two weeks to two months, depending on the type of structure. While for the sale of oil reserves held by private companies, the period is several days [47].

In January 2002, an important amendment was made to the Law on Oil Reserves, which gives the authorities the right to use the accumulated state reserves to counteract a sharp increase in prices, whereas previously it was only possible to close the physical deficit that threatened to stop production and spread the deficit along the food chain. Japan’s NRC system continues to evolve. Currently, the attention of the Japanese government is directed not at increasing the volume of oil reserves in physical terms, but at building a truly effective scheme for the implementation of reserves. In particular, as part of the new energy strategy, Japan plans to create a state reserve of petroleum products and liquefied gas. Long-term storage of liquefied natural gas (LNG) is costly and involves a number of technical difficulties, so the main object of attention in this case is liquefied petroleum gas (LPG) [47].

According to the government’s plan, the program for creating a strategic reserve of the CIS should give the state reserve system greater efficiency due
to the diversification of stored resources and the rate of release of reserves in the event of an emergency. The system of the CIS strategic reserve is similar to the oil reserve system: some of the reserves have the status of a state reserve, and some of them are accumulated by enterprises in the fuel and energy sector. The government plans to increase the level of state reserves to 1.5 million tons. Despite the high costs, the program is in full swing: three bases are already functioning. Two more bases are being built, they are planned to be commissioned in 2010–2012 [47].

In 2006, The Japanese government had an inviolable oil reserve in the amount of 319 million 910 thousand barrels of oil, which should be enough for the country for 90 days. Oil companies are also required to have a reserve, at present they have a total of about 271 million 160 thousand barrels, sufficient for 82 days [50]. As of November 2007, the CIS stockpiled for 83 days of normal consumption in the country, of which the state reserve was 0.61 million tons (18 days), the stocks of private companies — 2.15 million tons (65 days) [47]. Thus, as rightly pointed out in [47], Japan is one of the world leaders in the field of new approaches and technologies for creating not only the largest, but also effective strategic reserves of energy resources [47].

The advantages of state reserves are: the ability to respond quickly; completeness of information on the status of stocks; independence of action from private companies. However, a serious drawback is the need to expend budgetary funds for the creation and maintenance of state reserves.

In Denmark, France, the Netherlands and some other countries, there are reserves of crude oil that are managed by special agencies with or without government participation. This allows the oil companies to release from the work of reservation. However, among the shortcomings of this method are the limited state control over the reserves of oil funds, the appearance of a risk of unreliability of information on accumulated reserves, etc. mandatory reservation. This is a fairly common way to create oil reserves.

The choice of the type of reserve — oil or oil products, depends on many economic and geopolitical factors. Mainly crude oil is stored in the USA, as there is a large number of refineries and a well-developed transportation network. In other countries, mainly used warehouses of finished petroleum products for quick delivery to the consumer. However, the storage of petroleum products is expensive and has several disadvantages. Therefore, there is already a tendency to increase crude oil in the strategic reserves of countries.

At present, international strategic oil reserves (MCNR) have been created, which makes it possible to ensure their effective coordination and reduce the costs of formation and maintenance. The largest systems of such reserves are
formed within the framework of the European Union and the IEA. They provide for the construction of emergency reserves in each country for at least 90 days of net import from the level of the previous year. Today, the MCNR have reached a total of about 114 days of net imports. This allows, during emergency periods, to supply oil to the market more than the fixed maximum daily deficit in total oil supplies to the world market.

It is necessary to agree with the opinion stated in [47] that the role of strategic reserves of hydrocarbons has increased in recent years, due to the increasing instability and speculativeness in world markets. As rightly pointed out in [47], the NRC can neutralize threats energy security of a short-term nature, however, in the case of protracted and “voluminous” interruptions in supply, it is obvious that for now OPEC is the almost absolute owner of the oil market. Despite this, many states, including major oil producers and exporters, are making plans to build their own NRC systems, the mass nature of which theoretically could lead to a temporary but tangible oil shortage on the world market. However, given the fact that creating the appropriate infrastructure for the NRC and filling it with oil is a costly project that only large rich countries can afford, this scenario seems unlikely. In this case, as rightly noted in [47], The use of the NRC for stabilizing and lowering world oil prices on world markets through their partial sale benefits all importing countries. States that do not have NRC do not incur the costs of creating and maintaining them, but take advantage of the intervention of a portion of the reserves on the market, reducing their costs of buying cheaper oil.

At the same time, as rightly pointed out in [47], many international experts come to the conclusion that the country’s energy security may well provide commercial reserves without resorting to the use of state reserves. This assumption is confirmed by the conclusions that were made in 2005, when Hurricane Katrina paralyzed the US refining industry, traffic and infrastructure concentrated off the shores of the Gulf of Mexico. It was impossible to sell oil from the reserves of the strategic reserve located in the areas affected by the hurricane, precisely at the moment when the need arose. The events of that period revealed the weak points of the US strategic oil reserve system, which was the reason for the important generalizing conclusions given in [47]:

1) large-scale and/or long-lasting natural phenomena can make the strategic reserve of oil of an individual state useless;

2) the efforts of a single country to establish the NRC system cannot ensure the full energy security of this country and the oil-consuming countries should form national oil reserves in a coordinated manner.

It is becoming clear that progress in this area is impossible without international and regional cooperation. This was noted in 2006 in the final documents
of the St. Petersburg G8 Summit. In particular, the summit participants noted that the coordination of strategic reserves planning should be one of the main principles of the joint activities of the leading countries of the world to ensure global energy security. In this regard, it is important to mention the intentions of the Japanese government in the approaches to creating a collective energy security system in the Asia-Pacific region. As rightly noted in Ref. [47], it is important for Tokyo that countries with increasing energy consumption, including India and China, participate in a system of coordinated oil reserves. Japan has already concluded NRC cooperation agreements with New Zealand, Republic of Korea et al. [47].

As is known, discussions around the possibility and necessity of creating the NRC in Russia have been conducted at an expert-analytical level since 2000. However, last year the idea of forming an oil reserve was voiced at the official level. Back in December 2008, Russian Deputy Prime Minister I. Sechin, at a meeting of the oil alliance in Algeria, said that Moscow could decide to create its own oil reserves. In particular, he noted that the “stress from the market” can be removed by reserving or buying back oil companies from surplus oil, and the volume of purchases can be up to 16 million tons. — there are no sufficient tanks for their storage in Russia [47].

In response to this statement, the Russian government in early 2009, instructed the Ministry of Energy to develop a concept for the formation of strategic oil reserves, the ultimate goal of which would be to stabilize the prices of oil and oil products on the domestic market, and to strengthen, therefore, Russia’s energy security. The head of the Rosrezerv, A. Grigoriev, has repeatedly stated that the department under his control will be able to influence market prices, provided that the volume of the NRC is at least 5 million tons of oil [47].

In February 2011, after a meeting at the Ministry of Energy of the Russian Federation devoted to the preparation of proposals for the formation of an oil state reserve, it was noted that there are opportunities for its creation in the country. However, the question of how to store such significant amounts of oil is still not resolved: as long as the corresponding tank farm is not available in the country. To this is added the problem of storing oil in a difficult Russian climate [47].

Experts also talk about the legal mechanism for the creation and functioning of the NRC in Russia. Some experts are pessimistic about the creation of the NRC system in Russia, citing the lack of urgent need, the high costs of their formation and maintenance. In particular, the Ministry of Energy experts believe that in a crisis, the construction of oil tanks for the storage of the necessary oil reserves may be excessively expensive. Therefore, they proposed to reserve not
the oil itself, but to create a fund of strategic explored deposits prepared for production, ready for transfer to development by certain companies [47].

It is noteworthy that the decision to include in the NRC not extracted oil, but only deposits of an unallocated fund can indicate that the initial task of price regulation has faded into the background. The overwhelming majority of the sites proposed for the state reserve are not ready for rapid industrial development, which means that the authorities simply will not be able to obtain the necessary volumes of petroleum products for market interventions. At the same time, Deputy Prime Minister V. Khristenko believes that Russia needs not a petroleum reserve, but a fuel reserve. The choice of storing crude oil or petroleum products depends on many economic and geopolitical factors. At the same time, it can be noted that the advantages of crude oil as a strategic reserve consist in lower storage costs and greater flexibility in managing the situation — in terms of the possibility of processing into the desired product [47]. In this way, the issue of creating the NRC in Russia is still under discussion and development.

In the United States, the method of managing strategic oil reserves (SNR) and the conditions for using its reserves are defined in the “Law on Energy Policy and Energy Saving” [17]. He gives the President of the United States the right to attract reserves of the SNR to overcome serious irregularities in oil supplies. The president should officially recognize the existence of negative phenomena that pose a threat to the country and the international situation.

In Chile, the funds of the Copper Stabilization Fund are equal to the gold and foreign exchange reserves and managed by the Central Bank of the country. The use of the fund’s assets is permitted by the government when the actual current price is below the established base price. The amount of funds that can be withdrawn from the fund is calculated using a formula similar to the formula for the receipt of funds, to the full use of the resources of the fund.

In Venezuela, the use of the funds of the Investment Fund for Macroeconomic Stabilization can be carried out with the approval of the country’s Congress only in two cases: if the revenues from oil exports are below the established base value; in the case when the volume of the fund’s assets exceeded the level of 80% of the average annual amount of revenues due to oil exports in the last 5 years.

The funds of the Fund are managed by the Central Bank of Venezuela and invested in foreign financial assets. It is forbidden to invest in any financial transactions, loans, guarantees, issue of debt securities, which could entail the occurrence of obligations from the fund. In 1999, changes were made that weakened the role of the fund as a macroeconomic stabilizer. Thus, only half of the
funds above the base value are sent to the fund, and the fund’s funds can be used by the President’s decision on social expenditures and public investments [18].

In the state of Alaska (USA), the expenditure of the Alaska Permanent Fund is mixed. Part of the fund can only be used when amending the State Constitution. The scheme of using the remaining funds of the fund is determined annually by the governor and the state legislative authority. Traditionally, 42% of them are paid in the form of “dividends” to all citizens of the state of Alaska, and the rest goes to reinvestment to compensate for the decline in the real volume of the fund due to inflation, as well as to increase the fund’s capital [1].

The fund’s assets are managed by the Alaska Permanent Fund Public Corporation (Alaska Permanent Fund Corporation) and invested in three areas: a fixed-income portfolio (39.4% of the total portfolio), shares (51.8%) and real estate (8.8%) [19]. As of June 30, 2003 the size of the fund was $24.19 billion, which is 4 times the size of the Constitutional Reserve Fund [20; 21].

The spending of the Alaska Stabilization Constitutional Budget Reserve Fund is determined by the decision of the State Congress. Moreover, their maximum (upper) volume must be approved by three-quarters of the votes of each chamber. The funds of the fund are provided to the state government in the form of a loan that must be repaid during the budget surplus.

In Kuwait, the General Reserve Fund was originally managed by the Ministry of Finance. Now the General Reserves Fund and the Future Generation Reserve Fund are managed by the Kuwait Investment Authority, which is independent of the government. Funds of the funds are invested in foreign financial assets. The expenditure of funds from the General Reserves Fund is permitted with the approval of the country’s Council of Ministers. But clear rules for the formation and expenditure of funds are absent.

From 1979 to 2003 The Equalization Fund for the Republic of Kiribati grew from $60.5 to $335.7 million [5].

In Oman, the Oil Fund is managed by the Ministry of Finance of Oman, and its funds are invested in foreign assets and foreign currency deposits in the Central Bank of Oman. There is no clear mechanism for using the funds of the fund. The volume of the fund is not reported.
Chapter 8. Foreign experience in stabilizing financial revenues to the state budget

8.1 Experience of the State Pension Fund of Norway

One of the first countries to successfully operate a sovereign wealth fund, is Norway. Her experience can be used to improve the formation and management of a sovereign wealth fund in Russia.

Norway is the largest independent exporter of oil on the world market. Norway’s oil reserves are located in three zones of the continental shelf: the North, Norwegian and Barents Seas. In 2009, The country’s proven oil reserves amounted to 7.1 billion barrels. Along with Saudi Arabia, Russia, the United Arab Emirates, Iran and Kuwait, Norway in 2009. Norway occupied the leading positions in the field of export and oil production.

Low oil consumption allowed Norway to export oil. In 2009, oil exports from Norway exceeded 2000 thousand barrels per day. In 2009, the largest importers of Norwegian oil were Sweden (41 %), Denmark (21 %), the United Kingdom (12 %), Ireland (9 %) and the Netherlands (6 %) [86].

Compared with 2003, exports and oil production in Norway in 2009 decreased slightly, while oil consumption remained almost unchanged and remained at a low level.

The export of oil and gas has almost always been important for Norway. So, back in 1999, oil and gas exports amounted to 35 % of Norway’s total exports [54]. At the same time, in terms of value, exports of Norwegian gas slightly exceeded oil exports [53].

Revenues from oil and gas exports form the basis of the economy of Norway (see table 60) [53–59]. Thus, according to data from the US Energy Information Administration (EIA), in 2010. The country’s revenue from oil exports reached $ 137 billion. The main export goods were oil and oil products, machinery and equipment, metals, chemical products, ships, fish. According to the estimates of 2009, Norway was the main export partners of the United Kingdom — 24.28 %, Germany — 13.4 %, the Netherlands — 10.87 %, France — 8.55 %, Sweden — 5.76 %, the USA — 4.82 %.

In terms of GDP in 2009, Norway ranked 43rd in the world, and in terms of GDP per capita it ranks among the top ten countries. GDP growth rate in 2009 amounted to –1.4 %, but it is estimated that in 2010 GDP growth increased by 1.5 %. In 2011, Norway’s population is estimated at around 5 billion people.

In 2008, Ginny coefficient was 25. In 2009, Norway’s federal budget revenues amounted to $ 226.8 billion, expenditures — $ 287.0 billion. 2010 domestic
debt, accounted for 47.7% of GDP, according to 2009 estimates — 49.8% of GDP. The volume of external debt as of June 30, 2010, amounted to 2.232 trillion dollars, as of June 30, 2010 — 475.9 billion dollars. According to estimates of December 31, 2009, Norway's foreign exchange reserves amounted to $48.86 billion, the growth rate of 2010 inflation was 2.4%.

In 2009, the main imported goods of the country were machinery and equipment, chemical products, metals, food products. According to an estimate of 2009, Norway's main import partners were Sweden — 13.86%, Germany — 12.89%, China — 7.8%, Denmark — 6.78%, USA — 6.16%, Great Britain — 6.01%.

Norway's oil reserves as of January 1, 2010 amounted to 6.68 billion barrels, gas reserves as of January 1, 2010 — 2.313 billion cubic meters. Oil production estimated 2009 amounted to 2.35 million barrels per day, gas production estimated in 2009 amounted to 103.5 billion cubic meters. Oil consumption estimated 2009 equal to 204.1 barrels per day, natural gas consumption estimated in 2009 amounted to 4.62 billion cubic meters. Oil exports are estimated at 2010 amounted to 137.00 billion dollars, gas exports estimated 2009 — 98.85 billion cubic meters.


Based on data from reports [83], from 1975 to 2009. Oil production in Norway significantly exceeded its consumption. In 2009, reserves of crude oil in the country amounted to 7.1 billion barrels.

In terms of proved reserves in 2009, Norway ranked 18th in the world. Cumulative crude oil production in 2009, in Norway amounted to 2,342 thousand barrels per day. In terms of crude oil production in 2009, Norway ranked 12th in the world.

Oil consumption in 2009 amounted to 211 thousand barrels per day. The average crude oil production in Norway from 1975 to 2009 amounted to 1895 thousand barrels per day. The average consumption of crude oil in Norway for the same period was 203 thousand barrels per day.

Total natural gas production in 2009 in Norway was 103.5 billion cubic meters, its consumption amounted to 4.1 billion cubic meters.

The average natural gas production in Norway from 1977 to 2009 amounted to 42.8 thousand barrels per day.

The Pension (State Petroleum) Fund of Norway (SPF) was established by law of June 22, 1990 [61] to smooth out short-term fluctuations in foreign exchange earnings from the export of gas and oil, and to finance the growing costs of old-age and disability pensions and medical expenses. According to forecasts of the
Ministry of Finance of Norway by 2050. There will be a decrease in the country’s financial revenues from petroleum activities, and the cost of paying pensions and disability benefits will increase [58; 62], which will require additional financial resources. This increases the value of the GPF for the economy of Norway.

The creation of the fund makes the Norwegian economy more sustainable and increases the room for maneuver in the field of social policy. The fund is at the same time savings and stabilization, and is intended to ensure the sustainability of the public sector in the long term. GPF, an integral part of public finance in Norway, is considered as part of the country’s trade balance. The fund’s assets are replenished from two sources: revenues from oil exports and income from the fund’s investments.

Fund revenues can only be used for transfers to the federal budget in accordance with the resolution of the Parliament of Norway and cannot be used for lending to the government of Norway or the private sector. GPF cannot make loans [52]. The fund is replenished constantly, regardless of the amount of income of oil and gas companies. All assets of the SPC are invested in stocks and bonds abroad. This avoids the so-called “Dutch disease”, i.e. situations where the super-profits from the export of any product lead to an overvaluation of the national currency. As a result, other sectors of the economy become unprofitable.

Thus, Norway’s SPC has become a macroeconomic regulator of economic growth. A feature of the fund is the initial flow of all Norway’s revenues from oil operations not to the budget, but to the state-funded fund. One of the conditions for the receipt of funds in the SPC — the achievement of a surplus of the state budget. To do this, determine the level of export prices for oil and the possible magnitude of the budget deficit, excluding from it revenues from the oil industry to the budget. The expenses of the fund are deductions to the federal budget of the country to finance the budget deficit.

Thus, there is a direct link between the use of fund capital and the budget. At the same time, in Norway there is no criterion for determining the amount of allocations to the SPC [58–60; 63]. The amount of each annual contribution is separately approved by the country’s parliament as part of the overall budget process [63].

Three economic entities of Norway participate in the elaboration of the fund’s strategy and control over its management: the Ministry of Finance, the State Bank and an independent auditing company. The Ministry of Finance determines the fund’s investment strategy.

The State Bank implements its implementation, and an independent auditing company controls the implementation of the investment strategy and the operation of the fund. She then reports to the country’s parliament.
External managers are appointed to manage the funds of the fund by regions of the world and industries, separately for shares and bonds.

The ministry determines the level and direction of investments of the fund portfolio on the basis of a developed theoretical model that takes into account the financial and economic indices of countries where the fund's resources are invested. The main goal of fund management is to invest capital in such a way as to increase the international purchasing power of the fund with an acceptable degree of risk.

In the process of developing an investment strategy, the Norwegian Ministry of Finance decides on the localization of the fund's assets, the market and foreign exchange distribution of its assets and share ownership rights. Thus, initially the fund's capital was invested exclusively in bonds that were placed on the same financial markets as the foreign exchange reserves of the State Bank of Norway. However, in the subsequent it was revealed the expediency of changing the structure of the portfolio.

The study of returns on stocks, bonds and bills showed that in the period from 1871 to 1992, i.e. over 120 years, the average stock return was 7 percentage points higher than bonds. When reviewed by decade, stock returns were higher than bonds in 8 out of 10 cases [66].

Compared with the Alaska Permanent Fund, the Norwegian GPF portfolio structure includes more robust assets. The fund portfolio includes about 60% of bonds. Most of the bonds based on the ratings of Moody’s and Standard and Poor’s were rated at the end of March 2004. AAA and AA, which accounted for over 70% of the total bond portfolio of the fund.

According to the Standard & Poors classification, the share of bonds rated AAA was 48.65%, the share of bonds rated AA — 29.95%, the share of bonds rated A was 12.78%. The share of bonds with a rating of BBB was only 8.11%, the share of bonds with a rating of BB was insignificant and amounted to 0.15%.

For the effective operation of the fund, the Norwegian Ministry of Finance conducts research on the profitability and risk of stocks and their optimal share in the fund's portfolio. The State Bank of Norway assesses current trends in the stock and bond market. To assess income and risk by date, he divides the portfolio into 42 subgroups according to asset class, geographic region, and economic sector.

One of the further possible directions of the investment strategy of the State Pension Fund is to expand the portfolio by including in its composition assets of other classes (private shares of large institutional investors, indexed (related to inflation) bonds, closed funds, goods and property).

In particular, Mercer Investment Consulting advised to include indexed bonds in the fund's investment portfolio, which will make up 1% of the State
Pension Fund’s investments. This type of bonds (90% of which is concentrated in the USA, Great Britain and France) guarantees real revenues in local currencies and the establishment of the real value of the State Pension Fund.

The peculiarity of the State Pension Fund is the absence of the status of a legal entity, a separate management apparatus, and its own bank accounts. The financial resources of the State Pension Fund are kept on a special account of the Norwegian Ministry of Finance in Norwegian crowns at the State Bank of Norway [52].

An important task of the Ministry of Finance of Norway is the assessment of capital management of the SPC by the State Bank of Norway. For this purpose there is an external independent examination (audit), evaluating the activities of the State Bank in managing the fund. The audit company reports to the audit on the results of the audit.

**8.2 The Emirates experience**

The UAE is an important player in global capital markets thanks to investment institutions such as the Abu-Dhabi Investment Authority (ADIA), Dubai Ports World, Dubai Holding and the International Oil Investment Company Abu Dhabi (IPIC). The Abu-Dhabi Investment Authority (ADIA) controls the investments of Abu Dhabi, the richest emirate of the UAE, and manages investments in foreign assets of about $360 billion and investments in national assets of $900 billion. Since the founding of the state, its revenues have not ceased to grow [6].

The Abu Dhabi Investment Authority (ADIA), managed by the government of the Emirate of Abu Dhabi, was founded in 1976. According to his own data, the average return on investment of the fund over the past 30 years was about eight percent per annum. The fund’s report does not indicate the exact size of the assets at its disposal. According to various sources, they are estimated at $500–800 billion. The Abu-Dhabi Investment Authority (ADIA) reports that 60–85 percent of the fund’s assets invested in North America and Europe in 2009. Asia and emerging markets accounted for 25–45 percent of assets. From 10 to 20 percent of assets were invested in government bonds, 5–10 percent — in hedge funds, about 10 percent is held in cash. From 46 to 65 percent are invested in shares of developed and developing companies [1].

Since 2000, the UAE stock market began to actively develop. The following events were particularly significant. February 1, 2000, The United Arab Emirates Securities and Commodity Authority, which is subject to the Emirates Securities and Commodities Authority (ESCA), began work. March 26, 2000 was founded in Dubai Stock Exchange. March 26, 2000 Dubai Financial Market (DFM)
started the first trading in shares of seven registered companies with the participation of 10 brokers. September 18, 2000 in the financial market of Dubai, foreigners have the right to make transactions on 20% of the shares of the company Emaar. October 5, 2000 Dubai’s financial market starts 6 days a week, from Saturday to Thursday. November 15, 2000 Abu Dhabi Securities Market/ADSM started its operations. June 19, 2001 Dubai’s financial market was the first of the Middle Eastern stock exchanges to receive ISO 9001: 2000 certification. July 11, 2001 For the first time, bonds are traded on the Dubai Financial Market (Emirates). January 16, 2003 foreigners are allowed to operate on 49% of Tabreed’s shares. March 29, 2003 In the financial market of Dubai, for the first time, government bonds issued by the government of Dubai were registered. In October 2005, an open subscription to the shares of Dana Gas was started, raising $78.5 billion, with a plan of $561 million [10]. In the financial market of Dubai, for the first time, government bonds issued by the government of Dubai were registered. In October 2005, an open subscription to the shares of Dana Gas was started, raising $78.5 billion, with a plan of $561 million [10]. In the financial market of Dubai, for the first time, government bonds issued by the government of Dubai were registered. In October 2005, an open subscription to the shares of Dana Gas was started, raising $78.5 billion, with a plan of $561 million [10].

Since 2000 the volume of transactions on the stock exchanges of the UAE is constantly growing. Today, there are seven stock exchanges in the region: two in the UAE (Abu Dhabi and Dubai) and one each in Bahrain, Kuwait, Oman, Qatar and Saudi Arabia. At the end of October 2005, their total capitalization amounted to 1.17 trillion dollars, while at the end of 2000 it reached 119 billion dollars. Thus, it was twice the total GDP of the Gulf countries. For comparison: according to Interfax, the capitalization of the Russian stock market, calculated on the basis of securities traded on the RTS, at the beginning of November amounted to $415.922 billion, taking into account the market value of OAO Gazprom, reaching $119.718 billion [6].

The Abu Dhabi Securities Market (ADSM) was founded on November 15, 2000 by a decree of the government of the emirate, which gave it both autonomous status and financial and managerial independence. The stock exchange has the right to create its own centers and branches Dhabi: Emirates of Fujairah, Ras Al Khaimah and Sharjah are currently under his patronage and are headed by a Board of Directors consisting of nine members appointed for 3 years [10].

Dubai Financial Market (DFM), which trades up to 80% of the shares, is 8 months older than its capital counterpart: it began work on March 20, 2000. He also has independence and is an important element of the UAE stock market, despite the fact that the number of companies registered on it is still small.
In general, all four funds quite actively manifest themselves in the economic sphere. Because of its size, the diversity of the financial instruments used and the diversification of its investments, the Abdu Dhabi Investment Authority (ADIA) Investment Administration occupies a central position among the other sovereign wealth funds. His goal is to function as a skilled portfolio investor. Its strategy is to transform the oil wealth of the emirate into a portfolio of professionally managed financial assets.

The lack of transparency of this fund, the lack of a large number of annual reports that exist, for example, in the sovereign wealth fund of Norway, made the Abu Dhabi Investment Authority (ADIA) the object of speculation and discussions about the volume of its assets and its impact on global financial markets. For this reason, any changes in the functioning of sovereign wealth funds will lead to discussions about the role of the Abdu Dhabi Investment Authority (ADIA) and its ability to maintain its leading position [19].

The Abu Dhabi Investment Authority (ADIA) also serves as co-chair of the International Working Group of Sovereign Wealth Funds, which is developing a voluntary code of conduct for sovereign wealth funds. In March 2008, Abu Dhabi Investment Authority (ADIA) has reached an agreement with the US Treasury and Singapore to establish a set of principles aimed at achieving transparency and prioritizing the economic, rather than political goals of sovereign wealth funds, and avoiding protectionism.

This proves the commitment of the Abdu Dhabi Investment Authority (ADIA) to actively intervene in public and political debates and discussions about the creation and improvement of the global financial architecture [19].

In the meantime, while the Abu Dhabi Investment Authority (ADIA) is engaged in improving the management of its assets, Mubadala Development Company (Mubadala Development Company) has undertaken to contribute to the diversification of the economy of the Abu Dhabi emirate. It follows the strategy of aggressively building new international networks, developing partnerships with world-class foreign companies and involving them in joint ventures, which greatly expands the economic ties of the emirate [19].

This approach is complemented by the activities of the International Petroleum Investment Company (IPIC) in the energy sector. The activities of the Abu Dhabi Investment Council and its features and distinguishing features that would separate it from other sovereign wealth funds have not been clearly defined. His strategy could be to revise and adjust the regional portfolio of the Emirate of Abu Dhabi.

While in the emirate of Abu Dhabi sovereign wealth funds have been functioning and improving their activities for several years now, the emirate
of Dubai only recently created its sovereign wealth funds. Like the emirate of Abu Dhabi, its goal is also to obtain economic benefits from the realization of its investment opportunities on a global scale. Difficulties in achieving this goal are created by the fact that Dubai does not have such extensive experience in managing state assets as that of the Emirate of Abu Dhabi. For this reason, the investment area of Dubai is quite fragmented. It seems that private property dominates in Dubai more than in other regions of the world. The main investment tool in Dubai is the company Istithmar World. The word “Istithmar” in the national language of the UAE means “investment”. Founded in 2003 and having a capital of $12 billion, Istithmar World is positioning itself in global financial markets as a major institutional investor, placing assets of about $3 billion. Its investment portfolio includes investments in more than 50 companies in the financial services, consumer and industrial sectors, and real estate [19].

The company Istithmar World is owned by Dubai Investment Corporation (Investment Corporation of Dubai (ICD)), which is a large public corporation established in 2006, by transfer from the investment department of the financial department of the government of the UAE. Such a complex structure of management and distribution of property is the subject of debate about the degree of transparency of sovereign wealth funds in Dubai [19].

Dubai’s other significant institutional investor is Dubai International Capital (DIC), which was founded in 2004, with a volume of assets of $13 billion. Its goal is to create a globally diversified portfolio that invests in the industry of North America, Europe, Asia (Pacific Region), the Middle East and North Africa. Her desire to grow her role in the global market led to her investing in the assets of about 500 companies and the creation of the Global Strategic Equity Fund (Global Strategic Equities Fund (GSEF)), which amounts to $2 million. The investments of the company Dubai International Capital (Dubai International Capital (DIC)) include investments in Sony, HSBC Holdings Plc., EADS and Indian ICICI service company [19].

In just a few years of its operation, the sovereign wealth funds of Dubai and companies that are classified as sovereign wealth funds, such as Dubai International Capital (DIC), developed rapidly and in a short period of time proved themselves to be skilled portfolio investors. Nevertheless, today it is rather difficult to determine the specifics of the functioning and the role of each of them in the economy of Dubai and the United Arab Emirates. However, it is not easy to highlight any strategically coordinated NAT, the role they play in the development of the Dubai economy or which strategic directions of their investments to collectively follow [19].
It should be noted that although Dubai is striving to become the center of the financial services industry, neither Istithmar World, nor Dubai International Capital (DIC), show themselves as candidates to support these ambitions. Despite the fact that a large investment company in Dubai, the Dubai International Finance Center (Dubai International Finance Center (DIFC)) has set itself the goal of making strategic investments in the banking sector, such as, for example, acquiring about 2.2 percent of German Deutsche Bank shares in the summer of 2007, Dubai still does not have an effective investment instrument and a consolidated investment strategy developed. The reason for the lack of a specific strategy may be the complex ownership structure of Dubai’s sovereign wealth funds, which creates difficulties in their management. It also makes Dubai vulnerable to discussions about the degree of transparency and the organizational structure of its sovereign funds, although each of them individually may be more transparent than some other sovereign wealth funds in the Arab world [19].

Thus, the structure of the UAE’s sovereign wealth funds is sufficiently complex. At the same time, on the whole, the UAE economy has sufficient potential for its development. An important issue is also the international cooperation of the UAE, in particular, with Russia. To date, the UAE has diplomatic relations with 145 countries of the world. The basis for bilateral relations between Russia and the UAE is an agreement on trade, economic and technical cooperation of January 2, 1990. The trade turnover between Russia and the United Arab Emirates in 2007 grew by 27%, reaching about 821 million dollars US ($771 million Russian exports and $50 million Emirates exports). Russia exports machinery and equipment, precious metals (gold), ferrous metals, lumber, paper and chemical products. In January–October 2008, trade turnover amounted to 692.8 million dollars [14]. The volume of bilateral trade between these countries in the period since 2001, till 2004 increased from 155 million dollars to 400 million dollars. However, this is significantly less than the capabilities and needs of both states [13]. In 2000, Russia and the UAE signed a contract for the purchase of 50 Pantsir-S1 complexes in the amount of $734 million [15].

The priority areas of cooperation are energy (including nuclear and renewable energy), investment cooperation and cooperation in the field of research and use of outer space for peaceful purposes. Until the end of 2010, it is possible to open investment bureaus in both countries, which will make it possible to intensify cooperation between Russia and the United Arab Emirates in the investment sphere.

The countries are interested in increasing the exchange of goods, intensifying contacts between state and commercial organizations and companies
of the two countries through the implementation of joint projects. At the same time, Russia needs to complete as soon as possible the formation of a corresponding legal and regulatory framework that will help to intensify relations between the two countries. In particular, this can be achieved by signing an agreement between the government of the Russian Federation and the government of the United Arab Emirates on the promotion and mutual protection of investments (investments) and on the taxation of investment income [12].

The main prospects for the long-term sustainable development of trade and economic cooperation between Russia and the United Arab Emirates are related to increasing the competitiveness of Russian producers in the market for industrial demand and capital construction goods. This requires targeted efforts to adapt the products of the Russian heavy industry to the requirements of the oil and gas producing countries of the Persian Gulf and to ensure the commercial presence of the main producers, in particular, in the Emirates. One of the main industries where Russia could provide a significant increase in export supplies is energy construction, the laying of oil and gas pipelines and desalination. The trade turnover of recent years between Russia and the UAE has a generally positive trend [16].

According to the Statistical Center of Dubai, the foreign trade indicator of this emirate showed good stability in the second quarter of 2010, and its volume increased by 22.17% compared to the same period last year and amounted to 142.7 billion dirhams (38.9 billion dollars). The emirate, which accounts for 80% of all non-oil trade in the United Arab Emirates, showed a significant improvement in all three sectors — exports, re-exports and imports of foreign trade — in the second quarter of this year, which contributed to 259.5 billion dirhams (70.9 billion dollars) [17].

The UAE is an important player in global capital markets through investment institutions such as the Abu Dhabi Investment Authority (ADIA), Dubai Ports World, Dubai Holding and the International Oil Investment Company Abu Dhabi (IPIC).

The Emirate of Abu Dhabi controls four sovereign wealth funds: Abu Dhabi Investment Authority (ADIA), a smaller, but more aggressive strategy, Mubadala Development Company, International Oil Investment Company (International) Petroleum Investment Company (IPIC)) and the Abu Dhabi Investment Council. For several decades, all these four sovereign wealth funds created to manage the oil and gas revenues of the emirate strengthened their positions in the regional and global oil markets, which contributed to diversifying the Abu Dhabi economy and reducing the risks associated with the volatility of oil prices on world markets [14].
Founded in 1976, in response to rising oil prices in the early 1970s, the Abu Dhabi Investment Authority (ADIA) Investment Authority is an investment institution whose mission is to invest on behalf of the government of the Abu Dhabi emirate in order to maintain and increase the welfare of this emirate. The development history of the Abu Dhabi UAE Investment Management (ADIA) includes the following key points. Over the years, the United Arab Emirates Investment Authority (ADIA) has become the largest sovereign wealth fund. The Abu Dhabi UAE Investment Authority (ADIA) is a joint-stock company specializing in investment and corporate finance in addition to advisory services. The Abu Dhabi Investment Authority of the UAE (ADIA) is jointly owned by the Abu Dhabi Investment Council [8; 13].

Because of its size, the diversity of the financial instruments used and the diversification of its investments, the Abu Dhabi Investment Authority (ADIA) Investment Administration occupies a central position among the other sovereign wealth funds. His goal is to function as a skilled portfolio investor. Its strategy is to transform the oil wealth of the emirate into a portfolio of professionally managed financial assets. The lack of transparency of this fund, the lack of a large number of annual reports that exist, for example, in the sovereign wealth fund of Norway, made the Abu Dhabi Investment Authority (ADIA) an object of speculation and discussions about its assets and the degree of its influence on global financial markets. For this reason, any changes in the functioning of sovereign wealth funds will lead to discussions about the role of the Abu Dhabi Investment Authority (ADIA) and its ability to maintain its leading position [14].

One of the important events was the participation of the UAE at the International Forum of Sovereign Wealth Funds. The International Forum of Sovereign Wealth Funds (IFSWF) is an initiative group of sovereign wealth funds (Sovereign Wealth Funds (SWFs)) that organize meetings to exchange views and common interests to help understand Santiago principles and actions of sovereign wealth funds. These Santiago principles are generally accepted principles and practices and consist of 24 basic principles of the functioning of sovereign wealth funds [10]. The Abu Dhabi Investment Authority (ADIA) also serves as the co-chair of the International Working Group of Sovereign Wealth Funds.

In March 2008 The Abu Dhabi Investment Authority (ADIA) has reached an agreement with the US Treasury and Singapore to establish a set of principles aimed at achieving transparency and prioritizing the economic, rather than political goals of sovereign wealth funds, and avoiding protectionism. This proves the commitment of the Abu Dhabi Investment Authority (ADIA) to actively intervene in public and political debates and discussions about the creation and improvement of the global financial architecture [14].
The second meeting of the International Forum of Sovereign Wealth Funds took place on May 6–8, 2010 in Sydney, Australia. In the future, such meetings are planned to be held annually. The next meeting is scheduled for April 2011 and should be held in Beijing in China [9].

Currently the largest sovereign wealth fund, the Abu Dhabi UAE Investment Authority (ADIA) plays an important role as a member of the International Working Group of Sovereign Wealth Funds (IWG) and the International Forum of Sovereign Wealth Funds. At the same time, the fund is rated as one of the most closed in the world. Only in 2010 The Fund has presented an open annual report for 2009 and disclosed the results of their financial transactions. However, the fund managers did not report on the size of the assets under management. According to various experts, the amount of the fund can be estimated at $900 billion [7]. Linaburg-Madwell index of transparency (LMIR) of this fund was only 3 out of 10 possible points [9].

It should be noted that the role of sovereign wealth funds in the world is increasing. In the period from September 2007 until November 2010 the total aggregate volume of their assets increased from 3.190 billion dollars to 4.1108 billion dollars.

The Abu Dhabi UAE Investment Authority (ADIA) has the largest share in the structure of the total volume of sovereign funds. It focuses on the economic objectives of obtaining long-term financial income. The fund’s asset portfolio is diversified across several classes and their sub-categories, including quoted stocks, fixed income instruments, real estate, private equity, infrastructure, etc. About 80% of the fund’s assets are managed by external managers. About 60% of the fund’s assets are invested in reproducing strategies.

The average return on investment of the fund, according to its own data as of December 31, 2009, for the last 30 years was about 8% per annum, for the last 20 years — 6.5% per annum, according to its data at December 31, 2008 similar indicators were 6.1% and 7.6%. The report of the fund does not indicate the exact size of the assets at its disposal [7].

The investment management of Abu Dhabi UAE (ADIA) manages the investments of Abu Dhabi, the richest emirate of the UAE, and also manages investments in foreign assets in the amount of about $360 billion and investments in national assets in the amount of about $900 billion. At the same time, the government of the Emirate of Abu Dhabi periodically transfers to the fund a portion of the income received in the event of a budget surplus. In turn, in the event of a budget deficit, the Abu Dhabi Investment Authority of the United Arab Emirates (ADIA) sends part of its income to the government of the Emirate of Abu Dhabi.
In addition to the government of the emirate of Abu Dhabi, the Abu Dhabi National Oil Company (ADNOC) also plays an important role in generating income for the Abu Dhabi Investment Authority of the UAE (ADNOC). Abu Dhabi National Oil Company (ADNOC) and its subsidiaries, which pay dividends to help fund the Abu Dhabi Investment Authority of the United Arab Emirates (ADIA) and its subsidiary Abu Dhabi Investment Council (ADIC). These payments are made on a periodic basis. About 70% of revenues with a budget surplus go to the Abu Dhabi UAE Investment Authority (ADIA), while the other 30% goes to the Abu Dhabi Investment Council (ADIC) [8].

Abu Dhabi National Oil Company (ADNOC) was established in 1971 for functioning in various spheres of the oil and gas industry. Since its founding, the company has expanded the range of its operations and areas of activity through the creation of subsidiaries and integration into the oil and gas industry in Abu Dhabi. Currently, the company’s oil production is more than 2.7 billion barrels per day.

The investment committee assists the managing director. He reviews the proposals and creates recommendations for investment proposals.

The investment committee is supported by a number of other committees:

– the strategic committee proposes a common investment strategy;
– a task development committee formulates investment objectives;
– the management committee is responsible for non-investment tasks and reports.

The internal audit department advises on the tasks of operational management, independently evaluates the control system of the fund. The audit committee appoints two external audit firms to conduct external independent audits [7]. In 2007, the fund decided to purchase Citigroups for $7.5 billion. This deal could bring the fund up to 4.9% of the New York Stock Exchange. In June 2008, the fund began buying large volumes of real estate in London, New York, Chicago, Abu Dhabi, Paris, Milan, Rome and Los Angeles. According to the fund’s report, investment interests are not based on any political interests, while making investment decisions, the structure is guided solely by financial considerations. In recent years, the fund has acquired three companies, and also has stakes in 21 companies.

The following companies are among the companies-partners of the fund. The company Emirates Ship Investment Company LLC is engaged in chartering and logistics shipping. Maar NV (Maar Storage Company NV) is a limited liability company. The main operations are storage in warehouses and warehouses in the states of Florida, USA. Finance House PJSC (Finance House PJSC). The company began operations in July 2004. The main
activities of the company are financial, investment, commercial and various
types of banking [5].

About 80% of investment decisions are made by the external managers of
the Abu Dhabi United Arab Emirates Investment Authority (ADIA), who have
placed the majority of investments (at least 45%) on the markets of developed
countries. Up to 80% of its assets are managed by external managers, includ-
ing about 60% of those that are passively managed, which is done by track-
ing indexed funds. Like many large institutional investors, the fund adheres to
a conservative investment strategy, comparing the results of work with the dy-
namics of major world indices like the S&P 500 [2]. So far, such an investment
strategy justifies itself: over the past 20 years, the annual yield of the fund was
about 6.5%. A similar figure when recalculated for a thirty-year period turned
out to be higher — the level of profitability reached the mark of 8% per annum.

8.3 Saudi Arabian Sovereign Welfare Fund

Saudi Arabia is the world’s largest oil exporter. This creates the prerequisites
for creating a sovereign wealth fund in this country. Nonetheless, for a long time
Saudi Arabia has fluctuated in applying the sovereign wealth fund as an active
participant in global financial markets. The geographical location, economic con-
dition and size of the country’s population require a significant degree of finan-
cial liquidity and a low degree of risk. For this reason, the investment policy of
this country differs significantly from other countries of the Persian Gulf. Only in
April 2008, Saudi Arabia announced the creation of a sovereign wealth fund.
Until that time, its foreign assets were managed by the Saudi Arabian Monetary
Agency (SAMA), the Central Bank of the Kingdom of Saudi Arabia.

In 2008 non-reserve foreign assets of the agency exceeded $300 billion. Re-
serves were about 30 billion dollars. In addition to these funds, the Saudi Ara-
bian Monetary Agency (SAMA) managed about $60 billion of assets, including
Saudi Arabian pension funds, on behalf and on behalf of other agencies. These
assets were placed primarily in liquid, low-risk bonds, but also covered invest-
ments in stocks and high-risk bonds, making the agency a conservative inves-
tor. McKinsey Agency estimates the fund’s investments in cash and deposits at
the level of 20%, investments in fixed income financial instruments at the level
of 55–60%, investments in stocks at the level of 20–25%, the share of invest-
ments in US dollars — up to 85%. At the same time, lime and other data, ac-
cording to which the share of the fund’s investments in US dollars is about 75%,
to other currencies — about 25%.

As of June 30, 2010, the balance sheet total of the Saudi Arabian Monetary
Agency (SAMA) amounted to 589.094 million rials (as of January 14, 2011, 1 the
Saudi rial was equal to 8.007 Russian rubles). The largest share in the structure of assets was investment in securities abroad (1,144.319 million rials). The largest share in the structure of liabilities was government deposits (860.301 million rials). In the first quarter of 2010, there was a 2.6% increase in government deposits and government agencies and institutions.

As the dynamics of the change in the Saudi rial rate against the Russian ruble over the past 180 days as of January 15, 2011, shows, the Saudi rial rate fluctuated between 8.3912 rubles per riyal and approximately 7.9 rubles per riyal [12].

Revenues of the Saudi Arabian Monetary Agency (SAMA) as of June 30, 2009 according to the profit and loss account amounted to 3.042 million riyals. Among the expenses, the largest share was accounted for by the SAMA Currency Agency of Saudi Arabia to the Agency for Public Pensions.

As the dynamics of changes in the financial position of the Monetary Agency of Saudi Arabia (SAMA) in the period since 2005 shows till 2010 (first quarter), in general, there was an increase in assets. The largest share in the assets was occupied by investments in foreign securities, which also had increasing dynamics. Among the liabilities, the largest share belonged to government deposits.

In 1971 The Public Investment Fund (PIF) of Saudi Arabia was established. His goal was to contribute to the development of the national economy of Saudi Arabia. In 1974, The Public Investment Fund (PIF) has been authorized to place assets in joint ventures of the national economy. Public Investment Fund (PIF) is managed by the Ministry of Finance of Saudi Arabia. April 15, 2008 It was announced the creation of a new sovereign fund of Saudi Arabia, Sanabil al-Saudi (Sanabil al-Saudia), whose capital was planned at the level of 5.3 billion dollars (20 billion riyals). Fund management is supposed to be entrusted to an investment company, wholly owned by the Public Investment Fund. The purpose of the fund is to diversify the country’s financial assets and improve investment risk management, as well as diversify the country’s economy through the development of its financial services sector. The creation of the Sanabil al-Saudia fund was preceded by the following events.

The possibility of creating a sovereign wealth fund is associated with the development of the country’s economy. In 2009, Saudi Arabia’s economy continued to grow despite adverse global conditions and the financial crisis, which resulted in a significant decrease in oil prices during the year. There was also a decrease in prices, including a decrease in the price of oil. According to OPEC, the average price of Arabian Light oil fell by 35.2% from $94.8 per barrel in 2008 (when the highest oil prices were observed) to $61.4 per barrel in 2009.

Average daily oil production in Saudi Arabia, according to data from the Ministry of Oil and Mineral Resources, fell from 9.2 million barrels per day in
2008 to 8.2 millions barrels per day or by 11.3 %. As a result of lower prices and oil production in 2009, GDP at current prices, in which the share of the oil sector is 47.7 percent, fell by 21.2 % from 1.8 trillion rials in 2008 up to 1.4 trillion rials in 2009 At constant prices 1999 y. GDP increased by 0.6 percent from 836.1 billion riyals in 2008, up to 841.2 billion rials in 2009. The state budget deficit amounted to 86.6 billion riyals or 6.1 % of 2009 GDP.

In 2008, there was a surplus of 580.9 billion riyals or 32.5 % of 2008 GDP. The current account of the balance of payments recorded an increase of 85.4 billion riyals or 6.1 % of GDP in 2009. Monetary unit M3 increased by 10.7 % to 1,028.9 billion riyals.

At the end of 2009 over the year, the total index of stocks increased by 27.5 percent from 4,803 in 2008 to 6,121.8 in 2009. The market capitalization of shares rose from 924 billion rials in 2008 to 1,195.5 billion rials in 2009 According to OPEC, the world spot price for crude oil in 2009 is decreased.

The average annual price of Arabian Light oil fell from $ 94.77 per barrel in 2008 to 61.18 dollars per barrel in 2009, the average annual price of Dubai oil dropped from 93.48 dollars per barrel in 2008 to 61.65 dollars per barrel in 2009, the average annual price of North Sea Brent oil fell from 97.01 dollars per barrel in 2008 to $61.5 per barrel in 2009, the average annual price of West Texas Intermediate oil fell from $99.63 per barrel in 2008 up to $61.66 per barrel in 2009. During the first quarter of 2010 the average price of Arab Light crude oil increased from $42.9 per barrel for the same period of 2009 up to 75.75 dollars per barrel or by 76.6 %.

Real crude oil prices in 2009 were down. The average price of Arab Light crude oil fell by 36.4 percent from $16.31 per barrel in 2008 to $10.38 per barrel in 2009, the average price of North Sea Brent crude fell by 37.5 percent from $16.69 per barrel in 2008 to 10.43 dollars per barrel in 2009. Over the past 5 years, the real price of Arab Light crude oil reached its highest level in 2008 (16.31 dollars per barrel). The lowest level was observed in 2005 and amounted to 9.31 dollars per barrel.

In the period from 1980 to 2009, The share of consumption of various energy sources has undergone significant changes. The share of consumption of natural gas and atomic energy has significantly increased. At the same time, the share of oil consumption has decreased. Nevertheless, oil is still the main energy source in the world. The share of world oil consumption fell from 37.9 % in 1985 up 34.8 % in 2009.

The share of consumption in OECD countries fell from 42.8 % in 1985 up 39.7 % in 2009 The share of consumption in the United States fell from 40.2 % in 1985 to 38.6 % in 2009, in Japan — from 55.1 % in 1985 to 47.6 % in 2009,
in Russia — from 32.5% in 1985 to 19.3% in 2009, while in Chile it rose from
13.8% to 18.6% over the same period.

The share of natural gas consumption over the same period increased from
20.1% to 23.8%. The share of consumption in OECD countries increased from
19.9% in 1985 up to 25.0% in 2009. The share of consumption in the United
States increased from 24.7% in 1985 to 27.0% in 2009, in Japan — from 9.9%
in 1985 to 17.0% in 2009, in Russia — from 34.7% in 1985 to 52.7% in 2009, in
China — from 1.8% to 3.7%.

In 2009 Saudi Arabia’s proven oil reserves remained at their previous level of
264.6 billion barrels. Explored reserves of natural gas increased from 267.3 tril-
lion cubic meters in 2008 up to 279.7 trillion cubic meters in 2009.

During 2009 crude oil production in Saudi Arabia decreased by 11.3%
from 3,366.3 million barrels in 2008 to 2,987.3 million barrels in 2009. Average
daily oil production was 8.2 million barrels per day in 2009. Production of pe-
troleum products fell by 3.3% from 721.4 million barrels in 2008 to 697.5 mil-
lion barrels in 2008.

Explored natural gas reserves in Saudi Arabia in 2009 amounted to 7.92 tril-
lion cubic meters. Among these countries, the leading natural gas reserves, Saudi
Arabia ranked 5th in the world, ahead of the United States (6.93 trillion cubic me-
ters) and the United Arab Emirates (6.43 trillion cubic meters). It was preceded
by Russia (44.38 trillion cubic meters) and Iran (29.61 trillion cubic meters), Qa-
tar 25.37 trillion cubic meters) and Turkmenistan (8.10 trillion cubic meters).

Total natural gas production in 2009 in Saudi Arabia was 77.5 billion cubic
meters, which coincided with the volume of its consumption (77.5 billion cubic
meters). In terms of natural gas production, Saudi Arabia ranked 9th in the world.

It was preceded by Russia (527.5 billion cubic meters), the USA (593.4 bil-
lion cubic meters), Canada (161.4 billion cubic meters), Iran (131.2 billion cu-
bic meters) and Norway (103.5 billion cubic meters), Qatar, China and Algeria.
The average natural gas production in Saudi Arabia from 1965 to 2009 amount-
ed to 32.6 thousand barrels per day. The average natural gas consumption in
Qatar over the same period was 29.0 thousand barrels per day.

In 2009, Saudi Arabian oil exports decreased by 14.4% from 2,672.4 mil-
lion barrels in 2008 to 2,287.7 million barrels in 2009. Exports of petroleum
products decreased by 4.7% from 386.3 million barrels in 2008 to 368.1 million
barrels in 2009.

The main volumes of exported oil went to the regions of the Far East and
Asia, which accounted for 64.8% of Saudi Arabia’s exports of crude oil and
57.5% of exports of petroleum products. 16.9% of the total volume of exported
oil and 1.3% of the total volume of petroleum products were sent to North
America. 10.0% of the total volume of exported oil and 8.5% of the total volume of petroleum products were sent to Western Europe, 4.6% of the total volume of exported oil and 19.5% of the total volume of petroleum products to the Middle East countries, Africa — 2.6% and 10.9%, respectively.

In general, the economy of Saudi Arabia has successfully functioned, which creates the potential for the creation and development of sovereign wealth funds in a given country.

**8.4 Alberta Provincial Savings Trust Fund**

Alberta is a province of Canada that produces the largest volume of crude oil (1.7 million barrels per day in 2004) and natural gas (13.2 billion cubic feet per day in 2004), which is about 80% and 70% respectively from the total production of crude oil and natural gas of the country.

In the province of Alberta, the difference between expenditures and tax revenues is covered mainly by resource revenues, investment income from the placement of the province’s financial assets and annual transfers from the federal budget. The province can finance this tax gap if the income from these three sources is maintained and grows over time relative to the growth volumes of the entire economy of the province. The need for financial investment tax gap can be calculated by the following formula [16]:

\[
SFG = \left( \frac{r - n - \rho}{r - \theta} \right) \cdot \frac{RR}{Y} + (r - n - \rho) \frac{NFA}{Y} + \left( \frac{r - n - \rho}{r - \nu} \right) \cdot \frac{FT}{Y}, \tag{8.1}
\]

where:
- \(SFG\) — tax gap between expenditures and provincial tax revenues, expressed as a percentage of provincial GDP;
- \(RR\) — current level of resource income received by the provincial government;
- \(NFA\) — province’s net financial assets;
- \(FT\) — current level of federal transfers to the provincial government;
- \(Y\) — total output of the province’s GDP;
- \(r\) — real rate of return on net financial assets;
- \(n\) — population growth rate;
- \(\rho\) — production development rate;
- \(\theta\) — rate at which the expected increase or decrease in resource income in the future;
- \(\nu\) — rate at which growth or decline in real federal transfers is expected.

Alberta accounts for 73% of Canadian oil and oil products. Alberta’s explored oil reserves contained in oil sands contain about 175 billion barrels crude oil. In recent years, the development and development of oil sands in the province has been growing. In recent years, oil production from oil sands
has been at the level of 1 million barrels per day. The average daily production of crude oil and gas significantly exceeds their consumptions, which allows the province to export part of the hydrocarbons and also form funds based on them. A hereditary savings trust fund is an example of such a fund.

Virtually all of the provincial funds are under the control of the Alberta Investment Management Corporation (AIMCo). It is a government corporation responsible for investing in the Alberta Province Inheritance Savings Trust Fund, as well as some other public pension and other fund-based funds. Legislatively, the creation of AIMCo was enshrined on March 13, 2007.

In January 2008, the corporation received the status of the state. AIMCo controls assets of approximately $73.7 billion as of June 30, 2007 and is one of the largest institutional investors in Canada [8].

The trust fund of hereditary savings is one of the oldest of the funds listed below. In terms of its assets, it is in fifth place. The investment policy of the fund, like all other provincial funds, is subject to the mandatory approval of the Minister of Finance.

A hereditary savings trust fund was formed in 1976 in the Canadian province of Alberta (Alberta Heritage Savings Trust Fund) as a result of the signing of the act of its creation. The volume of the fund was 1.5 billion Canadian dollars in cash and assets received from the General Revenue Fund [9]. The purpose of the creation of the Alberta Hereditary Savings Trust Fund was the preservation and investment of funds [10] derived from the production of oil and gas. The decision to create a fund was influenced by the following factors: concern for future generations [11], strengthening and diversification of the economy, improving living standards, the desire to have a foundation for a rainy day [12].

In March 1979, the fund has already reached 4.7 billion Canadian dollars [13]. In the period since 1976 until 1982–1983. The main sources of fund replenishment were 30% of royalties from Alberta’s non-renewable resources and fund investment income. In the period from 1983–1984, the share of royalties was reduced to 15%.

In Alberta, there are two types of royalties — for conventional oil and natural gas and for oil sands. For conventional oil and natural gas, royalties are calculated at an ad valorem rate depending on the price and level of production of oil and natural gas. For oil sands, royalty is the sum of the traditional fixed royalty rate (1%) [14] and 25% of net profit. In the period from 1974 to 1995 the amount of royalty per barrel of oil production was different, its largest value was reached from 1980 to 1985.
The fund began to make loans in other provinces of Canada. Since April 1987 royalty revenues were no longer a source of replenishment. In 1987, the fund’s volume was already 12.7 billion Canadian dollars.

The fund’s investment income was transferred to the budget of Alberta. During 1985–1986, 1.67 billion Canadian dollars were transferred. During this period, 785 billion Canadian dollars were transferred. Financial resources from the fund were invested in capital projects for long-term profits in Alberta, the largest of which was Alberta’s oil exploration project (Alberta Oil Sands Technology and Research Authority), as well as government debt obligations (bonds).

January 1, 1997, The new act came into force (Alberta Heritage Savings Trust Fund Act), which established two portfolios: the transition portfolio of the fund (transition portfolio) and the endowment portfolio. The purpose of the development portfolio was to generate income for the province of Alberta, the purpose of the investment portfolio was to achieve long-term profits. The fund can also accumulate a sufficient part of investment income to protect the fund from inflation. So, thanks to these measures, at the end of 1996. Fund assets amounted to 12 billion dollars.

Initially, a portion of the fund’s resources was used for savings for future generations (a portfolio of endowed resources, an investment portfolio), and a portion was used to finance current government programs and public services (transition portfolio, transition portfolio). However, since the mid-90s it was decided not to direct the fund’s funds to projects and programs. All revenues earned by the fund have been added to the general resources of the fund.

The fund has invested in stocks, bonds and real estate in order to accumulate resources for the province of Alberta. About 700 million Canadian dollars were placed on the private investment market, about 800 million Canadian dollars in private equity, infrastructure, real estate, domestic debt.

According to the Notes to the financial report of the fund, the main mission of the fund is to ensure the careful management of savings derived from the non-renewable resources of Alberta and to ensure the highest financial returns from the use of these savings for present and future generations.

In June 2008, fund size increased to 17.019 billion Canadian dollars. On September 30, 2008 the fund has dropped to 15.8 billion Canadian dollars. The fall was about 1.2 billion Canadian dollars. This was caused by the global economic crisis and the unfavorable situation in the financial markets. For over 30 years of its existence, the fund has accumulated about 30 billion dollars of investment income. The functioning of the fund has a beneficial effect on improving the quality of life in the province.
In the period from March 2008 till June 30, 2008, Fund investment income was 155 billion Canadian dollars. Of these, 131 billion Canadian dollars remained in the fund to protect against inflation, and 24 billion Canadian dollars were transferred to the General Revenue Fund.

This fund is the main fund of the province of Alberta, which is engaged in payments for government programs. Despite the fact that the Alberta Hereditary Savings Trust Fund increased by CZK 131 billion, but minus unrealized planned capital gains of C $ 46 billion, the total increase for the period under review was C $ 85 billion [145].

As of September 30, 2008, The trust fund of the hereditary savings of Alberta suffered losses. Over the last months preceding September, the total losses of the fund amounted to 450 million Canadian dollars [24].

Despite this, according to forecasts, the volume of the fund will grow by 2010–2011, can reach 18.7 Canadian dollars [25].

The fund actively invests in stocks, bonds, real estate, mortgages, money market, in forest areas. In accordance with the recommended policy of investing the funds of the fund, the largest share of the fund's assets is placed in shares (51%), while the share of fixed-income securities (24%) is slightly less [27].

Canada's stock market is characterized by the Standard & Poor’s Toronto Stock Exchange Index (S&P/TSX) Composite Index. In the 2nd quarter of 2008, this index increased by 9.1%, which is much more than in the same period of 2007 (6.3%). In the United States, due to the problems of credit markets and rising inflation, a period of high oil prices and commodity prices, the stock market suffered losses. The US index The S&P 1500 Index, which takes into account the 1500 largest national companies, had a loss of 2% or 2.9% when calculated in Canadian dollars. Over the estimated period, this index fell by 3.1%. The DEX Bond Universe Index, which characterizes the Canadian bond market, fell by 0.7% over the same period [7].

As a result of negative events in the global economy, the proportion of the fund’s investments in various types of fund assets as of September 30, 2008 compared with the proportions stipulated by the long-term policy of the fund, they have changed significantly. The main change in proportions occurred in the class of bonds and mortgages.

During the first five years of its existence, the Alaska Fund invested exclusively in bonds, and only later included shares and other foreign investments in its composition. Since 1997, the Alberta Provincial Savings Trust Fund has pursued the exact opposite policy. As a result, the performance of the Alaska Foundation exceeded that of the Alberta Foundation. The Alaska
Foundation, earlier than the Alberta Foundation, began to create reserves to reduce the effects of inflation on the fund [30].

Another comparison criterion is fund management. The Alaska Foundation is in trust, the Alberta Foundation is in public administration, which makes all major decisions. In Alaska, in accordance with the public dividend policy, every citizen decides how to spend the funds, which also concerns decisions on the allocation of fund resources [14].

An important aspect of the operation of the Alberta Province Trust Fund is the tax allocation of funds. The current budget of the government of Alberta is associated with a complex distribution of financial flows. You can see the main areas of government revenues and expenditures, as well as the degree of involvement of various funds in them, such as the Sustainability Fund, the Capital Account, the Alberta Province Heritage Savings Trust Fund (Alberta Fund), as well as a number of other funds (Alberta Heritage Medical Research Endowment Fund, Alberta Heritage Science and Engineering Research Endowment Fund, Alberta Heritage Scholarships Fund) which shows the complexity of the existing taxation and distribution of financial flows, the lack of complete transparency. The existence of a number of specialized funds creates difficulties in understanding how much savings is in the province and where they are going.

The new scheme is more transparent and much easier. Alberta’s cumulative revenues are distributed between two funds: the General Revenues Fund and the Alberta Province Inheritance Savings Trust Fund. Each year, a fixed percentage of the Alberta Province Hereditary Savings Trust Fund is allocated to the General Revenues Fund for additional funding for basic programs and services. A number of organizations (Alberta Heritage Foundation for Medical Research, Alberta Heritage Foundation for Science and Engineering Research, Alberta Heritage Scholarships) receive ongoing and long-term funding. All surpluses are sent at the end of the year to the Alberta Provincial Savings Trust Fund, as well as to replenish two other funds (Sustainability Fund, Alberta Heritage Capital Fund).

The experience of the operation and management of the Alberta Province Hereditary Savings Trust Fund, as well as elements of the above financial flows scheme, can be used to improve Russian funds (the Reserve Fund and the National Wealth Fund).
8.5 Sovereign Welfare Fund of Qatar

The small countries of Qatar have long occupied an important position in the operation of trade routes between India and Europe. In the 1940s, when oil was discovered here, and then huge natural reserves, representing one third of world reserves, this region became particularly significant for the world community.

The initial traditional occupations of the Qataris were pearl hunting, fishing, breeding of camels and sheep, and partly agriculture. The oil found in Qatar (1939) and its industrial production (since 1949) radically changed the situation in the country, allowing it to achieve unprecedented rates of economic growth.

The economy of Qatar is almost entirely dependent on oil and gas production. The oil reserve is estimated at 3.3 billion barrels, it is projected to last for 25 years. Qatar — 6th in the world in terms of exports of natural gas and a major exporter of oil and oil products (21st place in the world). He goes to the Organization of Petroleum Exporting Countries of OPEC. Today, the country produces about 140 million barrels per year. Control over oil and gas since the 1970s belongs to the state. Oil refining has also been established, there are two oil refineries in Umm Said. The following industries are developing: fertilizer production, metallurgy, cement, petrochemical, chemical, and milling industries [19; 22].

To date, oil revenues account for more than 55% of GDP, 85% of export earnings and 70% of all government revenues. Proved oil reserves of 14.5 billion barrels. The profit from the oil and gas industry has allowed Qatar to become a rich country with a modern, well-developed economic infrastructure and per capita incomes, almost the same as in Western Europe. This means that, thanks to oil production, the level of per capita GDP in Qatar is quite high, its economy is comparable with the leading western industrial countries. Currently, less than 10% of the labor force is employed in all these sectors of the economy [19; 22].

In its brief description of economic and financial events, the International Bank of Qatar (IBQ) noted that the country had achieved impressive economic results for the fourth year in a row, despite the remaining problems of the limited natural resources of the state, aggravated by the rapid development of the economy. Nominal gross domestic product (GDP) in 2006 grew by 24% as a result of an impressive annual growth rate of an average of 30% over the past three years. The real growth rate also remained high due to the high incomes of the hydrocarbon sector and active investment flows [11].

As it is cut off in the report of the International Bank of Qatar (IBQ), a noticeable increase in the non-oil sector was supported by a small but noticeable effect of a sharp adjustment of the Doha Stock Exchange in early 2006.
The country is reaping the benefits of the Qatar strategic development program launched in 1990 years, combining the openness of the economy with a clear plan for economic diversification and institutional and democratic reforms. This strategy, along with favorable energy prices and high investment costs, is likely to have a stimulating effect on the growth rate of the country over the next five years.

By 2012, the economy could double. According to the report of the International Bank of Qatar (IBQ) of Qatar, prepared in cooperation with the economic research group of the partner bank National Bank of Kuwait, the price pressure in the country continues to increase, consumer inflation reached 11.8% in 2006 mainly due to rising rental rates. Expansionary tax policies and limited resources contribute to inflation. The unwinding inflationary spiral “wages — prices” [11] also contributed to inflation.

The Qatar International Bank of Qatar (IBQ) report indicates that the Qatari government is working to create a viable and active private sector. He, in turn, should create jobs in a country that has historically been concentrated in the public sector. Among the efforts of the government in this direction are attempts to turn Qatar into a center of major sporting events and events in the energy sector, which lays the foundation for significant private sector investment in the tourism industry. Investments aimed at stimulating the diversification of the country’s economy were also a strategic priority. The financial sector was named the main direction of attracting more private investment.

The government’s initiative to establish Qatar’s Financial Center (QFC) was an important step in that direction. The task of QFC is to attract world-class financial institutions, although it is not limited to attracting offshore banking institutions or economic operations in foreign currency (not Qatari riyal) [11].

As the report of the International Bank of Qatar (IBQ) shows, the wealth of Qatar is abundant in natural gas resources, corresponding to 15% of the world’s proven reserves. Major investments in the gas sector and the rapid development of natural gas exports have had a positive effect on the economy of the past five years.

In 2006, Qatar exported 25 million tons of LNG, having doubled its exports compared with 2002 and became the fourth largest exporter of LNG in the world. Dry (liquid-free) natural gas, which has so far been supplied mainly for the needs of local industry, is being transformed into a new revenue source of foreign currency: its first deliveries were made to the UAE via the Dolphin pipeline. Gas production using natural gas-to-liquid (GTL) technology will also be developed this year.

Providing opportunities for the conversion of natural gas into environmentally friendly, expensive fuel with higher profitability. At the same time, crude
oil remains the backbone of the economy, determining 60% of total export revenues [11].

In 2006, Oil and gas revenues continued to grow, exceeding $20 billion, although in the second half of 2006 a slowdown in production and prices growth rates was found. The report of the Qatar International Bank (International Bank of Qatar (IBQ)) assigns a leading role in strengthening the country’s external and financial position to the growth of hydrocarbon revenues. By the end of 2006, Qatari Central Bank’s net foreign assets (QCB) reached $5.4 billion, and the accumulated surplus of the current account and financial operations over the past five years is estimated at $30 billion and $10 billion respectively.

The total amount of these savings will be used to reduce the degree of dependence of Qatar on energy income. Two years ago, the government established the Qatar Investment Authority, whose task is to manage the emirate’s large funds to improve and diversify sources of income through international contracts [11].

According to the report of the International Bank of Qatar (IBQ), Qatar is the last among the Gulf states to enter the international investment market, but he intends to make up for lost time. According to unofficial estimates, Qatari foreign assets reach $70 billion. The country has strengthened its position in the external market, and continues to strengthen international creditworthiness [11].

The Qatar economy retains a high dependence on hydrocarbon exports, although the current account and financial account are less susceptible to falling energy prices compared to other hydrocarbon exporters, mainly due to the long-term nature of export contracts for natural gas. Another significant risk remains the cyclical nature (boom-recession) of capital markets [3; 11].

According to the report of the International Bank of Qatar (IBQ), the stock market in recent years — in decline after the rapid growth of liquidity and lending. Market adjustment began in 2006, led to a loss of about 23% of the capitalization of the Qatari stock market within two months. The decline in the capitalization of the local stock market, however, did not change the situation in private consumption, since the share of local securities in the total private wealth of Qatar is small, and local investors can boast one of the highest per capita income levels in the world. The impact of market adjustments on private sector activity, including financial institutions, is also limited [11].

According to the report of the International Bank of Qatar (IBQ), recently, the stock market was capable of breakthroughs, registering at the moment a growth rate of 8%, as measured by the Qatar Qatar Qatar Index, despite a weak “start” 2007 The companies listed on the Doha Stock Market announced a 28% increase in revenues in the first half of 2007 compared to the same period in 2006.
Many market analysts consider the increase in companies’ returns along with the fact that companies in the market traded with a PE ratio of 15.1, with the likelihood of the risk of a stock market crash. Investors continue to remain concerned about the DSM offer of a limited number of investment opportunities, with the result that the market as a whole is extremely concentrated [11].

As mentioned in the report of the International Bank of Qatar (IBQ), the attendant risk is the influence of neighboring countries. This is a consequence of the strengthening of financial ties and integration within the Gulf Cooperation Council (GCC), as evidenced by the growth of interregional investment flows. Increased liquidity and lower investment barriers for GCC citizens within the region contributed to the strengthening of close cooperation.

Liberalization of the economy also played a role. Plans to create a single monetary union GCC, to be introduced in 2010, are also aimed at strengthening the financial integration of Qatar within the region. However, the process of preparing for the introduction of a single currency, where the agreement on the convergence of currencies and the pegging of the currencies of all GCC countries to the US dollar have so far entered, has encountered difficulties due to the withdrawal of Oman from the project. There was concern that the union would not be concluded by 2010 [11].

Nevertheless, the official position of Qatar remains in favor of the project, denying assumptions about the possibility of revaluing the Qatari riyal or changing its monetary policy in light of the significant depreciation of the US dollar compared to other currencies.

Today, Qatar is one of the fastest reforming countries in the region and one of the richest countries in the region. Taking into account the forecasts of many analysts about the imminent replacement of oil as an energy source by natural gas, Qatar will continue its impressive economic growth in the future [11].

The positive growth of the economy of Qatar created the conditions for the establishment of a sovereign wealth fund in this country. Qatar Investment Authority (QIA) Qatar Investment Authority was established as an independent public investment Institute in 2005 by Decision No. (22) 2005 and began its operation in early 2006.

The Qatar Investment Authority (QIA) Qatar Investment Authority is proprietary and subject to supervision and accounting by the state. In accordance with Article (2) of the Qatar Investment Authority’s Qatar Investment Authority (QIA), it has the status of a legal entity and forms its budget regardless of the Qatar government.

The division of roles and responsibilities between the owners of the Qatar Investment Authority Qatar Investment Authority (QIA), the management
organizations and its direct management is documented. The volume of the fund is about 75 billion dollars [14; 21].

In accordance with the founding document of the Qatar Investment Authority (QIA) of the Qatar Investment Authority, its goals are to develop a strategy, invest and manage state reserve funds and other assets transferred to it for the government of the country through the Supreme Council for Economic Affairs and Investment. Affairs and Investments) [13; 22].

According to Decision No. (22) 2005, the Qatar Investment Authority (QIA) Qatar Investment Authority’s mission and investment strategy is “… developing, investing and managing a state reserve of funds and other property transferred to it by the Supreme Council in accordance with the policies, plans and programs approved by the Supreme Council” [4].

In carrying out its mission, the Qatar Investment Authority (QIA) and its employees are guided by the following principles: integrity, integrity, mission for the benefit of the people of Qatar, entrepreneurship, professional excellence and respect for people. The Qatar Investment Authority (QIA) of Qatar recognizes that people are the most valuable resource [4].

The Qatar Investment Authority (QIA) of Qatar has the following organizational structure. The Board of Directors is the supreme body that has complete control over the Qatar Investment Authority (QIA) Qatar Investment Management Strategy and its business development. The board of directors consists of the chairman, deputy chairman and other members. QIA’s Board of Directors convenes on a regular basis and as needed to discuss and review the Qatar Investment Authority (QIA) Qatar Investment Authority (QIA) strategic objectives and policies. The Qatar Investment Authority (QIA), the chief executive officer of the Qatar Investment Authority, is responsible for internal control over its QIA operations. In carrying out its functions, it is assisted by employees of the management team, the investment committee and business departments whose activities cover the management of direct investment in real estate and private equity, support for internal audit, legal tasks, administration and financial work. Qatar Investment Authority (QIA), the Qatar Investment Authority, also attracts additional specialists and companies to update existing systems and bring new knowledge and experience [13; 22]. The Qatar Investment Authority (QIA) Qatar Investment Authority has 92 employees [8]. Qatar Investment Authority (QIA), Qatar’s Investment Authority, has one office in China, opened in 2009 and one office in India [5].

Qatar Investment Authority (QIA) was established in Qatar to diversify Qatar’s financial assets into their new classes and strengthen the country’s economy. Accordingly, the fund invests primarily in international markets; in
Qatar, the fund supports various areas, but does not invest in the energy sector. The Qatar Investment Authority (QIA) capitalization of the Qatar Investment Authority is estimated at $60 billion. The fund is based on the proceeds of the excess of funds from the sale of Qatar’s natural resources, its oil and gas revenues. According to the 2007 information, the fund’s investments consist of 40 percent of investments in US dollars, 40 percent in euros and 20 percent in other currencies, including the British pound.

The Qatar Investment Authority (QIA) Qatar Investment Authority (QIA) investment in the British company Four Seasons Health Care, which the Qatar Foundation made in September 2007 in the amount of 2.08 billion euros, investments in Allianz Capital Partners in the amount of 2, are among the most interesting investments.

In addition, to making these investments, the Qatar Investment Authority is actively involved in creating new alliances in the Arab world and in other countries with developing economies. Together with Dubai International Capital (DIC), the Qatar Investment Authority (QIA) of Qatar acquired 3.12 percent of the shares of EADS. In March 2008, the Qatar Investment Authority (QIA), together with the International Petroleum Investment Company (IPIC), invested $2 billion in various sectors of the economy with the exception of the oil and gas sector.

Also important are the companies Qatar Holding LLC, Delta Two LTD, Qatari Diar, Major Direct Foreign Investments (Public). Qatar Holding LLC was founded in April 2006. Under the leadership of the Qatar Financial Center as an investment instrument of the Qatar Investment Authority for the implementation of Qatar’s strategic and direct investments. The Fund also owns Qatar Investment Company, which owns Qatar Holding LLC, which includes branches of Qatar Holding Luxembourg II and Qatar Holding Netherlands BV. Delta Two LTD is also an important investment instrument of the Qatar Investment Authority. Qatari Diar is a real estate company. The volume of its assets is 42 billion dollars.

It was founded in December 2004. The purpose of its creation is to support the economy of Qatar and to ensure the priority projects of the country in the field of real estate. She invests in companies in France, Qatar, Great Britain, Italy, Oman, Morocco, Egypt, Syria, Sudan and Seyshel [13; 22].

Important companies are also Qatari Diar and Hassad Food. Qatari Diar Real Estate Investment Company (Qatari Diar) is owned by Qatar Investment Authority (QIA) Qatar Investment Authority. She has a separate management, but is managed by the same sheikh who manages the Qatar Investment Authority. Founded in 2004, Qatari Diar Real Estate Investment Company (Qatari Diar) has assets of $20 billion.
Qatar Investment Authority (QIA), the Qatar Investment Authority, established this company in 2008. The company’s assets amount to about 1 billion dollars.

Through its company Diar Real Estate Investment Company, the fund plans to develop two real estate projects in Syria, including investing in a $250 million development project in the coastal city of Latakia.

Also, the Qatar Investment Authority (QIA) of Qatar has invested $350 million in the Rawabi project, which provides housing for more than 40,000 people.

The Qatar Investment Authority (QIA) Qatar Investment Authority’s participation in joint ventures and investments in emerging markets extend far beyond the Arab world. The Foundation has created the Infrastructure Fund (PME Infrastructure Management Limited Fund) worth $400 million for investments in African transport, communications, communications and the energy sector.

The Qatar Investment Authority (QIA) and the Dubai Exchange (Borse Dubai) are very active in the European and American markets. They are fighting for the Swedish OMX, which controls the stock exchanges of the Scandinavian and Baltic countries and provides technology to the stock exchanges of various countries, including Russia [18].

Qatar Investment Authority (QIA) bought 9.98% of OMX shares. However, the Dubai Stock Exchange (Borse Dubai) has merged with the American NASDAQ Exchange, and now with joint efforts they can gain control over 47.6% of OMX shares. According to their agreement, Dubai is will buy OMX and then transfer ownership of it to the American exchange in exchange for 19.9% of its shares and 28% of the shares of the London Stock Exchange (LSE), which NASDAQ now owns [18].

The Qatar Investment Authority (QIA) Qatar Investment Authority is widely known as a major institutional investor investing in European companies, such as Barclays, Volkswagen, Credit Suisse, and investments in the real estate sector in London. Of the Qatar Investment Authority (QIA) investments of Qatar’s investment in 10 controlling stakes in companies operating in emerging markets, half of them were invested in national companies. These investments were relatively small investments, with the exception of the creation of a joint venture with Deutsche Bahn and the organization Mubadala and investments in the development of the aerospace industry of Abu Dhabi by creating a joint venture with Boeing. Qatar Investment Authority (QIA) has also invested in NOVA Chemicals.

Qatar Investment Authority (QIA), the Qatar Investment Authority, spent $20.0 billion. This was due to the large amount of investment in the construction of the railway, as well as the conclusion of a deal with the German automobile
concern Volkswagen, which amounted to 4.6 billion dollars, investments of 1.2 billion dollars in the assets of the British bank Barclays and 530 million dollars company in London Songbird Estates.

At the same time, through its other mechanism, Qatari Diar, a real estate company, the Qatar Investment Authority (QIA) of Qatar plays an important role in the development of the country’s economy. Among its projects is the construction of a new city of Lusail, which is considered one of the key elements of the implementation of the development strategy of Qatar.

As part of its development strategy, in November 2009, Qatari Diar signed an agreement on the implementation of a 15-year project to create a railway network worth $26 billion with Deutsche Bahn AG (DB). Under this agreement, the partners will create a joint venture, Qatar Railways Development Company, with Qatar’s share of 51 percent, and Deutsche Bahn AG (DB) will provide two of its four managing directors, including the CEO, for the first four years.

In the short term, it will help provide jobs in Germany in the challenging conditions of a constantly changing economic environment. It also provides the company with long-term benefits: the planned investment, estimated at hundreds of millions of dollars, involves the construction of railway infrastructure in the Arabian Peninsula over the next twenty years. Deutsche Bahn AG (DB) will play a significant role in these projects.

In 2009, The Qatar Investment Authority offered 7 billion euros for a 25% stake in Porsche and its options to purchase shares of another German auto concern Volkswagen.

On September 2, 2009, the Qatar Investment Authority (QIA) Qatar Investment Authority made a major deal by acquiring a 10% stake in the Porsche car company, in the amount of $10 billion. October 20, 2009 Qatar Investment Authority (QIA), the Qatar Investment Authority, sold 379 million shares of Barclays [6], making a profit of $1 billion after the bank’s shares doubled in price.

A large Israeli investment group IDB Holding Corp, the Swiss Credit Suisse Group AG and investment funds from Saudi Arabia and Qatar created a joint investment fund. IDB Holding Corp. The total assets of the new fund is $1 billion. The fund intends to invest in promising projects in China, Brazil and Latin America. The Olayan Group participates in the fund from the Saudi side, and the Qatar Investment Authority from Qatar. Israeli and international observers are united in one thing — the creation of a joint fund does not have special economic significance, but is a loud political statement of intent [20].

In early July 2010, The Agricultural Bank of China listed on the Shanghai and Hong Kong stock exchanges. The bank placed 8% of its capital (25.24 billion class H shares) on the Hong Kong stock exchange at a price of 3.2 Hong
Kong dollars per share, and in Shanghai — 7 percent (22.2 billion class A shares) at 2.68 yuan for share. As a result, the bank managed to attract more than 19.2 billion US dollars (hereinafter — dollars). The total income from the placement can reach $22.1 billion if underwriters implement the option for additional securities by August 5, 2010 [12; 17].

Interest in the bank's shares was shown by the Qatar Investment Authority, which bought securities worth $2.8 billion, the Kuwaiti Investment Authority, which invested $0.8 billion, the British Standard Chartered Bank, whose contribution amounted to $0.5 billion, the Netherlands the Radobank Nederland Bank and the Australian investment company Seven Group Holdings Ltd., which invested $0.25 billion, and the Singaporean investment company Temasek Holdings, which acquired securities for $0.2 billion. Shanghai and Hong Kong Stock Exchanges This is a week after the public offer [12; 17].

The Qatar Investment Authority (QIA) is actively involved in building alliances with other sovereign wealth funds. Thus, the two largest in the Middle East richest non-transparent sovereign funds in the world from the United Arab Emirates (UAE) and Qatar agreed to create a joint fund with an initial capital of $2 billion “for acquisitions abroad”. State-owned International Petroleum Investment Company (IPIC) from Abu Dhabi and the Qatar Investment Authority (QIA) announced that their new joint fund “will seek global investment opportunities in the energy sector and beyond”. This move by Abu Dhabi demonstrates the emirate’s intention to continue its investment strategy, manifested in the acquisition of property in the West [15].

For Qatar, which has the third largest natural gas reserves in the world, this alliance has an intrinsic value. Qatar supplies Abu Dhabi with blue fuel needed by the emirate to meet growing domestic demand for electricity. The partnership allows the two neighboring countries to expand gas trade. But the main aspect of this oil and gas alliance is the external aspect. The Qatar Investment Authority (QIA) Alliance with the Qatar Investment Authority will expand IPIC’s ability to buy foreign assets.

Examples of the UAE and Qatar are followed by their rich neighbors. Kuwait Investment Management (Kuwait Investment Authority) in January said it would invest 3 bln. Dollars in Citigroup. These investments are criticized by Western countries. But experts believe that Middle Eastern sovereign funds, which have enormous financial resources due to income from energy trading, are practically the only salvation for Western banks caught up in deep crisis [15].

Using the investment tool, Qatar Holding, the Qatar Investment Authority (QIA), invested in the assets of various companies. Qatar Investment Authority (QIA) investments include the London Stock Exchange, the London Stock
Exchange, Lagardere, Chelsea Barracks, Credit Suisse, Raffles Medical Group, Sainsbury’s PLC, Aerospace & Commercial Bank of China and Aerospace EADS Corporation.

In October 2008, the Qatar Investment Authority (QIA) announced that it plans to invest $5.3 billion in bank shares as part of a strategy to strengthen investor confidence in banks. The announced investments include Barclays PLC (UK), Commercialbank and Qatar International Islamic Bank Qatar International Islamic Bank (5% of the shares in the amount of $127 million), Doha Bank ($5.3 billion) [5]. In 2009, The Qatar Investment Authority intended to invest in the Qatar Bank (QIB).

In December 2009, the Qatar Investment Authority (QIA) acquired an additional 5% stake in a number of banks: Commercialbank, Al Rayan Bank (Al Rayan Bank) and Al Ahli Bank (Al Ahli Bank). The transaction amount amounted to 549.7 million dollars [5].

Qatar Investment Authority (QIA), the Qatar Investment Authority, actively cooperates with Russia. For example, Gazprombank OJSC and Qatar Investment Authority (QIA), the Qatar Investment Authority, represented by the investment group Barwa and the investment company First Investor (a subsidiary of Barwa Bank), plan to create a joint fund Barwa Gazprombank Russia/CIS Real Estate Fund to invest in real estate in Russia and CIS countries. The volume of assets of this fund at the time of formation will amount to $150 million. Through additional fundraising, it is planned to increase the volume of assets to $500 million. The life of the fund is 5 years. The fund will be managed jointly by First Investor, Barwa Real Estate Company and Gazprombank.

The regional network of OAO Gazprombank is represented by 219 points of sale of the branch network (including 43 branches and 176 internal structural divisions) and 103 points of sales of 5 subsidiary Russian banks. Gazprombank also participates in the capital of three foreign banks — Belgazprombank OJSC (Belarus), Areximbank CJSC (Armenia) and Russian Commercial Bank in Zurich (Switzerland). Gazprombank opened representative offices in Beijing (China) and Ulan Bator (Mongolia). QIA fully controls Qatari Diar Real Estate Investment Company (Qatari Diar), which is a real estate investment fund. According to various sources, QIA manages from 60 to 75 billion dollars [16].

The First Investor (TFI) is an investment bank in Qatar, which is a 100% subsidiary of Barwa Bank. Barwa Real Estate Company QSC is one of the largest real estate investors in Qatar. The Government of Qatar directly and indirectly owns 55% of Barwa shares, mainly through Qatari Diar (45%) — a division of the Qatar Investment Authority of Qatar Investment Authority (QIA) in real estate. The company currently operates in the Gulf countries, the Middle...
East, North Africa and Europe. Along with the implementation of development projects, Barwa also develops its activities in the field of building materials, project management and real estate. Gazprombank and the Qatar Investment Authority (QIA) and the Qatar Investment Authority will create a joint investment fund with assets of $150 million, June 18, 2010 [16].

The Qatari company Barwa Real Estate Company and Gazprombank plan to invest more than 500 million dollars in the construction of residential and commercial real estate in Russia. The partners completed the formation of the Barwa Gazprombank Russia Real Estate Fund. At the moment, the parties have invested $75 million in it. The remaining amount they plan to make in the near future. According to a Gazprombank representative, preliminary contracts have already been signed for some projects. In addition to the fund’s resources, partners will also attract borrowed resources [9].

### 8.6 Kuwait Sovereign Welfare Fund

The development of sovereign wealth funds of Kuwait depends on the growth rate of the country’s economy. The country’s economy has its own history of development. Up until the 1930s and 1940s, traditional occupation in Kuwait was nomadic cattle breeding, oasis farming, pearl mining and maritime intermediary trade. Kuwait’s heyday is associated with oil production. Although the country’s largest oil fields were discovered in the 1930s, their development began only after World War II and accelerated after independence was declared in 1961. Intensive oil production (since 1946) forms the basis of the Kuwaiti economy.

Since then, oil has remained the dominant factor in the country’s economy, generating about 90 percent of all export earnings. Kuwait’s oil reserves are estimated at about 10% of world oil reserves, and at the current rate of oil production, oil will last for another 150 years. Currently, Kuwait ranks third in the Middle East (after Saudi Arabia and Iran) in terms of oil production. In recent decades, Kuwait has been pursuing a policy of saving oil resources; therefore, after 1979, there has been a tendency towards a reduction in oil production. Also a separate item of the country’s income — the income from the investment of Kuwait abroad. Foreign investment takes 10% of oil revenues.

Kuwait is a major exporter of petroleum and petroleum products. The main exported goods of the non-oil group are sulfur, carbamide, dyes. Fertilizers and shrimps are also exported. The main export partners are Japan (20.5%), South Korea (13.7%), USA (12.4%), Singapore (11.3%), Taiwan (9.9%), and the Netherlands, India, Pakistan and the United Kingdom. Kuwait imports food, construction materials, machinery, spare parts, ready-made clothing. The
main import partners are the USA (12.9%), Germany (11.9%), Japan (7.9%), as well as the United Kingdom, Saudi Arabia, France, Italy and India [8].

Today, Kuwait’s economy is relatively open. In terms of the openness of the economy (Index of economic freedom), Kuwait a few years ago was ahead of countries such as Norway, France, Spain, Malaysia and Argentina [8].

Kuwait is the largest investment center. The country has a developed local capital market, and its population holds more money on bank deposits than the population of Saudi Arabia, Abu Dhabi (the emirate of the United Arab Emirates, UAE) and Qatar combined. Kuwait is the largest investor in long-term capital abroad, but the subject is no longer private capital, but the government.

Interesting organization of the financial system of Kuwait. Kuwait’s central bank is fully accountable to the government. The credit system includes 7 commercial banks, two of which were created with the direct participation of the government. There are 5 insurance companies with public and private capital.

In Kuwait, the stock market and the stock exchange are quite developed. The Kuwaiti Stock Exchange is one of the 12 largest in the world. The Kuwaiti Stock Exchange (KSE) is considered one of the main in the region, and its market value is estimated at about $ 30 billion. Kuwait Stock Exchange (Kuwait Stock Exchange, KSE) is the national stock market in Kuwait. Despite the fact that some companies already existed long before the creation of a stock exchange (such as the National Bank of Kuwait, 1952), it was not until 1962 that a law was passed on organizing a stock market in the country. The Kuwaiti Stock Exchange is the first, largest and most important stock market among the Gulf countries, as well as one of the most important in the world. The stock exchange quoted securities of companies and organizations grouped by the following activities: banking, investments, insurance, real estate, industry, services, food products, non-Kuwaiti organizations, mutual funds. Companies represented in the banking group, non-Kuwaiti organizations and mutual funds are listed.

Not long ago, Kuwait, among the few states, was the undisputed leader in the Arab region in terms of its main economic indicators and had bright prospects for further prosperity. From an investment point of view, an important advantage of Kuwait is its high macroeconomic and microeconomic indicators, especially from the standpoint of the high development of the economic infrastructure. The country is still one of the “oases” of well-being and prosperity in the Middle East. However, the current contours of Kuwait’s economic growth are not so expressively outlined, and the potential of its economic achievements and social gains has been leveled to a certain extent [8].

Positive trends in the development of the Kuwaiti economy have created prerequisites for the creation of sovereign wealth funds in this country. In 1960, The
Kuwait Oil Fund (Oil Fund) was established in the form of the General Reserve Fund to accumulate funds from the budget surplus resulting from high oil export revenues. It was used to finance all types of government spending.

Transfers from the General Reserve Fund to pay for government budget expenditures are governed by Kuwaiti law. The General Reserve Fund manages all public assets, including the participation of assets of Kuwait’s state-owned enterprises, such as the Kuwait Fund for Arab Economic Development and the Kuwait Petroleum Corporation (Kuwait Petroleum Corporation), as well as participating in the activities of multilateral and international organizations, such as the World Bank, the IMF and the Arab Fund [11].

In 1976, The Reserve Fund for Future Generations was established in Kuwait. Initially, the Fund was formed on the basis of 50% of the total reserves of the Fund at the time of creation of the fund and 10% of the annual income of the state, as well as income from the assets of the Fund. The income of the Fund does not depend on fluctuations in oil prices, and makes up 10% of all government revenues and all revenues from its own investments. Since the creation of the Reserve Fund for future generations, the General Reserve Fund has begun to perform stabilization functions, as well as service the public debt and be used for public investment.

The General Reserve Fund in Kuwait was originally managed by the Ministry of Finance. Now, the General Reserves Fund and the Future Generations Reserve Fund are managed by a Kuwait Investment Authority (KIA) independent of the government ((Kuwait Investment Authority) KIA). Funds of the funds are invested in foreign financial assets. The expenditure of the general reserves fund is allowed with the approval of the country’s Council of Ministers [13].

Kuwait Investment Authority (KIA) manages the assets of one of the oldest national wealth funds in the world. The functioning of the Kuwait Investment Authority (KIA) based on the experience of the Kuwait Investment Board, which was established in 1953, eight years before Kuwaiti independence [13].

In 1982, the Kuwait Investment Authority (KIA) was created to manage the assets of the Ministry of Finance of Kuwait. Further, the powers of the Kuwaiti Investment Authority were expanded. To date, the Kuwait Investment Authority (KIA) also manages two sovereign wealth funds: the General Reserve Fund and the Future Generation Fund. The Kuwait Investment Authority (KIA) may also manage any other funds entrusted to it by the Minister of Finance. Kuwait Investment Authority (KIA) is Kuwait’s asset manager, not its owner [13].

The Kuwait Investment Authority (KIA) aims to achieve profits from the management of oil revenues in the long term and provide an alternative source of government revenue in the event of a depletion of the country’s oil resources.
As an autonomous government body, the Kuwait Investment Authority (KIA) is responsible for managing and administering the Future Generation Fund (FGF) and (FGP) and the General Reserve Fund (GRF), as well as any other financial resources and funds directed to him to manage the Minister of Finance of Kuwait. According to the estimates of the Institute of Sovereign Welfare Funds (SWF), the sovereign wealth fund of Kuwait has an average Linaburg-Madwell Transparency Index of 6 [13].

The mission of the Kuwait Investment Authority (KIA) of Kuwait Investment is aimed at achieving a long-term return on investment income from the investment of financial reserves. In doing so, the following three tasks are set:

1) achieving a high rate of return on their investments. When calculating the moving average for three years, the profit figures should exceed the established limits. This is supposed to be achieved by developing and maintaining a diversified portfolio and distributing assets across different sectors of the economy, taking into account profitability and risk indicators;

2) Kuwait Investment Authority (KIA) seeks to become a successful world-class investment organization, constantly improving its asset management skills;

3) Kuwait Investment Authority (KIA) is supported by the Kuwaiti private sector [13].

The basic principles of the Kuwait Investment Authority (KIA) Investment Management are: integration, social responsibility, following the rules and procedures, following international accounting and auditing standards, communication and teamwork, knowledge and competence, due diligence, development decisions, leadership, management [6].

The Kuwait Investment Authority (KIA) has the following structure. Kuwait Investment Authority (KIA) is an independent government institution that is led by a board of directors, the majority of whose employees must be from the private sector. Managing Director appointed by the Board of Directors. The Kuwait Investment Authority (KIA) is headed by the Minister of Finance. Other places are occupied by the Minister of Energy, the Governor of the Central Bank of Kuwait, the Deputy Ministry of Finance and 5 citizens of other countries who are experts in this field, three of whom should not occupy other government posts.

The Executive Committee of the Board of Directors is responsible for monitoring the activities of Kuwait Investment Authority (Kuwait Investment Authority (KIA)). The Kuwait Investment Authority (KIA) Board of Directors includes the Audit Committee, whose employees are from the private sector [13].
The accounts and financial statements of the Kuwait Investment Authority (Kuwait Investment Authority (KIA)) are subject to audit by an approved two leading independent global audit firms. In addition, the Kuwait Investment Authority (KIA) is required by law to submit semi-annual reports on the placement of its assets under management to the independent State Audit Office. The Kuwait Investment Authority (KIA) submits to the Council of Ministers (Cabinet of Kuwait) an annual report on the movement of funds in its accounts. In addition, the Kuwait Investment Authority (KIA) submits annual reports on the status of its accounts to the National Assembly (Kuwaiti Parliament), on a periodic basis reports on its financial status to various committees of Parliament [13].

Kuwait Investment Authority (KIA) manages risk management in Kuwait. The KIA's Risk and Performance Unit of the Kuwait Investment Authority (KIA) is responsible for this. She reports directly to the Managing Director. The KIA's Risk and Performance Unit is responsible for conducting risk analysis, identifying and preventing emerging risks reported to senior management, evaluating investment risks for all types of invested assets, identifying irregularities and deviations from planned indicators of the developed investment strategy. Kuwait's laws prohibit Kuwait Investment Authority (KIA) from borrowing [13].

Kuwait Investment Authority (KIA) is the parent organization of the Kuwait Investment Office (KIO), which was originally established as the Kuwait Investment Board. Kuwait Investment Authority (KIA) invests in local, Arab and international markets. Its head office is located in Kuwait, and its branch is in the United Kingdom in London [13].

Kuwait Investment Board (Kuwait Investment Board) was created in 1953, when it was decided to reduce the country’s economy from one of the non-renewable resources, and it was considered that oil revenues could be used to create a fund for the future. In 1961, the Minister of Finance created the investment policy framework for the sovereign wealth funds of Kuwait, which is still in use today [13].

Kuwait Investment Office (KIO) replaced the Kuwait Investment Board in 1963. Its headquarters is in London. As a global and long-term investor, the Kuwait Investment Office (KIO) manages the Reserve Fund of Future Generations and the General Reserve Fund, which was established in 1976 [6].

The geography of the distribution of the produced investments of all asset classes is very wide. The objectives of the Kuwait Investment Office (KIO) include maintaining the real value of the money invested, which is the responsibility of the Future Generation Fund’s Office of the Future Generation Fund. As of the 2004/2005 fiscal year, the annual contribution to the Reserve Fund of Future Generations of Kuwait The Future Generations Fund was made in the
amount of 896.240 million Kuwaiti dinars (about 3.06921 million US dollars, given that 1 Kuwaiti dinar is about 3.42454 dollars United States).

Annual yield of the Kuwait Investment Authority (KIA) in 2005 accounted for 11 %, in 2006 — 15.8 % in 2007 — 13.3 % [14].

In July 2007, the assets of the Kuwait Investment Authority (KIA) amounted to 213 billion dollars, of which 174 billion dollars belonged to the Future Generation Fund (FGF) and 39 billion dollars belonged to the General Reserve Fund (General Reserve Fund (GRF)) [6].

Receiving 10 percent of all state revenues, the Future Generations Fund (FGF) also reinvests its investment income annually. All assets of the Future Generations Fund (Future Generations Fund (FGF)) are invested outside Kuwait. The General Reserve Fund (GRF) has state assets in the General Reserve Fund, it receives state revenues, by means of which state budget expenditures are paid [6].

Related businesses in Kuwait Investment Authority (KIA) include [6]:

1) NTEC (NTEC (National Technology Enterprises Company of Kuwait)) Established in 2002 with a starting capital of $ 311 million, NTEK has venture capital, which is managed by Kuwait Investment Authority (KIA).

2) The company St Martins Property, the cost of which is 3 billion pounds. Independently founded in 1924, St Martins Property is a diversified portfolio development and investment management company covering the United Kingdom, other European countries and Australia. The company is important for making large investments and implementing Kuwait’s investment policy.

3) Kuwait Real Estate Investment Consortium KSC, which costs about 88.3 million dollars. Founded as a joint stock company in October 1975, the company is owned by the Kuwait Investment Authority (KIA), which owns 99,127 % of the shares. The company participates in real estate transactions and invests in securities. Its investment portfolio is diversified at the national and international levels.

4) Kuwait China Investment Company (KCIC) KSC 15 % of the shares of this company are owned by Kuwait Investment Authority (KIA). The company is an important investment in the Kuwait Investment Authority (KIA) in Asia [6].

The placement of Kuwait Investment Authority (KIA) funds is based on the global distribution of global GDP. A review of the Kuwait Investment Authority (KIA) strategy in Kuwait in 2004 recommended diversifying its portfolio of assets, including stocks and bonds, by adding other asset classes, such as private equity, real estate, investment in emerging markets. The largest investments by the Kuwait Investment Authority (KIA) in 1969 include 7.1 percent of the shares.
Daimler AG, which made the Kuwait Investment Authority (KIA) the largest shareholder of the German car manufacturer. The Kuwait Investment Authority also owns a 3.3 percent stake in BP, which makes the Kuwait Investment Authority one of the most important shareholders of the global energy group.

The last most significant investments of the Kuwait Investment Authority (Kuwait Investment Authority (KIA)) include investments in the Industrial and Commercial Bank of China in 2006 of $720 million, making Kuwait Investment Authority (KIA) its largest investor. At the end of 2007, Kuwait Investment Authority invested $3 billion in Citigroup. In 2008 it has invested $2 billion in Merrill Lynch. In the summer of 2008, the Kuwaiti Investment Authority sent $1 billion dollars to finance Dow Chemical's acquisition of Rohm and Haas. The same summer, the Kuwait Investment Authority announced its intention to place up to $50 billion, or 20 percent of its assets in Japan, in order to balance its portfolio.

In 2008, according to the Spanish newspaper ABC, the Kuwait Investment Authority (KIA), the Kuwait Investment Authority (KIA), was considered an alternative bidder by NK LUKOIL for a stake in the Spanish oil company Repsol YPF. LUKOIL negotiated the purchase of 29.9 percent of Repsol (20 percent from Sacyr and 9.9 percent from La Caixa and Caixa Catalunya). In particular, it was assumed that LUKOIL could take the responsibility of the construction company Sacyr. Debt last in 2008, was about 20 billion euros. It was formed as a result of issuing a loan of 5.2 billion euros to Sacyr, which was previously provided for the purchase of 20 percent in Repsol. In this regard, the company Caixa negotiated with the creditor banks that provided funds to replace the borrower [5].

Given the financial and political difficulties of LUKOIL, the issue of buying a stake in Repsol has long remained unresolved. Its shareholder, Sacyr Vallehermoso SA, also considered other proposals. So, at the end of October 2008. Sacyr received an offer to sell its 20 percent to Repsol from CNPC, a Chinese company.

The Kuwait Investment Authority (KIA), the Kuwait Investment Authority, plans to reorient its investments to the domestic market and has already begun to search for its capital in Asian countries.

The Kuwait Investment Authority (KIA) invested 300 million Kuwaiti dinars ($1.12 billion) in several stock exchanges countries and is ready to raise this amount to 500 million Kuwaiti dinars. The Kuwait Investment Authority (KIA) has already invested 3.4 billion Kuwaiti dinars in the Kuwait Stock Exchange.

The Kuwait Investment Authority (KIA), the Kuwait Investment Authority intends to continue to invest in the real estate and financial sector of the United States, Europe and Asia, but will refrain from investing in order to save
the failing Western banks. Kuwait Investment Authority (KIA) was criticized by members of the Kuwaiti parliament for allowing itself to invest $5 billion in US companies Merrill Lynch and Citigroup in January 2008 [12].

In this regard, the Kuwait Investment Authority (KIA) has now shifted to Asia. It plans to invest $48 billion in Japan, as well as finance a project related to real estate in Singapore. In the field of view of Kuwaiti investors are also India and China, which are given a clear priority [12].

Currently, the Kuwait Investment Authority (KIA) continues to be the quiet and loyal shareholder of its investments in various countries around the world. This role is best illustrated by the example of his asset management at Daimler AG and BP. In 1998, Daimler-Benz AG acquired Chrysler to become globally integrated car company.

However, nine years later, Daimler AG was unable to integrate its company into the US carmaker market, Chrysler was sold. Despite the possible reasons for withdrawing their investments from DaimlerChrysler, the Kuwait Investment Authority (KIA) decided to retain its stake in the company and refrain from interfering.

At the end of the 1980s, another case occurred that resonated with the institutional culture of the Kuwait Investment Authority (KIA). In response, British Prime Minister Margaret Thatcher’s decision to conduct a privatization policy, the Kuwait Investment Authority (KIA), decided to invest in a 22 percent stake in British Petroleum. By becoming its largest shareholder, the Kuwait Investment Authority (KIA) prompted public concern. A follow-up investigation by the British Monopolies and Mergers Commission called the Kuwait Investment Authority (KIA) to reduce its stake in BP to 9.9 percent by October 1989.

As a major investor, the Kuwait Investment Authority (KIA), the KIA had to learn to take into account the intense political risks, as the case with BP shows, and also to maintain significant loyalty throughout all periods of its operation, as the case with the companies Daimler AG which does not aim to take an active role in managing BP, the Kuwait Investment Authority (KIA) its final response to political and regulatory pressures was a significant decrease in its representation at BP.

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In 2010, The Kuwait Investment Authority (KIA), Kuwait Investment Authority, was considering the possibility of acquiring General Motors shares at the time of their initial public offering. General Motors had intended to sell 365 million shares at prices ranging from $26 to $29 during an initial public offering (IPO) [9].

Such a quiet, obviously non-political investment strategy of the Kuwait Investment Authority (Kuwait Investment Authority (KIA)) was verified by the events that occurred in late 2007 and early 2008. Investment Management Investment of Kuwait (Kuwait Investment Authority (KIA)) at Citigroup and Merrill Lynch has introduced the Kuwaiti Investment Authority into a global public debate about the potential threats that these and other sovereign wealth fund investments could pose threats to the western banking sector, forcing the Kuwait Investment Authority (Kuwait Investment Authority (KIA)) to explain the motives of their investments. The management of the Kuwait Investment Authority became the first among the management of sovereign wealth funds, which decided to resist the accusations of Western countries. In general, since its inception, the Kuwait Investment Authority (KIA) has retained its position as a skilled portfolio investor, diversifying its risks across all asset classes, industries, and geographic regions.

Cases of investing in companies BP and Daimler AG suggest that Kuwait Investment Authority (KIA) has considerable experience in managing political risks and can minimize the public disclosure of its actions.

However, the enormous size of the Kuwaiti Investment Authority, one of the largest sovereign wealth funds of the world, may in the future present a challenge to its strategy of maintaining low profits one of the world’s largest sovereign wealth funds could in the future present a challenge to its strategy of maintaining low profits one of the world’s largest sovereign wealth funds could in the future present a challenge to its strategy of maintaining low profits.
8.7 Sovereign Welfare Fund of Kazakhstan

Kazakhstan is geographically the largest of the former Soviet republics, with the exception of Russia, which has huge reserves of minerals and metals, such as uranium, copper, and zinc, has a large agricultural sector, most of which is comprised of cattle breeding and the grain sector. The industrial sector of Kazakhstan focuses primarily on the extraction and processing of these natural resources [13].

If ten years ago GDP per capita was a little over seven hundred dollars, then at the end of 2004 it reached two thousand seven hundred dollars, in 2005 the per capita GDP is projected to be about three thousand dollars. By 2010, according to the plan, Kazakhstan should have achieved per capita GDP of more than 5,800 US dollars, that is, the current level of such countries as the Czech Republic, Hungary, Poland, Malaysia, and by 2015 — about 9,000 US dollars. Today, Kazakhstan has a really working market economy and has rich mineral resources, extensive agricultural land, qualified personnel, and significant industrial potential.

The main source of economic growth is the exploitation of the raw material potential of the country. Compared to 1985, hydrocarbon production increased by 225 percent, while worldwide production increased less than 1.3 times. About 30 billion US dollars of foreign direct investment has been attracted to the economy of the republic. Investors know that today Kazakhstan is a reliable partner that guarantees stability and ensures mutually beneficial cooperation [10].

The financial system of Kazakhstan is recognized as one of the most progressive, and this is confirmed by leading international experts. Kazakhstan is the first among the CIS countries to create a National Fund to ensure stable socio-economic development, reduce dependence on adverse external factors. In 2009, about 5 billion 300 million dollars have been accumulated in the National Fund. The country’s gold and foreign exchange reserves, taking into account the National Fund as a whole, exceeded $14 billion [10].

Kazakhstan consistently pursues an open foreign trade policy. So, in 2004, the volume of foreign trade turnover approached $33 billion with a positive balance of over $7 billion and grew more than 3 times compared with 1994. The geography of foreign trade, which in the early years of independence mainly included the CIS, also markedly diversified [10].

In 2004, in the structure of Kazakhstan’s trade turnover, the EU member countries, Russia, Switzerland and China were in the first place. This structure has not changed in 2010.
Currently, Kazakhstan, according to the classification of the World Bank, is in the group of middle-income countries. If we compare the main indicators of the quality of life, over the past 10 years, on average, the cash income of Kazakhstani has increased 5 times; the average monthly salary increased almost 6 times; 25 times the minimum wage; the average monthly pension increased 4.6 times; deposits of individuals in banks and the volume of deposits per inhabitant increased 35 and 37 times, respectively. Government spending on guaranteed free medical care alone this year has grown more than 1.7 times compared with 2003. Progressive economic growth in Kazakhstan has significantly expanded the social orientation of government spending, which indicates the achieved safety margin of the country’s economy [10; 12].

According to the Statistics Agency of the Republic of Kazakhstan, in January-September 2010, GDP production increased by 7.5%. The short-term economic indicator (KEI) in January-December 2010 compared to January-December 2009 was 107.1%. The volume of industrial production in January-December 2010 amounted to 11,756.8 billion tenge, which is 10.0% more compared with January-December 2009. In January-December 2010, in the mining industry and quarrying, the physical volume index was 105.3%. The production of crude oil (105.6%), natural gas (103.5%), coal and lignite (105.1%), and iron ore (110.9%) increased [7].

In the manufacturing industry in the reporting period there was an increase of 18.4%. Electricity, gas, steam and air conditioning supply increased by 4.1%, water supply — by 4.8%. The volume of gross agricultural output in January-December 2010 amounted to 1,441.0 billion tenge, and compared with January-December 2009, it decreased by 11.7%. The volume of construction work in January-December 2010 is higher than the level of January-December 2009 by 1.0%. The volume of cargo turnover in January-December 2010 amounted to 381.0 billion ton-kilometers (taking into account the estimated volume of cargo turnover by non-transport organizations and entrepreneurs engaged in commercial transportation) and grew by 13.1% compared with the corresponding period of 2009. Compared to January-December 2009, passenger turnover increased by 13.8% and amounted to 148.5 billion passenger-kilometers.

The volume of communication services in January-December 2010 increased by 5.0%. The volume of retail turnover for the 12 months of 2010 amounted to 3,014.0 billion tenge (without turnover of public catering) and increased by 12.3% compared with January-December 2009. The volume of wholesale trade during the reporting period amounted to 7,709.2 billion tenge and increased by 12.0% compared with January-December 2009 [7].
The volume of investments in fixed assets in January–December 2010 amounted to 4,773.2 billion tenge, which is 0.5% lower than in January–December 2009. The foreign trade turnover of Kazakhstan in January–November 2010, according to customs statistics, amounted to $73.2 billion and increased by 16.2% compared to January–November 2009, including exports — 51.0 billion US dollars (increased by 35.7%), imports — 22.1 billion US dollars (decreased by 12.7%). In January–November 2010, 60.4 million tons of oil and gas condensate were exported, which is 0.3% more than in the same period of 2009, in value terms, exports amounted to $32.7 billion and increased by 1.4 times [7].

The consumer price index in January–December 2010 compared with January–December 2009 was 107.1%. Prices for food products increased by 6.2%, non-food products — by 6.4% and paid services — by 9.0%. The prices of enterprises producing industrial products in January–December 2010 increased by 25.2% compared with January–December 2009. According to the World Bank, the global price of Brent crude oil in January–December 2010 was $79.6 per barrel (in January–December 2009 — $61.9 per barrel) [7].

As of January 1, 2011, the country’s international reserves as a whole, including the currency assets of the National Fund ($30.6 billion) amounted to $58.9 billion, which is 23.7% more than on January 1, 2010. According to the National Bank of Kazakhstan, the credit investments of second-tier banks in the economic sectors as of December 1, 2010 amounted to 7,494.6 billion tenge, which is 4.2% less than as of December 1, 2009. As of December 1, 2010, deposits in the banking system amounted to KZT 7,451.3 billion, which is 19.1% more than on December 1, 2009. Deposits of the population amounted to 2,143.6 billion tenge and increased by 18.6%. The official exchange rate of the tenge to the US dollar in January–December 2010 was 147.3 tenge (in January–December 2009 — 147.5 tenge), the tenge against the euro — 195.7 tenge (in January–December 2009 — 205.7 tenge).

Based on the data reports [16], in the period from 1985 to 2009, oil production in Kazakhstan significantly exceeded its consumption. In 2009, crude oil reserves in the country amounted to 39.8 billion barrels. In terms of proved reserves in 2009 Kazakhstan ranked 10th in the world.

Cumulative crude oil production in 2009 in Kazakhstan amounted to 1,682 thousand barrels per day. In terms of crude oil production in 2009, Kazakhstan ranked 17th in the world. Oil consumption in 2009 amounted to 260 thousand barrels per day.

The average volume of crude oil production in Kazakhstan in the period from 1965 to 2009 amounted to 809 thousand barrels per day. The average
volume of crude oil consumption in Kazakhstan for the same period was 282,43 thousand barrels per day.

The economic rating of Kazakhstan in the world has increased. According to the Institute The International Institute for Management Development (IMD), the competitiveness of the republic has risen from 36 to 33 lines, the indicator of economic development has moved from 44 to 43 positions. By the efficiency of the government, Kazakhstan has risen from 21st to 20th place. The efficiency of doing business and the indicator of infrastructure development also increased from 34 to 29 line and from 44 to 39 place in the rating, respectively [20].

The labor market, tax policy and budget expenditures are recognized as the strongest sides of the Kazakhstan economy. The weakest ones are foreign trade, healthcare, ecology and high prices. Thus, in the ranking of Kazakhstan was at the level of countries such as India, Poland, Estonia and Indonesia. Russia and Ukraine. The top three are the following countries — Singapore, Hong Kong and the United States. According to the published global rating of peace-loving in 2010, Kazakhstan ranked 95th out of 149 countries. Compared with 2009, this figure dropped by nine points [20].

At the same time, Kazakhstan’s dependence on the sale of fuel and mineral raw materials, low investment activity in infrastructure and manufacturing industries make the country’s economy vulnerable and sensitive to changes in the situation on the market of raw materials. Therefore, the country’s leadership set the goal of moving away from Kazakhstan’s dependence on raw materials, making a bet on radical economic reform. Accelerated modernization of the country and integration of the country into the world market require a qualitative breakthrough in all areas of development based on innovation, the creation of new directions of economic growth and the best use of the country’s traditional competitive advantages [19].

The mission of the Fund is to promote the growth of national welfare through increasing the long-term value of the Fund’s companies and promoting sustainable development, diversification and modernization of the economy. The Foundation is a commercial organization and performs a number of non-commercial functions determined by the legislation of the Republic of Kazakhstan [17].

The vision of the Fund by 2020 is a financial and investment fund that effectively manages assets in order to diversify the sources of state revenues and increase the country’s wealth. To fulfill its mission, the Foundation must act in three main strategic areas [17]:

- Promotion of diversification and modernization of the national economy;
- Increasing the long-term value of the Fund’s companies;
• Realization of the role of the operator of state programs for the stabilization of the banking and financial sectors (to eliminate crisis phenomena in the economy);
• Promotion of diversification and modernization of the national economy.

The National Welfare Fund “Samruk-Kazyna” was created to improve the competitiveness and sustainability of the national economy and prevent factors from possibly negative impact of changes in world markets on economic growth in the country. The main objective of the Fund is to manage the equity stakes (participatory interests) of the national development institutions, national companies and other legal entities to maximize their long-term value and increase competitiveness in world markets. The main principles of the Foundation’s activities are [19]:

• Respect for the interests of the state as the sole shareholder of the Fund;
• transparency, efficiency and flexibility of the Fund and companies;
• consistency and efficiency in decision making and their implementation;
• responsibility and accountability.

The main activities of the Foundation are [19]:
- assistance in modernization and diversification of the national economy;
- assistance in stabilizing the country’s economy;
- increase the efficiency of companies.

The key activities of the Fund and companies are the modernization and diversification of the national economy in the framework of the implementation of the messages of the President of the Republic of Kazakhstan, the Strategy for Industrial Innovation Development of the Republic of Kazakhstan for 2003–2015, the program “30 Corporate Leaders of Kazakhstan”, goals and objectives set for companies [19].

The fund is designed to provide maximum assistance to the Government of the Republic of Kazakhstan, quickly and efficiently solving issues of attracting investment in the real economy, enhancing work in the regions, strengthening inter-sectoral and interregional relations and making maximum use of the existing advantages and opportunities. Effective diversification and modernization of the national economy is carried out through active investment activities, especially in priority sectors of the economy, such as [19]:

• oil and gas sector;
• electric power industry;
• metallurgy;
• chemistry, petrochemistry;
• infrastructure.
The main objectives of the Foundation are [19]:
- development and implementation of investment projects of regional, national and international scale;
- support and modernization of the existing assets of the group of companies of the Fund;
- assistance in the development of regions and implementation of social projects;
- support of domestic producers, domestic goods and services.

As part of the tasks under consideration, the Foundation performs the following functions [19]:
- development and (or) implementation and (or) financing of investment projects of regional, national and international scope, including in the real sector of the economy, independently and (or) with the participation of companies, as well as together with strategic foreign and (or) domestic investors, through participation in the authorized capital and the provision of loans;
- Acting as an operator for the implementation of the program “30 Corporate Leaders of Kazakhstan” and other programs and plans by decision of the Government of the Republic of Kazakhstan;
- development of new sectors of the economy and the acquisition of economically attractive assets, both in the country and abroad;
- ensuring a coordinated and active investment policy during the implementation by companies of investment and innovation projects, the main priority of which is the implementation of projects in Kazakhstan;
- attraction of domestic and foreign, state and private investments and introduction of innovations in various sectors of the economy;
- implementation of a balanced borrowing of capital in the global and domestic capital markets;
- financing of small and medium business projects;
- creation of an effective integrated system of financial and investment instruments within the group of companies;
- development of interregional economic relations, including through the implementation of projects in the territory of the Republic of Kazakhstan;
- provision of regional breakthrough development through social-entrepreneurial corporations.

The Foundation also performs the following functions [19]:
- participation in the stabilization programs of the Government of the Republic of Kazakhstan;
- acquisition of declared voting shares of second-tier banks;
placement of conditional funds in second-tier banks in order to maintain socio-economic development, including the completion of construction projects, financing of small and medium-sized businesses and the agro-industrial complex;

- assistance in the development of the mortgage lending market and the system of housing construction savings;
- definition, approval and monitoring of the procurement of the Fund and companies, providing mechanisms for increasing the domestic content in the procurement of the Fund and companies from Kazakhstani producers of goods and services, ensuring localization in Kazakhstan of production, assembly, repair and maintenance of imported equipment during its large purchases companies;

- Fiduciary management of the state shareholding of the joint stock company Stressful Assets Fund.

Pursuant to the Decree of the President of the Republic of Kazakhstan “On the State Planning System in the Republic of Kazakhstan” dated June 18, 2009 No. 827, the Foundation is currently developing a long-term development strategy in accordance with the Rules for the development, approval and evaluation of the implementation of the development strategy of national managing holdings, national holdings, national companies with state participation in the authorized capital (Resolution of the Government of the Republic of Kazakhstan dated April 7, 2010 No. 286) [19].

The development strategy of Samruk-Kazyna JSC until 2020 will be developed taking into account the strategic and program documents of the Republic of Kazakhstan, including the Strategic Development Plan of the Republic of Kazakhstan until 2020 and the State Program on Forced Industrial-Innovative Development of the Republic of Kazakhstan. By July 1, 2010, it is planned to submit to the Ministry of Economic Development and Trade of the Republic of Kazakhstan a draft Development Strategy of Samruk-Kazyna JSC until 2020. Two documents are important for the Fund: a Memorandum on the basic principles of activity of Samruk-Kazyna JSC and the Strategic Development Priorities of Samruk-Kazyna National Welfare Fund JSC [19].

Samruk-Kazyna Fund includes 44 subsidiaries and affiliates, and together with affiliated legal entities, the total number reaches 404. The Fund fully owns shares of 29 subsidiaries, such as, for example, KazMunayGaz, Kazakhstan Temir Zholy, KEGOK, Kazpost, Development Bank of Kazakhstan and others, and in the other 15 companies it has a share from 1 to 75 percent.

The mission of the SEC is to promote the economic development of the regions by consolidating the public and private sectors. Until 2010, the SEC did not manifest itself, and four of them even worked at a loss. Currently, 100% of
the shares of these social-entrepreneurial corporations belong to the Ministry of Industry and Trade of the Republic of Kazakhstan [19]. Fund shares in other companies are as follows [19]:
- Kazakhmys PLC (Great Britain) 14.99 %;
- Eurasian Natural Resourses Corporation PLC (UK) 11.65 %;
- The Samruk-Kazyna Fund intertwined the interests of both the state and private business, there is a merging of power and finance with private business. This suggests that a state-monopoly structure has been created in the country [3].

At the First International Investment Forum Astana Invest-2010, Kairat Aytekenov, Managing Director, Board Member of Samruk-Kazyna Fund, said that in the first quarter of 2010, the authorized capital of the fund amounted to 24.4 billion dollars, which is comparable in volume with the republican budget. Fund assets exceeded $71 billion — more than half of Kazakhstan's GDP, 52 percent. In the first quarter of 2010, the holding received operating income in the amount of 141.4 billion tenge. The numbers are impressive: there are few companies or foundations in the world whose authorized funds are comparable to the budgets of their countries, and their assets exceed half of GDP.

Although the fund is a joint stock company, all of its shares are owned by the state. Its sole founder is the government represented by the State Property and Privatization Committee of the Ministry of Finance. The supreme body of Samruk-Kazyna is its sole shareholder — the government of Kazakhstan. The management body is the board of directors consisting of 12 people.

The Council is headed by the Prime Minister of Kazakhstan, Karim Massimov. The board consists of four government ministers: the minister of industry and new technologies, the minister of economic development and trade, the minister of finance, the minister of oil and gas, as well as the assistant to the president of Kazakhstan, the head of the office of the prime minister, the head of the secretariat of the board of directors, the chairman of the board of directors and three independent member [3].

The executive body of the fund is the board. The internal audit service, the fourth body of the fund, carries out, as stated in the charter, “control over the financial and economic activities of the Company, assessment in the field of internal control, risk management, execution of documents in the field of corporate governance and consulting in order to improve the Company’s activities”.

In accordance with the Memorandum on the basic principles of activity of Samruk-Kazyna JSC, the Fund is managed as follows. State represented by the Government The Republic of Kazakhstan is the sole shareholder of the Fund. The Government of the Republic of Kazakhstan shall determine the
composition of the Board of Directors of the Fund in the manner specified by the legislation of the Republic of Kazakhstan. The Chairman of the Board of Directors of the Fund is the Prime Minister of the Republic of Kazakhstan. The Board of Directors of the Fund includes the first heads of the ministries of economy and budget planning, finance, energy and mineral resources, industry and trade, independent directors, the Chairman of the Board of the Fund and other persons. Responsibilities of the Corporate Secretary of the Fund are assigned to the Head of the Office of the Prime Minister of the Republic of Kazakhstan. At the same time, the Head of the Office of the Prime Minister of the Republic of Kazakhstan does not participate in the management of the Fund. Financing of the activities of the Fund is carried out at the expense of the authorized capital and income, formed at the expense of dividends from companies and other sources not prohibited by the legislation of the Republic of Kazakhstan [6].

The decision on the sale of shares (participation share) of companies is made by the sole shareholder of the Fund by adopting a relevant decree of the Government of the Republic of Kazakhstan. To ensure proper control (monitoring) of the Fund's fulfillment of the tasks and functions assigned to it by the Memorandum, the Fund’s development strategy plans to reflect the relevant quantitative and qualitative key performance indicators of the Fund [6].

According to the charter, the main purpose of the Samruk-Kazyna fund is to manage the ownership of shares of national development institutions, national companies and other legal entities [3].

The objectives of the fund are to maximize the long-term economic value of companies and increase their competitiveness; Introduction of the best world practice of corporate governance of companies development and implementation of investment projects of national and international scale; support of domestic producers and domestic suppliers of works and services. The declared subject of activity includes, in particular, the promotion of the development of the stock market [3].

In its structure, the Samruk-Kazyna Foundation is reminiscent of a large ministry in the country. Meanwhile, its tasks and functions are fundamentally different from the tasks and functions of any ministry. For example, the Ministry of Transport and Communications is engaged in leadership and inter-sectoral coordination on the development and implementation of public policies in the field of transport and communications. The main tasks and functions of the ministry are described in 94 points. It develops, controls, creates the conditions, represents the interests, carries out licensing and so on. The ministry includes the Committee for Highways, the Committee for Civil...
Aviation, the Committee for Transport and Communications, and the Committee for Transport Control.

486 billion tenge was allocated for stabilization of the financial sector, currently 476 billion tenge was used. Funds were placed in 4 large system forming banks. One part of the funds was provided for the purchase of common shares of banks, the other part — for lending to the economy. On February 2, 2009, the purchase of ordinary shares of BTA Bank JSC in the amount of 75.1% in the amount of KZT 212.1 billion was carried out [19].

Halyk Bank of Kazakhstan JSC allocated 120 billion tenge, of which 60 billion tenge for the purchase of shares and 60 billion tenge to finance the real sector of the economy. On the funds provided for the purchase of shares, March 27 of this year. ordinary shares in the amount of 20.9% were repurchased in the amount of KZT 26.9 billion, on May 29 of this year purchase of preferred shares in the amount of 33.049 billion tenge in the amount of 196,232,499 pieces was made.

JSC “Kazkommertsbank” was allocated 120 billion tenge, of which 84 billion tenge to finance the real sector of the economy and 36 billion tenge for the purchase of shares. On May 15, the purchase of common shares of Kazkommertsbank JSC in the amount of 21.2% in the amount of 36 billion tenge was made. In addition, Alliance Bank JSC provides 24 billion tenge for the subsequent purchase of shares [19].

Of the funds allocated to Kazkommertsbank to finance the real sector of the economy in the amount of 84 billion tenge, on 18.02.2010, 90.4 billion tenge was used (funds are issued on a revolving basis). Due to these funds, borrowers working in the field of trade and industry were mainly refinanced or financed. In this framework, 27,653 existing jobs were supported [19].

Of the funds allocated to the “Halyk Bank” to finance the real sector of the economy in the amount of 60 billion tenge as of February 18, 2010, 85 billion tenge was used (funds are issued on a revolving basis). These funds mainly refinanced or financed borrowers working in the field of food production, agriculture and the production and distribution of electricity and water. 15,418 active jobs were supported in this area. In the 3rd quarter of 2009, the prosecution authorities conducted an audit of the targeted use of funds allocated for lending to the real sector of the economy, which, according to the Foundation, revealed no significant violations [19].

The main drawback of the fund is the lack of transparency and the intricacy of its schemes in the distribution and expenditure of public funds. However, officials disagree with the criticism of the foundation [18]. The results of the audit of the National Innovation Fund JSC and the Investment Fund of Kazakhstan JSC for 2007–2008, completed in February 2010, showed that out of
121 projects funded by these funds, they earned only 5. However, it is reliably known that these violations were made even before the foundation of Samruk-Kazyna was established, and the renewed fund got “inherited” the solution of the problems of its predecessors [9]. The state holding Samruk was established by decree of the head of state in January 2006. The renewal of the Samruk-Kazyna Fund took place on October 12, 2008 [14].

The Government of the Republic of Kazakhstan No. 1097 dated November 19, 2007 approved the “30 Corporate Leaders of Kazakhstan” Program (hereinafter referred to as the Program) aimed at creating competitive, export-oriented industries and non-resource sector industries in Kazakhstan through the formation of corporate leaders of regional and global scale. The program included two directions for the implementation of joint investment projects of the state and business in non-oil export-oriented sectors of the economy.

An analysis of the current situation showed that the global financial crisis had a strong negative impact on the international financial markets and the economic development of all countries, and Kazakhstan, due to its close integration with the global economy, was no exception. Large corporate external debt, direct dependence on prices on the world market for raw materials and the instability of the global financial system severely undermine the stability of the national economy, creating a threat to its further effective development. To solve the problems caused by the global financial crisis in Kazakhstan, the Fund acted as the main operator of the Government of the Republic of Kazakhstan in implementing the Plan of joint actions to stabilize the economy and financial system of the republic for 2009–2010. To this end, the Government of the Republic of Kazakhstan provided additional funding to the Fund totaling 1,087.5 billion tenge. The funds received are directed to [17]:

1. stabilization of the financial sector — 487.5 billion tenge;
2. development of the housing sector — 360 billion tenge;
3. support of small and medium businesses — 120 billion tenge;
4. implementation of innovative, industrial and infrastructure projects — 120 billion tenge.

Expanding the scope of the Fund’s activities requires the simultaneous improvement of its governance mechanisms. Currently, the Foundation has already taken certain actions in this direction. In particular, before the merger, Samruk JSC and Kazyna JSC developed corporate governance codes, formed institutions of independent directors, corporate secretary, established committees of the board of directors, internal audit service. The Kazyna Foundation was also certified according to international quality standards ISO 9001:2000.
The Foundation conducts further measures to improve corporate governance based on best practices, both in Samruk JSC and Kazyna JSC [17].

The measures to diversify and modernize the national economy with the support of the Fund are carried out through active investment activities in the oil and gas sector, in the electric power industry, metallurgy, chemistry, petrochemistry, infrastructure. The investment activity of the Fund is aimed at ensuring the transition of raw materials production to a higher division, to the production of goods with higher value added, as well as the creation of new industries not related to raw materials, and infrastructure development [17].

In the group of companies of the Fund, a system of long-term and medium-term strategic planning is being implemented, relevant documents are being developed and annual budgets are being prepared. Evaluation of the implementation of the goals and objectives of subsidiaries is carried out on the basis of established key performance indicators [17].

To optimize the asset portfolio and isolate non-core activities, relevant activities are carried out to analyze business processes and develop plans for restructuring companies [17].

In order to implement certain objectives for the development of the economy, new subsidiaries were created in the structure of the Fund's portfolio [17]:

1) JSC NGK Tau-Ken Samruk in the mining industry;
2) United Chemical Company LLP in the chemical industry;
3) SK-Pharmacy JSC is the operator of a unified system of procurement and distribution of medicines for public medical institutions;
4) Samruk-Kazyna Real Estate Fund JSC for the development and support of the construction sector and the construction of public rental housing;
5) Samruk-Kazyna Contract JSC for monitoring and internal control of the procurement process of the group of companies of the Fund.

The fund is designed to provide maximum assistance to the Government of the Republic of Kazakhstan in the implementation of tasks to diversify and modernize the national economy. In this area, the Fund will manage national companies and development institutions in order to further develop industry and infrastructure, increase and stimulate investment and financial activity in priority sectors of the economy. The role of the Fund and its companies in the implementation of this area will consist in solving the following strategic tasks [17]:

1. Financing and assistance in the implementation of projects that increase the value added in industry;
2. Financing and assistance in the implementation of projects ensuring the development of infrastructure;
3. Creation of new non-primary production;
4. Promotion of small and medium-sized businesses.

The implementation of these tasks will be carried out on market principles and taking into account that the Fund and its subsidiaries achieve an average return on investment for this industry [17].

One of the main strategic activities of the Fund is to increase the long-term shareholder value of the Fund’s companies. The fund aims to accelerate the development of the economy through the professionalization of management and improving the efficiency of the companies in its portfolio. In relation to companies, the Fund should act as an active shareholder, striving to improve corporate governance processes and improve the efficiency of the boards of directors of companies. In particular, the Foundation is called upon [17]:

1. To promote the growth of economic value added of companies (Economic Value Added);
2. Increase the corporate governance rating of the Fund;
3. To optimize the structure of assets;
4. Introduce transparent evaluation mechanisms for non-commercial (“social”) projects.

In order to minimize the negative impact of external changes on the country’s economy, the Government of Kazakhstan has taken anti-crisis measures. A key role in this was played by the Foundation, which assumed many of the functions of an anti-crisis manager [17]. Within the framework of this strategic direction, the Foundation is intended to realize the following goals [17]:

1. Promote return on equity (ROE) growth for banks and financial institutions in its portfolio;
2. Promote the return of overdue loans of corporate clients and the public.

The implementation stages of the Strategic Priorities are as follows. The strategic goals and objectives of the fund are distributed over three horizons — short-term, medium-term and long-term. In the short term (2009–2010), the main priority of the Fund is the implementation of measures to overcome the crisis and stabilize the economy. At this stage the following tasks should be solved [17]:

1. optimization of portfolios of national companies through the allocation of non-core assets;
2. improving the operating performance of industry companies;
3. ensuring transparent accounting of planned unprofitable and socially significant non-commercial activities;
4. solving the tasks defined by state programs for stabilization of the economy.
In the medium and long term (2011–2020), the main focus of the Fund’s activities will be shifted to solving the problems of diversification and modernization of the economy through effective asset management and investment in priority sectors. At this and subsequent stages, the Fund will invest funds received from the sale of assets, along with other sources of financing, in creating new strategic advantages for the country and further diversification and modernization economy. Another priority at this stage is the sale to effective private owners of stakes in those companies where there is no need for state participation, as well as the active involvement of the private sector in solving the problems of economic diversification [17].

In order to form an effective asset structure and to achieve the role of an effective “portfolio manager” by the Fund, it is necessary to optimize the structure of the existing assets of the Fund as much as possible. It is proposed to regroup and consolidate the assets of the Fund in three sectoral areas (groups of companies) [17]:

- Industrial;
- Infrastructure;
- Financial.

The purpose of the industrial group of companies will be to maintain and develop the mining sector of the economy of Kazakhstan and the transition of raw materials production to a higher division, stimulating the development of processing and the associated manufacturing sector.

This can be achieved by using the opportunities of large industries of Kazakhstan with large physical volumes of consumption and output by investing in related industries. Industrial development projects must meet the requirements of the average profitability adopted in the industry and help create the long-term value of the companies implementing these projects [17].

The infrastructure group of companies will focus on serving the interests of not individual industries, but the interests of business and citizens of the country. It is advisable for the Fund to take under increased attention the issues of tariffs for infrastructure services, which are inextricably linked with the investment plans of infrastructure companies. The role of financial institutions is to help increase sustainability, diversify, and modernize the economy. The main tasks of the financial group of companies will be [17]:

1. providing financing and implementation of investment projects in priority sectors of the economy;
2. facilitating the attraction of private investment from domestic sources and foreign investment in the economy;
3. support for the implementation of housing construction programs;
4. providing financing for projects in the small and medium business sector.
The Fund will play the role of an “active” shareholder in making decisions on the most important issues. The fund should gradually be transformed into a compact corporate center and concentrate on achieving the goal of becoming an effective financial and investment manager [17].

The Fund should be an active shareholder of portfolio companies, which operates through their boards of directors, without interfering in operations. In order to implement the Strategic Priorities and achieve the goals set, the Fund needs to ensure the effectiveness of the management of the companies in its portfolio. Within the framework of this task, the Foundation will carry out targeted work in the following areas [17]:

- Implementation of those activities and functions that create added value for portfolio companies.
- Actively promoting the achievement of synergy by combining the capabilities of portfolio companies.
- Management of portfolio companies through company boards of directors.
- Implementing a program to improve the efficiency of boards of directors of portfolio companies in order to increase the effectiveness of the model for managing portfolio companies.
- Continuing work on internal transformations aimed at overcoming the eight barriers hindering the Fund’s ability to become a highly efficient organization.
- Improving the performance management system of portfolio companies.
- Building an effective risk management system.

In order to ensure the effectiveness of corporate governance, the Fund will develop and approve a corporate governance code, which will form the basis for relations between the Fund and companies. Corporate governance should be based on the following principles [17]:

1. Protection of the rights and interests of the sole shareholder.
2. Management through boards of directors, elimination of direct intervention in the current operating activities of companies.
3. Transparency and objectivity of disclosing information about the activities of the Fund.
4. Legality and ethics in business.
5. Effective dividend policy ensuring the long-term interests of the sole shareholder.
6. Effective personnel policy to ensure the involvement and development of highly professional managers.
7. Effective regulation and elimination of corporate conflicts and conflicts of interest.

The Fund is the largest owner of economic assets in the country, a major employer, and also the operator of state anti-crisis programs. The combination of these functions will require the Fund to increase the effectiveness of its interaction with the state in several areas [17]:

- The Fund will hold a discussion with the state as a major shareholder on goals, objectives and ways to accomplish them in order to develop specific goals and objectives for portfolio companies in accordance with government policy and also to coordinate with the state mechanisms for assessing, reporting and financing non-commercial tasks. An important element of the interaction between the Fund and the state is the coordination of non-commercial tasks.
- The Fund will develop proposals and defend the interests of its portfolio companies in the formation of government policies and regulatory regimes in industries (for example, the procedure for reforming them).
- The Fund will ensure accountability to government agencies regarding the activities of portfolio companies. To this end, the Fund intends to agree with the Government of the Republic of Kazakhstan on the standard structure and regularity of providing aggregated reports on the activities of the NWF to the Government of the Republic of Kazakhstan and authorized agencies.

At present, the Fund's companies carry out a large amount of non-commercial activities.

Effective management of non-commercial functions should be carried out on the basis of clear formalized procedures that ensure the transparency of the allocation and use of funds for these functions, as well as the effectiveness of their use to achieve state goals. In particular, the valuation of non-commercial activities will be conducted in accordance with the agreed principles of accounting for commercial and non-commercial activities.

The Foundation will strive to reduce the cost of non-commercial activities, including through annual prioritization of non-commercial functions and work with the Government of the Republic of Kazakhstan on the elimination of non-priority tasks [17].

International cooperation “National Welfare Fund Samruk-Kazyna” JSC conducts activities in accordance with the priority areas of work of the Government of the Republic of Kazakhstan. The Foundation plans and implements joint projects with its subsidiaries with many foreign partners, in particular with Russia and other CIS countries, India, China and other countries of Asia, Europe, USA, Canada, and the countries of the Persian Gulf [19].
Cooperation with the Russian Federation (RF), being one of the priority areas, is conducted in the following main areas: oil transit, development of pipeline transport, development of the Caspian Sea shelf, gas industry, construction projects of the Pre-Caspian gas pipeline, reconstruction of the existing gas transmission system and creation of new facilities for transportation natural gas region of Central Asia. The Caspian Pipeline Consortium (CPC) is today the largest export destination for Kazakh oil.

The Karachaganak project, which is one of the largest oil and gas projects in Kazakhstan, is developing steadily. As part of the implementation of the tasks set out in the action plan for the Economic Cooperation Program between the Government of the Republic of Kazakhstan and the Russian Federation for 2008–2011, the Foundation has worked to create a joint venture fund.

Bilateral cooperation with the Russian Federation is also carried out in the field of communications, postal services, rail transport, energy and military-industrial industry [19].

The partnership with the People’s Republic of China is carried out within the framework of cooperation in both the primary and non-primary sectors of the economy. Investment projects include the construction of the Astana–Almaty high-speed railway, the construction of the second stage of the Kazakhstan–China oil pipeline at the Kenkiyak–Kumkol section and the Kazakhstan–China gas pipeline. Since 2007, within the framework of the cooperation program between Kazakhstan and China, NC Kazakhstan Engineering JSC and KEGOC JSC have cooperated with the Chinese corporation TVEA to organize the joint production of transformers and other electrical products at the Kazakhstan Engineering plants [19].

The United States is one of the main strategic partners of the Republic of Kazakhstan in the field of investment. The American companies Exxon Mobil, Chevron, ConocoPhillips, Halliburton and others actively cooperate with the national company KazMunaiGaz in the oil and gas sector, being participants in major projects — Kashagan, Block N, Tengiz, Karachaganak, KTK. Microsoft and Cisco recently held presentations in Astana on opportunities for cooperation with the Foundation in the field of information technology and the development of innovative technologies, and expressed interest in the further development of mutually beneficial cooperation [19].

Cooperation with European countries is as follows. The Fund’s cooperation with the Federal Republic of Germany is developing in such areas as: oil and gas industry, telecommunications, electric power industry, agro-industry, innovative technologies, insurance and trade. In preparation for the visit of the President of the Republic of Kazakhstan to Germany to participate in the
opening ceremony of the Year of Kazakhstan in Germany, Samruk-Kazyna NWF JSC will take part in the Kazakhstan–Germany Economic Forum, which will be held on February 3, 2009 in Berlin [19].

Cooperation with the countries of the Persian Gulf is as follows. Cooperation with the United Arab Emirates is carried out in the areas of exploration, production and transportation of oil, energy, direct investment and banking. For example, JSC NC KazMunayGaz carries out activities under the project “First Petrochemical Complex in the Atyrau Oblast” and the “N” project together with ConocoPhillips and the state-owned JSC Mubadala Development Company [19].

Samruk-Kazyna JSC is a holding company uniting practically all large state enterprises of Kazakhstan and 100% owned by the state. In contrast to the unprofitable 2009 for Samruk-Kazyna JSC, the total size of the planned consolidated net profit for 2010 was to be about 400 billion tenge. The holding managed to achieve such indicators thanks to a well-thought-out policy of restructuring the debts of second-tier banks, carried out step by step throughout the year [2]. According to one of the managing directors Nurlan Rakhmetov, besides the results of debt restructuring of the above-mentioned banks, this is due to the systematic work carried out by the fund to improve the efficiency of the companies of the fund group and the financial stability of second-tier banks [15].

In 2011, the volume of purchases of the Samruk-Kazyna NWF according to the plan will exceed 3.5 trillion tenge, of which about 1 trillion planned to spend on the purchase of goods. Particular attention is paid to the purchase of goods of domestic producers. Thus, this year, 443 contracts for a total amount of nearly 70 billion tenge were concluded with 96 machine-building enterprises, contracts for a total amount of about 25 billion tenge were concluded with 20 chemical producers, contracts for the supply of rolled metal products for more than 17 billion were concluded with 83 organizations tenge [1].

Samruk-Kazyna National Welfare Fund plans in 2011 to continue the development of borrowed funds within the Chinese lines. This was announced at a board meeting of the fund by its managing director Abai Iskendirov. According to him, it is planned to provide additional attraction of two billion US dollars from the State Development Bank of China to finance projects in the mining and metallurgical industry [15].

A. Iskandirov also informed that the fund plans to provide a loan in the amount of 76 billion tenge at the expense of its own funds to the Development Bank of Kazakhstan to implement and finance projects of the State Program of Forced Industrial-Innovative Development on “soft” conditions. “That is, the loan will be up to 15 years at a rate of 5% per annum”, said the managing
director of the fund. A. Iskandirov also informed that the fund is going to attract up to 500 million US dollars from international financial institutions and foreign investors to finance industrial projects. “We also plan to place tenge additionally in the amount of 75 billion tenge with a maturity of 7 years”, added A. Iskendirov [15].

Samruk-Kazyna National Welfare Fund will actively assist its subsidiaries in attracting additional borrowed funds, Abay Iskandirov said. “At the same time, the main emphasis will be placed on compliance by subsidiaries with the requirements of financial sustainability”, A. Iskandirov added. According to him, the national company KazMunayGaz plans in 2011 to additionally attract about $500 million in the loan capital market, and the Development Bank of Kazakhstan — $800 million in the eurobond market and about $100 million in the domestic stock market [15].

In general, for 12 large companies of the fund, the total net profit plan was fulfilled, according to preliminary data, by 169% and grew 3-fold compared to 2009. As for the net profit consolidated by international standards of the Samruk-Kazyna, the financial statements for the first half of 2010 confirmed by the external auditor, in accordance with which the fund received a profit of KZT 282 billion. Given that for the same period of 2009 there was a loss of 17 billion tenge [15].

According to the managing director, the total for these six companies has a reduction in the structure of assets by 129 organizations or 44%. At the same time N. Rakhmetov added that according to the national company “KazMunayGas” it is planned to reduce 6 thousand people. “The economic effect from the sale of non-core assets of KMG is estimated at 34 billion tenge”, N. Rakhmetov said. The representative of the fund said that this work will continue — in the near future, proposals will be made on the target structure of the assets of the remaining companies [15].

N. Rakhmetov recalled that the program to optimize the structure of subsidiaries of the Samruk-Kazyna National Welfare Fund has been conducted since 2009, and in the same year the first phase of optimization was carried out.

The Prime Minister of Kazakhstan, Karim Masimov, announced the completion of the anti-crisis function of the National Welfare Fund “Samruk-Kazyna” at a board meeting of the fund. According to him, “the anti-crisis function of the fund, in principle, ends in 2010. A number of tasks are being transferred to 2011, which need to be completed. For example, issues of the construction sector”.

The Head of the Government instructed to finalize the Strategic Plan for the Development of the Fund until 2020. As the Head of the Cabinet of Ministers
of the Republic of Kazakhstan noted, the principal task is to find ways out of the fund from banks’ capital, returning the resources that were invested by the state. According to him, banks should operate on the principles of corporate governance with the involvement of the private sector [15].

According to K. Massimov, the issues of transparency and the introduction of proper corporate governance are one of the main tasks of the fund. The foundation should be transparent and accountable to society, and all citizens should know how decisions are made and funds are spent, the Prime Minister of Kazakhstan said.

At the same time, there are opponents of IPO placement. There is information that the next two years, the National Wealth Fund Samruk-Kazyna (UK) does not plan to withdraw its subsidiaries to an IPO. The management of the state fund is not satisfied with the price that can be obtained on the market for shares of national companies [1].

Karim Masimov instructed the chairman of the board of directors, Kairat Kelimbetov, to prepare proposals for conducting a “people’s IPO”, that is, selling the shares of national companies to the broad masses of Kazakhstan citizens.

Kairat Kelimbetov said that the entry into the initial public offering of IC companies will take place no earlier than 2013. “We believe that now the price of our assets is not attractive, but the terms of borrowing for the fund itself and our national companies are quite attractive”, he said. Nevertheless, the head of the state fund confirmed that proposals for the sale of part of the assets are being prepared and will be submitted to the government for a political decision [1].

The IPO implies an increase in the level of transparency of companies, according to economist Valentin Makalkin. According to him, the activities of the national companies are inefficient, which makes it difficult to go public. “For example, KTZ. All the time they talk about the lack of rolling stock and its wear, while at the same time costly projects are being carried out to build a new building”, he said. The expert indicates that the participation of the broad masses as shareholders will show a low level of dividends and, consequently, a low level of profitability of companies [1].

The Prime Minister of Kazakhstan, Karim Masimov, positively assesses the work of the Samurk-Kazyna National Welfare Fund last year. According to the head of the Cabinet of Ministers, in 2010 the group of companies of the fund rather effectively fulfilled the tasks set by the President and the Government. At the same time, there are certain remarks, taking into account which the “work on mistakes” will be done. In general, such important issues as stabilization of the financial and construction sectors were resolved due to the availability of the fund, the Prime Minister of the Republic of Kazakhstan believes [15].
At the same time, Nursultan Nazarbayev is dissatisfied with the work of the Samruk-Kazyna foundation. The President of Kazakhstan severely criticized the activities of Kairat Kelimbetov, the head of the structure that unites all national companies and development institutions of the republic. This happened during the next meeting of the Security Council, which was held today in Astana.

The Security Council, according to the tradition that has been established recently, was held behind closed doors — even the President’s personal cameramen were allowed to make only a five-minute protocol shoot.

**8.8 Sovereign Welfare Fund of Venezuela**

As a major oil exporter and a member of OPEC, Venezuela is an important actor on the world stage. The Venezuela Macroeconomic Stabilization Investment Fund (Investment Fund for Macroeconomic Stabilization) was established in November 1998, when world oil prices reached their minimum. Its goal is to protect the economy and the state budget from fluctuations in oil prices.

The Investment Fund for Macroeconomic Stabilization (FIEM) was established under the control of the President of the Republic in accordance with Decree No. 2,991, which was published in Official Gazette No. 36.575 of November 5, 1998, and partially amended by the Decree No. 146, which was published in Official Gazette No. 36.722 of June 14, 1999.

The Investment Fund for Macroeconomic Stabilization (FIEM) is an investment fund that is not a legal entity affiliated to the Central Bank of Venezuela (BCV), whose goal is to reduce oil revenue fluctuations on the impact on the financial sphere, the exchange and the monetary balance of the country [9].

The Foundation has become part of the Venezuelan government’s program to stabilize public finances and improve the management of the state oil company, Petroleos de Venezuela. A feature of the Fund is its decentralization: the Fund’s funds are directed to smoothing out fluctuations in oil export revenues.

The fund’s funds are formed when the current oil price exceeds the cut-off price (reference value) based on the five-year average oil price level. Financial resources are used to compensate for the decrease in revenues while reducing revenues from oil exports.

The funds are received by the central government, regional authorities and the state oil company itself. In the fund for each of the three beneficiaries, the financial resources are deposited in accordance with their shares of participation in the fund (according to the results of 2000, the shares respectively amounted to 10.37 and 53 %) [12].

The formula for calculating the basic amounts of income is somewhat different for each of the beneficiaries, but in all cases it is based on the five-year
average level of oil prices. The fund’s assets are managed by the Central Bank and invested in foreign financial assets. The decision on the use of the fund’s resources is made by the parliament [9].

The accounting policy of the Macroeconomic Stabilization Investment Fund is based on the following provisions [9]:

1. FIEM is regulated, in terms of accounting, by generally accepted accounting principles that are specifically adapted to its goals and functions.
2. The financial year of the Fund ends on December 31 of each year, therefore, it closes its accounts and prepares its financial statements at the end of the year.
3. Operations of the FIEM accounting fund are recorded in US dollars, with an equivalent representation in bolivars.
4. The income and expenses of the FIEM fund are reflected on a cash basis. Thus, it is displayed when they are collected or paid in the corresponding period.
5. At the end of the year, at the closing date of December 31, 2000, the exchange rate was 698.75 Bolivars per US dollar [9].

Earned interest and FIEM fund commissions in 2000 were as follows. Earned but uncollected interest on the state on 12.31.2000 amounted to $2.3 million, equivalent to 1,626.1 million bolivares, which were recorded in the “Deferred Income” section. Deferred FIEM fund payments in 2000 included fees paid to the BCV bank for managing the investment portfolio in December 2000 and amounted to $0.3 million, equivalent to 0.2 billion bolivars. Other liabilities included expenses paid to BCV for the management of the investment portfolio in December 2000. They amounted to $0.3 million, equivalent to 0.2 billion Bolivars [9].

The results of the 2000 financial year of the Investment Fund for Macroeconomic Stabilization (FIEM) amounted to 114,400,000 dollars, which is equivalent to 79,900 million bolivars. They were based on the amount of interest received and the realized price fluctuations on the financial instruments included in the portfolio stock. The net amount of income was obtained after deducting the administrative expenses of the BCV bank from the income of the investment portfolio of the Investment Fund for Macroeconomic Stabilization (FIEM). This net income was proportionally distributed between each of the participants (national (National Executive), PDVSA and state-owned enterprises), in accordance with the share of each party [9].

The use of the funds of the Macroeconomic Stabilization Investment Fund in Venezuela can be carried out with the approval of the country’s Congress only in two cases: if the revenues from oil exports are below the established
base value; in the case when the volume of the fund’s assets has exceeded the level of 80 % of the average annual amount of revenues due to oil exports over the past 5 years [8].

In the latter case, the central government has the right to use the Fund’s funds to pay off foreign debt, and regional governments for capital expenditures. Thus, the Fund serves exclusively for short-term macroeconomic stabilization [12].

Initially, the criteria for filling the fund were formulated fairly tightly: if the world price of oil exceeds the standard price ($14.7 per barrel), then every dollar above this goes to the fund. Subsequently, the rules for transferring funds to the fund were changed, and the state budget was reduced to constant deficits. In 1999, the Fund legislation was amended to weaken the role of the Fund as a macroeconomic stabilizer.

In particular, very low baseline values have been established, only half of the funds above the baseline amount are sent to the Fund, the Fund’s funds can be used by the President for social expenditures and public investments. In fact, since 1999, the Fund has been replenished by government borrowing, since the budget deficit remains [8; 9].

Thus, after May 1999, the rules of the Investment Fund for Macroeconomic Stabilization have changed significantly, basic levels of oil prices were recorded, from which the accumulation or withdrawal of resources began on the basis of oil prices at $9 per barrel.

The resources to be transferred to the fund were limited to only 50 cents from each dollar above the new base level, and the withdrawal of the fund’s funds was to take place with a legislatively approved government sanction. Combining fund operations with central government operations also proved problematic [9].

Since in 1999 and in early 2000, despite a significant increase in oil prices, the central government continued to experience a deficit, it could make contributions to the fund using only other sources of funding. In particular, the accumulation of the fund’s gross assets was partially funded by domestic borrowing.

In addition, the Investment Fund for Macroeconomic Stabilization (Investment Fund for Macroeconomic Stabilization) did not become a barrier to increasing costs when in 2000. there was a rise in oil prices. The surplus policy was replaced by a deficit, GDP declined annually. Inflation in 1999–2004 amounted to 21.3 % on average for the year, including in 2004 — 21.8 %, by 2006, it fell to 16.0, but in subsequent years, an increase to 30.4 % in 2008 was observed. Inflation rate in 2010 amounted to 29.8 %.

The funds of the Fund are managed by the Central Bank of Venezuela and invested in foreign financial assets. It is prohibited to invest in any financial
transactions, loans, guarantees, issuance of debt securities, which could entail the occurrence of obligations for the Fund. By the beginning of 2000, the total amount of the Fund’s assets was about $1.7 billion (including $700 million from the central government, $400 million from regional authorities and $600 million from the state oil company).

The initial formula for transfers to the FIEM fund was subsequently replaced by a formula for transferring oil revenues in the amount of 6%, which was to be applied in 2003–2007. FIEM fund resources covered budget expenditures in 2002 and 2003 regardless of the size of oil revenues. In 2003, in the face of rising oil prices, 76% of the net value of the FIEM fund was transferred to the public sector, the rest to the FEM. After 2003, there were no deductions to the FEM fund.

After the FIEM fund was converted to the FEM fund (Fondo para la Estabilizacion Macroeconomica), only $700 million remained in it. Oil revenues were channeled to the Fonden fund, which is the national development fund, controlled directly by the president. The Fonden Foundation was used for political purposes as a foundation during the election campaign of William Chávez. Due to the high level of world oil prices, about $57.4 billion were transferred to the Fonden fund from 2004 to 2008, almost all of them were spent at once, while part of these funds were given in the form of assistance to other countries. At the end of 2000, the Fonden fund was only $6,070 million. Then the government ordered the central bank to transfer $12 billion to the Fonden fund in January 2009 [29].

The fund’s capital invested in the shares covers transfers of resources from the company Petruuleos de Venezuela S.A. (PDVSA), the National Executive (National Executive) and state-owned enterprises, in accordance with the provisions set out in Articles Four, Fifth and Sixth of Decree No. 146. In accordance with Article No. 18 of the above-mentioned Decree, the resources of the Investment Fund for Macroeconomic Stabilization (Investment The Fund for Macroeconomic Stabilization (FIEM) is managed by BCV Bank, in accordance with the policies and criteria established by the latter for managing international reserves and in accordance with BCV Bank Laws. These resources are allocated separately from international reserves and equity BCV. The resource management of the Investment Fund for Macroeconomic Stabilization (FIEM) by the BCV Resource Bank began in December 1999 [9].

According to the estimates of the Institute of Sovereign Welfare Funds (SWF), Kuwait’s sovereign welfare fund has a Linaburg-Madwell Transparency Index of 1, which indicates a high degree of closeness and non-transparency of the fund [28].
Thus, the Macroeconomic Stabilization Investment Fund was established in the mid-1970s as a fund for unforeseen revenues from oil exports. Soon his resources began to be invested in the shares of state enterprises, many of which turned out to be unprofitable.

A portion of the resources of the Macroeconomic Stabilization Investment Fund (Macroeconomic Stabilization Investment Fund) was used to invest in state-owned companies in the electricity sector. These companies have a deficit and depend on transfers not only from the central government budget, but also from the Macroeconomic Stabilization Investment Fund for financing investments and meeting debt service obligations.

That is, extra budgetary subsidies were practically implemented using the resources of the Macroeconomic Stabilization Investment Fund (Macroeconomic Stabilization Investment Fund). The activity of the Macroeconomic Stabilization Investment Fund was officially recognized as insufficiently ineffective [9].

The functioning of the sovereign wealth fund is associated with the development of the economy and external relations of Venezuela. The oil industry belongs to the sphere of the greatest coincidence of interests of Russia and Venezuela. It is not by chance that one of the main issues discussed during the visit of Chavez to Russia in November 2004 was cooperation in the field of energy. An intergovernmental Russian-Venezuelan agreement on cooperation in the energy sector was signed along the entire chain of “exploration — mining — processing — marketing”.

On November 26, 2004, a “Memorandum of Understanding” was signed between LUKOIL and PDVSA, providing for cooperation in the sectors of the fuel and energy complex. We are talking about joint production and refining of oil, projects in the gas industry, petrochemistry, cooperation between refineries.

PDVSA expressed its willingness to provide the Russian company with new exploration and mining projects in the Orinoco belt, in the Gulf of Venezuela and Lake Oz. Maracaibo on the subject of their possible joint implementation, as well as projects to rehabilitate and increase the productivity of depleted fields. The issue of purchasing crude oil and petroleum products from PDVSA was also considered both through one-off transactions and on a long-term basis, including for deliveries to the North American market. An exchange of personnel is planned for training, retraining and the issue of purchasing crude oil and petroleum products from PDVSA was also considered both through one-off transactions and on a long-term basis, including for deliveries to the North American market.

An exchange of personnel is planned for training, retraining and the issue of purchasing crude oil and petroleum products from PDVSA was also considered both through one-off transactions and on a long-term basis, including for
deliveries to the North American market. An exchange of personnel is planned for training, retraining and advanced training in various specialties. To implement oil and gas projects, the parties intend to create a joint venture. The oil group LUKOIL expressed its readiness to invest about $1 billion in Venezuelan oil and gas projects. The company has already received a contract to upgrade 150 oil refineries in Venezuela [19].

“Russia and Venezuela are large oil-producing countries. Much depends on the state of our energy sectors in international energy markets. Much depends on our responsible behavior”, said Russian President Vladimir Putin during the Russian–Venezuelan summit talks.

Moscow (November 2004). Today, oil is a strategic resource of any country. In order to weaken dependence on the state of the world market for “black gold,” as well as on the energy policy of the largest producers and consumers of hydrocarbons, which requires profound economic and social reforms, the country has no other reliable and significant source than all the petrodollars. The successful development of the oil and gas complex in Venezuela is the guarantor of economic well-being and containment of social tensions. At the same time, the experience of Venezuela showed that the “oil factor” is capable of paralyzing the economy and the political system of the state, which relies on the development of one industry [19].

At present, Venezuela remains highly dependent on oil revenues, which account for about 95 % of export revenues, about 55 % of federal budget revenues, and about 30 % of GDP. The national strike between December 2002 and February 2003 had far-reaching economic consequences — real GDP declined by about 9 % in 2002 and 8 % in 2003 — but production volumes could recover strongly until 2008. Thanks to high oil prices, the government was able to increase GDP by about 10 % in 2006, 8 % in 2007, and almost 5 % in 2008. However, the subsequent sharp drop in oil prices caused a reduction in GDP in 2009–2010.

Improving access to domestic loans created a consumer boom that caused higher inflation — about 32 % in 2008, about 30 % in 2010. Imports also rose significantly to the 2009 recession. Venezuelan President Hugo Chavez continues his efforts to strengthen the government’s control over the economy by nationalizing firms in the agribusiness, financial, construction, oil and steel industries. This affected the decline in private investment, production capacity and non-oil exports [19].

In the first half of 2010, Venezuela ran into problems in the power industry on a national scale, when its main hydropower plant — which provided more than 35 % of the country’s electricity — was almost shut down. In May 2010, Hugo Chavez closed the unofficial foreign exchange market — the so-called
“parallel” market — in an attempt to curb inflation and the slow depreciation of the currency. In June 2010, the government created the “Transaction System for Securities Denominated in Foreign Currency” (SITME) to replace the “parallel” market.

In December 2010, Hugo Chávez eliminated a double exchange rate system and set a single exchange rate of 4.3 bolivars for $1. In January 2011, Chavez announced a second devaluation of the bolívar over a period of twelve months. In December 2010, the National Assembly adopted a package of five constitutional laws aimed at the complete transformation of the Venezuelan economy in accordance with Hugo Chávez’s 21st century socialism. These laws are likely to be implemented in 2011. Venezuela began 2011 struggle with macro-economic imbalances. As a result, the government’s economic policy, the housing crisis and the electric power crisis have become the focus of attention [19].

The Venezuelan economy resumed its growth in the fourth quarter of 2010, increasing its GDP by 0.6%, thanks to the oil industry and utilities. With this result, a period of decline ends (April–June 2009), reflecting the impact of the international financial crisis, informs the Central Bank of Venezuela (BCV) in its annual report. The issuer noted the recovery of the oil sector, the main engine of the national economy, with an average of 2,500,000 barrels per day of exports [32].

“The activities of the hydrocarbon industry increased by 1.8% compared with the same period last year, thanks to an increase in oil production and exploration”, the report says. In relation to other favorable indicators by the end of 2010, BCV notes growth in telecommunications, transport, health care, financial institutions, production and provision of public services in general [32].

Exports of petroleum products in 2010 also declined — by 14 percent. This happened, in particular, due to a series of accidents at the country’s refineries. Despite the drop in exports, oil supplies to foreign markets still bring up to 90 percent of revenues to the Venezuelan budget. Venezuela, a member of the Organization of Petroleum Exporting Countries (OPEC), also remains the largest oil producer in South America. Meanwhile, in November 2010, oil production in the country fell by 4 percent compared with October and amounted to 2.69 million barrels per day. Venezuela is among the ten richest countries in oil and gas. According to the CIA Factbook, as of January 1, 2010, the country’s proven oil reserves were estimated at 97.77 billion barrels, and gas — at 4.983 trillion cubic meters [35].

In January 2010, the country’s government carried out a strong devaluation, lowering the official rate of the bolivar from 2.15 per dollar to 4.3 per dollar. Meanwhile, a rate of 2.6 bolivars per dollar was used to support vulnerable
people, which is used to import food, medicine and other essential items. However, the government then announced plans to abolish this “preferential” course. At the same time, the value of the dollar at the level of 4.3 bolivars per unit of American currency will remain unchanged. In addition, it is supposed to keep at the same level (5.3 bolivars per dollar) and the exchange rate of SIT-ME, which is used for companies with limited access to US currency [5].

According to the Minister of Planning and Finance of Venezuela, Jorge Jordani, this step should “simplify operations”. The changes will also help Venezuela achieve its goal of 2 percent economic growth in 2011, he added at a press conference broadcast on national television. The devaluation is aimed at strengthening the economy and public finance — it allows you to get more bolivars for each petrodollar. However, economists are skeptical of such measures, noting that they will not be enough to solve the country’s financial difficulties. They note that in the past few months, U. Chavez has stepped up the pace of nationalization, which continues to undermine the position of the private sector [5].

In addition, the weakening of the currency will contribute to rising inflation by increasing the cost of imported goods. Meanwhile, the annual rate of inflation in Venezuela is already one of the highest in the world — it is 26.9%. First of all, the new price increase will hit the poor. That is why economists expected devaluation in Venezuela, noting that W. Chavez would like to take a political blow in advance, before the 2012 elections. Meanwhile, economists say, even after the devaluation, the bolivar’s rate against the dollar will continue to be overvalued [5]. So, the main work on finding the optimal vector of development, ensuring stable progressive growth and a decent standard of living for the majority of the population, is still ahead.

Revenues from oil exports form the basis of the economy. Thus, according to data from the US Energy Information Administration (EIA), in 2010. The country’s revenues from oil exports reached $64.87 billion. The main export products were oil and oil products, bauxite and aluminum, minerals, chemical products, and major industrial goods. According to the 2009 estimate, Venezuela’s export partners were the United States — 27.3%, Colombia –11.4%, China — 12.8%, Brazil — 8.8%. In terms of GDP in 2009. Venezuela took the 35th place in the world, but only 92% in terms of per capita GDP. GDP growth rate in 2009 amounted to —3.3%, according to estimates, in 2010, GDP growth was — 2.8%.

In 2011, the population of Venezuela amounted to about 27 million people. In 2008 Ginny coefficient in 2009 equaled 41. In 2010, Venezuela’s federal budget revenues amounted to $50.12 billion, spending amounted to $56.53 billion. 2010 domestic debt. accounted for 25.5% of GDP, according to 2009 estimates — 18.0% of GDP. The volume of external debt as of June 30,
2010. amounted to 55.61 trillions dollars, as of June 30, 2010 - 53.58 trillion dollars. According to estimates of December 31, 2009. Norway’s foreign exchange reserves amounted to $ 35.00 billion, as of December 31, 2010. - $ 29.49 billion, the inflation rate of 2010 estimated equaled 29.8% in 2009 - 27.1%. In 2009, the main imported goods of the country were agricultural products, raw materials and supplies, machinery and equipment, transportation equipment, construction materials. According to an estimate of 2009, Venezuela's main import partners were the USA — 20.6 %, Colombia — 17.8 %, China — 12.8 %, Mexico — 8.7 %, Brazil — 4.7 %.

On the basis of these reports [17], in the period from 1965 to 2009 oil production in Venezuela significantly exceeded its consumption. In 2009, According to various estimates, crude oil reserves in the country amounted to about 198.9 billion barrels. In terms of proved reserves in 2009 Venezuela ranked 2nd in the world. Cumulative crude oil production in 2009 in Venezuela was 2,437 thousand barrels per day. In terms of crude oil production in 2009, Venezuela ranked 11th in the world. Oil consumption in 2009 amounted to 609 thousand barrels per day. The average volume of crude oil production in Venezuela from 1965 to 2009 amounted to 2,733 thousand barrels per day. The average consumption of crude oil in Venezuela for the same period was 395 thousand barrels per day.

Explored reserves of natural gas in Venezuela in 2009 amounted to 5.67 trillion cubic meters. Among these countries, the leading reserves of natural gas Venezuela ranked 8th in the world. It was preceded by Russia (44.38 trillion cubic meters), Iran (29.61 trillion cubic meters), Qatar (25.37 trillion cubic meters), Turkmenistan (8.10 trillion cubic meters), Saudi Arabia (7.92 trillion cubic meters), the United States (6.93 trillion cubic meters) and the United Arab Emirates (6.43 trillion cubic meters).

In the period 1970 to 2006, natural gas production volumes coincided with its consumption. Since 2007, consumption volumes began to slightly exceed production volumes. Total natural gas production in 2009 in Venezuela was 27.9 billion cubic meters, it was 29.7 billion cubic meters. In terms of natural gas production, Venezuela ranked 26th in the world. The average natural gas production in Venezuela from 1970 to 2009 amounted to 20.6 thousand barrels per day. The average volume of natural gas consumption in Venezuela for the same period was 20.7 thousand barrels.

Oil fields on the territory of Venezuela (the official name of the country is the Bolivarian Republic of Venezuela (up to 2000 is the Republic of Venezuela), independence was proclaimed on July 5, 1811) were discovered at the end of the nineteenth century.
By the 1930s, the country had already taken up the strong position of one of the world's largest producers and exporters of oil. From the backward agrarian state, Venezuela rather quickly moved into the group of the most developed countries in the Latin American region. Despite repeated attempts to diversify production, and, accordingly, reduce the impact of the global oil market on economic development, “black gold” remains the determining factor [19].

The whole modern history of Venezuela is connected with the history of the exploitation of its oil resources. Oil in Venezuela was discovered in 1922 [10]. Until the nationalization of 1976, oil fields were developed on the basis of concessions, among whose owners UK companies first dominated, and from the late 1920s, US corporations prevailed.

According to the terms of the concessions, their owners owned the extracted raw materials, and they also set prices on it. The state received an extremely low concession duty, payment for subsoil (royalties), proportional to the volume of production, and income tax [10; 19].

From 1917 to 1975, the total income of foreign oil corporations in Venezuela exceeded $200 billion, while the state received only about 45 billion dollars. From the beginning of the 1920s to the end of the 1960s, there was a rapid growth in the oil industry. Oil accounted for more than 90% of Venezuela's export revenues and 60% of government revenues, accounting for almost 25% of GDP; It is oil that explains the large amount of foreign investment. Taxes and various deductions paid by the enterprises of the petroleum industry, allowed to develop an extensive program of public works and provide loans to many private entrepreneurs. Foreign exchange earnings from oil exports allow us to purchase not only consumer goods abroad, but also industrial goods in sufficient volume, which contributes to the rapid growth of production [10; 19].

After the fall of Jimenez’s dictatorship in 1958, the government set a course for more balanced economic development. Expenditures on education increased, investment in the manufacturing industry was encouraged, part of the funds was directed to the development of the country’s interior regions. In the period from 1958 to 1970, the economic growth rate was 6.1% per year.

From 1961 to 1971, the number of people employed in manufacturing and trade doubled. In 1959, the Venezuelan government raised the income tax of oil companies from 26% to 45%, and by the beginning of the 1970s — to 50% and more. The procedure for determining oil prices began to change, after OPEC was formed in 1960, with Venezuela becoming one of the founders [10; 19].

In 1976, under President Carlos Peres, the Venezuelan oil industry was nationalized, but Venezuela could not effectively use the opportunities and increased revenues from oil exports to increase its own oil production potential,
develop manufacturing industry, create a diversified economy, reduce Venezuela's dependence on oil.

The state oil company Petroleos de Venezuela SA (PDVSA) worked extremely inefficiently, spending considerable funds on expensive and ambitious projects and salaries to high-ranking employees. Despite high oil prices, foreign debt has increased [10; 19].

In the late 1980s, a sharp decline in oil prices on the world market led to an economic crisis [10]. In 1989, President Carlos Perez, the newly elected president, launched a program of economic stabilization and restructuring, developed at the initiative of the IMF, but the shock therapy he took caused massive discontent among the population, and Peres was removed from power. The lack of own resources for the development of the oil industry forced President Rafael Caldera to reopen this industry for foreign consortia, which were engaged in the exploration and development of light and medium oil fields under production sharing conditions [10; 19].

In 1973–1974, oil prices on the world market and, consequently, Venezuela's revenues from oil exports increased by 400%. This gave the government the means to carry out far-reaching plans, including the development of agriculture, hydropower and new heavy industries, especially metallurgical; the construction of industrial enterprises was supposed in the eastern part of Venezuela — in Ciudad Guayana and other cities.

The economic growth rate in 1970–1977 was 5.7% per year. After 1977, the economy was stagnant. In 1986, Venezuela's GDP was even lower than in 1977. The decline in GDP compared with the previous year was recorded in 1989 and again in 1994. GDP increased by 93% from 1965 to 1979, but from 1979 to 1995 the increase was only 25%. Trying to stabilize the economy, successive governments took measures to strengthen the market sector in the economy. In 1989, the Perez administration adopted a program of austerity and cost reduction, which led to unrest and outbursts of violence.

With the coming to power of Hugo Chávez (1999), a law was adopted, implying the strengthening of the role of the state and an increase in taxation in the oil sector (2002). The state's share in oil exploration and oil production was set at no less than 51%. Subsoil payment — royalties has also been significantly increased. The PDVSA staff, unhappy with the reforms, began to strike, but in the struggle against the strikers that lasted for almost two years, Chavez managed to triumph: in early 2003, about 18,000 employees of the company (that is, almost half of the personnel) were dismissed.

In early January 2007, Hugo Chavez announced the upcoming nationalization of the largest telecommunications and electricity companies in
Venezuela — Compania Nacional de Telefonos de Venezuela (CANTV) and EdC, controlled by US firms. We are also talking about the intention of Venezuela to obtain a controlling stake in the extractive and oil refineries of Exxon-Mobil, Shevron, Total, ConocoPhillips, Statoil, BP. According to Chavez, he intends to build “socialism of the XXI century” [19].

Today, Venezuela is among the world leaders in oil reserves, production and export. In the early 2000s, for proven reserves, it ranked fifth to sixth in the world and first in Latin America (78 billion barrels excluding reserves of super heavy and bituminous oil). The production of petroleum products was several times higher than domestic consumption. Venezuela’s gross domestic product (GDP) — the aggregate of goods and services produced in the country — was in 2002, about 131.7 billion dollars, and the average per capita income was the highest in Latin America. Such a dramatic transformation of the country is due to one reason — the high level of oil production [19].

In 2004, the country ranked ninth in their production, yielding to Saudi Arabia, Russia, the United States, Iran, Mexico, China, Norway and Canada. In world oil exports, it is in fifth place (after Saudi Arabia, Russia, Norway, Iran). The oil sector provides more than 1/3 of GDP, more than 50% of budget revenues, and about 75% of total export earnings [19].

The state-owned petroleum company Petroleos de Venezuela (PDVSA) is one of the largest in the world, occupies a strong position in terms of oil and gas reserves, production volumes, refining capacities, and sales volumes. In the 90s, the presence of Venezuelan capital in the enterprises of the USA, Germany, France, Sweden and other countries expanded. The largest branch of the company is CITGO, operating in the United States, with a processing capacity of more than 1 million barrels of oil per day. She owns eight factories for the production of fuel, asphalt and petrochemicals, several thousand gas stations.

PDVSA on a parity basis (50%) with the German company Veba Oel AG owns Ruhr Oel GmbH — one of the largest oil refining companies in Germany. Together with Finnish Fortum since 1995, PDVSA is controlled by AB Nynas Petroleum, working with refineries in Sweden, Belgium and the UK. Under a long-term lease agreement, PDVSA operates at a refinery and a terminal on Curaçao Island.

The company has a fleet of its own tankers. In the state treasury in the form of taxes and other fees, it makes an average of about 10–11 billion dollars annually (1999–2002). The production capacity of the oil giant is 4 million barrels per day [19]. The production capacity of the oil giant is 4 million barrels per day [19].
There are four main oil basins in Venezuela: Maracaibo (in the west), Falcon (in the north, includes the Caribbean shelf outside the Maracaibo lagoon), Apure (in the central part of the country) and Oriental (in the east). The most common and expensive oil fields in the world market of light and medium oil in the Maracaibo basin are already very depleted. Particularly promising from the point of view of reserves today is considered the basin of the river Orinoco in the east of the country, where heavy and bituminous oil is located.

The current level of oil production in Venezuela is 3.2 million barrels per day (January 2004 – April 2005), of which 2.6 million is produced by PDVSA, the rest are in accordance with contracts of a strategic association (Contracts of a strategic association have been concluded to attract foreign capital into the development of heavy oil since the late 1990s. They expire for 35 years. They involve the creation of joint ventures with TNK companies in which the share of PDVSA ranges from 30 to 50%) on the development of deposits in the Orinoco belt [13; 19].

Since the 90s, after 20 years of comprehensive state control over the oil industry, Venezuela has begun to pursue an “open door” policy for private, including foreign, capital. The oil industry was nationalized in 1976. The expansion and strengthening of the public sector in the industry, as well as the state’s monopoly on the sale of oil and oil products, were fundamental points in Venezuela’s oil policy [19].

The latter for the first time gained access to exploration and mining. In early 1996, the first ten oil fields were put up for auction. This contributed to the arrival of the world’s largest oil companies and the inflow of foreign investment. In the 1990s, PDVSA entered into agreements with private companies for the exploration and development of light and medium oil fields on the basis of proportional profit sharing. Among these companies were British Petroleum, Repsol-YPF, Chevron (now Chevron Texaco), Shell, Perez Companc (now Petrobras Energia), Total, China National Petroleum Corporation, Teikoku Oil [19].

With the coming to power of the left-wing government of William Chávez, the tilt was again made towards the strengthening of the public sector in the economy and socially oriented policies. First of all, it concerned the oil industry, which now had to serve the interests of the Bolivarian revolution. Due to revenues from the activities of the oil industry, it was supposed to achieve economic stabilization, diversify production, ensure the implementation of large-scale social programs. This required the establishment of full control over the activities of the PDVSA. The new Constitution of 1999, adopted at a nationwide referendum, reaffirmed the state’s monopoly on activities in the oil industry (Art. 302). From now on, the state is the sole owner of PDVSA shares, and any activity related to the oil industry, must be consistent with it (art. 303).
At the same time, the president noted the need to continue the policy of openness of the industry for foreign investors, begun in the 1990s [19].

In 2001, a new law on hydrocarbon raw materials (Ley de Hidrocarburos) was adopted, which also envisages an increase in the role of the state and an increase in taxation in the oil sector. This law is often referred to as the “Oil Law”, meaning that in many Latin American countries, not only the term “petroleo” is used in relation to oil, but also “hidrocarburos”.

The new law replaced the law on hydrocarbon raw materials of 1943 and the law on nationalization of 1975. According to the new law, the charge for the development of subsoil (royalties) increased from 1–16.6 % to 20–30 %, and the share of PDVSA in any mining project, production, transportation or storage was not less than 51 % [17].

In the history of Venezuela, oil has played a dual role: being in essence a blessing and a source of wealth, it turned out to be the cause of many disagreements and troubles. The oil factor has repeatedly played the role of a shock absorber during periods of severe economic and political crises.

Due to high oil revenues, Venezuela has been considered one of the richest countries in the region for many years, and was among the countries with the highest average per capita income in Latin America [19].

The liberal course did not allow to break the vicious circle of dependence on “black gold”, pushing into the background other aspects of development. The recipe for increasing oil production and exports to replenish the treasury contributed to the strengthening of economic imbalances and made the country’s economy even more dependent on the state of the global oil market. After a slight economic growth in 2000–2001. Venezuelan economy was waiting for a series of economic shocks [19].

The economic and political crisis observed in recent years is largely due to the “oil factor”. It was the transformations in the oil industry that were the main reason for the opposition of President Chavez and the middle class of the country, headed by the managerial corps of the state oil company (October 2000 — the strike of oil workers; April 2002 — an attempted coup d’état; milestone 2002–2003 — action “oil disobedience”).

The fall in world oil prices at the end of 2001 – early 2002 was one of the factors exacerbating social problems, increasing the contradictions between the government and the opposition. It was not by chance that the rebels ousted President Chávez from power at 48 o’clock on April 11, 2002 at the height of the strike at the country’s largest oil refinery, and the interim government headed by Pedro Carmona marked the openness of the oil sector and the increase in oil production [19].
Over the years of its existence, PDVSA has actually become a self-governing company, a “state within a state” with a claim to conduct independent international and economic policies. The interests of many enterprises, financial institutions and other organizations were associated with the company’s activities.

Its staff held a privileged position in Venezuelan society, being a kind of labor aristocracy. Employees of the company have traditionally received higher salaries than in other industries, and had a package of social benefits. In addition, the workers of PDVSA were the most organized part of the Venezuelan society — the first trade union of workers “Fedeprol” was created and actively operated in the oil industry.

Attempts to redistribute the national income in favor of the marginal layers at the expense of the oil sector have provoked violent resistance from both the oil oligarchs and the oil unions. Frequent changes in leadership, mass layoffs, supply of oil to Cuba on preferential terms and a number of other factors caused discontent among management personnel and ordinary workers in the industry.

The increase in taxes, direct government intervention in the company’s operations and the “pumping out” of social funds from it led to a reduction in production.

The national strike that began on December 2, 2002, almost paralyzed the main industry in Venezuela. The work of the largest processing sets was stopped. During the strike, the level of oil production decreased from 3.2 million to 30 thousand barrels per day. The protest was joined by the crews of most tankers carrying oil. Fulfilling international supply commitments was not possible.

As a result of the PDVSA boycott, the country lost more than $ 5 billion. The crisis in the oil industry affected the entire economy: GDP growth declined by 8.9 % in 2002 and 9.7 % in 2003 [19].

Venezuela, one of the largest exporters of energy resources, experienced a serious shortage of fuel and was even forced to import oil and refined products. Oil was the main factor exacerbating the crisis situation in the country and, at the same time, thanks to oil, Venezuela dynamically emerged from the crisis. The unusually high world prices for “black gold” and, consequently, export earnings made it possible to quickly restore macroeconomic indicators and normalize the economic and political situation as a whole. According to ECLAC, GDP growth in 2004 was 18 % [19].

With the normalization of the situation in the oil sector, by mid-2003, the influx of foreign investments, which were directed mainly to the oil and gas industry, revived. However, it turned out to be very unstable and from $ 1.3 billion in 2003 dropped to $ 600 million in 2004. Private companies, which
are operators in 33 oil and gas projects in the country, were afraid of pressure from the Venezuelan authorities.

It was about the possible renegotiation of contracts in accordance with the new legislation, under which PDVSA is expected to take a significant share, and higher royalty and income tax rates are being established.

This is where the contradiction between the authorities’ desire to attract investments to increase the efficiency of the industry and the desire to establish full state control over the use of revenues from the oil and gas complex [19].

Another reason for “restoring order” in PDVSA was the internationalization of its activities, more precisely, the absence of any control over pricing. According to the calculations of the Ministry of Energy, the losses from the provided discounts of $1.03 per barrel of oil from 1983 to 2004 amounted to about $11 billion [19; 25].

As a key sector of the national economy, the petroleum industry is called upon to serve as the basis for the development of other industries. In January 2004, the country’s president announced that he needed a “new” PDVSA, since the company now has different tasks. Since taking office in February 1999, Chavez has changed the composition of the company’s directors six times. The appointment of new people in the management of the company is partly due to the mission assigned to it. “Petroleos de Venezuela” is the driving force behind the changes taking place in Venezuela.

Venezuela intends to retain the role of one of the leading players in the global oil market. President Hugo Chavez is confident that the country is and will remain the main and most reliable supplier of oil in the Western Hemisphere. According to the industry development plan for 2004–2009, oil production by 2009 should exceed 5 million barrels per day. To achieve these goals, an investment of $37 billion is required, with $27 billion to invest in PDVSA. Meanwhile, it continues to overcome the consequences of the crisis situation and seeks to optimally establish production and export [19].

In connection with the continuing high demand for energy in the world for Venezuela, there is an urgent need to commission underutilized and new facilities, replace the outdated equipment, introduce advanced oil refining technologies, and develop new fields.

An important factor is the depletion of a significant part of the light and medium oil fields (Maracaibo area), because of which additional funds have to be spent on the intensification of production, the use of modern, but more expensive technologies.

Most of the country’s oil reserves are heavy bituminous oil that is low on the international market, with reserves estimated at 267 billion barrels and
located in the so-called Orinoco Heavy Oil Belt. Given the latest geological exploration data in this region, Venezuela may become the country with the largest hydrocarbon reserves.

For the development of deposits with foreign companies concluded contracts “strategic association”. Currently, four such projects are being implemented: Petrozuata, Cerro Negro, Sincor and Hamaca [19].

Particularly relevant for Venezuela is the issue of processing raw materials and selling finished fuel. Increasing the share in the export of petroleum products and the need to improve their quality implies technical re-equipment of the industry.

Without a deep and comprehensive modernization of production and refining capacities, it will be impossible to maintain the dynamics of the development of the oil sector and the competitiveness of its products at the world level. In production, PDVSA plans to increase the share of the use of its own raw materials, equipment, services [19].

Venezuela’s dependence on the extraction and export of oil and refined products makes the country’s economy vulnerable.

Changes in the international markets are directly reflected in the macroeconomic indicators of the mono-exporter country: the balance of payments, international currency reserves, inflation, etc. The influence of the world oil market on the Venezuelan economy requires its leadership to conduct a flexible policy: reserves of the most demanded energy raw material — oil, to provide a “field for maneuver”, i.e. develop both related and other non-oil sectors of the economy. In recent years, Venezuela has been trying to accelerate the development of the gas and gas processing industries. According to proven reserves of “blue fuel” (148 trillion cubic feet), it is among the top ten countries in the world.

The diversification of the economy (including the development of gas production and gas processing industries), along with the modernization of the oil industry, will make it possible to better prepare for the likely changes in the global energy market [19].

To minimize the negative effects of fluctuations in oil prices for the country’s economy and, above all, the state budget and the foreign exchange market, the Macroeconomic Stabilization Investment Fund (FIEM) was created, which was formed with funds from the oil sector. At the beginning of 2003, the PDVSA itself was forced to resort to the help of the fund, withdrawing about 2 billion dollars from it to stabilize and expand production, as well as to develop the oil infrastructure [16; 19].

Later, due to oil revenues, a number of other funds were established, through which large-scale programs in the sphere of education, health care,
and housing construction were financed. During 2004, $3.7 billion was allocated from the PDVSA budget for social programs, projects for the development of agriculture and infrastructure.

Of this amount, more than $2 billion went to the Economic and Social Development Fund (FONDESPA), which was created for the accumulation and distribution of additional income derived from high oil prices. It finances 43 projects envisaged by the economic development plan of the country, including the development of public transport (24% of the total funds of the fund), housing (26%), electricity (20%), environmental protection, development of communications (9%) and a number of others.

The redistribution of oil revenues for infrastructure development is provided for by the Law on Energy Resources, in which it is noted that oil, being the property of the nation, should serve the harmonious, sustainable development of the Venezuelan state [19].

During the years of “oil paradise”, Venezuela did not manage to build a developed multi-branch economy. Will the current leadership of the country be able to reasonably dispose of the “golden rain” and not repeat the mistakes of its predecessors when millions of dollars from selling oil went to solving immediate problems, implementing ambitious projects, creating unprofitable and uncompetitive industries, satisfying excessive demands of elite and state officials, maintaining the state apparatus [19].

Since 2004, the Venezuelan economy has been developing dynamically, which is determined by overcoming the political crisis in the country and the favorable conjuncture of oil prices on the world market. The average price of the Venezuelan “oil basket” in the first half 2007 amounted to 57.53 dollars for 1 bar. (in 2006 — 56.44 dollars). Revenues from oil exports during this period reached $23.3 billion. Venezuela’s GDP growth in 2006 amounted to 10.3 % (in 2005 — 9.3 %, in 2004 — 17.9 %).

In the annual presidential address to the National Assembly of Venezuela (January 2005), W. Chavez cited figures indicating serious advances in the country’s economic development, including in such sectors of the economy as construction, finance, transport, trade and services, industrial production (vehicles, clothing, furniture).

Marked decrease in inflation. However, there are other data: in 1999, about 17 % of the population lived below the poverty line, and in 2005–25 %. Unemployment is high, almost 50 % of the working population is employed in the informal sector. The rise in oil prices in 2004 made it possible to obtain additional revenues of $5 billion. Despite the colossal gains from oil exports, the level of per capita GDP was about $4,000. This trend continued in 2005 [18].
In 2005, according to the human development index (0.778), Venezuela ranked 68th among 177 countries of the world. According to the index of competitiveness for economic growth in 2004, it ranked 85th among 104 countries, and for business — 82nd out of 102. According to the index of economic freedom, it is in the group of 12 “repressive economy” countries (146th among 161 countries of the world).

The largest increase was observed in the industrial sector (8.2%), trade (17.9%), the transport sector (14.8%), construction (15.5%), and communications and communications (28%). Economic growth in industries not related to oil production and refining amounted to 10.8%. In the oil industry, on the contrary, there was a decline in production by 3.9%, which was caused by a decrease in the oil production quota established by OPEC. The decisive role in the economy of the country is played by the oil production and oil refining industry [4].

Venezuela — an industrial-agrarian country, in terms of economic development and economic potential is among the leading countries in Latin America, second only to Brazil, Mexico and Argentina. Venezuela is an important player in the global energy market: in 2006–2007, on proven oil reserves ranked 1st in Latin America and 6th in the world (10 billion tons), 8th in the world in gas reserves (227 trillion cubic feet, of which 148 trillion cubic feet were confirmed reserves), 7th place in the world in oil production (150 million tons per year) and 5th place in oil exports [4].

The change in the contours of foreign policy and the position of Venezuela in the international arena is also largely determined by its oil interests [19; 22]. As one of the initiators of the creation of OPEC, Venezuela is making efforts to improve the efficiency of decisions taken by this organization to stabilize the international oil market, expand the composition and scope of its activities, establish production quotas and fair prices. OPEC controls about 40% of world production and almost half of world oil exports. Venezuela ranks third in production and export [19; 21].

The growth of the authority of Venezuela in OPEC was promoted by the fact that in 2000 it became the state — the chairman of this organization, and Ali Rodriguez, who was then Minister of Energy, was elected its secretary general. The second OPEC summit was held in the capital of Venezuela — Caracas (September 2000). It was a period of aggravation of the organization’s contradictions with the main oil-importing countries. Thanks to the active position of Venezuela, the oil cartel has expanded its presence in the global energy market. W. Chavez qualified OPEC not only as an association of oil producers in the struggle for fair prices — the so-called “price corridor”, but also as a “strategic tool” in the struggle for the interests of developing countries [19].
Another priority of the oil policy is the diversification of sales markets and participation in integration processes in the energy sector. More than half of the country’s exported oil goes to the North American market, for which Venezuela has been a “strategic reservoir” for many years. Despite a slight decrease in its share in US oil imports, it continues to rank fourth in the world (after Mexico, Canada and Saudi Arabia) in the export of oil and oil products to the northern giant — about 1.6 million barrels per day (2004).

Venezuela initiated the creation of the transnational oil company Petroamerica (based on the Petrobras alliance (Brazil) and PDVSA), to which other interested Latin American countries can join. In the meantime, a number of agreements have been signed on joint development of fields in the east of Venezuela, where Petrobras’s experience in deepwater drilling will be used, and on the construction of an oil refinery in Brazil. An important focus has been cooperation with the Caribbean countries in the field of energy. In 2000, the Caracas Energy Pact was signed on the supply of oil on favorable terms to the Central American and Caribbean states (Belize, Haiti, Costa Rica, El Salvador, Guatemala, Honduras, Jamaica, Panama, Dominican Republic; later joined by Barbados and Nicaragua).

According to the agreement, Venezuela undertakes to supply 80,000 barrels of oil to these countries daily for 15 years (1 year preferential) and at a rate of 2% per annum on financed supplies (the amount of funding depends on the level of world oil prices).

The Caracas agreement is being implemented in parallel with the 1980 San José agreement, according to which Venezuela and Mexico already delivered 160,000 barrels of oil to these countries daily barrels of oil on the terms of payment for 15 years (1 year preferential) and a rate of 2% per annum on financed supplies (the amount of funding depends on the level of world oil prices).

Also on “special financial conditions” Venezuela supplies oil to Cuba (53 thousand barrels per day, two grace years, the possibility of payment with Cuban goods and services). In December 2004, during the visit of U. Chávez to Cuba, a new agreement was signed, somewhat expanding and modifying the
previously concluded agreement. It is worth noting that in the period of the national strike, the neighboring countries — Brazil, Argentina, Colombia, Trinidad and Tobago and other states of the region provided substantial support to Venezuela and helped it with energy resources and food. It should be borne in mind that the active position of Venezuela in an effort to implement ideas for the creation of Petrosur, Petrosaribe, Petroandina, a single energy belt (Anillo Energetico) is dictated not only by economic but also geopolitical interests [19].

In recent years, energy cooperation has been developing more intensively with the PRC, India, European countries and Russia. In December 2001, Sinovensa, a Sinovensa Chinese-Venezuelan company, was established to produce orimulsion, a fuel that is close in composition to fuel oil. The Chinese side (China National Petroleum Corporation and PetroChina Fuel Oil Company) owns 70% of the shares and 30% of the shares — PDVSA. According to the agreements signed by U. Chavez during his visit to China in December 2004, Chinese companies received rights to develop 15 oil sites in eastern Venezuela (in the Orinoco river basin) and build oil refineries in this area [19].

In April 2010, the bicentennial of the independence of the Bolivarian Republic of Venezuela was celebrated. The last year due to the economic crisis was not easy for both Russia and Venezuela, but cooperation continues to grow. The most important events in Russian-Venezuelan relations over the past 10 years have been the following [20]:

- The visit of the President of the Russian Federation D. Medvedev to Venezuela in November 2008;
- Meetings of the Intergovernmental Russian–Venezuelan High Level Commission (annually since 2004);
- Meetings of the President of Venezuela, U. Chávez, with representatives of the business circles of Russia (May 2005 and September 2006 in Caracas, June 2007 in Moscow);

The dynamics of intergovernmental contacts shows that the peak of economic relations fell in 2008, but in 2009 the decline in Russian–Venezuelan trade began. For 10 months of 2009, the trade turnover decreased by almost
3 times — to 275.8 million dollars against 787.5 million dollars for 10 months of 2008. The main reason for the reduction in trade turnover was a drop of 2.9 times in Russian exports to $275.5 million against $787.1 million in the same period of 2008. Imports from Venezuela declined slightly, but in absolute terms remained at the same low level of $0.3 million [20].

In 2009, the Venezuelan government stopped trading on the New York Stock Exchange with shares of all strategic national enterprises operating in the energy sector; strengthened the responsibility of the management of large national companies and nationalized a number of enterprises and banks. Venezuela, like the Russian Federation, created the Macroeconomic Stabilization Fund, which was later renamed the National Development Fund, and also paid off all its debts to the International Monetary Fund and the World Bank long ago [20].

Starting from 2000, the core of the economic development of relations between Russia and Venezuela was the participation of Russian big business in the Venezuelan economy, the relationship in mechanical engineering, electric power industry, geological exploration, and mineral extraction increased rapidly. Now in Venezuela there are such leading Russian companies as Gazprom, Lukoil, Zarubezhneftegaz, Raznoimport-Venezuela, VO Tekhnopromexport, TNK-BP, Russian Aluminum, VNIIGAZ, RusKaolin, Raznoimport. A number of large Russian companies are studying the possibility of participation in such sectors of the Venezuelan economy as the mining industry, oil and gas and transport infrastructure, financial and investment and banking activities, chemical industry, engineering, transport, air traffic [20].

IFC Metropol, Agrochemical Corporation Azot CJSC, SeverStalAvto OJSC, Ruspromavto OJSC, Russian Railways OJSC, Polyus Gold OJSC, Uralavto OJSC, WTF ZIL-Export LLC Negotiate with potential Venezuelan partners in a number of projects. A number of joint projects in the field of rail and air transport are in the development stage. Olivia. Business activity is yielding positive results, strengthening Russia’s position in Latin America and the weakening of the US position [20].

Developing relations with Venezuela, it would be a mistake in the light of the “reset” of relations between Russia and the United States to pay less attention to its new partners in Latin America, whose foreign policy is focused on creating a multipolar world. These are countries such as Cuba, Nicaragua, Bolivia, Ecuador, Argentina and Brazil. Events of the past years indicate that the dreams of Simon Bolivar about uniting the countries of Latin America and creating a powerful power pole — “Great Colombia” — are being realized. Russia needs to participate in this process in spite of any diplomatic games from the United States. This is confirmed by the statement of US Vice President Joe
Biden in an interview with The Wall Street Journal, in which he predicts that the weakening of the Russian economy will force Moscow to “make concessions to the West” and accept the loss of its geopolitical role [20].

Events in Honduras in the summer of 2009 showed that the United States returned to the region of Central and South America. “The coup in Honduras, the US military bases in Colombia, the invasion of Iraq and Afghanistan, the threats to Iran. We have to live in such a world, and air defense will give us a much higher degree of security”, said Chavez in an interview with National Television of Venezuela, citing on arms purchases in Russia. Not surprisingly, weapons were the main export item of the Russian Federation to Venezuela [20].

As part of military cooperation, at the end of 2008, the Russian Federation conducted air patrols along the coast of South America and fleet maneuvers. Two Tu-160 strategic bombers of the Russian Air Force landed at the Libertador military airfield in Venezuela and for several days carried out training flights over neutral waters. Joint maneuvers of a detachment of warships of the Northern Fleet as part of the heavy nuclear-powered missile cruiser Peter the Great of the Navy in the Caribbean passed. This shows that Russia also wants to regain the position of an influential player in Central America and actively cooperate with the countries of South America [20].

On the whole, in 2007–2008, Moscow sold military hardware for 4 billion dollars to Caracas. At the end of 2009, Russia allocated a weapon loan to Venezuela for another 2.2 billion dollars [20].

June 23, 2009, Russia and Venezuela signed an intergovernmental agreement on the establishment of a Russian-Venezuelan bank. The corresponding document was signed by the Deputy Minister of Finance of the Russian Federation Dmitry Pankin and the Deputy Minister of Economics and Finance of Venezuela Gustavo Hernandez.

The new bank is created on the basis of Eurofinance-Mosnarbank. Its authorized capital will amount to $4 billion. The founders of the bank on the Russian side will be VTB and Gazprombank. The new bank will finance joint projects and programs in the sphere of cooperation between Russia and Venezuela. Its headquarters will be located in Moscow [20].

The enterprise will implement an integrated project, within the framework of which activities will be carried out for the exploration and production of hydrocarbons from the Junin-6 block, as well as to improve the quality of crude oil and its sales in international markets [20].

From what has been said it is obvious that the Russian state is primarily focused on large Russian companies and state corporations. In this well-established scheme there is no medium and the more so small business. Without
the support of the state, trade relations and infrastructure projects of medium-sized businesses will not appear there [20].

Without a real medium-sized business, not a single model of economic interaction works. It is a mistake to pay insufficient attention to the participation of medium-sized businesses in international economic programs. The increase in commodity turnover in the light, food industry, in the sphere of tourism largely predetermined the development and gave impetus to many economies of the world. New technologies in the field of medicine, education, public utilities, communications, construction are in demand in Venezuela, and the Russian medium-sized business is ready to actively develop in new territories due to the partial loss of the sales market in the country [20].

It is worth taking advantage of the interest that the Venezuelan side is showing to the development of economic ties with St. Petersburg. The development of trade between our countries is impossible without the port infrastructure of St. Petersburg and the Leningrad Region. In September 2007, the Society of Russian-Venezuelan Friendship and Business Cooperation was created in St. Petersburg, which works to develop a partnership approach with the involvement of local authorities in joint systematic activities in the development of commercial relations of medium-sized businesses [20].

The intensification of Russian-Venezuelan relations led to the fact that Russian companies, and above all oil, rushed together to Venezuela. LUKOIL was the first to sign an agreement on the Junin-3 block with the Venezuelan PDVSA back in 2005. In 2008, the company extended the contract; at the same time, TNK-BP entered into an agreement on the Ayacucho-2 block, OAO Gazprom received Ayacucho-3. And on October 8, 2008, Rosneft, LUKOIL, TNK-BP, Surgutneftegaz and Gazprom established the National Oil Consortium (NOC). In 2009, during the visit to Moscow of Hugo Chávez, a memorandum on the establishment of a joint venture between the consortium and PDVSA was signed.

The joint venture will develop the Junin-6 block with 53 billion barrels of oil resources. PDVSA will receive in it 60 %, NNK — 40 %. For the right to enter the project, the consortium will pay a $1 billion bonus. In addition, Junin-3 blocks may be transferred to the joint venture Ayacucho-2 and Ayacucho-3 [23].

Investments in Junin-6 alone for 25 years are estimated at $30 billion. Of course, this money would not have been applied either in Russian geological exploration, or in oil refining, or in transport infrastructure. True, globalization of Russian companies is really needed, especially given the aging of the Russian oil industry.

The potential resource base of Venezuela is huge — if the country certifies reserves of super heavy oil in the Orinoco river basin, equal, according to
PDVSA, to 236 billion barrels, it will take the first place in the world in terms of liquid hydrocarbon reserves, surpassing Saudi Arabia. Venezuela invites national oil companies from Brazil, Iran, China, India, Belarus, Russia to certify and develop these reserves [23].

In addition, Russian oil industry workers can gain valuable experience in the extraction and processing of heavy oil. And the development of Junin-6 promises to be a profitable project for Russian companies. After all, its internal rate of return should be 19% — much higher than in Russia. But, going abroad, it is necessary to soberly assess not only the benefits, but also the risks. And in Venezuela, they are very high [23].

The production risk is associated with the peculiarities of the oil industry of Venezuela, which is rather old and with one of the highest rates of depletion in the world. 45% of reserves are extra heavy oil (which hardens when extracted to the surface and, accordingly, needs refining — upgrade). The country uses three ways to upgrade, including the mixing of super-heavy oil with chemicals, to produce synthetic medium and light oil on very expensive installations (this technology is owned by international oil companies) [23].

The risk of a deterioration in attitudes toward foreign investors in oil-producing countries usually rises in a period of high oil prices, when the receiving party believes that it will do without foreigners. This risk is dramatically exacerbated in Venezuela, where many commercial decisions in the oil industry are made for political reasons [23].

The risk of nationalization. In 2007, Hugo Chavez forced ConocoPhillips, ExxonMobil, Chevron, BP, Statoil and Total to transfer PDVSA operational control in four projects on upgrading super heavy oil worth $31 billion. PDVSA was their minority partner, and now its share has increased to $60. Some of the majors agreed to the new conditions, but ConocoPhillips and ExxonMobil left the country. ConocoPhillips suffered the most financially, participating in two of the four upgrade projects and having the largest assets in Venezuela worth more than $10 billion. Work in Venezuela provided about 4% of its global oil and gas production [23].

The risk of insufficient compensation. An additional problem with nationalization is that PDVSA pays compensation to exported assets for foreign companies based on their net book value, and not on the market. ExxonMobil started lawsuits against PDVSA precisely because he was not satisfied with the compensation proposed by Caracas [23].

The risk of protracted litigation. After leaving Venezuela, ExxonMobil appealed to international courts seeking compensation for damages. In early 2008, the English arbitration court decided to freeze the foreign assets of
PDVSA for $12 billion. In response, Venezuela stopped the supply of ExxonMobil oil. Then the British judge overturned the previous decision of colleagues, taken in favor of the American major. ExxonMobil sued the courts of the Netherlands and the United States. Experts believe that the proceedings will last long. And at the end of 2009, Venezuela had already decided to sue ConocoPhillips for the fact that the American company was going to buy out PDVSA in the Texas refinery, which is in their joint ownership. ConocoPhillips explained its decision by saying that in January 2009, PDVSA did not deliver the specified amount of oil to the plant; she was making excuses that the failure occurred due to cuts in OPEC production quotas [23].

The risk of undermining the productive potential of PDVSA due to the heavy tax burden and social obligations imposed on it by the government. The company performs seven missions (in the field of education, health, rights of the local population, food, etc.), for which it must allocate at least 10% of annual investment. But it is she who will be the leader in the joint venture with the Russian consortium [23].

The risk associated with the implementation of projects for the extraction and processing of super-heavy oil. These projects are technically complex and expensive — about $18 billion each. The problem is that PDVSA is unable to effectively manage such complex and large-scale projects, that is, to play the role that the majors used to play. The Venezuelan company has no know-how, no organizational experience, no qualified personnel: in 2002, after an attempted military coup and a two-month strike in PDVSA, more than 17 thousand of its employees were fired. In addition, in recent years, Venezuela has signed a number of agreements with national oil companies from oil-producing countries based not only on the financial or production capabilities of partners, but also on political considerations. These agreements declared ambitious targets for oil production, but so far they have shown very modest results.

The Chinese CNPC, for example, has experience in producing heavy oil and money, but even its joint venture with PDVSA, Petrozumano, produces only 19 thousand barrels/day of oil instead of 70 thousand barrels/day, scheduled for 2009 [23].

The risk associated with OPEC production quotas. Experts believe that PDVSA shifted the lion’s share (190 thousand barrels/day) of production cuts, which was recently carried out at the request of OPEC, to its joint ventures with foreign companies. Enterprises that produce only a quarter of Venezuelan oil had to absorb a 60% reduction in production in the country [23].

Tax risk — the country is constantly tightening fiscal working conditions for foreign oil companies. Over the past decade, both royalties (from 16.7 to
30%) and income tax paid by foreign companies (from 34 to 50%) have been significantly increased [23].

The risk of insolvency of PDVSA, whose financial situation has deteriorated sharply during the crisis. Its debt to foreign suppliers and contractors rose to 7.6 billion by the end of 2008 due to falling oil prices, and payments to service companies were delayed by almost a year. In addition, in the fall of 2008, PDVSA lost a $5 billion credit line from the Royal Bank of Scotland [23].

The risk of non-compliance with contractual obligations by Venezuela. In the spring of 2009, Caracas nationalized the assets of more than 60 foreign and local service companies. In the summer of 2009, Standard & Poor’s responded to this nationalization by lowering the PDVSA rating from BB– to B+ due to “increased uncertainty about the company’s willingness to fulfill contractual obligations to some of its suppliers” [23].

The risk of making wrong decisions due to the lack of reliable information. The transparency level of PDVSA leaves much to be desired. It is not even clear how much oil Venezuela actually produces. The level of oil production is a very politically sensitive issue for OPEC countries, and especially for Venezuela. Its volume is a good indicator of the state of the industry, and the government aims to show that PDVSA is flourishing. Hugo Chavez claims that 3.4 million barrels per day are mined in the country. The opposition (including former PDVSA managers who were fired by Chavez after the strike) insists that the Venezuelan company is on the verge of collapse and produces only 2.3 or even 2.1 million barrels/day. BP called the figure of 2.5 million barrels/day in 2008 [23].

With the export of oil is also not all clear. According to official data of Caracas, exports in 2009 grew. But experts believe that since the Venezuelan refinery has serious problems, PDVSA “exports” oil to its Antilles plant, and then imports oil products for domestic consumption from there to Venezuela — this is how a more cheerful export picture emerges [23].

Thus, the Venezuelan economy has a number of positive and negative features. The functioning of the sovereign wealth fund is associated with a number of problems, which affects the lack of effectiveness of its work.
Chapter 9. Problems of formation and use of funds of sovereign wealth funds of the Russian Federation

9.1 Analysis of expenditures of the federal budget of the Russian Federation

The Stabilization Fund of the Russian Federation was created to insure the federal budget of the Russian Federation against unbalancing, which may occur with possible reductions in tax revenues due to a significant reduction in the price of oil on the world market. This would prevent a budget deficit due to the emerging risks of reduced revenues. To do this, it is necessary to determine the degree of exposure to the risks of budget expenditures.

The protected items of expenditure contained a set of prime budget expenditures, the financing of which was to be carried out in full, even when applying the sequestration procedure for other expenditure items. Their list was compiled as a special supplement to the main text of the law on the federal budget. Unprotected expenditure items included costs that were funded secondarily as funds were received in the budget.

Protected expenses always included wage costs, as well as, besides 1994, expenses for government benefits, scholarships, food and the purchase of medicines. This list was supplemented every year by a number of other items of expenditure, whose composition changed annually. That is, such articles were not always protected. For example, the repayment of domestic commodity debt was a protected expense item only in 1995 and 1996.

Due to the large number of items of expenditure, we identified homogeneous groups of items of expenditure. Under the group of items of expenditures of the federal budget of the Russian Federation is understood as a set of articles combined for the purpose of funding.

The Development Budget was also formed as part of the federal budget. It was formed as part of the capital expenditures of the federal budget and is intended for lending, investing and guaranteeing investment projects.

These groups of articles also contain socially significant articles. However, there are fewer of them than in the groups of articles “Education”, “Social Policy”. In the groups of articles “National Defense”, “Culture and Art”, “Health” the share of protected articles was about 50%. They include such protected articles as, for example, “Financing particularly valuable cultural heritage sites of the peoples of the Russian Federation”.
Table 9.1. — The share of protected items in groups of expenditures of the federal budget in 2017 (% of approved expenditures in the budget)

<table>
<thead>
<tr>
<th>Groups of expense items</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total consumption</td>
<td>42.6</td>
</tr>
<tr>
<td>among them</td>
<td></td>
</tr>
<tr>
<td>Public administration</td>
<td>77.2</td>
</tr>
<tr>
<td>National defence</td>
<td>49.0</td>
</tr>
<tr>
<td>Law enforcement and state security</td>
<td>81.7</td>
</tr>
<tr>
<td>Fundamental research and promotion of scientific and technological progress</td>
<td>100.0</td>
</tr>
<tr>
<td>Industry, energy and construction</td>
<td>34.1</td>
</tr>
<tr>
<td>Agriculture &amp; fisheries</td>
<td>13.9</td>
</tr>
<tr>
<td>Education</td>
<td>98.6</td>
</tr>
<tr>
<td>Arts and culture</td>
<td>54.9</td>
</tr>
<tr>
<td>Media</td>
<td>22.4</td>
</tr>
<tr>
<td>Health</td>
<td>57.8</td>
</tr>
<tr>
<td>Social policy</td>
<td>90.8</td>
</tr>
</tbody>
</table>

Sources: [12]

However, in spite of such measures, the financing of items of expenditures of the federal budget was not fully implemented. Such regular underfunding of federal budget expenditure items was risky, since led to its failure. In 1999–2002 the execution of groups of items of expenditures of the federal budget increased in percentage terms, since during these years there was a budget surplus.

However, a number of groups of expenditures of the federal budget, as before, were not fully implemented. In 2003–2005, the average percentage of completion again fell to 95%.

The risk associated with the possibility of a deficit of the federal budget of the Russian Federation makes it necessary to provide protective measures through the use of funds from the Stabilization Fund. This allows you to determine the value of the minimum required volume of the Stabilization Fund based on the differentiation of groups of expenditure items of the federal budget of the Russian Federation according to their degree of protection.

To determine the minimum required volume of the Stabilization Fund of the Russian Federation, it is advisable to allocate constantly protected, unprotected and sometimes protected groups of expenditure items of the federal budget of the Russian Federation. The classification of items of expenditure to one of the three groups was made as follows.
These groups of items of expenditure have been assigned by us to permanently protected items of expenditure.

A number of items of federal budget expenditures did not relate to protected items in any of the years during the period under review. This means that they could not be met in the event of a budget deficit. They are classified as unprotected items of expenditure.

To assess the minimum required value of the Stabilization Fund of the Russian Federation, the dynamics of the ratios of constantly, sometimes protected and unprotected groups of items of expenditure of the Russian federal budget were analyzed. It was implemented in two versions: as a percentage of total budget expenditures and as a percentage of GDP. In each case, two methods were used to estimate the rate of change in expenditures:

1) calculating the geometric average and
2) building correlation as a function of time.

This makes it possible to increase the accuracy of the assessment of changes for each of the groups of expenditures of the federal budget of the Russian Federation.

The growth rate of sometimes protected articles calculated by the geometric mean was the highest, since unprotected articles were actively transferred to this group of articles. The calculation of the average geometric growth rates for each group of articles makes it possible to estimate the forecast of the structure of federal budget expenditures for the next year.

Another way to assess, made on the basis of trends for each of the three groups of articles, is to determine the dynamics of changes in their share in time. Trends for constantly, unprotected and sometimes protected budget expenditure items were calculated using the indicator binary variable [16]. As you can see, all three groups have tendencies with rather high coefficients of determination. They are similar to the growth rate obtained in the geometric average calculations. This allows you to predict the structure of the federal budget. On this basis it is also possible to estimate the minimum required size of the Stabilization Fund of the Russian Federation. In accordance with the obtained values of the trends, the assessment of the share of constantly protected articles in 2017 may be 46.3%; unprotected — 29.3%; sometimes protected — 24.4%.

The use of two assessment methods allows us to estimate a possible corridor of changes in the forecast values of items of expenditure of the federal budget of the Russian Federation. This makes it possible to estimate the minimum required amount of the Stabilization Fund for the next year.

It should be noted that, as in the previous cases, the calculations were made for the period from 1992 to 2004, and the verification (verification) was
performed for 2005. In accordance with the growth rates obtained, a rough estimate for permanently protected articles in 2005 is should be 8.5 %; unprotected — 5.2 %; sometimes protected — 4.5 % of GDP.

Actual values in 2005 for permanently protected items, they made up 7.9 %, for unprotected items — 4.3 %; for sometimes protected ones — 4.2 %, which is not more than 0.9 percentage points different from the values obtained.

As trend lines show, the share of constantly and sometimes protected expenses of the federal budget of the Russian Federation in % of GDP increases, while the share of unprotected expenses decreases.

According to the obtained trend equations, the forecast estimate for constantly protected articles for 2005 may be 7.6 %; unprotected 3.8 %; sometimes protected — 3.9 % of GDP. Actual values in 2005 for permanently protected items, they made up 7.9 %, for unprotected items — 4.3 %; for sometimes protected — 4.2 %. It can be seen that they differ by no more than 0.5 percentage points from the values obtained.

Based on possible deviations from the forecast values, it can be expected that the structure by groups of items of expenditures of the federal budget for 2005 will be will be in the following ranges: permanently protected: 8.5–7.6; unprotected: 5.2–3.8; sometimes protected: 4.5–3.9 % of GDP.


As can be seen from the table, the maximum deviation of the estimated estimates obtained from the planned ones is observed in the group of unprotected articles using the geometric average formula and is 1.1 percentage points and in the group of constantly protected articles when using the correlation function and is 0.7 percentage points. The maximum deviation of similar indicators in % of GDP is observed in the group of unprotected items when using the geometric average formula and is 0.9 percentage points and in the group of unprotected articles when using the correlation function and is –0.5 percentage points. This suggests that greater accuracy is provided in the calculations in % of GDP.

Thus, when determining the minimum amount of the Stabilization Fund, the calculation option based on the analysis of expenditure groups of the federal budget of the Russian Federation in % of GDP is more preferable. In its application, the scatter of estimates is less.

To determine the length of the time series, first of all, it is necessary to study its dynamics and the nature of changes.
The analysis shows that average values in % of GDP are more stable than average values as a share of budget expenditures. Therefore, it is more expedient to use them to estimate the minimum required volume of the Russian sovereign wealth fund.

When assessing the growth rate of the three groups of items of expenditures of the federal budget for the geometric mean and trends, the choice of the length of the retrospective data series is important. In order to find the row length sufficient to characterize each group of expenditure items, the average values obtained on the basis of the budget plan, as well as estimated using the geometric mean and correlation function for different periods, were considered.

According to the data in the table, the share of constantly protected items of expenditure of the federal budget of the Russian Federation on average for the period 1999–2017 amounted to 44.19 %, the share of sometimes protected items of expenditures of the federal budget of the Russian Federation — 2.85 %, the share of unprotected items of expenditures of the federal budget of the RF — 32.96 %.

The calculations showed that with the average federal budget expenditures of 14.13 % of GDP [31], constantly protected items amounted to 6.27 % of GDP. The value of sometimes protected budget items is equal to 3.25 % of GDP. The dynamics of the share of sometimes protected items of expenditures shows that over the past 7 years their value has not decreased below 2.43 % of GDP, regardless of the composition of the items in a particular year. Therefore, when determining the minimum volume of the Stabilization Fund, it is necessary to take into account only the changing part of the sometimes protected items, which is equal to: 3.25 – 2.43 = 0.82 % of GDP.

In the dynamic version, that is, taking into account changes over the years, the minimum amount of the fund in % of GDP should be adjusted annually, taking into account the dynamics of changes in expenditure items.

According to article 96.3. Of the Budget Code of the Russian Federation [18], the funds of the Stabilization Fund can be used to finance the federal budget deficit while lowering the oil price below the base price, as well as for other purposes if the accumulated amount of the Stabilization Fund funds exceeds 500 billion rubles. Thus, the minimum size of the Stabilization Fund established by the Budget Code in 2004 is amounted to 3.8 % of GDP.

If we proceed from an estimate of 5.43 % of the GDP of the required volume of the Stabilization Fund for the conditions of the federal budget for 2005, then it should be equal to about 1,016.5 billion rubles. Therefore, if the federal budget revenues were lower than those planned in the budget, it would inevitably require a postponement of the execution of budget expenditure items to
a later date, or even sequestration of 4.2% of GDP. This value was calculated as
18,720/(1,291.7 – 500) · 100, where 18,720 billion rub. — GDP 2005.

The value of the minimum required volume of the Stabilization Fund should be reviewed every year, taking into account the growth of GDP. This is due to the decrease in the share of unprotected groups of articles and the growth of the share of constantly protected and sometimes protected groups of expenditure items in the amount of federal budget expenditures. These trends lead to an increase in the total share of constantly and sometimes protected groups of expenditure items and greater sustainability of the federal budget.

This means that the volume of the Stabilization Fund of 5.43% of GDP is determined as the average value over the last 7 years. However, this is only the average value of the amount of unprotected (4.61% of GDP) and the variable part of the sometimes protected (0.82% of GDP) groups of items of expenditure without a minimum value (2.43% of GDP), which does not take into account possible fluctuations of these values.

There is one more option for estimating the minimum required volume of the Stabilization Fund. The use of such regulatory methods as postponing the execution of budget items to a later date and sequestration when planning federal budget expenditures can reduce the amount of the minimum required volume of the Stabilization Fund.

The transfer of the execution of budget items to a later date and sequestration when planning expenditures of the federal budget were already planned in 2002 and 1997. According to paragraph 5, Decisions of the Government of the Russian Federation of February 28, 2002 N 137 “On measures to implement the Federal Law «On the federal budget for 2002»”, in 2002, the amount of funds proposed for the transfer of financing of articles amounted to 2.76% of the federal budget expenditures or 0.5% of GDP.

However, it is obvious that the transfer and sequestration of expenditure items will adversely affect the reliability of the planning and execution of the Russian federal budget. And if the transfer to a later date within one year does not change the budget indicators, then sequestering changes the structure of budget expenditures. This method of forming the federal budget, when planning it provides for the possibility of increasing the share of transferred and sequestered items, calls into question the expediency of creating the Stabilization Fund itself.

Thus, the minimum required amount of the Russian Stabilization Fund was appropriate to adjust annually, depending on the size of the federal budget and the share of unprotected and sometimes protected items provided for in the next federal budget.
Analysts point out that the budget revenues in 2010 compared with the budget revenues of 2009 increased by 13%, or 1 trillions rubles, which is fully explained by the increase in the average annual oil price by almost $20 per barrel. Expenses increased by 5% to 10.1 trillions rubles, but this figure is only 2% lower than planned. “This means that reducing the deficit is the merit of only high oil prices”, experts conclude.

In the opinion of the Accounts Chamber, it is advisable to additionally single out sources of financing the non-oil deficit of the federal budget, which will require making appropriate additions to part 3 of article 96 of the Budget Code of the Russian Federation [22].

In accordance with the Budget Code of the Russian Federation in 2008, the Reserve Fund was formed on the basis of the Stabilization Fund of the Russian Federation to ensure the balance of the federal budget and the fulfillment of the assumed expenditure commitments in the event of insufficient oil and gas revenues, and the National Welfare Fund focused primarily on accumulating funds to long-term sustainability of the pension system [31].

According to the Budget Code, the Reserve Fund is a part of the federal budget, subject to separate accounting and management for the implementation of oil and gas transfer in case of insufficient oil and gas revenues for financial support of the transfer. The federal law on the federal budget for the next fiscal year and planning period establishes the normative amount of the Reserve Fund in an absolute amount determined on the basis of 10 percent of the gross domestic product volume projected for the corresponding fiscal year specified in the federal law on the federal budget for the next fiscal year and planning period.

The reserve fund is formed from: oil and gas revenues of the federal budget in an amount exceeding the amount of oil and gas transfer approved for the relevant financial year, provided that the accumulated amount of the reserve fund does not exceed its standard value; revenues from the management of the Reserve Fund (this clause in the legislation is suspended for the period from January 1, 2010 to February 1, 2012).

Thus, at present, the volume of the sovereign fund of the Russian Federation in the amount of 10% of GDP is fixed by law. This value is greater than the proposed value for determining the minimum amount of the sovereign wealth fund of the Russian Federation (5.43% of GDP) and means that this ensures a high level of “insurance” of the federal budget indicators of the Russian Federation.
9.2 Possible additional source for the Stabilization Fund

The main criterion for the selection of countries is that the issuer of debt in which the funds of the Stabilization Fund of the Russian Federation can be placed must have the highest long-term credit rating.

In addition to the main sources, the fund can be replenished at the expense of income from investments of the Stabilization Fund’s funds abroad in highly liquid securities (stocks, bonds, etc.), including: dividends on shares, interest on bonds; income from the sale of shares/bonds as a result of changes in their market value relative to par, etc.

To mitigate risks, the Stabilization Fund’s investment mechanism based on the insurance principle can also be used. In this case, its funds can be invested in foreign countries in highly liquid securities. This will allow the Stabilization Fund, even in the event of a deteriorating economic environment in Russia, to receive income from foreign investments. However, the funds in the Russian Federation fund come mainly from the tax revenues of the federal budget of the Russian Federation.

When organizing a sovereign wealth fund of the Russian Federation in accordance with the basic principles of construction and operation adopted for the Norwegian state fund, an additional stable source of its replenishment can be organized. If its effectiveness is assessed according to the scheme adopted for the Norwegian equity-to-bond ratios, as well as the rate of receipt of dividend income and interest, by region, country, and all other levels of investment diversification, the following amounts of additional sovereign fund revenues can be obtained welfare of Russia.

As can be seen from table 192, with investments of the Russian sovereign wealth fund according to the Norwegian scheme, by December 2004 income from investments in stocks and bonds could reach 5.2 billion rubles, while income from investments in shares would be 3.8 billion rubles, income from investments in bonds would be 1.84 billion rubles.

By December 2004 income from investments in stocks and bonds could reach 5.2 billion rubles, while income from investments in shares would be 3.8 billion rubles, income from investments in bonds would be 1.84 billion rubles.

By December 2006, income from investments in stocks and bonds could reach 21.7 billion rubles. At the same time, income from investments in shares is 18.9 billion rubles, income from investments in bonds is 2.8 billion rubles.

An approximate assessment of the use of the Norwegian scheme of investing financial resources in stocks and bonds of the tranche of the Russian stabilization fund in the amount of 106.33 billion rubles.
If the Russian Stabilization Fund would invest under this scheme, and the first investments would be made on December 31, 2004, by the end of 2005 additional income on shares and bonds would allow the fund to grow by 32 billion rubles. This is comparable to the average monthly budget receipts in 2004, and represents, as it were, additional income for 13 months of the year. Thus, an indicative calculation shows that the current policy of disposing of the funds of the fund could have an alternative option that is more effective than the existing one.

Investment options for the Stabilization Fund of the Russian Federation are constantly discussed. In the budget message of the President of the Russian Federation for 2007. The stabilization fund was proposed to be divided into two parts — the “reserve part” and the “fund of future generations”. The reserve will be fixed in percentage slightly below 10% of GDP. It can be spent on replacing sources of external financing of the budget deficit as a result of falling oil and gas prices and on repaying external debt. The fund of future generations can be placed in highly liquid assets and partially spent within Russia [29].

Then the Government of the Russian Federation also developed schemes for investing the funds of the Stabilization Fund of the Russian Federation in various currencies. The investments of the Stabilization Fund of the Russian Federation, according to one of the schemes proposed by the Government of the Russian Federation, suggest the distribution of the accumulated funds of the fund between the euro, the dollar (45% each) and the pound (10%).

Investments under the Norwegian scheme assume investments in highly liquid foreign stocks (40%) and bonds (60%).

It should be noted that the size of the fund at the beginning of the current month in these calculations is formed as the size of the fund at the beginning of the previous month plus the income from the fund’s investments at the end of the previous month, plus revenues to the Stabilization Fund from the budget.

The Government also proposed a second investment scheme, recommending that part of the Stabilization Fund also invest in the Japanese yen and the Swiss franc [30]. However, this investment scheme has not yet been implemented. In particular, fears are caused by lower yen yields dynamics.

Fund funds are accumulated in rubles. But investments in debt obligations of countries with a stable economy and small inflation processes are made in dollars, euros and other national currencies.

The experience of countries with stabilization funds shows that income from financial investments in securities is one of the main sources of development of such funds. Thus, in Norway, the share of revenues from them to the State Pension Fund of the country amounts to about 30–40% of all sources of income of the fund [27].
In 2008, the profitability of the Reserve Fund and the National Wealth Fund (NWF) was 5.41% [41]. On February 1, 2009 year, the Reserve Fund amounted to 4.863 trillion rub. (about 137 billion dollars), and the National Welfare Fund — 2.992 trillion rub. (85 billion dollars). According to the data of the Ministry of Finance of the Russian Federation, as of March 1, 2011, the volume of the National Wealth Fund was 2,631.98 billion rubles, the volume of the Reserve Fund — 755.82 billion rubles. Until October 2009, all funds of Russian sovereign funds were invested in currency and government bonds of developed Western countries: 45% each in assets in dollars and euros, and the rest in British pounds [41].

Total as of February 1, 2011, 655.00 billion rubles were deposited from the National Wealth Fund on deposits with the state corporation Bank for Development and Foreign Economic Affairs (Vnesheconombank).

As of February 1, 2010, the reserve fund amounted to 1.8 trillions rubles (59.9 billion dollars), and the National Wealth Fund — 2.7 trillions rubles ($90.6 billion). Since their inception, the yield on the allocation of funds of funds amounted to 3.53% and 4.18%, respectively. About half of them (1.8% and 2.6%) funds earned in 2009. According to the statement of the Deputy Head of the State Debt and State Financial Assets Department of the Ministry of Finance, Peter Kazakevich, “Income from the placement of funds of the National Welfare Fund in 2009 increased compared to the previous year, deposits in Vnesheconombank played a role”. According to him, despite the fact that ruble inflation in 2009 was higher than the designated yield, it cannot be said that it “ate” the funds’ revenues, “The funds are invested in the currency, and inflation in the eurozone was negative”.

According to data released by the Ministry of Finance, the placement of funds of the National Welfare Fund on VEB deposits brought him substantial income: in rubles — 7.21%, and in US dollars — 3.18%. If it were not for VEB, who accepted government money on its deposits, the yield on the placement of funds of the National Welfare Fund was actually equal to the return on investment of the reserve fund. The fact is that funds of both the National Welfare Fund and the Reserve Fund are invested in the same instruments — on the Central Bank accounts and in the basket of allowed currencies (dollar, euro and pounds sterling) [42].

The cumulative estimated loss from placing funds of the Reserve Fund in foreign currency accounts with the Bank of Russia, recalculated in dollars, for the period from January 15 to January 31, 2011 amounted to 0.01 billion dollars, which is equivalent to 0.34 billion rubles. The exchange rate difference from the revaluation of balances on these accounts for the period from
January 1 to January 31, 2011 amounted to a negative value (–4.66) billion rubles. In January 2011, the Reserve Fund in the amount of 150 billion rubles, not used to finance the deficit of the federal budget in 2010, was converted into foreign currency and credited to the corresponding accounts with the Bank of Russia [43; 46; 47].

The total amount of the National Welfare Fund as of February 1, 2011 amounted to 2,674.53 billion rubles, which is equivalent to 90.15 billion dollars. As of January 1, 2011, the size of the fund amounted to 2,695.52 billion rubles, which is equivalent to 88.44 billion dollars.

The cumulative estimated loss from placing funds of the National Wealth Fund in foreign currency accounts with the Bank of Russia recalculated in dollars for the period from January 15 to January 31, 2011 amounted to $0.04 billion, which is equivalent to 1.05 billion rubles. The exchange rate difference from the revaluation of balances on these accounts for the period from January 1 to January 31, 2011 was a negative value (–15.93) billion rubles, and the exchange rate difference from the revaluation of the fund’s funds deposited in USD in Vnesheconombank was (–5.06) billion rubles [43; 46; 47].

In December 2010, the Ministry of Finance of Russia continued to implement the order of the Government of the Russian Federation No. 23-r of January 19, 2010 on channeling funds from the Reserve Fund to finance the federal budget deficit. Part of the fund’s funds in foreign currency in accounts with the Bank of Russia, namely, 8.74 billion US dollars, 6.64 billion euros and 1.25 billion pounds sterling, was sold for 600.00 billion rubles, and the proceeds credited to the account for the accounting of the federal budget. Unused funds in the amount of 150.00 billion rubles were returned to the account for recording funds from the Reserve Fund and will be converted into foreign currency in January 2011. Thus, in 2010, funds from the Reserve Fund in the amount of 1,119 were allocated to finance the federal budget deficit, 50 billion rubles [43; 46; 47].

The reserve position of the Russian Federation in the IMF, formed at the expense of the Reserve Fund, amounted to 991.94 million SDRs [43; 46; 47]. The aggregate calculated income from the placement of the Reserve Fund, converted into dollars, for the period from January 15 to December 31, 2010 amounted to $0.54 billion, which is equivalent to 16.58 billion rubles. The exchange rate difference from the revaluation of balances in accounts to record funds of the Reserve Fund in foreign currency for a specified period was negative — (–27.63) billion rubles, and the exchange difference from revaluation of fund assets placed in the reserve position of the Russian Federation in the IMF is positive value — 0.31 billion rubles [43; 46; 47].
Until April 1, it is necessary to figure out how to send “additional” oil and gas revenues of Russia to the reserve. The reason is a significant reduction in the reserve fund and the 2012 elections [43]. By April 1, we need to find a way to stop using the additional oil and gas revenues of the federal budget in 2011, and also to introduce changes to the Budget Code from 2012 that would regulate the Russian oil and gas budget deficit. In other words, the additional incomes of the Russian commodity sector should turn into new reserves [43; 46; 47].

9.3 The macroeconomic effect of the use of sovereign wealth fund

The significance of the sovereign wealth fund as a potential factor of economic development is obviously determined by the scale and direction of the fund’s spending. The scheme of using these funds, which was actually implemented up to the present time, was the accumulation of the fund’s receipts in the accounts of the Bank of Russia and then their placement in various types of securities of foreign countries (mainly the obligations of the US Treasury).

The same was true of the income earned on these securities. The operation of the Stabilization Fund under this scheme means that super-profits from the export of energy resources are used for crediting the economies of other countries and, in principle, cannot have any positive effect on economic activity in the national economy of Russia.

Alternative policies in the use of funds from the Stabilization Fund — financing (or stimulating) productive investments.

It should be noted that, despite maintaining sufficiently high growth rates of production in recent years, the Russian economy’s need for investment remains very high for at least two reasons. Firstly, due to the need for large-scale replacement and modernization of the production apparatus of most industries the real sector of the economy.

Secondly, the fact that the decline in investment in the period 1991–1998 significantly outperformed the decline in production. So the use of the fund’s funds for investment needs in the current economic environment is extremely urgent.

During the existence of the Stabilization Fund in the economic literature, a number of proposals were formulated regarding the possibility of the effective use of the fund’s resources. All proposals in this area can, with some degree of conventionality, be divided into two groups:

1) proposals for the use of the fund for financial policy purposes;
2) proposals on the use of the fund’s resources for direct financing of investments in the sectors of the real sector of the domestic economy.
The first of these areas, as a rule, is identified with compensation at the expense of the Stabilization Fund funds for reducing tax rates for various categories of economic agents. The feasibility of this proposal has been analyzed in a number of studies by Russian scientists [35].

Thus, a further decrease in UST may lead to an increase in the Pension Fund deficit. Moreover, as rightly [37], in the future, an increase in the load on the pension system is expected. Reducing the income tax will have a negative structural effect: this tax is collected, to a large extent, from highly profitable companies in the fuel and raw materials sector and trade organizations. Accordingly, its cancellation may bring benefits mainly to fuel and resource companies, rather than manufacturing enterprises.

According to the results of the studies of TsMAKP, on average for 2006–2008. The falling revenues of the federal budget as a result of the implementation of this measure to reduce the tax burden were estimated at 1.3–1.4 % of GDP. However, the possibilities of reducing tax revenues are limited and the possibilities for further reducing non-interest expenses are almost exhausted. Moreover, there is an objective need for their expansion, in particular, in the following areas:

- transfers to the subjects of the Federation, the increase of which is necessary to compensate for the losses of the population from the reform of social benefits;
- financing of state investment programs (projects). According to the calculations of the Ministry of Economic Development of Russia, it is advisable to increase the level of public investment to 5 % of GDP (in recent years, they amounted to 2–2.5 % of GDP);
- normalization of financing of power structures in the conditions of cancellation of benefits for military personnel and the need to upgrade weapons and military equipment.

In general, as shown by the TsMAKP studies, it is expedient to reduce tax revenues to the budget while slowing down the accumulation of the Stabilization Fund — with an increase in the base price for oil, at which deductions are made to the Stabilization Fund of a part of export duties and mineral extraction tax [36].

The second possible direction of using the funds of the Stabilization Fund is investing in the Russian economy in various forms. At the same time, this concept is aimed at avoiding the “excessive” sterilization of money supply in the conditions of a likely decrease in the dynamics of foreign exchange reserves and requires a change in the very concept of using the funds of the Stabilization Fund. This concept is based on the following main provisions [36]:

- the possibility and necessity of investing part of the funds of the Stabilization Fund in the domestic market;
- the need to ensure sufficient profitability of placing funds of the Stabilization Fund — at a level that exceeds the rate for the state to attract borrowed resources in foreign markets;
- the need to ensure an acceptable liquidity in the placement of funds — the possibility of prompt (within six months) return of previously invested funds.

The first strategy is aimed at increasing the maneuverability of using budget funds to regulate money supply. This implies the implementation of the following measures [36]:

- imposing a ban on the transfer of funds to the Stabilization Fund in amounts exceeding those fixed in the Federal Law “On Budget” for the relevant year;
- creation of the Investment Fund of the federal budget, in which it is advisable to direct the balances of the federal budget not listed to budget beneficiaries during the year, and federal budget revenues exceeding the level established in the Budget Law (including export duties and mineral extraction tax over the limits of the Stabilization Fund formation). The funds of the Investment Fund should be used to make public investments in the manufacturing sector of the economy, as well as to stimulate the development of mortgage lending.

It should be noted that this strategy has the following disadvantages:
- reducing the certainty of fiscal policy in terms of investment, linking public investment to foreign economic conditions;
- the continuation of the immobilization of a significant part of the budget resources received by the Stabilization Fund.

The second strategy mentioned above assumes the transfer to the Stabilization Fund of a part of the functions of the Investment Fund and the implementation, at its expense, on a returnable basis of investment financing of Russian companies that are not in the fuel sector. This can be realized in the form of financing the leasing of investment equipment or in the form of mixed public-private co-financing of companies in priority sectors of the economy [36].

It should be noted that the option of transforming the Stabilization Fund into an Investment Fund has two significant drawbacks:
- reducing the liquidity of the placement of the Stabilization Fund;
- the need for a significant change in the regulatory framework and existing state institutions (to ensure the effective use of budgetary resources).

Most analysts agree that investing the funds of the Stabilization Fund in the Russian economy should provide not only short-term economic growth, but also create the prerequisites for long-term economic growth. The most obvious
options are: investing in infrastructure or investing directly in the manufacturing sector of the economy.

As experts note, the investment of the Stabilization Fund funds in infrastructure projects (for example, in road construction) [38] will certainly lead to growth in basic sectors of the economy: production of metal, cement, construction equipment will increase, growth will be observed in engineering. With the exception of engineering, growth in other high-tech industries will be almost not noticeable. Additional consumer demand, which will be stimulated by these investments, will be met by imports.

Thus, such measures in an open economy will greatly stimulate foreign producers. Another, significant drawback of this approach is that growth will stop, and even a decline in production will be observed as soon as this flow of investment is reduced. It turns out that the funds of the fund must be invested in projects that will pay off, then the funds of the fund can be constantly reinvested.

Another possible investment option is to invest in long-term investment loans in the industry. However, this raises a problem: who will allocate them and how, to which projects they should be sent, and whether the repayment of loans will be respected.

The implementation of these investments may imply the achievement of the following macroeconomic results [36] in the case of the effective use of these funds: additional GDP growth – by 0.2 percent. p. in 2005, 0.5 in 2006 and 0.7 in 2007; increase in industrial production – by 0.1 percent. p. in 2005, 0.6 in 2006 and by 0.9 in 2007; increase in investments in fixed assets – by 1.9–2.6 percents.

In [36] it is noted that the implementation of the strategy of “production” use of the funds of the Stabilization Fund is currently limited by the lack of sufficient institutional mechanisms and the necessary regulatory legal base (currently, such mechanisms include the Federal Target Programs and the Federal Targeted Investment Program).

From the above, two important conclusions follow. First, the stimulation of economic growth through the use of the funds of the Stabilization Fund can theoretically be carried out by various methods — both through the parameters of economic policy and through direct financing of productive investments. Secondly, all the considered methods are characterized by a certain limitation (in terms of the possibilities of effective implementation of certain measures).

Nevertheless, based on the results of this review, it can be stated that the use of funds from the Stabilization Fund for the purpose of intensifying the development of the domestic economy in modern conditions seems more appropriate in comparison with the current scheme of using these funds.
Consider one of the possible approaches to assessing the macroeconomic efficiency of using the funds of the Stabilization Fund to accelerate economic growth.

Namely, suppose that the funds of the fund (or a part of these funds) are used directly to increase production investment. This formulation of the problem is legitimate, given that in the case of a reduction in the tax burden at the expense of the Stabilization Fund, there is also an increase in investment, which, in turn, causes an additional increase in national economic output. Then an estimate of the potential GDP increment can be obtained from the ratio:

\[ \text{GDP} = \frac{I_{\text{сф}}}{k} \]  
(9.1)

where: \( I_{\text{сф}} \) is volume of productive investment at the expense of the fund, GDP is increase in GDP caused by these investments; \( k \) is capital intensity ratio of investments.

Thus, for a quantitative assessment of the macroeconomic consequences of the expansion of investments in fixed assets, it is necessary to have information on the level of national economic capital intensity of production growth in the domestic economy. In relation to modern economic conditions, a reasonable calculation of the indicated coefficient based on reported macroeconomic statistics is not possible. In this regard, within the framework of this work, macroeconomic estimates of capital intensity were used, calculated on the basis of the results of the work done by the specialists of the Center for Macroeconomic Analysis and Short-term Forecasting (CMFAC) described above.

There are two main areas for using the funds of the Stabilization Fund for investment purposes:
1) financing of state investment programs;
2) stimulation of investment activity of enterprises of the real sector by reducing the tax burden on them (with compensation for this reduction at the expense of the fund).

Calculations made by us on the basis of data from the previous tables showed that in each of these areas, the effectiveness (efficiency) of investments differs insignificantly: the macroeconomic capital intensity ratio (the ratio of investments to GDP growth) is 1.02–1.08 rubles/rub.

The potential amount of the Stabilization Fund, which can be used to increase fixed capital, is estimated at 867.9 billion rubles. This value is obtained as the value of the Stabilization Fund as of December 31, 2006, equal to 2,340.9 billion rubles, minus the minimum required minimum value of 1,472.942 billion rubles (5.43 % of 2006 GDP). This, in turn, can provide an additional GDP increment of 803.7 billion rubles or 3.0 percent points in relation to the level of 2006 (based on the value of the capital intensity ratio of 1.05 rubles/rub.).
9.4 Multiplier model Stabilization Fund of the Russian Federation

The assessment of the potential macroeconomic effect caused by the use of the Stabilization Fund funds to finance productive investments is based on taking into account only the interconnections of a technical and economic nature that are formed in the production process.

However, expanding investment (like any other element of GDP) means simultaneously changing the scale of financial flows circulating in the economy. A quantitative analysis of these effects, due to the interdependence between the material and financial parameters of the reproduction process, can be carried out only on the basis of special tools, the natural basis of which is the “Input-output” table (inter-branch balance).

This table contains the necessary primary information, which allows to characterize both the technical and economic interrelationships of individual sectors (activities) of the economy, and the value structure of the output of these sectors [39].

However, the study of the relationship of material and financial indicators of inter-sectoral balance requires the construction of special econometric ratios characterizing the process of transformation of various types of income into indicators of final demand in the economy.

An applied economic-mathematical model containing a quantitative description of such dependencies — the model of the final demand multiplier developed by the specialists of the Institute of Institutional Studies, Russian Academy of Sciences [40] — was used in this dissertation research.

It should be noted that the terms “multiplier” and “multiplicative effect” are widely used in economics since the 1930s. XX century primarily in connection with the works of John M. Keynes. These concepts were used to analyze (mainly theoretical) the economic consequences of public policies aimed at stimulating economic activity (for example, the effect of expanding budget expenditures); in the above understanding, these terms are usually used in modern economists.

At the same time, analyzing the economic history of modern Russia, it should be stated that the recommendations of economists, as a rule, do not correspond to the scientifically correct approach to the assessment of multiplicative effects.

Thus, when analyzing alternative areas of macroeconomic policy and, in particular, incomes policy, the following type of judgment traditionally prevails: an increase in budget expenditures (or, for example, an increase in credits to the economy) means an increase in other things equal conditions of money in
circulation, which gives rise to growth impulses prices. Such constructions are based on the simplest model of inflation, based on the rate of turnover of money and their quantity in circulation. At the same time, a possible increase in production volumes as a result of growth in budget expenditures is practically ignored, although it is clear to everyone that such a link obviously exists in the conditions of underloading of production capacities typical of the modern Russian economy.

It is also clear that a correct analysis of the consequences of accepted economic policy directions should consist, at a minimum, of studying how the volume of final demand expands and in which correspondence this expansion is located with the existing reserves of production capacity. At the macro level, the solution of this task corresponds (albeit far from exhausting it) to calculating the increment multipliers of GDP as a result of an increase in one of its elements (household consumption, expenditures of state and non-profit organizations, gross accumulation).

With all the traditional character of the problem of multiplier, there is an obvious gap between the simplest constructions in the spirit of Wixel-Keynes and the task of calculating it on the basis of actual statistics of national accounts. It may be noted also as well as known modifications of the specified theoretical model also do not allow to fully carry out calculations of an applied nature.

In the late 1990s, In the laboratory of income and consumption forecasting at the Institute of Applied Physics, RAS, a multiplier model was developed [40], which makes it possible to establish links between the functional elements of final demand and the components of the gross value added created in the economy.

These relationships are specified in the form of a system of algebraic equations, the parameters of which are determined on the basis of the structural ratios of intersectoral balance (coefficients of direct costs, wage shares, profits, taxes in the volume of value added in the context of individual industries, etc.), as well as a number of econometric dependencies characterizing the behavior of the population, the policies of enterprises and the state.

On this basis, it is possible to assess the response of the economic system to changes in individual elements of final demand (for example, public expenditure), and also assess the economic impact of this change on individual industries.

The final demand multiplier model is based on a special balance scheme that describes the relationship between the income indicators of individual groups of economic agents and the cost of producing each functional element of final demand (GDP used) [40].

In turn, when building the ratios included in the balance of the gross domestic product, the tools developed in the framework of the “Costs-output” system are widely used. In other words, this model is focused on the use of the
entire array of reporting macroeconomic information contained in the system of national accounts, the “Cost-Output” tables and the balance of monetary incomes and expenditures of the population [40].

In the multiplier model, two types of relationships can be distinguished between the indicators included in it:

1) technological interconnections of industries (economic activities) in the production process and

2) interconnections that determine (across the economy as a whole) the laws of transformation of certain types of income (wages, profits, taxes, etc.) in various types of products that are elements of final demand (i.e., GDP).

The sum of direct and indirect GDP increments gives an idea of the integral macroeconomic effect of the expansion of a specific element of GDP.

Since the industries (types of economic activity) have a different structure of material costs (depending on production technology), as well as a different cost structure of the price of products produced (characterized by the proportion of wages, depreciation, profits, taxes in the price of products), so far taken industry in general will also be different.

In addition, for the production of domestic products always requires a certain amount of imported materials, components, etc. Therefore, an increase in the output of a particular product will be accompanied by an increase in imports required for its release, as well as for the output of products expended in the production of this product, etc. As a result, an increase in the output of a product, even if it directly enters into final use (for example, equipment for a new enterprise), may differ in magnitude from GDP growth. All these points are taken into account in the model.

As mentioned above, the final demand multiplier model used in this dissertation research is based on a special type of balance diagram (GDP balance) described in [40].

The base for calculating the multiplier is the well-known balance sheet representation of gross domestic product (GDP) adopted in the system of national accounts (SNA).

First, GDP at market prices can be represented as the sum of products used for personal consumption of households (C), government consumption (G), gross fixed capital formation and material circulating assets (I), export–import balance (E – U):

\[ Y = C + G + I + (E - U). \] (9.2)

Second, GDP at market prices is the sum of the elements of value added and indirect taxes, which form the income streams of individual economic agents — the population, enterprises, and the state: wages, payroll, net profit of the economy, consumption of fixed capital, indirect taxes on production and
products (more precisely, net taxes on production and products, i.e. taxes less subsidies, but in this case it does not matter):

\[ Y = W + S + R + A + T_{VA}. \]  

(9.3)

Each element of GDP used is the sum of domestically produced and imported products. This is expressed by the following relations:

\[ C = \tilde{C} + U_C = M_C + W_C + S_C + R_C + A_C + T_{VAC} + U_C; \]  

(9.4)

\[ G = \tilde{G} + U_G = M_G + W_G + S_G + R_G + A_G + T_{VAG} + U_G; \]  

(9.5)

\[ I = \tilde{I} + U_I = M_I + W_I + S_I + R_I + A_I + T_{VAI} + U_I; \]  

(9.6)

\[ E = \tilde{E} + U_E = M_E + W_E + S_E + R_E + A_E + T_{VAE}, \]  

(9.7)

where: the sign “~” above the variables means domestic products going to the elements of final demand of the same name;

\( M \) with the corresponding indices denotes the material costs for the production of domestic products entering the elements of final demand;

\( U \) with the corresponding indices — imported products directly entering the elements of final demand.

Based on the input-output reporting table, such a presentation can be obtained on the basis of the sectoral structure of each functional element of GDP, indicators of intermediate consumption and the value-added structure in the sectoral section, import matrix showing its distribution between the elements of the first and second quadrants.

The meaning of the “total costs” indicator of value added is that it takes into account both the direct unit values of wages, profits, consumption of fixed capital, indirect taxes in the value of products of a given industry, and wages, profits, etc. in the cost of intermediate consumption.

Then, knowing the specific structure of sectoral added values, the import matrix and the sectoral structure of the elements of final demand, the latter can be represented (at market prices) as the sum of the total costs of value added and imports as follows:

\[ C = W^i_C + S^i_C + R^i_C + A^i_C + T^i_{VAC} + U_{C1} + U_C; \]  

(9.8)

\[ G = W^i_G + S^i_G + R^i_G + A^i_G + T^i_{VAG} + U_{G1} + U_G; \]  

(9.9)

\[ I = W^i_I + S^i_I + R^i_I + A^i_I + T^i_{VAI} + U_{I1} + U_I; \]  

(9.10)

\[ E = W^i_E + S^i_E + R^i_E + A^i_E + T^i_{VAE} + U_{E1}, \]  

(9.11)

where: \( U_{C1}, U_{G1}, U_{I1}, U_{E1} \) are total import costs for the production of domestic products going to the corresponding elements of final demand.

Thus, the total import costs for a given element of final demand are made up of imported products that directly go into final use and the full import costs
for the production of domestic products. At the same time, the volume and structure of final demand (used GDP) is completely linked to the volume and structure of value added (i.e. income) and import. The calculation of the magnitude of the multiplier is constructed as follows:

\[ C = b_1(W(1 - t_N) + b_2S) + b_3R + C_0; \]  
\[ I = b_4(R(1 - t_R) + A) + b_5T; \]  
\[ G = b_6T + G_0, \]

where:

- \( T_N \) — taxes from the population;
- \( T_R \) — taxes on profits;
- \( T_{VA} \) — indirect taxes (VAT and excise);
- \( b_1 \) — propensity of the population to consume;
- \( b_2 \) — the coefficient characterizing the ratio of the amount of pensions paid and benefits to payroll;
- \( b_3 \) — the share of profit going to personal consumption;
- \( t_N \) — the rate of direct taxes on wages;
- \( C_0 \) — consumption, not directly related to the variation in cash income (conditionally constant part plus subsistence consumption);
- \( b_4 \) — the share of expenses on gross accumulation at the expense of the own funds of enterprises in the amount of profit less taxes and depreciation;
- \( b_5 \) — the share of investments from the state budget and extra-budgetary funds in the total amount of taxes;
- \( b_6 \) — the ratio of the total amount of taxes and consumption expenditures of state and non-profit organizations;
- \( G_0 \) — The amount of government spending not related to the variation of tax revenues;
- \( t_R \) — The rate of income tax.

If in the economy there is an increase in any element of GDP, then it generates an increase in income streams in accordance with the group of relations.

It is given the propensity parameters of the population to consume, the rate of taxation of incomes of the population, the rate of taxation of profits, etc., as well as the share of imports in each element of GDP, which in turn determines the increment of elements of final demand in accordance with the ratios. This increment in final demand causes a further increase in income, which again causes an increment in demand, etc.
It should be noted that due to the lack of assumptions about the possible form and parameters of the export demand function, the increment value of the latter is assumed to be zero, except for the case when it is specified exogenously.

Consider the mathematical scheme for calculating the investment multiplier.

If they are known or, similarly, the multiplier can be calculated for these elements of GDP with a corresponding modification of the system of equations. At the same time, a different structure of the total costs of value added and imports for the production of individual elements of GDP will generate different increments of final demand, i.e. the magnitudes of the multipliers will be different.

It should be noted that the parameters of taxation, labor charges, the share of expenditures on government consumption in the total amount of taxes are regulated and they reflect the economic policy pursued by the state. Therefore, varying them compared to the reporting period allows you to track possible macroeconomic effects associated with changes in this policy.

Anticipating the actual consideration of the results of calculations of the magnitude of the multiplicative effect associated with the expansion of productive investment at the expense of the resources of the Stabilization Fund, it is necessary to briefly describe their initial conditions and prerequisites.

The technological structure of domestic production investments financed by the Stabilization Fund was adopted as follows: 20% of the capital expenditures are machinery and equipment are the products of the machine-building and metal-working industry and 80% for construction and installation works and other capital expenditures, i.e. is a product of the construction industry. During the calculations, it was accepted (as it was mentioned at statement of the multiplier model) that the export volume in the economy is an exogenous value and does not change when other elements of GDP change. Then, in accordance with the above-described scheme for calculating the investment multiplier, the scale of increase in household consumption and government consumption was quantified due to the increase in investment.

The calculations showed that the total value of the investment multiplier, subject to the conditions described above, is 1.73. This means that 1 billion rubles of investments financed by the Stabilization Fund, generates an additional increase in GDP of 0.73 billion rubles.

Accordingly, the use of funds of the Stabilization Fund in the amount of 867.9 billion rubles on the expansion of fixed capital, it ultimately provides an increase in GDP of 1,501.6 billion rubles.
At the same time, the structure of GDP growth, due to the expansion of investment, is the following: an increase in household consumption is 0.77 billion rubles, an increase in government consumption — 0.25 billion rubles.

In accordance with the calculation technology and the adopted prerequisites, the share of imports in investments is maintained at 20% of its total volume; as a result of the expansion of production, there is an increase in the need for imports, which are used as elements of material costs, which, according to calculations, is about 9% per unit of investment growth.

As a result, the increment of investment is 1 billion rubles generates an additional need for imports (in terms of capital investments) in the amount of 0.2 billion rubles, as well as an additional need for the costs of raw materials, materials, components, etc. in 0.09 billion rubles.

In accordance with the above, the use of funds from the Stabilization Fund in the amount of 867.9 billion rubles, as this amount was determined in paragraph 3.5. Household consumption increases by 668.4 billion rubles, government consumption by 217.0 billion rubles, and the increase in import requirements (reducing the increment in GDP) is 251.7 billion rubles.

It should be specially emphasized that this increase in GDP is not the production effect of investment, the scale of which was previously determined through the capital intensity indicator. The multiplicative effect in this case is a quantitative characteristic of the reaction of the economic system to changes in individual elements of final demand. Accordingly, the “full” effect of using the funds of the Stabilization Fund for the purpose of expanding fixed capital is formed as the sum of the production effect (increase in output as a result of expansion of fixed capital) and the multiplier effect.

Changes in the volume of investments entail specific changes in the sectoral structure of the gross output of sectors of the economy, due both to the nature of the technological structure of investments and the specificity of the pricing process in the domestic economy.

The degree of reaction of other sectors of the economy is significantly lower. At the same time, the values of sectoral multipliers for the industries-suppliers of material resources for engineering and construction (ferrous metallurgy, building materials industry) approximately correspond to the levels of multipliers of such industries as food industry, agriculture, housing and utilities services and health care.

Thus, it is legitimate to conclude that in modern conditions the expansion of the scale of investment activity is accompanied by a significant increase in economic activity in industries that are not directly technologically related to the investment complex.
It should be noted that the high values of sectoral multipliers characteristic of trade, transport and the financial intermediation services sector are a direct consequence of the high proportion of transaction services in the value of products of commodity-producing sectors of the domestic economy).

The total value of the gross output multiplier (equal to the sum of the industry multipliers) throughout the economy, including the service industries, generated by the change in the volume of investments.

Accordingly, the use of the funds of the sovereign wealth fund of the Russian Federation to expand investment in the domestic economy gives rise to the impulse to expand production in sectors of the economy, far exceeding in scale the direct increase in the scale of investment.
Chapter 10. Transformation of traditional behavior of global institutional investors

10.1 Patterns of various types of institutional investors

To quantify the investment qualities of institutional investors depending on the fund management strategy, it is necessary to study the typology of investors with whom a certain investment fund works.

At the same time, quality indicators — factors of investment attractiveness of institutional investors such as: the history of the management company, its location, marketing policy and others — we will not take into account.

As is known, the investment attractiveness of the object is determined for different types of investors, taking into account their investment preferences and risk attitudes. Each investor has its own system of preferences, based on the purpose of investment and personal characteristics.

From the point of view of the source of financial resources on the securities market, three groups of investors can be distinguished [6; 19]:

1) population (individuals, i.e. individuals);
2) corporate investors;
3) institutional investors.

As financial intermediaries, institutional investors perform the following important functions for the economy:

1) efficient allocation of financial resources;
2) accumulation of savings;
3) reduction of information costs;
4) reduction of investment control costs;
5) risk diversification.

According to one of the classifications, institutional investors are divided into [16]:

1. Pension funds;
2. Hedge funds;
3. Insurance companies;
4. Investment Trusts;
5. Private investment companies;
6. General funds of bank management;
7. Mutual (investment) trusts;
8. Mutual funds (mutual funds);
9. Endowment Funds;
10. Sovereign Wealth Funds.
In the global structure of assets under management, pension funds, insurance companies, and mutual funds (mutual funds) held the largest share in 2017. Compared to 2012, global assets managed by mainly large institutional investors in 2017 increased by 2 times. They increased by 14% and their total volume amounted to 74.3 trillion. This growth was largely due to the growth of direct investment and high stock market performance. One of the reasons for the increase in this indicator in dollars was also the decline in the value of the dollar relative to a number of other currencies [15].

Global assets of investment funds managed by countries of the world as of the end of 2017:
1. US: 18.9 trillion dollars.
2. Luxembourg: $3.9 trillion.
3. Ireland: $2.2 trillion.
5. France: $1.9 trillion.
6. Australia: $1.6 trillion.
7. United Kingdom: $1.5 trillion.
8. Japan: $1.5 trillion.
10. Brazil: $1.1 trillion.

In the period from 2009 to 2017. The total volume of assets of pension funds in the world as a whole is growing.

Currently, a lot of scientific literature is devoted to one or another issue of the work of institutional investors. The problems associated with the distribution of assets of institutional investors in various investment instruments are mainly dealt with in foreign literature, since the Russian market is still developing, and not all aspects can be applied to it. First of all, it addresses issues related to the optimal ratio of the share of different instruments in the investment portfolio and the use of different asset allocation strategies (K. Schweizer, 2011, and U. F. Sharp, 2007).

Some researchers suggest that professional market participants use the cyclical nature of economic and political processes in the economy when forming an investment fund strategy (A. Greenspan, 2009) and even suggest certain models (P. Krugman, 2003).

In individual works of well-known economists (B. Bernanke, 2002; I. Varyash, 2009; Y. Mirkin, 2005), one can find prerequisites for the formation of logical interrelationships between the stages of development of the financial market in a given country and strategies institutional investors.

An investment fund’s asset strategy is an action plan that identifies priorities in terms of riskiness, profitability and efficiency, assets investment tools,
methods and mechanisms for achieving priorities and a sequence of steps to achieve strategic goals.

The main task of the strategy is to obtain maximum profitability for investors of an investment fund under certain risk parameters (specified in advance) [97].

In the case of the sale of financial instruments that make up the portfolio of an investment fund, the proceeds go to the investment fund.

Dividends, coupon income and other payments of issuers of financial instruments are also credited there. When the investor leaves the investment fund, he is returned the amount of money corresponding to the value of his share in the assets of the fund.

As a special type of financial market participants, investment funds help investors increase the efficiency of their investments and save on costs by creating a wide pool of investors. By combining the investments of a large number of investors, investment funds use the effect of “economies of scale”, that is, reducing various costs of managing financial resources and transaction costs when buying and selling financial instruments and other investment objects.

With the help of institutional investors, minority shareholders receive more favorable conditions for entering the capital market and financial instruments for investment.

So, real estate objects are usually not available for individual minority shareholders, and combining the finances of many minority investors into a single pool in one investment fund allows you to invest in various instruments.

The forms of institutional investors vary depending on the civil legislation of the country of registration [94]. Significant differences can be noted between investment funds that do not have tax benefits, and investment funds registered in offshore jurisdictions, and, accordingly, usually have a simplified regulatory procedure and simplified requirements for financial and tax reporting submitted to state bodies [33].

The institutional structures of institutional investors can be combined in various ways and can include a management company and one or more onshore or offshore institutional investors. An investment fund may have several classes of shareholders; shares may be issued whose owners, for example, have special voting rights, have no voting rights.

Corporate income is often taxed twice. Initially, an investment fund pays a tax on the net profit of the fund, then the fund’s shareholders pay a tax on income from dividends received. Corporations pay up to 35 percent of their net income as income tax. If a corporation earns $100, then tax payments will be 35 percent or $35, which means that investors will receive $65 as dividends.
When a company pays $65 to investors, they pay up to 39.6 percent or $25.74 as federal income tax (for US citizens).

A partnership is a form of organization of an investment fund that does not include taxation of the net profit of the fund. Instead, the net income of an investment fund relates to investor income.

In fact, all income characteristics (short-term gain or loss, long-term gain or loss, tax-free income, treasury income, passive losses, etc.) are retained, but investors are taxed on the basis of the share of each partner in the investment fund.

Offshore investment funds are usually organized in the form of a corporation [36]. The fund is located in a country with preferential tax treatment.

An investment fund may be a mirror structure, calculated for both onshore and offshore investors. A limited partnership receives investments from investors registered in tax zones, and an offshore corporation may attract investments from other jurisdictions. Two funds run simultaneously and have the same shares in the total investment fund.

In practice, it is very difficult to maintain an equal ratio between the capitals of mirror funds. To keep a certain proportion between capital, the positions of funds must change.

Many types of assets cannot be transferred from the balance of one fund to the balance of another. Legislation on futures transactions requires that all transactions be made on an organized market at market prices. If the number of contracts sold does not equal the number of contracts purchased, or if the prices of sales and purchases differ from the average market prices, then the transaction is considered to be not legal.

Many financial instruments and most derivative financial instruments are difficult to transfer from the balance of one fund to the balance of another.

Often the problem of comparing the balance sheets of two mirror funds (offshore and onshore) is solved with the help of complex investment structures. Offshore investors do not want to invest in US-based investment funds due to double taxation. American investors do not want to invest in offshore capital, because it complicates their tax returns [46].

The solution is to create offshore and onshore investment funds, but at the same time all trading operations with securities and other assets will be carried out by an offshore fund.

Managing a successful investment fund is one of the most profitable forms of money management. To organize a new investment fund from scratch, the manager will have to deal with a lot of organizational costs. Below we would like to describe the main items of organizational costs. These items may change depending on the country of registration and location (salary and
rent), number of employees, style of the fund and investment philosophy, as well as other factors [48].

To organize the management company and the investment fund itself, first of all they must be registered. However, it is extremely important to consult with a lawyer and accountant in the early stage of using the fund's assets.

As a rule, a management company is first organized. The structure of the investment fund must be organized before the investment of the general partner of the fund.

Both companies must select a professional lawyer and administrator in order to be able to register. The cost of a lawyer and administrator is almost always lower than the fee for his own lawyer and administrator.

The organizational structure of an offshore fund does not have to comply with the requirements of the tax laws of any country. The organizers of the investment fund must agree with the competent lawyer and accountant three key documents: a partnership agreement, a risk disclosure document, and a subscription agreement. A partnership agreement defines the rights and obligations of each partner, including the conditions for entry and exit from the fund, the right to transfer investments to other partners.

This document establishes the procedure for calculating indicators for reporting, sets the amount of remuneration of the management company and indicative rates of return on an investment fund.

The risk disclosure document replaces the prospectus for the non-public placement of the fund's financial instruments. The purpose of the document is to inform investors of all possible risks that may affect investments [49].

In addition to the subscription agreement, an investment fund requires each investor to provide information about himself (age, contact information, education, current work), information about previous investment experience and financial position (previous experience with private placements, knowledge and sophistication, income, wealth), and affiliation information [53].

To create an investment fund and management company, the founders must determine fixed and variable costs. Revenues will be determined on the basis of capital management fees.

The cost of creating two internal business units (located in the US), including the documents necessary to attract investment, is in the range of 6,000 to 30,000 dollars. Often, the most competent lawyers working in prestigious law firms have experience in creating investment units and know business and legal issues.

As part of this work, the return on asset management of an investment fund is the total return on each asset of an investment fund as a result of its use, which directly depends on the efficiency of use of the assets of the fund as a whole.
The income of the management company of the investment fund is a commission, which usually represents a certain percentage of the total assets and a percentage of the income earned from the use of the assets. The revenues of the management company depend on the size of management fees and incentive premiums.

Typically, the management company receives as a remuneration 1–3 percent of the assets of the investment fund and 10–30 percent of the net income.

Assets under management include own funds and attracted funds of investors. The relationship of these indicators will be described below.

Based on the figure above, an investment fund can reach a break-even point (subject to competitive compensation, and also if the founders are a bargaining staff) at approximately $9 million under management. However, it is more important that investment returns lead to an increase in assets under management.

The ability to apply an investment fund strategy for a certain size of assets under management is called scalability. When the investment fund becomes large enough, incomes begin to decrease, management can return some of the investment to their owners.

The choice of the optimal size of an investment fund cannot be determined on the basis of maximizing the net profit of the management company [58].

When insiders have significant investments in an investment fund, any return of capital to investors affects their interests more than twice. When the income of the management company decreases, incentive premiums also decrease. In addition, investment fund insiders receive lower returns on their investments [58].

Many large owners of capital are looking for young investment funds, because they believe that newly formed funds often provide the highest return on investment for five years.

The situation is much more complicated than it may seem. Based on marketing analysis, it is possible to calculate the most attractive periods for investments in certain investment funds, depending on the investment strategy.

Administration of an onshore investment fund includes all those functions whose performance ensures the operation of the investment fund. Administration includes the following: preparation of trade documents, safekeeping of financial instruments, issuance and supply of financial instruments, receiving money from investors and interaction with investors, marketing, accounting and business management.

Over the years, there have been many judicial precedents for determining in which jurisdiction an investment fund operates. There is a concept of safe secrecy. The fund manager must follow the guidelines of the US Treasury and Tax Court for the main office of the fund to be considered an offshore office.
Some aspects of tax legislation affect the interests of institutional investors. Hedge funds must select a fiscal year. It is convenient to choose a tax year that does not coincide with the calendar one at the beginning. At the end of the year, banks and brokers must publish a balance sheet. In addition, if an investment fund could establish a financial date that does not coincide with the financial calendar of other financial institutions, this would help it to be in a better position to effectively use price anomalies at the end of the year. At a minimum, the fund would be able to raise funds on favorable terms.

Every business must declare particular recognition of income and expenses. In accordance with international financial reporting standards, investment funds should use the accrual method, that is, income or expense should be recognized as soon as there are grounds for recognizing it with reasonable probability.

Meanwhile, the selection of the optimal organization structure for managing an investment fund largely determines the efficiency of business development and the efficiency of management organization.

Writing a business plan is an effective way to organize business processes when creating a new business. The creation of an investment fund and a management company can be carried out by drawing up one general business plan or two separate business plans.

The business plan of an investment fund is significantly different from a business plan for organizations in the industrial or service industry. We would like to show the components of a typical business plan of an investment fund, as well as specific drafting options. And also I would like to note how business plans can help coordinate the interaction between the investment fund and the management company. Usually the structure of a business plan is as follows:

1. Performance Report;
2. Presentation;
3. Overview;
4. Promotion strategy;
5. Market conditions;

The business plan provides a choice of direction for the development of the company [76]. A business plan is particularly important for a new business, which must make strategic decisions and shape the characteristics of the development of the fund. In fact, a business plan is useful for any business, because it helps to solve key strategic issues, plan a development strategy, and respond quickly to changing external conditions.
A business plan can be a means of communicating with investors or partners [73]. For a new business, a plan can be a marketing tool to attract investors, lenders, and potential customers.

For a ready-made business, this may be a formal dialogue between the management of the fund and the board of directors. In the case of the formation of a new business unit, a business plan can help formalize a request for funds from sources of capital.

A brief overview of the company should describe the structure of the business in terms of regulatory legislation. This section should include information about the management of the company, as well as about certain people who should be selected to manage the new structural unit. The overview may contain a description of the rest of the staff in more general definitions, listing the requirements for staff qualifications. If the company has business partners (joint ventures, strategic alliances, etc.), a brief overview may include a description of these partners.

In addition, the business plan should include the following sections [107]. The business plan promotion strategy section of the business plan describes the flow or expected first product of the company [101]. If a product requires a description, this section should include a description at the level of detail necessary to explain key aspects of the product to readers of the plan.

This section should describe research efforts, especially if they affect future products. The market analysis section should describe the microeconomic conditions of the product market. This includes defining the market to focus and excludes related products in a reasonable way. It also includes a description of potential customers for the product, pricing and competition in the market, and a list of risks to companies in this market.

From the point of view of modern management, the main company created is a management company. The investment fund itself is the product that the management company produces. Currently, more and more attention is paid to writing a business plan, the cost of services for drawing up a business plan is also increasing, due to the increasing importance of this tool for organizing an investment business.

A development plan (marketing plan) allows an investment fund to foresee market changes. The best investment funds seek to obtain up-to-date information about investors, market leaders in investments and market conditions, as well as organize the work of individual departments to create a product that meets potential expectations and needs of the client. The basis of this activity is the development of a marketing plan (development plan) and its successful implementation.
Quickly identify new development goals and potential risks to an investment fund are not so much a ready-made development plan, but a process of its creation and planning as a whole. A systematic assessment of market conditions and domestic needs allows you to abstract routine tactical decisions and look at the market holistically.

Virtually each of the existing markets is a complex system consisting of smaller markets and segments. These segments can be divided into even smaller market niches [103].

The lack of a quality development plan leads to an incorrect positioning by the investment fund of its products in certain segments of the market. As a result, it spends serious efforts to find consumers, while not being able to fully meet their needs [105].

As shown in the figure above, the development of a development plan is a complex process, and each step involves a certain structure, thanks to which the plan is transformed from abstract information and abstract ideas into a document of practical value that employees of the investment fund can understand and appreciate.

“The main purpose of the strategic plan is to determine the strategic direction of development, formulate a set of operational objectives, and lay the foundation for the formation of marketing tactics” [108]. This is a very important step in the process of developing a plan, as it requires careful study of market attractiveness and competitive advantages.

It is important to understand that for the effective use of investment fund assets, when distributing assets, it is necessary to consider not only the investment fund development strategy, but also the features of the organizational structure.

For the purposes of our work, investors can be divided into two types: active and passive.

Active investors — investors who form their portfolio based on the market situation at a particular point in time [110]. This type of investors is ready to increase or decrease the share of investment at any time [102]. For example, in a situation of reducing macroeconomic risks, an investor may send his funds placed in bonds to the stock market.

In order to effectively manage investments, an active investor must have complete information about current trends in various markets or use the services of a financial consultant.

Based on the attitude to risk, we can distinguish the corresponding groups of investors:

– *Investors “safe haven”*. Mixed investment funds are most suitable for such investors because they offer an average level of profitability for various macroeconomic conditions and an average level of liquidity risk [106].
– **Speculative investors.** Active investors are most at risk of liquidity of investments; therefore, speculative investment funds will be most suitable for investment.

– **Conservative investors.** For this group of investors, the most important is a stable income and a low level of liquidity risk [109].

Based on this, there are 3 types of institutional investors:

- Growth funds.
- Funds conservation.
- Funds speculation.

Most people consider investing in investment funds as an alternative to investing in foreign currency, real estate and bank deposits. Thus, investor behavior patterns will differ depending on the features selected.

An investment fund in the same way will calculate a management strategy based on goals and objectives.

In our opinion, for institutional investors with a passive strategy, it is advisable to use the following strategy:

1. If the investment horizon is more than 1 year without the condition of early repayment, the investment fund is most preferable to form a growth fund. Equity funds and mixed funds have the highest average returns over the long term. However, the profitability of investing is very dependent on the talent of the asset manager [110].

2. With an investment period of up to 1 year, or with an uncertain investment horizon with moderate income expectations, it is preferable to use a conservation strategy.

For actively managed institutional investors, the management strategy depends on the market trend:

- in a growing market;
- in a falling market;
- in a neutral market.

In a growing market, the most appropriate is the use of speculative management strategies. At the same time, an additional advantage will be the availability of insurance against the actions of the management company, that is, certain obligations to maintain the composition of financial instruments in accordance with a certain guideline. The best guide may be indices.

In the declining market, the most frequently used asset allocation strategy of an investment fund is the investment of reliable debt instruments and commodity derivatives. In such a situation, conservation funds are especially popular.

In addition, many investment funds use a cash-out strategy, that is, they sell part of the fund’s assets, or they completely disband the investment fund.
Especially risky investment funds can use short sales [197]. In a neutral market, speculative trading is the prevailing management strategy. Since there are always markets with different directions for the movement of financial instrument quotes, there is always room for implementation of each of these strategies.

10.2 Behavior model based on global risk attitude and allocative efficiency

The analysis of the dynamics of indicators, as well as their comparison with similar indicators of organizations similar in type of activity, located in similar natural-geographical and economic conditions, makes it possible to evaluate the effectiveness of an investment fund. Any hierarchical control system must provide an active influence on the control object to improve the quality of its indicators.

However, the nature of the object and the subject of management generates a number of dialectical contradictions, as a result of which it is quite difficult to identify a common measure of management efficiency.

The particular characteristics of certain management systems and the conditions for their use of assets are sometimes so different that it seems appropriate to apply different performance criteria to evaluate management systems. Thus, indicators can have both quantitative and qualitative content.

When assessing the effectiveness of an investment fund, the following approaches can be applied:

- logical and managerial approach based on rationalization and optimal performance;
- economic and mathematical approach using models and in-depth calculations;
- financial and economic approach, involving the preparation of financial indicators;
- socio-psychological approach that supports personal-collective signs and factors of work activity.

Of great importance is the determination of the effectiveness of the main elements of the organization of an investment fund: functions, hierarchical structures, technologies. This concerns the internal factors of the management process itself.

Optimally structured, with a minimum number of levels and a small administrative staff, as a rule, has all the chances to improve the ratio between revenues and costs, i.e. to ensure improved management efficiency.

To understand the effectiveness of managing various portfolios of an investment fund, it is advisable to calculate the return on a consolidated
cumulative portfolio. This should be done in accordance with the following principles [36]:

1. All existing portfolios for which the manager receives remuneration and for which he makes decisions should be included in one consolidated portfolio, called composite.

   It is forbidden to include in the consolidated portfolios (composites) of the company portfolios in respect of which the manager does not make decisions.

2. The consolidated portfolio (composite) should include only directly those assets that are managed by the company.

3. Companies are prohibited from attaching artificial or modeled portfolios to real returns.

4. The composite composite portfolio should include all portfolios that meet the definition of a composite aggregate portfolio. It is prohibited to apply any changes to the definition of a consolidated cumulative portfolio in hindsight. A definition of a consolidated cumulative portfolio should be provided upon request.

5. The consolidated portfolio (composite) should include new portfolios in a timely and consistent manner, immediately after the company begins to manage this portfolio.

6. Portfolios that have ceased to exist are included in the historical profitability of the consolidated aggregate portfolio until the end of the last full evaluation period of the investment results during which these portfolios were under management.

7. The historical presentation of the investment results for the portfolio should remain in the original consolidated portfolio (composite).

8. The investment fund establishes requirements for the minimum value of a portfolio's assets for inclusion in a consolidated portfolio (composite).

   An investment fund should provide the following information to investors:
   a) financial results of investing for at least 5 years. An investment fund must annually publish such reports until a 10-year history has accumulated;
   b) annual financial results of investing in the composite composite portfolio for each year.

   At the same time, the benchmark (benchmark) should reflect the investment declaration, goals and investment strategy of the consolidated aggregate portfolio.

   With regard to investment funds, it can be said that the efficiency of the fund depends largely on the efficiency of applying the strategy of using assets (that is, the efficiency of using resources).

   The SFAS 133 standard for determining the effectiveness of hedging strategies identifies three categories of hedged items: fair value of an instrument, cash
flows, and currency risk. The fair value of the instrument involves hedging the price risk of a financial asset or liability.

Cash flow hedges compensate for the variability of cash receipts based on reporting data or forecast data. SFAS 133 describes currency risk hedging separately, fearing the integrity of the entire hedging concept described in the separate SFAS 52 standard.

If a derivative is qualified as “very efficient”, SFAS 133 allows for the reflection of profits and losses related to the revaluation of this instrument, in accordance with the time of their occurrence.

In the case of a cash flow hedge, changes in the fair value of the hedged item and derivatives, related to other comprehensive income are recognized as profit. If a derivative cannot be a hedging instrument, its value changes should relate to quarterly earnings.

Similarly, a hedging specialist can exclude from the calculations any part of a structural financial instrument that you would not want to insure against various risks. For example, if a derivative is priced at a discount to the current spot price and the current spot price is expected to decline as it approaches the expiration date [41], then the company may hedge separately the price risks associated with the spot price change and the separately estimated cost of the hedging item.

In order to reflect the positions on derivative financial instruments when accounting for hedging, the organization must determine the instruments to be hedged, write a strategy for determining the hedging strategy and derivative financial instruments, and prepare a document to assess the expected effectiveness of hedging. The drafting stage of these documents is, in fact, testing the prospects of hedging and is carried out before making a decision on hedging, and then on an ongoing basis. The organization should regularly perform retrospective testing to determine how efficiently the hedging is performed and how much the change in the fair value of the hedged item (or cash flows) is compensated for.

SFAS 133 requires an organization to perform statistical or other experiments to demonstrate the quality of the hedge and its accounting. SFAS 133 does not support any specific testing methodology. The hedging specialist must independently choose the methodology, the measurement period and the frequency of evaluation, and also store statistical information about previous tests.

The effectiveness of the hedging strategy substantially compensates for changes in the fair value (or cash flows) of the hedged items. If a hedged financial instrument is estimated at a fair value of $100,000 and there is some decrease in the value of the asset or liability, what can we define as effective hedging in this situation?
The determination of this quantitative range is subject to subjective judgment. Suppose that we have agreed that a highly effective hedging derivative should compensate for at least 80% of the change in value of this change and at most 125%. Then the allowable range of the derivative value change will be from $80,000 to $125,000. This method of evaluating performance has an additional advantage because it gives a simple idea of the change in the value of derivatives.

Since the total change in value is not zero, there is an element of hedge inefficiency, and it is already included in current income. Thus, even when hedging is considered highly effective, there is not necessarily an impact on the current profit of the organization.

If, for example, the value of the derivative instrument after hedging was $110,000, then hedging itself is very effective, since the change in value falls within the specified range and hedging will affect earnings of $10,000 ($100,000 – $110,000 = –$10,000).

This compensation idea is applied when testing the effectiveness of hedging using the dollar bias method, which is described below.

Also, the answer to this question about the effectiveness of hedging can be given by evaluating the volatility. A widely accepted measure of risk is dispersion. Estimation of variance requires several observations. To evaluate the above example in more detail, suppose that four changes in the fair value of the hedged item [+$100,000 + $40,000 – $120,000, $5000] corresponded to four changes in the fair value of the derivative financial instrument [–$110,000, –$35,000 + $128,000 – $8,000]. Thus the effect of hedging will be [–10,000, +$5,000 + $5,000 – $3,000].

The variance of the change without hedging will be 8.6, and the variance of the income stream including hedging will be 0.07. Hedging eliminated 99% of the variance from changes in the value of a financial instrument. A 99% performance indicator confirms that most experts recognize that this hedging eliminates most of the risks.

The most well-known are three ways to test the effectiveness of hedging forwards, futures contracts and swaps, when the critical points are the minimums or maximums for changes in the value of a derivative instrument and the hedging object are not identical: the dollar shift method, the method of variability of reduction, and the regression method.

The dollar offset method has some historical significance for the accounting profession and compares changes in the fair value of the underlying instrument (or basic cash flow) and derivative.

The method of dollar bias can be used to evaluate the effectiveness of any part of the time period of observations or for the entire period as a whole.
The variability methods of reduction and regression are closely related. The difference is that the first one assumes that the minimization of risks of a derivative instrument is equal and opposite in sign to the risks of the hedged item. The regressive method assumes that it is possible to implement a more effective hedging based on a statistical assessment of the minimum risks of hedging.

The method of variation variability compares the variability of the fair value of the hedged instrument (or cash flows) and the variability of the fair value of the derivative instrument separately. This method gives more weight for large deviations. Based on the analysis of statistics, we consider this method more accurate for different variants of the distribution of price changes.

We use a non-zero mean square deviation, although certain types of inefficiencies are ignored. For example, suppose that the change in the value of a hedged position is always $0.20, D = 0.20.

The estimated time to estimate a indicates the duration of the period during which the change in the value of the hedged item may differ from the change in the value of the derivative asset. In accordance with the idea that the amount of hedged positions should tend to 0.0, the organization should take into account the change in the value of the instruments separately.

Retrospective testing of the effectiveness of the regression method, in essence, gives the same results as testing the effectiveness of the method of variability of the reduction.

For effective hedging, the organization must independently determine the hedging objects and derivatives, targets, time period, the method of testing itself and performance standards. SFAS 133 provides some guidance on how to begin testing.

Retrospective testing and updating of prospective data should be conducted at least once a quarter. At the same time, it should also be carried out each time when the financial result of hedging transactions is recognized.

The information used in retrospective testing includes actual financial results from the moment of hedging and, in addition, may include additional historical data. The testing method used to determine the effectiveness of a hedge should be in accordance with the organization’s risk management policy.

The SFAS 133 standard provides flexibility in terms of observation frequency and observation interval to determine the effectiveness of testing. Some scientists [54] argue that testing should be carried out over the entire time horizon of hedging.

It is more logical to use weekly data. For effective testing, it is necessary to obtain 20–30 independent points of price change for the hedged object for at least 1 year prior to the implementation of the hedging itself. Thus, we...
recommend using several historical points to collect data for a shorter historical period of time. We recommend using monthly and weekly data to test performance at the annual hedge interval.

As we indicated earlier, SFAS 133 does not specify quantitative indicators to determine which hedging is poorly effective, which is ineffective, and for which the term highly effective hedging can be used.

SFAS 133 does not indicate that highly effective hedging should be in accordance with Standard 80/125. This standard is only recommended by scientists to determine the effectiveness of using the method of dollar bias and the method of regression. In the first case, the standard means that the cumulative changes in the value of derivatives should compensate for 80 to 125 percent of the cumulative change in the fair value (or cash flows) of the hedged item [55].

In the second case, this means that the regression of changes in the value of the hedged item from the change in value of the derivative financial instrument must be at least 80 percent of the initial value.

In our opinion, the dollar offset method is quite effective when using Standard 80/125. But each organization using this method should remember that test statistics are sensitive to observations with small changes in price. In this regard, the method of dollar bias determines a rather high percentage of all hedging operations as not very effective, even if the confidence level approaches 98%. This, of course, a serious drawback.

At the same time, methods of variability of reduction and reduction evaluate the effectiveness in terms of reducing risks. In the case where changes in the value of the derivative are close to changes in the value of the hedged item, the difference between these two methods is not significant. In the opposite case — the regression method will show a higher hedging efficiency.

This chapter describes the types of institutional investors. The aspects of modern portfolio theory are described in relation to the formation and use of assets, as well as the ways of evaluating the effectiveness of using the assets of institutional investors, affecting the strategy of using assets in relation to various types of institutional investors.

Considering the global experience of using the assets of institutional investors, taking into account the use of various organizational models and development plans, we can say that for each group of factors, attention should be paid to various aspects of the use of assets.

Considering that the global economic crisis has changed the attitude to many aspects of asset use and proved the need for professional risk management in organizations related to investment and financial activities, in the next
chapter I would like to explore aspects of using assets at different stages of the life cycle of an investment fund and assess their impact on efficiency.

In addition, the theoretical foundations of the use of assets and the existing scientific methods of evaluating the efficiency of using the assets of investment funds at different stages of the organization’s life cycle were adapted to the current state of the economy.
Chapter 11. Behavior models of Russian investment funds

11.1 Key features of the behavior of Russian stock funds

Brazil, Russia, India and China were supposed to be pockets of new economic growth, but the recent financial crisis in China (July and August 2015) and the problems in the Russian economy contributed to a shift that occurred faster than expected. In this context, a weak strategy of active management, limited by behavioral biases, will be more obvious.

The links between these prejudices and the activities of funds are identified with fund managers, who not only are mistaken, but also make big bets on risky assets without producing significant excess returns over stock indices [257].

To study the relationship between fund behavior and strategy effectiveness, we compare asset selection skills by managers [252].

The results show that Russian and BRIC funds in general often do not tend to follow domestic stock indexes [261]. As a result, they do not produce significant excess returns over the corresponding indices [269].

This study focused on two targets: the relationship between performance measurement and the concentration of the fund’s investment strategies on local risk factors and behavioral considerations.

In the past decade, starting with the global financial crisis of 2007–2008, emerging markets have attracted considerable attention from analysts and investors, as a new asset class in a portfolio.

It is important to understand the various economic and political characteristics demonstrated by Russia and other BRICS countries. Brazilians and Russians live in urban areas and above all are economies based on natural resources.

On the other hand, Chinese and Indians live mostly in rural areas, and their capital markets are more difficult to enter because they are controlled by the state. Their economy is based on the domestic industrialization of export markets.

Ateil (2010) confirmed that the concept of BRIC countries as an alternative investment class is controversial.

It was expected that these countries would create an economic miracle, but they must still overcome structural problems.

Since 2001, gross domestic product per capita has increased annually from 2.6 percent in Brazil to 10 percent in China.

In a report, Goldman Sachs (2010) explained the key economic power of the BRIC countries, which clarified the fact that the BRIC countries had significant economic advantages in 2010. They will act as key growth drivers for decades.
Alui, Aissa, and Nguyen (2011) reviewed the magnitude of the past global crisis and its infectious consequences by analyzing the dependencies of some selected emerging markets. Their results, using data on daily returns, indicate a different dependence of the BRIC markets and US markets.

However, as far as we know, explicit behavioral interpretations of active fund management regarding whether portfolio concentration is related to performance in BRIC markets are rarely studied.

The financial crisis of recent years has shown how, in such a short period of time, financial and economic problems have reached all corners of the world. Many practitioners claim that the worst financial period followed Lehman Brothers bankruptcy in the United States in September 2008. This crisis has also hit the emerging markets hard. Gurdjieff and Truek (2016) have shown the interdependence between the BRIC economies and developed economies in terms of market volatility.

VIX has a significant negative correlation at the level of 1–5% with the yield of indices of Brazil, Russia and China and at the level of 10% with the index of India [290]. This leads to the conclusion that BRIC markets cannot be considered as a hedge against volatility in global markets.

We are expanding the results of active management strategies in relation to the BRIC markets. Attention will also be paid to behavioral biases, while emphasizing the possible presence of overconfidence [280].

Warren Buffett (2016) notes that “diversification is a defense against ignorance. It does not make sense for those who know what they are doing”.

We can argue that the right balance between diversification and craftsmanship also depends on the ability of the investor to accept and diversify risk. The concept of activity in asset management describes the difference between the profitability of a managed portfolio and the yield of a base portfolio.

Active management is the virtue of qualified professional managers who are trying to get ahead of the market. These managers buy or sell securities, pursuing an excellent combination of risk and profit [285].

Active managers state that asset classes are selected through active selection and use, for example, market time, sector rotation, or country.

The goal in accordance with the selected criteria is to ensure that in the short term investment decisions of the investor will not cause problems in achieving the planned result and allow to achieve an optimal result in the long term.

Active portfolio management received a big boost after research by Greenold and Kahn (2000). They argue that the information ratio of the portfolio is a product of the fund manager’s skill in asset selection and strategy scalability [275].
In this context, skill is measured by the correlation between the expected profit of the manager and the achieved values, and scalability is the square root of the number of independent positions in the portfolio.

Thus, investors can achieve the same value of the target information ratio. The correct compromise between skill and breadth is one of the reasons for obtaining high returns in a portfolio.

We assume that active income is earned through skill. It is easier to maintain the same ratio of information, focusing on latitude. Active managers try a large number of areas of investment and thus justify a high return and their fees for active management, without having any outstanding skills.

Clark de Silva and Torley (2002) introduced the concept of “coefficient of transfer” to take into account the constraints that active managers face in implementing an investment strategy [255].

To be precise, the transfer coefficient is the correlation coefficient between the active weights and the predicted return, equal to one with no limitations in the construction of the portfolio. The analyst should know the benchmarks for expected returns [245].

Kremers (2009) proposed a measure called active share, which offers an estimate of the level of active management used by managers [225]. There is a simple rule: the funds with the highest active share are ahead of the basic indices both before and after the costs, while the funds with the lowest measure do not surpass their benchmarks [222].

Modern portfolio theory, in a rational context, argues that investors have to reduce the risk of their portfolios.

These strategies are based on active managerial skills that may have informational advantages in specific sectors.

Researchers Nanda and Wong (2004) believe that 80% of mutual funds are members of fund investment structures, claiming that these funds follow more targeted investment strategies because of their informational advantages. These authors find a strong positive effect from the star performer, also because these funds attract money to other family funds.

Gengh (2005) analyzed the relationship between concentration and efficiency of active US funds from 1984 to 1999 and found that more concentrated portfolios performed better than well-diversified portfolios [269].

Bucks, Busse, and Green (2006) show a positive relationship between the activities of a mutual fund and the willingness of managers to take high risks in a relatively small number of stocks.

They concluded that it is profitable to invest in these concentrated funds instead of diversified mutual funds.
Derval (2011) compared concentrated funds with diversified funds [274]. They concluded that the relationship between portfolio concentration and performance is determined by the breadth of the fund’s strategies. In their research based on a set of data on global equity funds, they showed that concentrated funds with higher levels of tracking errors and latitude got the best result.

Amikhud and Goenko (2013) showed that the effectiveness of the fund can be predicted using the R-square values calculated by its yield regression using a multifactor reference model [277]. Low R-squares indicate greater selectivity and are positively related to the size of the stock.

The economy uses interdisciplinary features, using developments in the field of sociology and psychology, to explain the economic behavior of individual agents and entire markets.

Self-confidence is a well-known bias, when a person shows high confidence in his judgment, for example, in pessimism, therefore, probable errors are justified by the difference between accuracy and probability.

In other cases, overconfidence can be defined as a particular form of improper calibration [278].

In finance, some puzzles that are not explained by standard economic theory are fully justified by the confidence of investors. These situations lead to errors in the valuation of securities, excessive trading volumes and the effect of disposition or propensity to sell profitable assets and keep unprofitable assets. In behavioral finance, overconfidence is often interpreted in the following ways:

a) investors overestimate the accuracy of their information;
b) investors underestimate risk.

Finance studies use both dimensions, explicitly or indirectly, to create predictions about the effect of individual self-confidence on economic decisions.

Scala (2008) notes that these two dimensions are often confused and are simply called “overconfidence” in the financial literature.

The main applications of self-confidence in modern finance from the point of view of financial markets and corporate behavior are analyzed. This crude definition of overconfidence, as a form of improper calibration, began in the 1990s. Since then, self-confidence has also become a field of interest for economists, mainly in the context of behavior in financial markets.

The potential presence of self-confidence in the markets and its preservation in the long run stimulated the ongoing discussion of the well-established idea of efficient markets and the rationality of economic agents.

The presence of self-confidence in financial markets is demonstrated experimentally in various conditions. Self-confidence of financial experts, including professional traders and investment bankers, is higher than that of
students in various experimental tasks (taken from the field of finance) developed by Glaser and Weber (2005).

In the models of behavioral financing analyzed below, self-confidence is often interpreted as any of these conditions: investors overestimate the accuracy of their information (sometimes, more precisely, overestimate private signals and underestimate government) and/or investors underestimate risk, which, for example, causes them to keep riskier portfolios [284].

Assuming the existence of such (and similar) aspects of self-confidence, they are analyzed as their impact on financial markets, including: excessive trading volumes, trading profitability, short-term and long-term asset valuations, and stock returns. Also, various scenarios are often modeled, confirming the retention of excessive confidence in the market.

One (1998) suggests that traders, insiders and market makers may unconsciously overestimate the accuracy of their information and rely on it more than justifiably, while traders show better than average effect, evaluating their information better. Such self-confident market participants cause an increase in trading volume.

Benos (1998) showed the same results in his model of the auction market with informed traders, where again the participation of risk-neutral investors, overestimating the accuracy of their information, leads to an increase in trading volume.

Overconfidence can also lead to increased market depth and volatility, as Benos (1998) wrote.

On the other hand, Odin (2001) assumes that self-confident traders tend to get lower profits because they increase both trading volume and volatility, which in turn adversely affects their trading results.

Discussions are currently ongoing regarding the sources of self-confidence, its dynamic or stable nature, and depending on the context of the study.

On the one hand, there is evidence that focusing on local risk factors can be seen as a symptom of management skills, especially with regard to the ability to make the best use of the information sets available at that time.

Indeed, qualified fund managers could have informational advantages in specific sectors and benefit from them in order to achieve better results, keeping more concentrated portfolios and choosing profitable stocks in specific sectors.

On the other hand, we could consider the lack of diversification in portfolios as a form of possible managerial self-confidence [285].

For example, some small and unqualified fund managers may be tempted to take on very large random risks and become a highly efficient fund.
This reassessment of their skills leads to investment in specific risk factors. This can lead to large losses or even simply disappointing results, as it seems in our case, when we do not find a statistically significant result in terms of excessive performance.

It is worth mentioning some of the definitions associated with activism and over-influence that have been used here.

To examine the relationship between bias and activity, we measure the choice of asset managers, managers of local funds, against global fund managers.

The idea is that local information can be used with an active local manager management strategy.

Our data set consists of weekly Russian stock quotes for the period from 2012–2017.

\[ r_{it} = \alpha + \beta x_{it} + \gamma g_{it} + \epsilon_{it}, \]  \hspace{1cm} (11.1)

where: \( r_{it} \) is the profitability of the \( Iti \) fund at the moment of time \( t \);
\( x_{it} \) is the local index yield with respect to time \( t \);
\( g_{it} \) is the global index yield with respect to time \( t \);
\( \epsilon_{it} \) is the imaginary variable.

The advantage of this approach is how the question of bias in relation to survival is solved [235]. This format makes it difficult to combine and then apply an approach based on the data from the corresponding panel [247].

In addition to the lowest quantile, the value of the local MICEX index in explaining the effectiveness of the fund is again confirmed.

The upper quantile shows a very subtle difference with respect to Russian obligations on the local index, but in general, Russian funds are less committed to the yield benchmark in the form of the MICEX index than their foreign counterparts [242].

To better understand the asset allocation strategies of local and global managers, we compare the factors that determine the composition of their portfolios. Factors are based on the classification of the industry/sector data flow.

Our goal is to compare the factors for local and non-local managers.

To better understand the asset allocation strategies of local and foreign funds, we compare the factor that determines their portfolios [245]. Factors are based on the industry/sector classification in the Datastream system (table 11.1).

The analysis shows that the local index is a guideline for fund returns, while the global index is rarely the key to explaining the effectiveness of the fund. In some cases, the global index is statistically significant for global funds investing in the BRICS economies as a form of diversification [247].
Table 11.1. — The main factors of price movements in the Russian stock market for local (left column) and foreign funds (right column)

<table>
<thead>
<tr>
<th></th>
<th>Est.</th>
<th>StdE</th>
<th>t</th>
<th>Sig</th>
<th></th>
<th>Est.</th>
<th>StdE</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.00</td>
<td>0.00</td>
<td>3.97</td>
<td>***</td>
<td>PIPELRS</td>
<td>0.03</td>
<td>0.01</td>
<td>3.38</td>
<td>***</td>
</tr>
<tr>
<td>FINSVRS</td>
<td>0.03</td>
<td>0.00</td>
<td>5.55</td>
<td>***</td>
<td>TELFLRS</td>
<td>0.10</td>
<td>0.02</td>
<td>4.48</td>
<td>***</td>
</tr>
<tr>
<td>OILGRS</td>
<td>0.06</td>
<td>0.02</td>
<td>3.47</td>
<td>***</td>
<td>OILGSRS</td>
<td>0.14</td>
<td>0.03</td>
<td>4.64</td>
<td>***</td>
</tr>
<tr>
<td>TELFLRS</td>
<td>0.08</td>
<td>0.02</td>
<td>5.01</td>
<td>***</td>
<td>CHMCLRS</td>
<td>0.27</td>
<td>0.06</td>
<td>4.34</td>
<td>***</td>
</tr>
<tr>
<td>CHMCLRS</td>
<td>0.15</td>
<td>0.02</td>
<td>7.34</td>
<td>***</td>
<td>INDUSRS</td>
<td>0.35</td>
<td>0.05</td>
<td>7.71</td>
<td>***</td>
</tr>
<tr>
<td>INDUSRS</td>
<td>0.26</td>
<td>0.04</td>
<td>6.90</td>
<td>***</td>
<td>TELMBRS</td>
<td>0.51</td>
<td>0.07</td>
<td>7.63</td>
<td>***</td>
</tr>
<tr>
<td>CNVELRS</td>
<td>0.40</td>
<td>0.10</td>
<td>4.11</td>
<td>***</td>
<td>FDRGRRS</td>
<td>1.40</td>
<td>0.28</td>
<td>4.97</td>
<td>***</td>
</tr>
<tr>
<td>TELMBRS</td>
<td>0.41</td>
<td>0.05</td>
<td>8.88</td>
<td>***</td>
<td>TRLESRS</td>
<td>1079.16</td>
<td>162.23</td>
<td>6.65</td>
<td>***</td>
</tr>
<tr>
<td>BRESRRS</td>
<td>0.58</td>
<td>0.08</td>
<td>7.51</td>
<td>***</td>
<td>INDEXCF</td>
<td>0.05</td>
<td>0.02</td>
<td>2.68</td>
<td>**</td>
</tr>
<tr>
<td>FDRGRRS</td>
<td>1.34</td>
<td>0.22</td>
<td>6.03</td>
<td>***</td>
<td>BRESRRS</td>
<td>0.73</td>
<td>0.24</td>
<td>3.04</td>
<td>**</td>
</tr>
</tbody>
</table>

Source: Thomson Reuters

In this case, funds from different countries demonstrate different behaviors. The distribution structure of investments of Russian funds in relation to the Russian MICEX index is very similar to foreign managers investing in Russia, but Russians are a bit less focused on domestic assets, with the exception of the funds of the first profit quantile [216].

– the fund is located in the country of investment;
– the fund applies a geofocus strategy;
– fund manager lives in the country of investment;
– fund manager does not live in the country of investment.

Russian fund managers received better returns than their foreign counterparts without producing a statistically significant alpha coefficient.

Comparing indicators with the distribution of assets, we see that Chinese investments have a home bias.

From this point of view, these results can also prove the effect of prejudice. Because global fund managers are too sure that they have local information.

As for the sectors defining portfolios of funds, we observe that local and global fund managers show non-overlapping ratings [209].

Finally, when using a risk-adjusted productivity index (Sortino-Satchel), local managers seem to make better use of inside information, better assessing local risks. This is true for all the BRICS countries, with the exception of China.

In the domestic scientific financial literature there are a number of publications on the behavior of institutional investors in Russia, for example, the monograph of A. Abramov “Investment Funds: Profitability and Risks, Portfolio
Management Strategies, Investment Objects in Russia” . This relevant work, published in 2005, describes the situation in the field of institutional investors in the early 2000s of the third millennium.

At the same time, the global liquidity crisis, which began in 2008, markedly changed the attitude towards the performance of institutional investors and liquidity risks in general. In this paper, many provisions are supplemented and new results are obtained from the point of view of scientific novelty.

For example, the works (A. E. Abramov, 2002; V.D. Milovidov, 2006) set forth in sufficient detail the investment strategies used by Russian investment funds, among which the strategies for the investment object, terms, currency and average funds required to implement the strategy [169].

The most developed in Russia were mutual investment funds, general funds of banking management and mortgage cover funds, which are investment funds of a contractual type, which are not legal entities [189].

The property constituting a mutual investment fund is transferred to the trust management of a specialized management company on the basis of a trust management agreement, in accordance with civil law. The management company carries out trust management of the mutual investment fund by performing any legal and actual actions in respect of its constituent property, and also exercises all the rights certified by the securities that make up the mutual investment fund [4; 5].

Joining of legal entities and individuals to the trust management agreement of a mutual investment fund is carried out by purchasing investment shares of this mutual investment fund [3].

A stock of an investment fund or share is a security that confirms the right of its owner to a share in the property constituting an investment fund, and also gives him the right to demand from the management company competent trust management of the investment fund and to receive monetary compensation at the end of the trust agreement concluded by the investment a fund with all owners of investment units or shares of an investment fund [1; 2].

Investment units are not issued securities, therefore in the legislation on investment funds the term “issuer” in relation to investment units, as well as in the bill of exchange legislation in relation to the process of issuing a bill of exchange, does not apply. However, the definition of a mutual fund emphasizes that investment units are issued by its management company.

2012–2017 cannot be called successful for the collective investment market. Russian investment funds showed a return below the level of interest rates on bank deposits, less than a third of those who fell into the estimated aggregate could outrun inflation.
Recently, the trend has begun to progress towards returning institutional investors to Russian jurisdictions, which indicates an improvement in the investment climate.

Investment funds start from the beginning of 2012 began to systematically get rid of the shares of Russian companies. The following fact even becomes noticeable: some funds draw up a return of funds to investors, while, of course, a renegotiation of the contract with foreign investment funds, which, in fact, are managed by the same persons, may occur [180].

In 2012, the situation associated with the development of the European debt crisis, an increase in the US budget deficit, which would cause infrastructural problems and problems of regulating the exchange rate of the Russian currency, was constantly injected.

Earlier, many investment experts wrote about the risks of the Russian economy for a potential investor. In Russia, it has become more difficult to earn compared to other countries [280]. The most successful participants in the investment market are ETF funds that use modern asset allocation mechanisms.

The traditional fund no longer looks preferable and today investors are avoiding such investments, since these market participants do not earn additional profits to investors and take high management fees.

The trend of outflow of funds from the Russian market continues. Thus, the current state of the market of institutional investors in 2017 in Russia was at a fairly good level compared with the investment funds of other countries, while Russia's accession to the WTO may carry certain risks [260]. At the end of this chapter, we will provide an assessment of the asset efficiency of institutional investors and suggest ways to improve it. To do this, you first need to consider the typology of investors institutional investors in general.

### Table 11.2. — Inflow/outflow of funds into Russian funds from 12/30/2016 to 12/29/2017, rub.

<table>
<thead>
<tr>
<th>Type of fund</th>
<th>Opened</th>
<th>Interval</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock</td>
<td>10,268,881,695</td>
<td>−698,576.5236</td>
<td>10,268,183,119</td>
</tr>
<tr>
<td>Mixed</td>
<td>−2,456,262,066</td>
<td>−2,421,687,839</td>
<td>−4,877,949,905</td>
</tr>
<tr>
<td>Index</td>
<td>−1,180,821,238</td>
<td>−</td>
<td>−1,180,821,238</td>
</tr>
<tr>
<td>Money</td>
<td>−151,776,611.7</td>
<td>−</td>
<td>−151,776,611.7</td>
</tr>
<tr>
<td>Funds'</td>
<td>1,882,087,712</td>
<td>28,185,651.72</td>
<td>1,910,273,364</td>
</tr>
<tr>
<td>Commodity market</td>
<td>−</td>
<td>−24,683,677.26</td>
<td>−24,683,677.26</td>
</tr>
<tr>
<td>Total</td>
<td>−939,767,289.9</td>
<td>−3,691,603,814</td>
<td>−4,631,371,104</td>
</tr>
</tbody>
</table>

*Source: National League of Asset Managers*
Incomes of investment funds are stably preserved over many years of time [262]. Moreover, consumer and fund manager behavior plays a big role in explaining these long-term behaviors because individual investors invest heavily in the winning funds of the past year. Successful fund managers are investing new assets in a growth momentum to keep ahead of other funds over the next two years.

In contrast, managers losing money are reluctant to sell their losing assets to finance the purchase of new impulse assets.

Thus, the history of fund management affects a much longer period than indicated in previous studies. Even more surprising is that the constancy of the return on the fund is not fully explained by the impulse. We find strong evidence that the purchase of growth-oriented assets is pushing up asset prices.

Cross-regressions indicate that the return on investment funds is related to the inflow of funds, and not to past performance, calling into question previous conclusions about the influence of the managerial talent of the manager in asset allocation. The imitation strategy of successful investment funds proves its effectiveness.

Several million private individuals currently have investments in Russian mutual funds. While some individual investors believe in the merits of active management in general, the other part adheres to even stronger beliefs regarding passive strategies. Among actively managed funds, there are those who can outpace the market over a long period of time [168].

Tiwari (2002) finds evidence that, at the level of net profit, the effect of “smart money” (when the same funds regularly beat the index) can be explained by market momentum, and not by the manager’s talent. While Theo and Wu (2001) found evidence of a high inflow of funds over many years of time in the same funds.

Chen (1999) believes that assets are most actively purchased at the expense of those funds, which show unsuccessful results for the current year. The data on the profitability of Russian funds make it possible to study the role of consumer inflow and the behavior of the fund manager in the fund’s activities. In particular, we decompose the profits and costs of each investment fund into categories:

1) managerial skills in allocating a portfolio;
2) profitability and type of assets;
3) trade expenses;
4) operating expenses;
5) expenses to secure payments to investors.

Together, these data allow us to study the relationship between models of the behavior of investment funds.
In the related work, Sirri and Tufano (1998) believe that consumer flows react about as strongly as annual returns relative to any other characteristic of the fund. In addition, the Lynch model (2002) predicts that profitability is repeated among the winners (but not losers), while the Burke and Green model (2002) does not predict any consistency between the cash flows of the funds and the manager’s talent.

While other ways of sorting funds are being undertaken, a lot of attention has recently been paid to the problem of the perceived insufficiency of actively managed funds.

The top 5% of all Russian funds in terms of profitability over the past 6 years are ahead of the MICEX index on average by 7–9% over the next year. As shown by Carhart (1997), successful funds hold winning assets that provide impulse revenue.

However, we expose another strong influence on the consumer response of the fund’s profitability, and the resulting behavior of managers. As the work of Sirri and Tufano (1998) showed, investors invest in funds that have high yields from previous years.

Unsuccessful funds reluctantly sell their assets at a loss [258]. This evidence is consistent with the findings of Greenblatt and Hahn (2002) that mutual fund managers can play a role in this effect.

This part of the work presents convincing evidence that new purchases of investors are pushing up the prices of assets. Cross-sectional regressions show that the effectiveness of the fund (adjusted for size) strongly correlates with simultaneous and past flows, while not related to the previous level of profitability [238].

These results also cast doubt on the idea of growing skills among fund managers, as Wermers (1997) wrote. Finally, we find a strong reputation effect in the behavior of investors, especially for growth-oriented funds.

Successful managers, for the most part, use their new funds to buy larger amounts of assets.

Thus, it is interesting that successful managers also demonstrate the effect of the disposition. They continue to disproportionately invest new cash in the same assets during the second and third year.

This effect of reputation in the behavior of funds explains why the effect of smart money is not fully realized.

However, it should be noted that these permanent inflows also have a negative impact on net income. This result is consistent with the model of Burke and Green (2002), where money is strongly chasing performance. However, our results suggest that constant returns may be associated with cash flows [228].
In this study, we use several measures that quantify the ability of an investment fund manager to choose assets.

The model of investment fund behavior can be assessed using the following indicators:

1. The weighted average return on assets currently in the portfolio.
2. The weighted average yield of management portfolios with the same characteristics [248].
3. Time series of average profitability of portfolios having the same characteristics [240].
4. Operating expenses incurred by the fund.
5. The ratio of costs to profitability [140].
6. The excess of the net return of the investment fund over the benchmark.

It is important to estimate the cost of maintaining the investment fund for each quarter.

Data on the ratio of costs and net profit obtained directly from the database of Thomson Reuters. We use a regression rate of return to adjust net profit [149].

The first component of investment fund performance indicators is called the portfolio allocation effect and is calculated by the formula (11.2):

\[ \text{Portfolio Allocation Effect} = \sum \left( \frac{r_t - \alpha_t}{\text{Weight}_j} \right) \]

where \( r_t \) is the portfolio yield in the current quarter with the number of assets \( N \) and weight \( j \), \( \alpha_t \) is the portfolio yield in the previous quarter with the number of assets \( N \) and weight \( j \), \( r_t \) is the quarterly yield of the portfolio asset \( t \) and the weight \( j \), and \( \alpha_t \) is the previous quarterly return of the asset of the reference portfolio \( t \) and weight \( j \).

In addition, our study examines the role of timing for the purchase or sale of investment fund assets in terms of fund performance. In particular, more recent studies (Greenblatt, 1995) show that the majority of successful investment funds use the impetus of sharp price movements in the markets to buy or sell assets.

\[ \text{Timing Effect} = \sum \left( \frac{\Delta r_t}{\text{Weight}_j} \right) \]

where \( \Delta r_t \) is the portfolio yield in the current quarter with the number of assets \( N \) and weight \( j \), \( \Delta r_t \) is the portfolio yield in the previous quarter with the number of assets \( N \) and weight \( j \), \( \Delta r_t \) is the quarterly yield of the portfolio asset \( t \) and the weight \( j \), and \( \Delta r_t \) is the previous quarterly return of the asset of the reference portfolio \( t \) and weight \( j \).

This formula shows that the fund manager is increasing the weights of assets in the fund portfolio for which anomalously high yield has recently been observed, or the fund managers for asset weights in the fund portfolio for which anomalously low yield has recently been observed.
This approach shows the stability of the portfolio’s asset structure, taking into account trading costs. If the stability of the asset structure is not typical for a portfolio at this level, then you can eliminate the manager’s talent and look for other reasons for stability (for example, low operating expenses) profitability [152].

Then we compare the current yield of the fund with the highest and the lowest value in previous years and determine whether this return can be maintained.

Our ranking procedure is as follows. We rank all domestic investment funds for which there is continuous reporting for the period from December 31, 2012 to December 31, 2017 by their annual gross yield [256].

Although this hypothetical portfolio only provides an estimate of the actual portfolio structure, we believe that using hypothetical portfolio weights reduces profitability, which we could find between winning funds and losing funds [258].

Funds with a higher level of asset turnover usually generate more extreme returns (both positive and negative) during a calendar year.

Thus, the use of hypothetical holdings reduces the difference in profitability during a given year between the funds with the highest level of profitability and the funds with the lowest level of profitability in previous years. A full description of the limitations of ownership data is available in Wermers (1999).

In particular, the purchase of the best assets of the past year clearly contributes to the high returns of such assets in the current year. The Lynch and Place model (2002) predicts that profitability tends to be repeated among winning funds (but not losers), while Burke and Green (2002) does not predict any consistency because consumer flows have a stronger effect on profitability than managerial talent.

As a result of our analysis, it can be seen that consumer flows to win-win funds play a large role in maintaining a stable fund return, as Burke and Green predicted (2002).

Some results stand out, the winning funds have a lower ratio of capitalization and past value of return on assets.

This approach takes into account reinvested capital gains and dividends as cash inflows. It is noteworthy that all these higher load ratios are consistent with the winning funds owning assets with higher expected returns than the losing funds.

Thus, while the majority of Russian funds use momentum to add new stocks to the portfolio, it is important that the winning funds implement these strategies to a greater extent than the losing funds.

Further understanding of the behavior of funds is achieved by looking at the large differences in the cash flows of the winning funds of the current year and past years.
It should be noted that the increase in assets in the portfolio over the previous years provides a buffer, so such funds usually buy more assets than they sell, even in the absence of inflows.

We study the consumer response to short-term cash flows for portfolios with the highest and lowest net returns in three months. Funds usually pay more attention to portfolio returns during the first year of investment.

Next, we analyze the return on assets in the portfolio of mutual investment funds. This expansion helps us understand whether fund managers have talent in finding assets that beat other assets with similar characteristics.

The results show that the funds with the highest net profit over the previous year show significant indicators of asset allocation efficiency. Approximately 5% of Russian funds can successfully pick up assets over a period of 6 years compared with the MICEX index.

Thus, the conclusions of this section point to two different aspects of the behavior of Russian investment funds, which explain the efficiency of asset allocation. First, the increase in the share of growing securities in the portfolio structure during the impulse of growth of the market as a whole. Secondly, the choice of time to change the structure of the portfolio of the fund.

Our results are inconsistent with the findings of Carhart (1997), who believes that worse-performing funds have much higher operating expenses than better-performing funds [158].

For example, Edelen (1999) shows how the inflow and outflow of a fund’s assets negatively affect a fund’s return. Edelen shows that funds invest large sums of cash when they expect the market to be abnormally high.

Past studies show that managers of growth-oriented funds have the best asset allocation skills. For example, Wermers (2000) found that the influx of consumers into mutual funds is most sensitive to income for the year.

The average cash flows to the Russian funds are distributed between winners and losers as before and amount to 2–4% per annum during the first four years after the rating year.

Consumer flows to winners remain much higher than flows to losers over this four-year period. There is a strong reputational effect among winning and losing funds.

The winning funds outperform the losing funds by only a few percent a year for a period of 3–4 years following the evaluation period [159].

This indicates that talented managers are concentrated in growth funds. Growth funds are also more likely to use impulse strategies [153].

The fund manager often buys the most profitable shares of the last year, but in small quantities (in proportion to the total value of the portfolio).
These measures, adjusted for turnover, add additional information on the behavior of investment funds.

Thus, successful funds have the opportunity for a higher level of variation in behavior when buying new assets in a portfolio or increasing current shares.

As a result, managers of successful funds most often change their behavior during the current or next year after demonstrating high rates of return [150].

Thus, impulse strategies are mainly implemented through the purchase of new stocks with much higher past returns. As a result, in the behavior of investment funds there is a tendency that successful fund managers usually implement impulse strategies, buying the most profitable assets in the past.

Constant cash flows to successful funds for 4 years after entering the top 5% of funds show that investors are attracted as a result of the reputation effect, which persists for a long time after the increased yield [250].

The continued flow of funds into growth-oriented funds indicates that the price of earning assets will usually rise over several years. Assets acquired by funds affect the flow of funds to these funds.

Wermers (2000) suggested that it is possible to study fund managers and find evidence of the effectiveness of the behavior of the most employees of the fund. Often, fund managers hold assets outside the fund during a period when the benchmarks are not met. Assets acquired at the expense of 5% of the best funds usually grow in value as a result of large cash inflows.

Thus, the purchase of a new asset position by the manager of a winning fund is likely to be a much stronger signal than adding large amounts of asset to an existing position [257].

Overall, we find that winning funds demonstrate strong performance indicators in future investment decisions. However, it is still unclear whether the manager’s talent affects stock prices.

To separate the influence of flows associated with the talent of a fund manager, we first sort the funds by their annual net return [252].

Neither the manager's talent nor the flows explain the specifics of the behavior of fund managers to initiate new positions of assets that have surpassed benchmarks [233].

The profitability of Russian funds depends to a large extent on the cash flows of the largest funds, which calls into question some preliminary research on the talent of managers.

In this paper, we studied the safety of the activities of mutual funds for the period from 2012 to 2016.

It is important to note that we managed to find out that fund managers do not have permanent skills of asset allocation.
The net yield of mutual funds is very predictable. Investing in growth in assets with the highest net profit over the previous year is a strategy that allows you to earn about 2–3 percent higher compared to the first year after rating.

In addition, the cash flows to the winning funds from investors are strong and stable.

The inflow is highest for investment funds with the best past performance, which reduces the share of assets of these funds.

However, this effect is that managers of these best-performing funds end up investing new flows of funds in stocks with high expected returns [133]. At least part of the increase in profitability is due to the behavior of top managers who buy additional stocks with high returns last year.

Large cash inflows allow high-performance funds to increase profitability by holding assets passively on the growth impulse. This impulse for the growth of the asset price is mainly due to the behavior of the winning funds.

The constancy of the yield of Russian mutual funds (managed by the management companies of Sberbank, VTB) can be explained as a result of the habits with a high yield of previous years.

The long-term stability of some funds is ensured by maintaining incoming flows for several years. Thus, investors’ expectations are to some extent realized. Finally, we find strong evidence that investment flows are pushing stock prices [163].

Until recently, most scientific studies considered mutual investment funds as independent entities without taking into account the fact that they are usually part of large structures. The disadvantages of this view become apparent when foundations make strategic decisions with far-reaching implications for activity [168].

The correct behavior of the fund manager gives the ability to control trade costs and allows funds to use more opportunities.

Academic researchers agree that trade costs are an important factor in determining the effectiveness of a fund. On average, they reduce fund returns by about one percentage point per year (Chalmers, Edelen and Kadlec (1999), Vermers (2000), Chalmers, Edelen, and Kadlec (2001), Bollen and Busso (2006) and Edelen, Evans, Kadlec (2013)).

For example, the valuation of the trading costs of a mutual fund ranges from 0.28 % to 2.65 %. Thus, one would expect an influx of funds into more efficient strategies to be able to trade more.

Despite the attractive economic rationale underlying our hypotheses, there is no empirical evidence on this topic.

We use cases where fund families are engaged in non-information trading on the same day to perform a similar task [268]. Focusing on the MICEX index
funds, which are the most widely used index, we evaluate trading efficiency as the ability of an index fund to closely monitor the MICEX index.

Using data from Russian mutual fund stocks for the period from 2012 to 2017, we see strong support for our hypothesis that the efficiency of trading in mutual investment funds has a positive effect on the performance of all member funds of a single structure. In particular, the structure of funds investing mainly in small stocks will have higher trading costs than the structure of funds, which invests mainly in large-capitalized stocks [248].

The structure of funds that we classify as having higher trade efficiency may have certain features that contribute to increased productivity [238].

Table 11.3. — Annual yield of Russian mutual funds vs. MICEX index over the past 5 years

<table>
<thead>
<tr>
<th>Name</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>Total</th>
<th>MICEX Over-performing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sberbank-Potrebitskiy sektor OPIFA</td>
<td>2.74</td>
<td>8.27</td>
<td>60.24</td>
<td>7.7</td>
<td>29.26</td>
<td>26.97</td>
<td>120.43</td>
<td>69.11</td>
</tr>
<tr>
<td>UralSib Aktsii rosta OPIFA</td>
<td>8.49</td>
<td>45.56</td>
<td>69.09</td>
<td>-3.41</td>
<td>9.46</td>
<td>-0.49</td>
<td>116.47</td>
<td>65.15</td>
</tr>
<tr>
<td>Sberbank-Globalnyi Internet OPIFA</td>
<td>38.29</td>
<td>-19.98</td>
<td>46.2</td>
<td>9.35</td>
<td>54.17</td>
<td>14.31</td>
<td>100.68</td>
<td>49.36</td>
</tr>
<tr>
<td>VTB-Fond Potrebitskogo Sektora OPIFA</td>
<td>-1.92</td>
<td>21.81</td>
<td>54.68</td>
<td>4.86</td>
<td>22.79</td>
<td>14.64</td>
<td>98.21</td>
<td>46.89</td>
</tr>
<tr>
<td>VTB-Fond Yevroobligatsiy OPIFO</td>
<td>4.02</td>
<td>-5.35</td>
<td>69.74</td>
<td>41.72</td>
<td>-4.65</td>
<td>2.67</td>
<td>96.64</td>
<td>45.32</td>
</tr>
<tr>
<td>Fond Yevrooblishatsiy OPIFO</td>
<td>0.84</td>
<td>-9.21</td>
<td>70.19</td>
<td>31.1</td>
<td>6.83</td>
<td>3.8</td>
<td>94.76</td>
<td>43.44</td>
</tr>
<tr>
<td>Ermak-fond kratkosrochnykhh investitsiy OPIFA</td>
<td>15.72</td>
<td>57.24</td>
<td>54.35</td>
<td>-7.04</td>
<td>-0.17</td>
<td>-1.02</td>
<td>92.53</td>
<td>41.21</td>
</tr>
<tr>
<td>Arsagera-Fond aktsiy OPIFA</td>
<td>7.58</td>
<td>66.17</td>
<td>49.82</td>
<td>-17.38</td>
<td>18.61</td>
<td>3.38</td>
<td>92.05</td>
<td>40.73</td>
</tr>
<tr>
<td>Kuznetskiy Most IPIFSI</td>
<td>20.08</td>
<td>13.41</td>
<td>53.12</td>
<td>0.24</td>
<td>19.87</td>
<td>3.84</td>
<td>91.29</td>
<td>39.97</td>
</tr>
<tr>
<td>Arsagera-Aktsii 6.4 IPIFA</td>
<td>13.12</td>
<td>55.63</td>
<td>40.85</td>
<td>1.39</td>
<td>16.88</td>
<td>-3.03</td>
<td>84.68</td>
<td>33.36</td>
</tr>
<tr>
<td>Maxwell Metallurgiya OPIFSI</td>
<td>6.74</td>
<td>53.98</td>
<td>48.91</td>
<td>22.28</td>
<td>-14.89</td>
<td>-4.9</td>
<td>81.20</td>
<td>29.88</td>
</tr>
</tbody>
</table>
### Continue of the table 11.3

<table>
<thead>
<tr>
<th>Name</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>Total</th>
<th>MICEX Over-performing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lider-Aktsii OPIFA</td>
<td>2.22</td>
<td>28.92</td>
<td>48.51</td>
<td>16.71</td>
<td>5.35</td>
<td>–1.2</td>
<td>79.28</td>
<td>27.96</td>
</tr>
<tr>
<td>TKB Investment Partners-Premium. Fond Aktsiy OPIFA</td>
<td>10.18</td>
<td>21.86</td>
<td>36.38</td>
<td>5.64</td>
<td>18.76</td>
<td>18.54</td>
<td>74.66</td>
<td>23.34</td>
</tr>
<tr>
<td>Ploschad Pobedy OPIFA</td>
<td>5.59</td>
<td>71.85</td>
<td>49.27</td>
<td>–18.89</td>
<td>–5.04</td>
<td>3.33</td>
<td>72.61</td>
<td>21.29</td>
</tr>
<tr>
<td>Olma-SShA OPIFF</td>
<td>10.73</td>
<td>–7.45</td>
<td>25.9</td>
<td>80.34</td>
<td>39.91</td>
<td>0.82</td>
<td>70.15</td>
<td>18.83</td>
</tr>
<tr>
<td>VTB-Fond Perspektivnych Investitsiy OPIFA</td>
<td>8.22</td>
<td>35.81</td>
<td>46.26</td>
<td>2.04</td>
<td>–3.2</td>
<td>1.37</td>
<td>69.56</td>
<td>18.24</td>
</tr>
<tr>
<td>Raiffeisen-SShA OPIFF</td>
<td>11.41</td>
<td>–8.83</td>
<td>24.51</td>
<td>81.81</td>
<td>37.93</td>
<td>4.36</td>
<td>67.84</td>
<td>16.52</td>
</tr>
<tr>
<td>Sberbank-Fond aktivnogo upravleniya OPIFA</td>
<td>4.64</td>
<td>14.94</td>
<td>42.04</td>
<td>–4.1</td>
<td>18.66</td>
<td>4.49</td>
<td>61.57</td>
<td>10.25</td>
</tr>
<tr>
<td>REGION Fond Obligatsiy OPIFO</td>
<td>11.83</td>
<td>16.95</td>
<td>34.65</td>
<td>9.52</td>
<td>8</td>
<td>7.78</td>
<td>59.46</td>
<td>8.14</td>
</tr>
<tr>
<td>Raiffeisen-Sryyevoy sektor OPIFA</td>
<td>–1.96</td>
<td>32.7</td>
<td>38.52</td>
<td>20.92</td>
<td>–5.11</td>
<td>0.66</td>
<td>59.40</td>
<td>8.08</td>
</tr>
<tr>
<td>VTB-Fond Telekommunikatsiy OPIFA</td>
<td>14.08</td>
<td>–16.57</td>
<td>46.47</td>
<td>–16.49</td>
<td>54.26</td>
<td>1.3</td>
<td>58.97</td>
<td>7.65</td>
</tr>
<tr>
<td>VTB-Fond Aktsiy OPIFA</td>
<td>4.91</td>
<td>41.7</td>
<td>36.53</td>
<td>–3.46</td>
<td>2.84</td>
<td>6.23</td>
<td>58.86</td>
<td>7.54</td>
</tr>
<tr>
<td>Sberbank-Financevy sektor OPIFA</td>
<td>13.71</td>
<td>22.77</td>
<td>42.81</td>
<td>–12.6</td>
<td>11.12</td>
<td>–3.19</td>
<td>57.52</td>
<td>6.20</td>
</tr>
<tr>
<td>VTB-Fond Predpriyatiy s gosudarstv uchast OPIFA</td>
<td>7.53</td>
<td>67.51</td>
<td>36.3</td>
<td>–18.06</td>
<td>–0.33</td>
<td>2.54</td>
<td>56.28</td>
<td>4.96</td>
</tr>
<tr>
<td>Dmitriy Donskoy OPIFA</td>
<td>10.85</td>
<td>17.25</td>
<td>42.27</td>
<td>–16.47</td>
<td>14.98</td>
<td>3.71</td>
<td>56.03</td>
<td>4.71</td>
</tr>
<tr>
<td>Alfa-Kapital Tekhnologii OPIFA</td>
<td>33.53</td>
<td>–13.31</td>
<td>22.9</td>
<td>34.47</td>
<td>37.87</td>
<td>7.87</td>
<td>55.35</td>
<td>4.03</td>
</tr>
</tbody>
</table>
11. Key features of the behavior of Russian stock funds

Continue of the table 11.3

<table>
<thead>
<tr>
<th>Name</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>Total</th>
<th>MICEX Over performing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfa-Kapital Likvidnye aktsii OPIFA</td>
<td>0.03</td>
<td>25.12</td>
<td>28.27</td>
<td>21.96</td>
<td>12.49</td>
<td>9.52</td>
<td>55.06</td>
<td>3.74</td>
</tr>
<tr>
<td>Alfa-Kapital Aktsiy Rosta IPIFA</td>
<td>8.1</td>
<td>23.53</td>
<td>40.86</td>
<td>–2.91</td>
<td>–10.36</td>
<td>13.1</td>
<td>55.04</td>
<td>3.72</td>
</tr>
<tr>
<td>Aprel Kapital-Aktsii nesyrevyh kompaniy OPIFA</td>
<td>6.57</td>
<td>47.9</td>
<td>31.33</td>
<td>–28.79</td>
<td>28.43</td>
<td>17.05</td>
<td>54.57</td>
<td>3.25</td>
</tr>
<tr>
<td>Metropol Zolotoe runo OPIFA</td>
<td>6.26</td>
<td>46.01</td>
<td>32.25</td>
<td>10.1</td>
<td>–4.36</td>
<td>–2.45</td>
<td>53.01</td>
<td>1.69</td>
</tr>
<tr>
<td>Alfa-Kapital Torgovlya OPIFA</td>
<td>0.72</td>
<td>3.17</td>
<td>25.94</td>
<td>16.16</td>
<td>28.15</td>
<td>26.8</td>
<td>52.86</td>
<td>1.54</td>
</tr>
</tbody>
</table>

Source: Thomson Reuters

The table shows that mutual funds managed by Sberbank, VTB and Alfa-Bank are ahead of the MICEX index in terms of profitability throughout the entire study period, which can be considered the main criterion of efficiency [97].

Sberbank funds have 5 mutual funds, VTB — 6 mutual funds, Alfa-Bank — 4 mutual funds in this list. Alfa-Bank mutual funds are not significantly ahead of the stock index of the Russian stock market (on average by 0.5–0.7% per annum).

The idea is that the manager of the structure of the fund is not responsible for attracting external funds, since this responsibility lies with external consultants who manage the funds raised [95].

We studied how well the negative relations between the fund's performance and turnover correlate well with the measure of the effectiveness of the fund's transactions.

More efficient trading allows affiliates to generate higher returns and hold smaller liquid portfolios. The idea is that effective managers help funds bypass investment restrictions associated with trade costs [87]. We confirm that funds owned by structures with more efficient managers turn around faster. The average portfolio turnover of funds from the most efficient structures is six percentage points higher than that of the funds with the least efficient structures. They also hold fewer liquid portfolios.

Investors reduce trading volume (Konstantindis (1986)) and hold more liquid assets (Amihud (1986)) when faced with higher trading costs [57].
For example, Gaspard and Matos (2006) examine the structural levels of cross-subsidization of a fund, and how they affect the performance of individual funds.

In addition, Kostovetsky and Warner (2012), Chen, Hong Kong, Jiang and Kubik (2013), Moreno, Rodriguez and Zambrana (2013), Evans (2014) studied how mutual fund structures outsource part of their portfolio and how this solution affects the operation of the foundation. Our work contributes to this literature, exploring as an invaluable strategic decision taken by the structures of mutual funds to build the effectiveness of their activities [177].

It can be argued that the structure of the organization of funds, rather than activity as independent entities, allows mutual funds to exploit the economy by distributing their operating expenses among various funds.

Our work also examines the importance of trading costs as a determining factor for investment decisions. In particular, two main mechanisms have been created for the relationship between trade costs and investment behavior. First, asset trading is associated with economically significant costs [277]. Investors adjust trading costs by reducing the frequency and volume of their transactions (Konstantinidis, 1986).

Second, since less liquid assets are associated with higher average returns (Mendelssohn, 1986; Brennan and Subrahmanyama, 1996; Brennan, 1998), investors with lower trading costs hold less liquid assets.

Some studies analyze the trading costs of mutual funds and their effect on fund performance (Bollen and Busso (2006), Alexander, Sesi, and Gibson (2007) and Edelen, Evans, and Kadlec (2013)). Some examine the heterogeneity in transactions between specific intermediaries [270]. Kei and Madhavan (1997) and Christophersen (2008) show the variance of institutional trade costs and mutual funds.

In addition, Anand, Irwin, Packt, and Venkataraman (2012) believe that institutional investors can maintain relative performance over several neighboring periods. We contribute to the scientific literature, recognizing that the trade costs of mutual funds are formed largely due to the effectiveness of the behavior model of the trading tables of their structures.

The data on mutual funds of mutual funds from the Thomson Reuters Eikon system were obtained for the period 2012 to 2017.

A measure of the trading efficiency of a fund’s trading table is based on the premise that effective trading tables can more closely track the index on its adjustment dates [170].

We use the Venkataraman model (2012) of the regression pool, as described above:
\[
\text{Perf}_{i,t} = \alpha + \beta_1 \text{Efficiency}_{i,t} + \gamma_1 \text{FamSize}_{i,t-1} + \gamma_2 \text{FamFocus}_{i,t-1} + \\
\gamma_3 \text{FundSize}_{i,t-1} + \gamma_4 \text{FundAge}_{i,t} + \gamma_5 \text{FundTO}_{i,t} + \varepsilon_{i,t},
\]

(11.4)

where: \( \alpha \) is MICEX index yield;
\( \beta \) is excess of the fund’s return over MICEX index yield;
\( \text{Efficiency} \) — efficiency of the fund \( i \) from the list of all funds for the year \( t \);
\( \text{FamSize} \) — size of assets of the fund structure \( i \) from the list of all fund structures for the year \( t \);
\( \text{FamFocus} \) — direction of investment of the structure’s assets Fund \( i \) from the list of all fund structures for the year \( t \);
\( \text{FundSize} \) — size of the fund’s assets \( i \) from the list of all funds for the year \( t \);
\( \text{FundAge} \) — life of the fund’s assets \( i \) from the list of all funds for the year \( t \);
\( \text{FundTO} \) — turnover of the fund’s trading \( i \) from the list of all funds for the year \( t \);
\( \gamma \) — impact factor;
\( \varepsilon_{i,t} \) — dummy variable.

As a second methodological test for reliability, we analyze the volume of assets between funds in the upper group and lower efficiency group [150].

As the characteristics of the fund, we use the size of the fund, the turnover of the fund and the age of the fund, respectively, since they all have a significant impact on performance.

In general, the results support the main hypothesis that the funds belonging to the structures of funds with effective trading tables are superior to those of inefficient structures.

The effectiveness of a family trading table has a performance impact only on funds that are managed internally. There is no effect on the effectiveness of the trading table on performance when viewing external funds.

\[
\text{Perf}_{i,t} = \alpha + \beta_1 \text{TopEff}_{i,t} + \beta_2 \text{MedEff}_{i,t} + \gamma_1 \text{FamSize}_{i,t-1} + \gamma_2 \text{FamFocus}_{i,t-1} + \\
\gamma_3 \text{FundSize}_{i,t-1} + \gamma_4 \text{FundAge}_{i,t} + \gamma_5 \text{FundTO}_{i,t} + \varepsilon_{i,t},
\]

(11.5)

where: \( \alpha \) is manager’s talent ratio;
\( \beta \) — excess of the fund’s return over the MICEX index;
\( \text{TopEff} \) and \( \text{MedEff} \) are dummy fund variables \( i \) from the list of all funds for the year \( t \);
\( \text{FamSize} \) is size of the assets of the fund structure \( i \) from the list of all fund structures for the year \( t \);
\( \text{FamFocus} \) — directions of investment of the assets of the fund structure \( i \) from the list of all fund structures for the year \( t \);
FundSize — size of the assets of the fund $i$ from the list of all funds for the year $t$;

FundAge — time of existence of the assets of the fund $i$ from the list of all funds for the year $t$;

FundTO — turnover of the fund’s trading operations $i$ from the list of all funds for the year $t$;

$\gamma$ is impact coefficient; $\varepsilon_{i,t}$ is dummy variable.

Funds owned by fund structures with the most efficient trading desks provide significantly higher productivity than funds in the base group.

This suggests that noticeable increases in productivity materialize only for funds in high performance structures.

Effective fund structures significantly outperform less inefficient funds in terms of assets. The difference is statistically significant in all cases at the level of 9%.

This is consistent with the view that the structure of funds can reduce maintenance costs by operating efficient trading desks.

The presence of both external and internal managed funds gives the effect in order to experience the reality of our measure. If our measure of efficiency really captures family-specific trading efficiency, then we expect it to be linked to the execution of our own funds.

There is no effect on the efficiency of the trading table on performance with external funds. Internal funds belonging to the top efficiency group far outnumber the base group.

The efficiency of the trading table has a strong impact on the income of the fund, but does not affect the retention of profit [153].

This suggests that the income gap between the more efficient and less efficient Russian stock funds measures not only the undeserved actions of fund managers, but also their unobservable trading costs [253].

The negative effect of fund turnover is due to the fact that portfolio turnover causes trading costs that impair productivity [283].

To test this hypothesis, we estimate the effect of turnover on performance for three groups of funds that differ from the effectiveness of the trading table of the respective fund.

In this section, we consider whether the effectiveness of the trading table affects the trading strategies of individual mutual funds. Theoretical literature contains two main hypotheses:

1. Investors adjust trading costs by reducing the frequency and volume of their transactions (Konstantinidis (1986)).

2. Investors with lower trading costs hold less liquid assets to earn a liquidity premium (Amihud (1986)).
In this section, we test the hypothesis that funds belonging to families with efficient trading platforms demonstrate higher turnover.

The annual fund turnover ratio, defined as the minimum amount of purchases and sales of assets for the year divided by the average total amount of assets under management during a calendar year.

It is well documented that less liquid assets are associated with higher trading costs as well as higher average returns (Mendelssohn (1986)).

Since household funds with efficient trading tables are capable of making deals at lower prices, financial theory suggests that these funds should contain fewer liquid portfolios.

Large structures need to keep less cash. The results of activities show that the efficiency of a manager negatively correlates with the share of assets in cash for all implemented models of behavior. Cash storage in funds from the most efficient families is about 0.5 percentage points lower than in the funds from the least efficient families. This is an economically large difference, given that funds on average hold only about 2% of their assets in the form of cash during the analyzed period.

The main conclusion is that efficient funds hold less liquid assets. The difference in liquidity is statistically significant in all cases at least at the level of 5%. The benefit of lower trading costs allows funds to have more opportunities when buying illiquid assets with higher potential returns.

In this paper, we study an important, but overlooked, mechanism by which the structure of mutual funds can influence the operation of their mutual funds.

Implementing a trade efficiency measure that allows meaningful comparisons between mutual funds is important. The funds of the most effective structures of funds exceed the funds of the less effective ones.

In addition to the impact of impact by controlling trading costs, the level of efficiency also affects the trading strategies of individual mutual funds.

### 11.2 Main factors influencing the cash flows of Russian bond funds

The cash flow volatility of global investors is lower in socially responsible funds than regular funds.

These results suggest that investors derive utility from the concept of social responsibility, especially when returns are positive.

Mutual funds are constantly introducing new types of strategies in order to attract investors and maximize assets under management. The decision to introduce a new type of fund depends on a number of factors, including investor demand for the attributes of the fund. According to Khoran and
Serves (1999), new types of funds generate capital inflows and incremental revenue for a fund company.

Subsequent investor behavior, however, may affect operating costs and the viability of a new type of fund. If a new type of fund attracts investors, for example, then the redemption activity may be more unstable and difficult for asset management [286].

Research on the social responsibility of investing today focuses solely on whether there is a difference between the performance of socially responsible funds and conventional funds.

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>«KAMAZ vehicle»</td>
<td>21</td>
</tr>
<tr>
<td>Magnitogorsk iron and steel works</td>
<td>22</td>
</tr>
<tr>
<td>&quot;Gazprom automation&quot;</td>
<td>23</td>
</tr>
<tr>
<td>«Sberbank of Russia»</td>
<td>24</td>
</tr>
<tr>
<td>&quot;Evraz group»</td>
<td>25</td>
</tr>
<tr>
<td>&quot;Inter RAO»</td>
<td>26</td>
</tr>
<tr>
<td>Novolipetsk steel (NLMK))</td>
<td>27</td>
</tr>
<tr>
<td>“FGC UES»</td>
<td>28</td>
</tr>
<tr>
<td>«Alfa-bank»</td>
<td>29</td>
</tr>
<tr>
<td>“PhosAgro»</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: http://www.apecom.ru/articles/?ELEMENT_ID=2152

Sberbank, VTB and Alfa-Bank funds are also the most socially responsible companies in Russia [184].

In addition, these include the funds of Gazprombank, but they are represented mainly by mutual funds bonds. The mutual funds of Gazprombank shares despite the social responsibility and the presence of a large investment structure. Do not belong to effective funds as a result of the analysis in the previous section.

Studying the behavior of socially oriented investors is also important from an academic point of view: Hexie (2003) proved that socially oriented investors withdrew capital at a slower rate than ordinary investors in the period 1999 to 2001, suggesting that socially oriented investors are more loyal.

Exploring the relationship between flow of funds and fund performance provides additional insight. There are several competing hypotheses regarding how socially oriented investors (SOI) influence the decision making of a fund, each of which makes an empirical forecast for future cash flow and productivity [134].
I believe that the differences between PSI behavior and ordinary investors are significant for young and mature funds.

As Jensen (1968) argued, the effect of the efficient market hypothesis is that the average risk-adjusted return on a mutual fund should reflect only the expenses incurred in managing the fund. The change of time series in the mutual fund activity should be as follows: the behavior of investors should not be related to the past profitability of the fund.

In this case, there is convincing evidence that performance affects the subsequent actions for the purchase and redemption of units.

In the context of an efficient market hypothesis, the relationship between cash flow and fund performance is a financial anomaly. One explanation for the anomalies of flow performance is that investor actions may be partly caused by psychological prejudices [138].

Kahneman and Tversky (1982) denote this representative heuristic. Share fund investors ignore previous convictions about the managerial talent of a manager and instead simply buy the most profitable units of funds in the past year.

Investors buy shares in mutual funds and buy them out for three reasons. First, as described above, changes in the expectations of a mutual fund activity may motivate investors to redistribute capital among their investments. Secondly, investors can redistribute capital depending on the need for liquidity [238]. Third, Massa (2003) argues that investors can buy out shares from specific mutual funds as a result of non-compliance with expected returns and risks.

There are two advantages to using cash flow volatility as a measure of investor behavior:

1. Volatility of the monthly fund flows fixes the net effect of the decision. This avoids the problems associated with uncertainty.
2. Variability of investors’ cash flows captures the costs incurred by active investors compared to passive investors [278].

Admittedly, in the existing financial literature there is no evidence that investors pay attention to fund attributes that are not related to performance. A Mutual Fund Investor Survey (Kaplun (1996)) defines young funds — these are funds at the age of five years, while mature funds are funds at the age of six years and older.

There is some controversy over the risks to which funds are exposed as a result of the impact of cash flows. Gruber (1996) shows that the flow of funds is positively associated with a delay in abnormal profits [279].

Tkak (2002) show that Morningstar ratings imply an abnormal return on expenditure of mutual funds.
One approach to controlling variables that can explain the dynamics of cash flow of funds is the inclusion of additional explanatory variables in the regression analysis.

In addition, the difference persists with the aging of funds. Lower volatility of cash flows of funds may represent a smoothing of consumption by investors. Cash inflows from conventional funds increase by 0.5360 percent for each 1% fall in the previous year.

The perspective theory of Kahneman and Tversky (1979) provides one explanation for the asymmetric effect on performance, suggesting that investors are exposed to both the risk of loss and the risk of winnings.

In addition, Lynch and Musto (2003) argue that investors can expect management to replace managers of poorly performing funds, and the expected returns will increase as a result.

SOI funds have significantly lower volatility than traditional investors.

Investors’ moods change over time and play a key role in the formation of cash flows into mutual investment funds of different risk classes. Developing a deeper understanding of the role of seasonality in managing cash flows between different asset classes of mutual funds can improve our understanding of how investor sentiment contributes to the seasonality of asset prices.

For example, cash flows between money market and capital funds strongly depend on the season and relative riskiness [235]. Seasonality correlates with the time of seasonal variation in risk aversion. Seasonal change in fund flows by risk category is consistent. People under the influence of seasonal factors tend to change mood.

Cramer and Weber (2012) finding that individuals risk reluctantly in the fall or winter.

We believe that the study of mutual funds represents a unique opportunity to study the mood of the degree of aversion to risk.

Cash flows of mutual funds are largely the result of individual investor decisions.

If seasonally varying risks affect the investment decisions of individuals, then the consequences for cash flow will be obvious.

The decrease in daylight that occurs in the fall of each year, as a rule, leads to a noticeable deterioration in people’s mood.

Medical data show that up to 10% of the population suffers from very severe clinical depression [135].

Evidence that risk aversion and negative sentiment vary seasonally motivates us to consider whether there is a systematic seasonality in the choice of an individual investor and a systematic seasonality in the cash flows between assets of different risk classes.

Schmidt, Timmerman and Wermers (2016) found evidence that investors considered the bond market to be the safest during the September 2008 crisis. We see that flows to bond funds are above average in autumn and winter and are consistent with depressed people. Of course, other factors may underlie these seasonal patterns of behavior, and we explore alternative explanations in conditional analysis.

The monthly shifts between flows to bond funds and stocks in Russia are associated with cumulative movements of excess returns in the securities market. Ben-Zachariah (2012) suggested that the net withdrawals of funds reflect the fund's investor decisions on asset allocation.

If investors exhibit a “flight to liquidity” behavior during market failures, and market failures occur more frequently in the fall, it can mechanically lead to observed seasonal flows from a risky fund.

The seasonal pattern of flows is consistent with the seasonally changing aversion to investors’ risks of high and low periods of simultaneous return on equity, capital gains, sales and redemption.

The seasonal structure of mutual fund flows is consistent with the individual psychology of the investor. They are becoming more risk averse in the fall.

The seasonal form of depression affects between 1% and 10% of the population, depending on location and diagnostic criteria, and most of the rest of the population experience depression and risk aversion.

The most fruitful can be an advertising campaign that aggressively promotes safe mutual fund classes in the fall, when many individual investors are more likely to take risks than usual.

Agency theory is an assumption that explains the relationship between principals and agents in business. Agency theory is concerned with solving problems that may exist in agency relations due to uncontrolled goals or different levels of attitude to risk. The most common agent relationships in finance occur between shareholders (the principal) and company executives (agents).

Empirical data for financial companies is ambiguous. For a sample of 181 large banks from 15 European countries for the period 2012–2017, it was confirmed that state-owned banks show lower profitability than private banks, and that higher ownership concentration is associated with higher credit quality, lower asset risk.
Ferris and Jan (2009) believe that agency conflicts between management companies and fund shareholders are more serious than private management companies, since the former are more focused on short-term performance [175].

In accordance with the findings of Ferris and Yang (2009), we find that the payment for the funds of state sponsors is much higher than for the funds of private individuals.

Agency theory predicts big agency problems for mutual funds due to higher production costs.

The findings of James (2006) for open-ended equity funds are consistent with the hypothesis that agency costs associated with monitoring effectiveness lead to a deterioration of the fund’s return.

Different investment abilities and behaviors can be alternative drivers of specific fund differences. Some studies have found a negative relationship between mutual fund cash flows and fund performance.

The results are agreed for all types of funds based on investment objectives with the exception of Russian corporate bonds.

We assume that the relationship between the size of the fund and the alpha coefficient may be insignificant for bond funds or even negative.

Bernhardt (2005) cite numerous studies that find a positive relationship between turnover and trading costs [172]. For example, Maxwell and Venkataraman (2006) report a negative relationship between trade volume and the value of corporate bonds.

The age of the foundation is another variable that we consider in the regression, which represents the longevity and experience of the foundation.

On the other hand, young foundations may not face organizational problems that experienced foundations may face.

According to Zhenga (1999), funds with positive flows work better than funds with negative flows, as investors invest their money in these funds. In accordance with these two studies, we find a positive and significant relationship between cash flows and the alpha coefficient.

These results imply that investors are able to find more capable managers on the Russian bond market.

Thus, funds founded by banks and financial structures have low average management and success charges.

Horana (2009) found that the relationship between fund age and fees is not stable and depends on the model used to measure this relationship [142].

After Qiu (2003), who found the effect of economies of scale on the example of Canadian funds, we study whether there are savings on contributions to the fund for Russian bond funds.
We find a weak positive relationship between the logarithm of the number of funds managed by one management company and management fees.

However, Russian bond funds have significantly higher fees than funds from other countries. This is consistent with the fact that funds have high agency and operating costs due to the lack of opportunity for market monitoring by individual investors [172]. The relationship between fund returns and fees can be established as a combination of some of the parameters of the ownership structure of the founder of the fund.

11.3 Efficiency of the stock and bond funds behavior

In this part of the work, aspects of ways to improve the efficiency of investor behavior are investigated in accordance with the principles of portfolio theory [154].

In modern conditions, the successful functioning and development of institutional investors to a decisive degree depends on an adequate assessment by the founders and investors of the fund of prospects for attracting funds to the institutional investors industry as a whole.

The crisis component of economic development, as well as underestimated risks, can lead to irreparable financial losses of institutional investors. Increased volatility increases the probability of default on individual securities. Therefore, an important direction of the development strategy of institutional investors is to increase the level of reliability of institutional investors.

The financial crisis of 2008–2009, which destroyed the models of the liberal economy, increased the systemic risks of the financial sector. To ensure the effectiveness of investment fund management, risk management, due diligence, and stress testing should be constantly implemented.

The depth of the observed crisis and the systematic nature of the problems that have arisen suggest that the fundamentals of the financial global architecture were affected. The crisis of financial globalization increases the uncertainty of the movement of financial capital. Improving the level of reliability of institutional investors should be one of the main directions of development of the post-crisis economy [156]. In this regard, the responsibility of regulators, shareholders and staff of institutional investors is more responsible for correctly determining the direction of development of an investment fund and the formation of its strategy [164].

The concept of strategy itself has very diverse definitions in the scientific literature. Depending on the objectives of the study, the definition of a strategy can be both general and detailed.

The investment fund strategy shows the vector of its positive development in order to meet the economic needs of investors, subject to regulatory requirements and current trends in the competitive environment.
From the point of view of realizing private goals of strategic development (to achieve maximum efficiency, profitability, competitiveness of an investment fund and maximize value), it is advisable for shareholders and investment fund personnel to build management systems based on matrix and cognitive models of financial behavior and advanced management technologies.

In order to concretize the functional expectations of various subjects of financial relations to the concepts of “financial stability” and “reliability”, which belong to investment funds, a triune approach to understanding by managers, investors and regulators should be used. In this regard, the information base for determining the level of financial stability are the static and dynamic indicators of the investment fund with a certain periodicity of their compilation. The procedure for determining the sustainability of an investment fund is called a due diligence. The financial sustainability of an investment fund is characterized by the sufficiency of its own capital, its profitability, the level of leverage, the level of profitability of capital, and liquidity [166].

The distribution strategy as the main component of the corporate strategy of financial behavior of an investment fund is aimed at achieving a certain level of profitability, liquidity and drawdown of investment fund portfolios. The purpose of the marketing strategy: an increase in the investment fund market share, the development and introduction of financial innovations and technologies, the development of qualitatively new investment products and an increase in their capacity [168]. The target criterion of the information strategy is the formation of the information space of the investment fund.

We would like to highlight the main types of currently used strategies for investor behavior:

1. Maximizing profitability [174]. Most often used at the initial stage of the distribution of assets of the fund, since it serves mainly to form a successful investment history [177]. This strategy allows you to enhance the effectiveness of the marketing component of the investment fund.

2. Flexible investment strategy. Sometimes there is a special period of distribution of the assets of an investment fund — a road show. This strategy implies large expenditures on marketing and maintaining the fund’s profitability at a certain low-risk level.

3. Minimize risk. This strategy is used during periods when there is no need to raise additional funds and allows you to keep the previously achieved financial results at the desired level. It is advisable to use in periods of uncertainty and increased risk.

Based on the above assessment, we would like to describe a scientific approach to improving the behavior of institutional investors with the help of a
tool that allows for a quick transition from one strategy to another, depending on the development cycle of the organization and market conditions.

Investors who invest in Russian investment funds usually understand the risks that are characteristic of institutional investors in developing countries, but they are more and more often directing their funds to funds located in BRIC countries and countries in the Asia-Pacific region because the reliability of managing these funds is higher.

The historical profitability of asset management of an investment fund is not an exceptional factor when choosing an investment fund for investment, since this indicator often depends significantly on market conditions or with a well-chosen management strategy. While the reliability of a fund is an indicator peculiar to a certain fund or a group of funds located in one jurisdiction, and is a more stable factor. According to Al Janabi, the most significant risk for institutional investors in a period of financial instability is liquidity risk, since it is quite unpredictable and difficult to calculate and monitor.

Spending savings and investment decisions should be consistent and interrelated, since they are derived from the investor's risk appetite [19] in terms of the postmodern portfolio theory [153]. Instead, the risky share of the portfolio should be adjusted after each change in the securities quotes.

In 1990, Norway decided to send its oil and gas revenues to a special Oil Fund. The fund is now called the Government Pension Fund Global. Contrary to the name, it is not associated with the pension system. As GPFG actively invests in infrastructure projects, the fund’s net cash flow has been negative for some periods. As a result of the growth in oil production in Norway and the persistence of high oil prices until 2015, the fund's assets rose to 7.4 trillion Norwegian kroner ($ 845 billion). With this cumulative return of the fund since 2008 amounted to about 280 % (Fig. 11.1).

The Parliament of Norway has established the following limits on investment GPFG: 60 % — shares, 5 % — real estate, the rest — bonds. To maintain the limits, the fund’s portfolio is regularly assessed and adjusted.

The main purpose of the foundation is to preserve savings for future generations. In 2001, a budget rule was developed as follows:

1. Expenditure of GPFG funds should smooth out the flow of government spending.
2. The annual deficit of the state budget of Norway (excluding oil revenues), which is covered by GPFG, should not exceed 4% of the value of GPFG assets at the beginning of the year.
3. Temporary deviations from the above norm are allowed when it is necessary to smooth out cyclical fluctuations of budget revenues.
Thus, smoothing fluctuations in budget revenues is a fundamental motivation of the Norwegian fiscal rule, which is consistent with the opinion of smoothing budget revenues (Backus & Crucini, 2000).

The problem is that in the unstable economic situation, the value of the assets of the fund may fluctuate significantly (Amano and Van Norden, 1998). The third paragraph of the rule shows that smoothing should not interfere with discrete fiscal policy as a counter-cyclical tool.

Budget revenues should not be connected oil prices too strong. Many researchers find link between macroeconomic indicators and oil price shocks in different countries (Olomola & Adejumo, 2006; Singer, 2007, Huang & Guo, 2007; Farzanegan & Markwardt, 2009; Iwayemi and Fowowe, 2011; Mikhaylov, 2018).

Fund investment strategies and income spending should be interrelated. There is a practice of redistributing assets in the investment portfolios of a fund after a significant change in prices, which is not always justified when the fund is obliged to smooth the flow of current expenditures. Often, unfavorable
market conditions can lead to the fact that portfolio risk must be reduced to ensure smoothing budget expenditures.

The methodological basis of the analysis is the continuation of modern portfolio theory, taking into account the works on the financial theory of optimal consumption and investment (60-ies of the XX century). In the early 90s of last century, it was replaced by the postmodern portfolio theory. Of course, it cannot be argued that the fund spending policy can be based only on post modern portfolio theory. It should also apply the methods for determining the investor’s risk appetite (Buetzer, Habib & Stracca, 2012). The theory makes sense only if it is based on empirical calculations (Fama, 1984; Fama & French, 1993).

The theory of time preferences suggests that the optimal risk should positively depend on the normal rate of return. The budget rule does not consider risk (although it should be taken into account from the theory). The annual expenses of the fund should depend on the normal rate of return adjusted for risk (Nyangarika, Mikhaylov & Tang, 2018).

The question arises: what rate to use for risk adjustment: current risk-free or normal risk-free?

The budget has non-investment income (an analogue of the labor income of an individual investor) and investment income, which can be considered an analogue of an investor’s income (Johansen & Søren, 1991; Cooper & Priestly, 2009). We begin by considering the two implications of the Merton model (Baumeister & Peersman, 2008): optimal costs and investments for an individual agent with an infinite continuous horizon of investment. Like Merton, we use the following formula:

$$UE^c dt = -\int_0^\infty -\rho e^{-\rho t} c(t)^{1-\gamma} dt,$$

where:

- $\rho > 0$ — subjective rate of time preference;
- $\gamma > 0$ — relative risk aversion;
- $E_0$ is the coefficient of elasticity;
- $e$ is the Euler number;
- $t$ is time;
- $c(t)$ is an arbitrary function (series) of $t$, $c(0) = 0$ In the case of $\gamma = 1$, we are dealing with a logarithmic utility. For understandable reasons, we will consider options for $\gamma \geq 1$, which is consistent with the preferences of a socially oriented state like Norway and with the preferences of savings accumulation.

The fund has an initial level of funds. $W(0) = W_0$, and there is an opportunity to divide them into investments in a safe asset, generating a fixed income $r$, and investments in a risky asset as follows:

$$z(t) \approx NIID(r + \mu, \sigma^2),$$

where: $NIID(0,1)$ is a Gaussian variable with independent and equally distributed values in the considered time interval;
\[ r + \mu \] — income from investments in risk-free and various risky assets and income from investments in risk-free and various risky assets;

\[ \sigma^2 \] is standard deviation.

For simplicity, we assume that the returns of risky assets are serially uncorrelated. Thus, we allow the return of asset prices to the average, but offer some special comments on this issue.

\[ dW(t) = \left[ (r + \alpha(t)\mu)W(t) - c(t) \right]dt + \alpha(t)\sigma W(t)dw(t), \]

where: \( \alpha(t) \) is the share of investments in risky assets;

\( r + \alpha(t)\mu \) is the expected return on the portfolio;

\( w(t) \) is the Wiener process;

\( c(t) \) is an arbitrary function (series) of \( t, c(0) = 0 \).

We need to find \( m \) for the following expression:

\[ m = \frac{\mu}{\gamma\sigma^2}, \quad \bar{r} = r + m\mu, \quad \bar{r} = \bar{r} - \left( \frac{1}{\gamma} \right)\gamma m^2 \sigma^2. \]

If condition is like this:

\[ (1 - \gamma)\bar{r} < \rho < \gamma + (1 - \gamma)\bar{r}. \]

This restriction means that the expenditure of the fund is positive, but does not exceed all of the fund.

Solving this optimization problem implies a constant value of the share of risky assets \( \alpha(t) \) in the portfolio and a constant percentage of the fund’s expenses.

\[ \alpha(t) = m, \quad \eta = \left( \frac{1}{\gamma} \right)\rho + \left( 1 - \frac{1}{\gamma} \right)\bar{r}. \]

This result allows us to make two observations related to the formulation of the budget rule. For the first observation, we note that the coefficient \( \eta \) consists of two terms. At the same time, the Norwegian budget rule has only an annuity component. If \( \gamma > 1 \), as we suggest, this combination is a weighted average of two components.

Return to average values, taking into account the risk appetite of investors in our model, the coefficient \( \frac{1}{\gamma} \) can be interpreted as the magnitude of risk taking (risk — appetite).

In the case of the Norwegian budget rule, a permanent component may be associated with a discount rate. Thus, the following assumptions can be made:

1. The optimal rate of spending GPFG funds may exceed the annuity value, if the state prefers to stimulate the current generation of residents of the country.
2. The annuity component of the consumption share of the fund should take into account the amendment to the risk appetite of the inhabitants of the country.
The Norwegian Ministry of Finance has calculated the annual standard deviation for GPFG yield of 9.8%. Then at $\gamma = 2$ risk adjustment will be 1%. Thus, the model assumes a reduction in fund expenditures, taking into account the Norwegian budget rule, from 4 to 3% of GDP. For GPFG (assets of USD 800 billion dollars), this corresponds to not less than 8 billion dollars.

If we take into account in the model the process of returning to the mean (mean reversion) then there will be less. Modern researchers (Hooker, 1996; Ferraro, Rogoff & Rossi, 2015) noted a return to the mean. The standard deviation of GPFG yield in this case will decrease from a 15-year period to 2.5% per annum. This will lead to a decrease in fund expenditures, taking into account the Norwegian budget rule, from 4.0 to 3.8% of GDP.

Thus, the normal rate of return should not be the only component for calculating the disbursement of the fund, the risk of the portfolio and the risk appetite are also important.

The above model assumes a risk-free rate that remains constant over time, but in reality, risk-free rates usually change over time. Head of the Bank of Norway Oisten Olsen argued that the decline in world real interest rates since the early 80s of the last century should mean a decrease in the optimal expenditure of funds GPFG.

To take into account the effect of low interest rates, we will use the utility function, although the diffusion process will change as follows:

$$dW(t) = [(r(t) + \alpha(t)\mu)W(t) - c(t)]dt + \alpha(t)\sigma W(t)dw_z(t).$$  \hspace{1cm} (11.12)

We define the diffusion process for the risk-free rate as:

$$dr(t) = \theta[r^* - r(t)]dt + \sigma w_r(t),$$ \hspace{1cm} (11.13)

where: $W_z(t)$ and $W_r(t)$ — Wiener processes;

$\theta$ — the expected rate of return of the long-term interest rate to the normal value, expressed by the parameter $> 0$.

We can use the same method to obtain an approximate solution as follows:

$$\alpha = \frac{\mu}{\gamma\sigma^2} - \beta_\eta (1-1/\gamma)/(\eta^* + \theta),$$ \hspace{1cm} (11.14)

$$\eta(r(t)) = k \exp\left[\left((1-1/\gamma)/(\eta^* + \theta)\right)r(t)\right],$$

where: $k$ is an insignificant constant;

$1/\gamma$ — investor’s risk appetite;

$\eta^*$ — the share of expenditure of the fund, according to the formula (5), if the risk-free interest rate is unchanged $r^*$;
\( \beta_{rz} \) — theoretical regression coefficient \( W_r \) and \( W_z \);

\( \theta \) — the expected rate of return of the long-term interest rate to the normal value, expressed by the parameter \( > 0 \).

We suppose \( \beta_{rz} \leq 0 \), since a drop in the risk-free rate can mean increased volatility of risky assets. From formula (11.12) it can be seen that the share of risky assets in the portfolio is higher when the risk-free rate is constant. The behavior of riskier assets is similar to dynamic hedging against a fall in the risk-free asset. Note, however, that the optimal proportion of a risky asset is constant in this model.

The key here is the bet function \( \eta \). From the time-varying interest rate, namely:

\[
dd ln \eta / dr(t) = \left(1 - 1/\gamma\right)/\left(\eta^* + \theta\right).
\] (11.15)

This function for a relatively constant risk-free rate takes the following form:

\[
dd ln \eta / dr(t) = \left(1 - 1/\gamma\right)/\eta^*.
\] (11.16)

Thus, we find:

\[
0 < \dd ln \eta / dr(t) < \dd ln \eta / dr.
\] (11.17)

Thus, when the risk-free rate temporarily deviates from the long-term normal value, the optimal fund-spending rate should be reduced (increased) by the natural logarithm.

The higher the rate of return rates to average values, the greater the difference. If the deviation from the long-term interest rate is instantly corrected, then \( \theta \to \infty \). If the adjustment to the average value of the risk-free rate takes a lot of time, then this is equivalent to the example discussed above.

The Norwegian government uses GPFG funds to increase government spending with fixed tax revenues.

Any deviation from the Norwegian budget rule should mean a gradual movement back to its observance.

Individuals usually earn labor income in addition to profits from their financial well-being. Similarly, the budgets of most countries (except Saudi Arabia) collect large tax revenues in those years when investment income is also high. That is, budget revenues and sovereign funds revenues are procyclical.

Of course, governments usually try to make these revenues as stable as possible over time, maintaining constant tax rates. However, actual revenue naturally depends on the business cycle. That is, government spending is also procyclical.

Thus, in the absence of a change in fiscal policy and without taking into account current contributions to sovereign funds, the budget balance has a countercyclical trend.
Therefore, European countries regularly use this mechanism to reduce the impact of business cycles on the economy as a whole. Recent studies (Singer, 2007; Iwayemi and Fowowe, 2011; Mikhaylov, 2018) indicate that this mechanism can be applied to the United States and Russia.

Since the volume of assets of Russian sovereign funds in 2016 is only about 5% of GDP, it can be assumed that it will be exhausted in the next 2 years, and there is no sense in talking about optimal spending of funds.

The Norwegian budget rule provides for covering the deficit (excluding oil revenues) of no more than 4% of GDP. Although the structural deficit cannot exceed 4% of GDP, in fact the difference between the actual and structural deficit is also financed by the GPFG, because the Norwegian government has no other sources of financing.

Fiscal policy is often also used as a countercyclical measure. Currently, subject to low interest rates and the absence of effective instruments, monetary policy has lost its influence. The Norwegian budget rule allows smoothing out the business cycle due to fiscal policy.

This paper presents models for determining the optimal percentage of spending of savings and reinvestment from the point of view of an individual investor, taking into account his labor income in the future.

If more than usual expenses are required due to unfavorable market conditions (for example, spending GPFG funds in excess of 4% of GDP), then the risk-free (bond) part of the portfolio should not change after an unexpected fall in market value. Instead, the risky share of the portfolio should be adjusted after each change in the quotations of the securities.

Analysis of optimal consumption and reinvestment depends on the level of the risk — free interest rate, which can be determined on the basis of discount rates for large infrastructure projects.

The current Norwegian budget rule is set in such a way that the current generation of Norwegian citizens will receive more substantial support from GPFG to the detriment of the interests of future generations. The article proposes a new annuity model of spending sovereign fund funds, taking into account the risk-adjusted interest rate of return.
Chapter 12. Long-term investment strategies of global institutional investors

12.1 Carry trade and growing global economy

This part of the work concludes that the carry trade strategy, which involves borrowing money with low interest rates and investing in a country with high interest rates, can generate a high ratio in developed and emerging markets.

Emerging markets are more favorable to this strategy in view of the interest rate parity hypothesis.

Using quantile regression, we found that the differential between interest rates exists due to the risk associated with a greater likelihood of a fall in the exchange rate of a currency with a high interest rate.

Commodity prices and the market index of emerging market shares can positively predict the profitability of the next month using the carry trade strategy. The state of liquidity in the United States adversely affects the profitability of the carry trade strategy. A high country risk contributes to the high profitability of a trading strategy [179].

Carry trade is one of the most popular trading strategies in the foreign exchange market. The strategy can generate high returns and a high Sharpe ratio, while it weakly correlates with traditional financial assets, the stock market and fixed income assets.

A recent example: European hedge funds have recently become investing in government bonds in India and Indonesia: investors believe that new political leaders in these countries will bring political stability and high economic growth, so there are good opportunities for long-term investments and potential higher interest rate returns. In addition, other developing countries also presented significantly higher nominal interest rates and capital returns than developed countries.

In the current macroeconomic situation, investors borrow money in countries such as Switzerland, the United States and Japan, and then invest in bonds and other instruments with high interest rates in Brazil, Russia, India, China and South Africa.

Empirical evidence of high carry trade yields violated an important hypothesis of uncovered interest rate parity (UIP), which allows us to predict that currencies with high interest rates should ideally depreciate in accordance with the differential between the currencies of the two countries.

The hypothesis of unpaid interest rate parity was confirmed empirically for many currency pairs for the period up to 2008. However, after 2008, the strategy gives mixed results.
A study by Frankel and Punaval (2004) found that the monthly horizon of emerging market interest rates cannot predict the behavior of the exchange rate. Mengistu (2014) found that the UIP does not work in Uganda and Tanzania [269].

Studying the effect of the announcement of quantitative easing (QE) with the United States, Glick and Leduc (2012) found that the unexpected announcement of quantitative easing and maintaining a soft monetary policy in the United States led to a weakening of the US dollar.

In modern literature, economists are trying to figure out which risk factors can explain the fluctuations in the yield on a carry trade. Burnside (2011) studied the CAPM and Famy-French model of a carry trade trading portfolio and did not establish any relationships. Daniel, Hodrick, Lou (2014) investigated other risk factors, and also did not find any relationships.

Menho, Sarno, Schmeling and Shrimpf (2012) stated that currency volatility is the most important risk factor for explaining excess returns on a strategy [287].

Liquidity and the risk of a fall in the exchange rate form a risk premium for the carry trade strategy, as argued by Brunnermeyr (2008).

Dukas and Zhang (2013) notes that capital controls impose a high carry-on-yield ratio in emerging markets.

Fang, Jie and Zhao (2013) showed that the carry trade yield in with the currencies of Asian countries is closely correlated with the yield on the local stock market. Dobrynskaya (2014) found that the profit on the carry trade strategy decreases during financial crises.

Bakshi and Panayotov (2013) reported that the commodity price index can predict the carry trade yield for a quarterly time interval. By applying regression to time series analysis, Sarno (2014) found that variations in currency exchange rates can predict losses when implementing a carry trade strategy.

Beckart, Harvey, Lundblad, and Siegel (2014) have shown that reducing political risk is associated with an increase in foreign direct investment (FDI).

In order to derive the basic theory, we first consider an arbitration strategy based on interest rate parity (CIP). Suppose that between the United States and country \( j \) arbitration is carried out at a risk-free interest rate from period \( t \) to period \( t+1 \):

\[
(1+i_{jt}) \frac{S_{jt}}{F_{jt}} = 1 + i_t, \tag{12.1}
\]

where: \( i_{jt} \) is interest rate for the currency in the interval from \( t \) to \( j = (1, 2, 3 \ldots N) \), where \( N \) is total number of countries' currencies;

\( S_{jt} \) is spot exchange rate to the US dollar;

\( F_{jt} \) is forward exchange rate to the US dollar.
The hypothesis of unpaid interest rate parity is based on the assumption that investors are risk-neutral, i.e. there is no risk premium at the forward rate. In this case, the nominal exchange rate can be perfectly predicted by the differential in interest rates set by the two countries [284].

The exchange rate of the currency of a country with high interest rates should decrease, while the exchange rate of the currency of a country with a low interest rate should rise due to arbitrage activity of investors.

Quantile regression was first introduced into economics by Kenker (1978). This method of investigating the financial economy has advantages over traditional methods [238]. Quantile regression does not imply a strict independent and normal distribution of errors.

The regression provides a complete picture of the response of dependent variables to changes in independent variables.

The use of quantile regression in financial research can be found in Adrian and Brannermeier (2011); Allen (2009); Giglio (2016).

Time series data is characterized by heteroscedasticity and autocorrelation.

It can be concluded that although most emerging market countries have high interest rates, their currencies are weak and heavily devalued.

However, some countries have a very weak currency, which does not allow long-term profitable carry trade: Argentina and Russia have interest rates 6–7% higher than the US, but national ones have been subject to strong devaluation [236].

The results show that the interest rate can play a key role in choosing currency pairs, both when investing in developed and emerging markets.

Rational economic behavior is based on the thesis that high returns should be associated with high risk,

In addition to stock market risk, there are macroeconomic risk factors that can affect the carry trade yield:

1. Volatility of the US stock market. The VIX index is an indicator of market and investor risk sentiment. A higher VIX value means higher volatility in the future and greater risk for investors. As a rule, peaks of the VIX index are accompanied by financial crises [176]. During the crisis period, traders should think to get out of investments in emerging markets and buy the US dollar as a safeguard against losses. Thus, retained earnings should be negatively correlated with the VIX index.

2. Liquidity of the US market. As a rule, borrowed funds are used to carry carry trade. The financial costs of funding should be related to trading activities. During the period when the TED [45] spread is expanding, the number of participants in the carry trade should decrease.
3. Corporate credit spread [46]. A high spread value means a deterioration in the credit status of the corporate bond market. It is assumed that this negatively correlates with the carry trade yield, since the deterioration of corporate lending may be caused by high financial costs of companies to borrow.

In addition, there are the following assumptions about risk factors for emerging markets:

2. The stock market index can help attract capital and cause a rise in the exchange rate.
3. Index of market profitability of bonds of emerging markets.

The volatility, liquidity and corporate credit risk factors in the United States are negative for a carry trade strategy for all portfolios with high statistical significance.

Previous studies show that investing in a market is subject to several specific risks. Studying the data of international management (ICRG), Erb (1996) found that high fundamental indicators negatively correlate with country risk, which implies a low risk of investing in the stock market of the country.

Bloomberg uses three components to assess country risks:

1. Financial risk (FR).
2. Economic risk (ER).
3. Political risk (PR).

A higher score means a better state and lower risks [196]. Financial risk includes credit and interest rate, banking sector risk, currency risk.

Economic risk includes the dynamics of per capita GDP, sovereign and financial risk, trade balance and the risk of foreign investment.

Political risk is measured by the stability of various government strategies and business environment risks.

The state of economic development may allow to generate positive returns of a carry trade strategy, for example, high political risk is an obstacle to the implementation of this strategy [136].

For investment in new technologies, high returns are the result of high risk premiums because the emerging market is very risky.

The one-month interest rate differential may allow predicting the tail distribution of the movement of the exchange rate of the next period, that is, it means that high interest rates of currencies can easily collapse.
Spreads of a portfolio of currencies in emerging markets generate almost twice the Sharpe ratio as compared to the yield of the S&P 500 index. It also revealed that carrying carry trade is subject to many macroeconomic risks: the risk of a decline in the stock market, the risk of stock market volatility, the risk of liquidity, the risk of expansion credit spread of corporate bonds in the country of financing.

The high profitability of the carry trade strategy is compensation for economic, financial and political risk.

Forecasting the movement of the exchange rate is one of the most difficult tasks in the field of finance for scientists and practitioners. Fundamental models, such as purchasing power parity or percentage parity, have limited application in forecasting exchange rates (Chung, 2005).

A stylized general equilibrium model assumes that when the market expects volatility to increase, the risk premium embedded in prices will influence the futures market. Currencies in emerging markets are a risky asset for a US investor. Even some small developed markets can be considered a risky asset. However, for large developed markets it is not clear whether we can view the US dollar as a risky asset.

Empirical results provide a positive relationship between the Volatility Risk Premium (VRP) and the future dollar rate.

The Japanese Yen is a safe haven currency for a long period of time [156]. In addition, the euro is likely to assume the role of safe haven during certain sampling periods [196]. Thus, further research is needed to identify the behavior of the European currency.

The only currency with a statistically negative VRP [47] ratio is the Japanese yen. Investors prefer the yen when risk sentiment rises (Botman, 2013).

This method is superior to the traditional method of predicting exercises in most cases. Using the model based on the premium for the risk of currency volatility, it is possible to predict future exchange rates for a diversified sample of currencies.

In order to calculate the premium for the risk of volatility, we need a measure of imputed volatility and a measure of realized volatility [194].

To calculate imputed volatility, you can use the method to calculate the VIX index.

Physical or realized volatility is calculated using actual data: intraday data for a time interval of 30 minutes.

The traditional approach for calculating VRP in literature (Della Corte, 2016) uses current imputed volatility and physical volatility over the past period of time up to the current date.
Exchange rate options prices used in this analysis are collected from the Bloomberg system. Options have a monthly shelf life with a daily frequency.

Bloomberg calculates this intraday volatility on a daily basis using 30-minute quotes [139].

The volatility risk premium is calculated for 20 currency pairs against the US dollar. Half of the currencies of developed countries, the so-called G-10 currencies: Australian dollar (AUD), British pound (GBP), Canadian dollar (CAD), Danish krone (DKK), Euro (EUR), Japanese yen (JPY), New Zealand dollar (NZD), the Norwegian krone (NOK), the Swedish krona (SEK) and the Swiss franc (CHF).

The sample includes 10 emerging market currencies: Brazilian Real (BRL), Chilean Peso (CLP), Czech Koruna (CZK), Israeli Shekel (ILS), Indian Rupee (INR), Malaysian Ringgit (MYR), Mexican Peso (MXN), Polish Zloty (ZL), Turkish Lira (TRY) and South African Rand (ZAR).

Table 12.1. — Indicators of volatility of currency pairs for the period 2007–2017

<table>
<thead>
<tr>
<th></th>
<th>Liquidity risk premium</th>
<th>Volatility</th>
<th>Average rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUD</td>
<td>14</td>
<td>4.7</td>
<td>4.3</td>
</tr>
<tr>
<td>CAD</td>
<td>10.6</td>
<td>4</td>
<td>1.4</td>
</tr>
<tr>
<td>CHF</td>
<td>11.2</td>
<td>4.5</td>
<td>0.5</td>
</tr>
<tr>
<td>DKK</td>
<td>10.1</td>
<td>3.8</td>
<td>1.5</td>
</tr>
<tr>
<td>EUR</td>
<td>10.2</td>
<td>5.2</td>
<td>1.2</td>
</tr>
<tr>
<td>GBP</td>
<td>9.9</td>
<td>4.2</td>
<td>1.4</td>
</tr>
<tr>
<td>JPY</td>
<td>10.9</td>
<td>5.4</td>
<td>0.3</td>
</tr>
<tr>
<td>NOK</td>
<td>13.7</td>
<td>4.8</td>
<td>2.7</td>
</tr>
<tr>
<td>NZD</td>
<td>14.9</td>
<td>4.9</td>
<td>3.9</td>
</tr>
<tr>
<td>SEK</td>
<td>13.8</td>
<td>5.1</td>
<td>1.8</td>
</tr>
<tr>
<td>BRL</td>
<td>14.8</td>
<td>7.4</td>
<td>9.8</td>
</tr>
<tr>
<td>Average</td>
<td>12.2</td>
<td>5.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Developed</td>
<td>11.9</td>
<td>4.6</td>
<td>1.9</td>
</tr>
<tr>
<td>Emerging</td>
<td>12.4</td>
<td>5.9</td>
<td>4.8</td>
</tr>
</tbody>
</table>

*Source: Bloomberg, author’s calculations*

Recent studies have also found the predictability of the premium for the risk of stock market volatility.

When agents feel insecure, they start charging risk premiums from various types of risky assets.
The results are consistent with the argument that the existence of time-varying risk premiums may explain why the interest rate parity hypothesis is often not empirically confirmed (Mayfield, 1992).

The intuition is that when risk aversion grows, unsafe currencies are quickly devalued in the market. VRP’s predictive ability does not necessarily mean market inefficiency. A higher return on currencies with a high liquidity risk premium can be considered as compensation for a higher future risk, the likelihood of which increases with time.

Over the past three decades, international financial literature has devoted considerable attention to the anomalies of the foreign exchange market. However, only recently have success been achieved in terms of liquidity in the foreign exchange market. At the same time, the liquidity of the stock market, its relationship with various anomalies in the stock market and other markets has been widely studied. However, despite its importance to this phenomenon, there is little empirical evidence.

Accordingly, this study examines the role of a lack of liquidity in the stock market for carrying out carry trade strategies. It is known that such strategies have long been used and provide significant profits due to imbalances in macroeconomic conditions. Recent studies indicate that markets are dependent on business cycles, stock market volatility and foreign exchange market liquidity (Christiansen, 2011; Mancini, 2013).

Market liquidity can explain various price anomalies in the stock market (Pastor and Stamba, 2003; Acharya and Pedersen, 2005) and empirically helps explain the profitability of product strategies and hedge funds (Amihud, 2005).

A number of studies indicate intermarket linkages between the stock market and the foreign exchange market. Pavlova and Rigobon (2007) highlight examples of dependencies in the stock, bond and currency markets.

Pastor and Staumbach (2003) believe that stock market liquidity affects other markets and various price anomalies [259].

Market conditions of the stock market affect speculative strategies in the foreign exchange market. In addition, the economic impact of the insufficient liquidity effect is significant, since the standard deviation of the decrease in the liquidity of the stock market reduces profits by 0.303 % per month, which is approximately one third of the monthly average [267].

In addition, we also consider the cumulative market volatility indicator (Wong and Xu, 2010). The analysis covers periods of high and low liquidity [260]. The results suggest that the liquidity of the stock market may help predict the yield of the carry trade strategy. During the period of high illiquidity (1976–2001), insufficient market liquidity contributed to the low yield of the carry trade
strategy. And vice versa, we see that in recent years, low liquidity (2001–2017) of capital has contributed to high profitability and popularization of the carry trade strategy. We assume that the observed divergence in predictability models is due to structural and technological changes in the last decade, which have led to a decrease in trade costs, along with a general increase in the importance of currency anomalies (French, 2008; Chordia, 2014).

In addition, we expand our analysis in a number of areas. First, we show that the effect of the lack of liquidity of capital on the carry trade strategy is not due to insufficient liquidity of the foreign exchange market. Secondly, we show that the results withstand several reliability tests [234].

This chapter expands the list of studies on the predictability of currency anomalies. We present the new facts of the work rules for the return of prices on the stock market to the average value. The rest of the paper is organized as follows.

The sample consists of observations of currency exchange rates (spot) at the end of the month, the exchange rates of forward contracts for one month and the corresponding spreads for the period from January 1976 to December 2017. The data set was obtained through the datastream Reuters terminal and includes the currencies of the following 48 territories: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, countries of the euro area, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Iceland, Japan, Kuwait, Malaysia, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Krajina and the United Kingdom. Throughout the study period, the actual sample size varies greatly depending on the availability of data.

The monthly net income of an investor who occupies a long position in foreign currency can be found by the formula:

$$r^{long}_{t+1} = f_t^b + s^a_{t+1},$$

(12.2)

where: $f_t^b$ is purchase price of a foreign exchange forward contract for 1 month;

$s^a_{t+1}$ is selling price of currency in the spot market, respectively.

In this case, the investor buys foreign currency in the forward market at the bid price, and subsequently sells foreign currency at the ask price in the spot market.

At the end of each month $t$, we distribute currencies into six groups, based on their potential profit [134]. Portfolios are recalculated monthly. Thus, currencies with the maximum expected returns are placed in the sixth portfolio. Similarly, the first portfolio includes the currencies with the lowest expected return.
Six portfolios are used to assess currency movements and implement trading strategies. To build an income portfolio, you need to buy currencies from the sixth portfolio and sell the currency from the first portfolio.

Table 12.2. — Characteristics of portfolios of currencies

<table>
<thead>
<tr>
<th>Group</th>
<th>Performance</th>
<th>Alpha</th>
<th>Alpha, 3 month</th>
<th>Excess</th>
<th>Volatility</th>
<th>Skew</th>
<th>Kurtosis</th>
<th>Sharpe ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.31</td>
<td>-0.344</td>
<td>-0.362</td>
<td>-12.72</td>
<td>2.777</td>
<td>-0.14</td>
<td>4.702</td>
<td>-0.122</td>
</tr>
<tr>
<td>2</td>
<td>-0.048</td>
<td>-0.089</td>
<td>-0.094</td>
<td>-9.52</td>
<td>2.549</td>
<td>-0.08</td>
<td>3.968</td>
<td>-0.019</td>
</tr>
<tr>
<td>3</td>
<td>0.096</td>
<td>0.056</td>
<td>0.074</td>
<td>-8.73</td>
<td>2.432</td>
<td>-0.07</td>
<td>4.201</td>
<td>0.039</td>
</tr>
<tr>
<td>4</td>
<td>0.167</td>
<td>0.152</td>
<td>0.114</td>
<td>-10.19</td>
<td>2.526</td>
<td>-0.14</td>
<td>5.285</td>
<td>0.066</td>
</tr>
<tr>
<td>5</td>
<td>0.268</td>
<td>0.255</td>
<td>0.193</td>
<td>-9.59</td>
<td>2.533</td>
<td>-0.53</td>
<td>4.467</td>
<td>0.106</td>
</tr>
<tr>
<td>6</td>
<td>0.733</td>
<td>0.735</td>
<td>0.657</td>
<td>-17.59</td>
<td>3.32</td>
<td>-0.75</td>
<td>5.912</td>
<td>0.221</td>
</tr>
<tr>
<td>Average</td>
<td>0.151</td>
<td>0.137</td>
<td>0.097</td>
<td>-8.26</td>
<td>2.307</td>
<td>-0.32</td>
<td>3.959</td>
<td>0.065</td>
</tr>
</tbody>
</table>

*Source: author’s calculations*

Further, the focus is on the role of aggregate market liquidity in explaining time fluctuations of the currency impulse. We use Amichud’s illiquidity indicator as the main indicator of aggregate market liquidity. Although our analysis focuses on the role of total liquidity, it is important to consider other aspects of the market situation outlined in the article (Amihud, 2002).

The volatility indicator is calculated as the standard deviation of the weighted index of the market. Time intervals are compared for all three market variables. Wong and Xu (2010) note that the return on assets in stock markets is lower after periods of high market volatility.

Some anomalies in financial markets tend to wane over the next decade. The findings also indicate that the profitability of the two currency strategies correlates positively during the period of increasing liquidity and reflects the increase in profitability relative to the previous period.

When market liquidity is low or fluctuates significantly, traders are more exposed to liquidity risk than during a liquid and stable market condition.

Data on the high yield of currency anomalies over the following months of a high degree of illiquidity of the stock market follows from the observed structural changes, the reduced role of liquidity risk and changes in the diversification properties of currency strategies.

At the same time, recent studies by Mancini (2013) and Carnauha (2015) argue that the lack of liquidity in the exchange rate may explain the changes in the return on capital transactions.
Insufficient liquidity can indeed be correlated between the markets of different countries. The study of the role of insufficient liquidity in the stock market in the last decade and previous periods shows that in the last period, reverse trends are noticeable [165].

We have shown how market conditions in the stock market contribute to the realization of a profitable carry trade strategy. In the light of our findings, this article significantly expands the existing literature, revealing new evidence of the effect of insufficient liquidity of the stock market on the foreign exchange market.

This part of the paper explores the importance of commodity prices for the carry trade strategy. We use the newly developed empirical model of factors to fix inhomogeneity [169]. The prices of metals and agricultural products affect the profitability of currencies, while oil prices do not. The stock market is closely related to the currencies of developed countries, while prices in the commodity market are more important for developing countries compared to the stock market factor.

The carry trade strategy is an investment strategy that includes borrowing in low interest rate currencies and investing in high interest rate currencies. Dobryninskaya (2014) and Lettau (2014) show that declining stock market prices can bring better returns better than portfolio formation based on the traditional capital asset pricing model (CAPM).

Commodity prices, however, are a source of financial information that may be useful. Currencies of countries-producers of raw materials, such as Australia and Canada, are correlated with the prices of raw materials. Passari (2015) proposes the construction of currency portfolios based on the projected yield of commodity prices.

The risk of the stock market is not associated with emerging currency portfolios [166].

There is a risk of a carry trade strategy that is associated with commodity prices. This price risk in commodity markets is associated with currencies of developing countries. Our empirical results are confirmed by the study of Bodart (2012), which demonstrate that the reversal of the orientation of the carry trade strategy during the financial crisis has a clear pattern only for the currencies of developed countries.

Risk factors for currencies of developed countries differ from risk factors for currencies of developing countries.

Cash infusions in hedge funds are related to the profitability of a carry trade strategy in developed countries. Risks in stock and commodity markets may be somewhat segmented.
The prices of agricultural products are closely related to the stock markets of developing countries, and the prices of metals are mainly influenced by developed economies [136]. This heterogeneity is caused by the greater liquidity of the currencies of developed countries, which are considered as an investment asset class.

Export and import prices are related to interest rates in developed countries. Moreover, commodity exporters are a few high-interest developing countries. Thus, commodity prices can affect the profitability of currency trading [236]. We find that commodity prices are important risk factors for the profitability of currency transactions.

Bakshi and Panayotov (2013) associate the commodity price index with future currency returns, but we focus on the relationship between excess currency returns and commodity risk factors. This result is supported by the withdrawal of Habib and Strakki (2012), which explains the strong reduction of carry trade transactions during the financial crisis in developed markets.

This section examines the relationship between currency trading and stock market returns.

The impact of the Japanese yen and the US dollar has an impact on the stock market returns. In addition, there are additional effects:

1. positive relationship between the carry trade trade returns and the stock market indicators of countries corresponding to the target investment currencies (Australia, New Zealand and China);
2. negative relationship between the US dollar and the dynamics of the US stock market, while the relationship between the yen and the Japanese stock quotes is positive.

In accordance with modern methods of trading in financial markets, traders sell forward foreign exchange contracts at a premium and buy forward foreign exchange contracts at a discount to earn profits.

Effectively, investors make a profit not only from the differential of interest rates, but also from the appreciation of the national currency during the investment horizon. For example, for the period from 2003 to 2007, when the currency markets were relatively stable, high carry trade volumes were observed for the Australian and New Zealand dollars against the Japanese yen, which further increased the carry trade strategy.

In times of financial turmoil, such as the global crisis of 2008, suffered huge losses, as well as damage from unfavorable exchange rate fluctuations and reducing interest rate differentials. Thus, trade efficiency is largely dependent on the volatility of financial markets and the investor’s risk-taking attitude.
In addition, investment currencies are subject to the risk of devaluation, which significantly depreciates their exchange rate during periods of instability [276].

Burnside et al. (2009) concluded that the carry trade yield is not associated with standard risk factors.

As mentioned earlier, the popular funding currency, the yen, experienced strong volatility spikes as a result of the crisis of 2008–2009.

A possible explanation for this reversal is investor risk appetite. An investment currency is valued indefinitely in relation to its financing currency due to the imbalance between supply and demand.

As a rule, investors who borrow low-interest money invest these funds in high-yielding assets, such as other currencies or stock markets [270].

During and after the “lost decade” in Japan, the country’s financial markets were supported by massive quantitative and qualitative mitigations that created an uninteresting environment for domestic investment and facilitated foreign operations. Similarly, the global financial crisis of 2007–2008 also forced the US to soften interest rates in order to stimulate growth and rebuild the economy.

When the Federal Reserve (Fed) cut interest rates to zero in 2008, the US dollar was considered the best option for borrowing, especially in the post-crisis period. On the other hand, the Australian and New Zealand markets were characterized by high interest rates with a 10-year government bond yield of approximately 7% before the crisis.

For each currency pair or each trading strategy, there are two relevant stock markets that were used as dependent variables in the regression equations [120].

As an indicator of market volatility, the VIX index is an important factor that affects profitability.

Cavallo (2006) explained two sources in detail. First, the profit strategy is proportional to the differential in interest rates between the financing and investment currencies, if the exchange rate between the two currencies does not move.

Secondly, the exchange rate varies depending on the movement of the exchange rate, i.e., an increase in the investment currency relative to the financing currency.

If it happens the other way around, then losses due to currency fluctuations usually compensate for the entire income from the difference in interest rates, which leads to negative profits for a trading strategy [163].

Moreover, the profitability of carry trade declined significantly during periods of crisis, as shown in Briere and Drute (2009) and Brunnermeyer (2009).

After a period of testing the validity of the interest rate parity hypothesis, the focus of research shifted to the explanation of profitability by searching for deviations.
One of the consequences of introducing a zero rate and aggressively easing monetary policy in Japan was the transformation of the Japanese yen (JPY) into the international funding currency.

Higher profits from the carry trade have led to an increase in the efficiency of stock markets, which is explained by capital flows from the financing currency to the financial markets of the country of investment.

The flow of volatility was investigated using GARCH models. The flow of investments from shares into currency is observed during the financial crisis, the reverse movement is observed in the post-crisis period.

From January 1994 to March 2017, higher rates of volatility change in bull markets than in bear markets. This conclusion is consistent with the research by Freins (2008), when the market is bullish, investors are more willing to invest in risky assets.

The positive impact of trade on the stock markets of the country of investment is consistent, as suggested by Chung (2012).

Higher profits from the carry trade led to a significant improvement in the yield on the Australian stock market [168]. Thus, it can be stated that there is a significant positive relationship between the profitability of the carry trade strategy and the stock returns in the respective target countries.

As the demand for investment currency rises, its stock value increases as the stock price depends on the future expected cash flows of the company denominated in the relevant currency.

The most common carry trade strategies in the period from 2009 to 2014 are based on two financing currencies (Japanese yen and US dollars) and three investment currencies (Australian dollar, New Zealand dollar and Chinese yuan). After 2014, the US dollar ceases to be the funding currency giving way to the euro.

Such a mechanism contributes to the withdrawal of capital from a low-income environment to a highly profitable environment, which effectively increases the liquidity of the stock market of the country of destination and leads to inflation [248].

There are negative relations between the volume of transactions on the carry trade strategy and the return on the shares of the country of financing. There is also a significant relationship between the carry trade strategy and the profitability of the US stock market.

In order to overcome the negative consequences caused by the 2008 financial crisis, the US Fed adopted an aggressive monetary policy and lowered the key rate to zero.

In this study, it turned out that there is a positive significant relationship between the dynamics of the yen and the indicators of the Japanese stock market.
It contradicts the traditional theory that expects a negative relationship between the two markets due to capital outflows that occurred in Japan [278].

Thus, the impact of yen-based trading strategies on the Japanese stock market is unconventional. It also became apparent that the relationship between the dynamics of the US dollar and the S & P 500 index is extremely uncertain.

Since 2014, the transition to the euro as a financing currency for the carry trade trade has become noticeable as the European Central Bank (ECB) does not change the amount of incentives to accelerate economic growth.

There is some evidence to support the use of the euro as a carry trade financing currency, for example, irrational behavior of the currency during the Greek upheaval in mid-2015. When the Greek news was good, the risk appetite increased and encouraged investors to borrow euros to finance operations abroad.

However, when the risk appetite faded due to high volatility, the money went back, helping the euro rise. Aggressive monetary policy policies pursued by the ECB have contributed to the global stock market.

### 12.2 Trading volatility: forecasting and trading strategies

This section presents empirical data on forecasting volatility with respect to existing asymmetries in the dynamics of profitability and volatility of financial assets. Using the newly developed method to detect impulses of volatility [270].

Looking at the long rows of the S & P 500, we see that the effect of a sharp jump in volatility lasts about one week, while the strong shock due to the lever effect disappears every other day.

The proposed volatility prediction model is capable of covering many empirical data.

Forecasting volatility is crucial for many investment decisions, such as investor behavior patterns and risk management [170]. This paper presents empirical results on predicting the volatility of a stochastic process with asymmetry and discontinuities [177].

Realized volatility is based on the notion of an increase in the sampling rate and is considered a derivative of true volatility [129].

This paper presents new evidence of leverage effects using high frequency data from the S & P500 index.

The main empirical contribution of this work is the forecast of volatility [239]. We include autoregressive components in the long-term volatility prediction model, as well as a continuous lever effect.

The literature on surge detection and prediction of volatility is very extensive. In this paper, we ignore microstructural noise and compare the performance of volatility prediction models [289].
We do not seek to explain the nature of volatility jumps and study the effect, but compare the effectiveness of forecasting realized volatility [249].

In a study of daily volatility data, Jacquier and Okou [14] separated market shocks to predict future excess returns.

We find that the daily variation of the jump, determined using this methodology, strongly correlates with more traditional methods of detecting variations of shocks, which primarily take positive values.

When testing the reliability of models, we obtain similar results for prediction using empirical models.

Patton and Sheppard show that negative semi-deviations are more informative than positive semi-deviations to predict future volatility [240].

Estimated volatility jumps are actually variations in jumps [120].

The highest levels of realized volatility were achieved on Black Monday, October 19, 1987.

During this day, negative jumps were combined with positive jumps, while, on October 19, negative shocks dominated [128].

Empirical distribution with this cut-off level best approaches the standard normal distribution.

Given the characteristics of measuring volatility, it is of interest to predict strength for future fluctuations.

Realized volatility has a long memory. The HAR model, although not formally belonging to the class of long memory models, is a modification of it.

Shocks have an impact on future volatility. Their influence can be interpreted as the influence of leverage.

Finally, volatility spikes can also improve future volatility forecasts due to the volatility effect of an investment strategy [148].

Using the methodology for stratification of continuous and jump components in the dynamics of volatility, we present new evidence of the influence of levers and effects.

We also observe a negative correlation between the implemented variance and future results. However, this correlation is less in absolute value than the positive correlation of realized variance and positive future profit [147].

With a negative stock market return, volatility has a stronger effect on future deviations than with a positive stock market dynamic (leverage effect).

It is well known that volatility is autocorrelated over a long period of time [247]. Evidence is in the scientific literature [30].

This autocorrelation is one of the drivers of the influence of volatility feedback [248]. The interpretation is that with increasing volatility, an expectation of higher future volatility arises, and market participants can reduce risks,
which will cause an immediate fall in stock prices [128]. We see that the constancy of volatility is mainly caused by the presence of a constant component of yield variation [120].

Realized variance, which we predict, consists of both constant variation in volatility and variation in volatility jump [125].

The coefficients of the model over the past 20 years are relatively stable. Jumping volatility predicts one future period of volatility [128].

To check the stability of estimates for different forecast horizons, we used coefficients for forecasting on the horizon from one day to 30 days.

It is necessary to distinguish between descending and ascending jumps [188]. Future volatility does increase during a negative shock, as the changes are likely to be associated with increased uncertainty about the underlying value of the asset. However, the effect of shock does not necessarily increase future volatility.

An intuitively positive leap is associated with the emergence of good news, as well as expectations of higher future incomes. The effect of the latter is able to compensate for the effect of increasing uncertainty [189].

In accordance with the leverage effect, both permanent and shock return components have a significant effect on future volatility. As mentioned earlier, the preservation of the lever effect, as the forecast horizon increases, becomes less statistically significant.

Ultimately, volatility spikes (continuous variation) are not statistically significant [190]. They are present during extremely calm periods, their forecasting on a short horizon is impossible.

The article analyzes the results of the volatility forecasting models, taking into account the risk of downward shocks and the effect of the lever. The proposed model for predicting volatility consists of the following factors:

1. time and size of intraday returns shock;
2. variation of shock.

The model is motivated by the overwhelming empirical evidence of the financial time asymmetry [270]. It is shown that correlation asymmetries between profitability and volatility are present for both continuous and shock components.

In fact, the empirical analysis is based on a long-term history of high-frequency values of the S & P 500 index. With a sufficient amount of high-frequency data, the accuracy of estimating return jumps is enhanced, and quarterly deviations are generally offset by better predictions of future volatility [250].

Synthetic financial market instruments, such as the VIX index, have existed for decades, and using realized volatility as an asset becomes popular, the
proposed methodology can be applied directly to building trading strategies based on quarterly deviations and jumps.

It is well known that intraday volatility and trading volumes have seasonal characteristics [160]. They are usually modeled using dummy variables.

Increasing the availability of high-frequency data creates new challenges for analyzing the seasonality of time series. With an increase in the frequency of observations, a greater number of significant harmonic oscillations appear.

The writings of Bailey and Bollerslev (1991), Anderson (2001) suggest that seasonality is deterministic. Usually, the seasonality factor can be removed from time series using dummy variables or a trigonometric function [168].

However, in recent years, parametric seasonal memory models for intraday volatility have been proposed by Rossi and Fantazzini (2014). They suggest the elimination of the seasonal effect through a stochastic process. Unlike deterministic cycles, stochastic seasonal components may change over time. That is why it is important to study the nature of seasonality [248].

Periodic intraday patterns are repeated exactly, and this can be quite predictable.

The average weighted intraday yield is almost constant for all stocks and is slightly positive. At night, the variance of return is more volatile. The opening and closing times of the stock market are more active, which leads to higher trading volumes and volatility than during lunch with bank employees. This causes a pronounced U-shape in the intraday trading volume. For implemented, volatility is more consistent with the J-inverse form.

For the DJIA index seasonality is deterministic. Seasonal long memory is noticeable, both for realized volatility and for the volume of trade [278]. Empirical evidence proves the presence of “normal” long memory, deterministic cycles, and seasonal long memory [298].

The nature of the intraday seasonality in the Dow Jones index and in individual stocks are not identical.

Actively managed portfolios of securities, which have a lower risk with higher volatility, significantly benefit compared with the standard by the criterion of the Sharpe ratio. This strategy has less risk during a market recession, which helps minimize losses.

Dispersion is predictable only over short time horizons, and dispersion predictions are often poorly related to future returns.

For the standard portfolio in the American market, the volatility correction mechanism provides an additional increase in the Alpha coefficient of +4.9% per annum, which contributes to an overall increase in the Sharpe ratio by 25%.
There is a relationship between volatility and average profitability, but there are also strong relationships between lagging volatility and current volatility [190]. This means that the rule of striving for the average value of stock prices weakens during periods of high volatility [140].

Portfolios with a volatility correction provided evidence of a countercyclical nature between the cycles of expected returns and profitability of the strategy [141].

For example, in August 2015, during a period of high volatility, many households sold stocks in large quantities in 2008.

Fleming (2003) and Mikhailov (2015) examined the effectiveness of the intraday allocation of assets between asset classes: stocks, bonds, and gold — based on an estimate of the conditional covariance matrix.

A portfolio with a correction for volatility can be easily realized by the investor in real time without using estimated parameters.

A typical investor will probably avoid strong impulses in the market. This is consistent with the idea of Santa Clara (2015) that strategies that avoid a large impulse to drop volatility work exceptionally well.

A volatility-adjusted portfolio assumes more risks when volatility is low: the strategy works by shifting when it takes market risk.


A typical conservative investor can benefit from using a portfolio with a volatility correction. The Sharpe Ratio is not always a good indicator for estimating efficiency gains [191].

Pedersen (2014) shows that leverage restrictions may distort the trade-off between risk and return.

It can be argued that periods of low volatility are similar to periods of low beta asset portfolio. While in theory, constraints may explain our findings that most investors can benefit from adjusting volatility with very tight leverage constraints.

The literature on asset pricing shows that the impact on price growth factors summarizes the expected return on assets.

These findings call into question many macroeconomic models [251]. In fact, many models of equilibrium asset pricing largely ignore the trade-off between risk and return [281].

Volatility tends to be high during recessions with high macroeconomic uncertainty [291].

One of the intuitive explanations is that investors are slowly abandoning their beliefs about volatility [193].
Volatility-corrected portfolios provide greater risk-based return and simple real-time implementations, which is combined with the behavior of a conservative investor, and the risk premium changing over time is the key object.

In this part of the work, the possibilities of the influence of oil prices on the profitability of the stock market in the USA and other markets are investigated. Several previous studies have shown that sharp changes in oil prices affect both macroeconomic variables and stock returns.

Hamilton (1983) discovered the negative impact of oil prices on the real economy. Chen (1986) was one of the first to investigate whether the risks of falling oil prices are for the US stock market; the results suggested no premium for the risk of falling oil prices.

Jones and Kaul (1996) found that changes in oil prices have a significant effect on stock returns in Canada, Japan, the United Kingdom and the United States.

Drispong (2008) showed that oil prices predict the stock market profitability all over the world, communication is particularly strong in developed countries and the world market index. Gav (2008) studied the effect of oil prices on world indices and found that positive shocks in oil prices negatively affect stock returns in all sectors except the oil, gas and mining industries [183].

Narayan and Sharma (2011) used the GARCH model and found convincing evidence of the lag in oil price dynamics from daily returns.

Lites (2011) investigated the effect of price shocks on the likelihood that an economy enters recession using the Markov model with a time-varying probability. Forecasting profitability is important from the point of view of asset allocation, as indicated by Pesaran and Timmermann (2002), who also study various methods for predicting financial returns [283].

Our findings suggest that real oil prices are useful signals for predicting stock returns.

However, the overall level of predictability of profitability and the predictive power of changes in oil prices differ significantly between markets [289].

Binary choice models assume the presence of some hidden (not observable) variable, \( Y^* \) depending on the values of which the observed variable \( Y \) takes the value 1 or 0. In our case, if the portfolio returns are positive, then \( Y \) is equal to 1. If the portfolio yield is negative, then \( Y \) is equal to 0: \( Y = 0 \), \( Y = 1 \).

The probability of obtaining a certain monthly income in the stock market:

\[
p_{jt} = \Phi(\pi_{jt}),
\]

where: \( \Phi \) is normal distribution function;
\( \pi_{jt} \) is linear function of variables.
\[ \pi_j = \omega_j + \chi'_{j,t-1} \beta_j, \]  

(12.4)

where: \( \chi'_{j,t-1} \) — predictable variables;

\( \omega_j \) — constant for the market \( j \);

\( \beta_j \) — beta coefficient for the market \( j \).

The level of predictability of stock returns is usually quite low. A statistically significant improvement in probability compared to 0.5 means significant predictability, which can lead to economic benefits in trading strategies.

We use a data set with a sample period of 1990–2017, in eleven markets by analogy with the study of Nyberg and Ponk (2015), which focus on the backlog of US stock returns from markets.

Binary dependent variables that can be distinguished:

1. The real price of Brent oil;
2. Three-month interest rate in the money market;
3. Consumer price index.
4. GDP growth rate. In addition, we studied the effect of growth in money market rates, the consumer price index, the acceleration of GDP growth rates, but for all the studied markets there were no stable relationships.

In this section, we will focus on the results of the probit-regression sample, in particular, the additional predictive power of the oil price change.

Dividend yield is statistically significant only for the markets of the United States and the Netherlands. In general, the level of predictability is rather modest.

The model shows a statistically significant ratio in ten of the eleven markets (above 0.5).

Thus, the real increase in oil prices is a useful signal for changes in the dynamics of stock market returns.

To study the value of our model, we use the “bought and hold” trading strategy in stock markets. Making decisions about portfolio formation gives a higher annual portfolio yield than a strategy without taking into account the dynamics of oil prices in six of the 12 markets.

Our research supports conclusions about the negative impact of changes in oil prices on future stock returns.


For example, negative changes in oil prices have a statistically significant (at least 10%) impact on Swedish markets, while positive changes affect German and Dutch markets. For the Italian market, positive and negative changes are important. In general, the effect of oil prices is asymmetric, with the exception of
Russian and Canadian stock markets, where the coefficient is positive. This is explained by the fact that Russia and Canada are net exporters of oil [249].

Thus, we expanded the literature on the effect of oil prices on stock markets by studying the predictive power of changes in real oil prices on stock returns in the United States and ten other markets using the probit-regression model [249].

Our findings suggest that real oil prices are indeed useful signals for changes in stock returns for a number of stock markets.

At the same time, we found little evidence of the symmetric effects of raising and decreasing oil prices, but we are unable to draw general conclusions, because the results differ significantly between the markets [246].

12.3 Potential market of crypto assets for investment

The period from 2016 to 2017 was full of events that contributed to the growth of the market of cryptoasset assets and the dynamics of the growth rate of Bitcoin. Doubts about further raising the key rate of the US Federal Reserve and the slowdown in global economic growth created risks in the global economy. In 2017, political issues largely determined the interest in alternative investment instruments, such as Bitcoin: UK exit from the EU, elections in the euro area, problems in Trump’s economic policy.

This has led to a trend away from standard economic and financial structures. Cryptoassets are a tool that provides secure transactions during economic and geopolitical shocks. Bitcoin took advantage of the increased uncertainty and loss of faith in the stability of the banking system and the future of economic security [140].

In the scientific literature, there have been extensive discussions over recent years about the factors influencing the price of cryptoasset assets (Buchholz 2012; Christophek 2013; Bowor and Selmi 2015; Tsiyan 2016; Bowri 2017). At the same time, the fact that the influence of independent variables may change over time was usually ignored [149].

While the traditional frequency approach in quantile regression is widely used, not much research has been developed based on the Bayesian BQR method (Kottas and Gelfand 2001). Using the BQR method has three points of novelty.

First, the use of this method will allow you to find a complete list of factors influencing the price of Bitcoin.

Secondly, it will confirm the efficiency of the idea of Kenker and Hallock (2001) that the BQR quantile regression method is more effective than the simple least squares OLS regression method.

Thirdly, this study can confirm the Bitcoin dynamics for asymmetry, heteroscedasticity and uncertainty of errors, as Bouore and Selmi (2016) wrote about.
The techniques we conducted allowed us to identify the most influential factors explaining the dynamics of Bitcoin in 2017. In particular, we distinguish three main groups of determinants.

The change in price was due to the increased utility of Bitcoin as a tool for settlements, which was facilitated by the loss of confidence in national currencies and uncertainty about the UK’s exit from the EU and the failure of many of Donald Trump’s initiatives.

In general, the following groups of factors can be distinguished:

1. Fundamental factors.
2. Macroeconomic factors.
3. Financial factors.
5. Infrastructure factors.

Bowor and Selmi (2015) pointed to the potential role of global macroeconomic and financial development and the prices of traditional financial assets that influence the evolution of the price of cryptoassets (exchange rate, trading volume on exchanges and gold prices).

It should be emphasized that the impact of macroeconomic and financial indicators on the price of Bitcoin can work through several channels. Among these channels, it can be pointed out that a favorable macroeconomic and financial environment can improve the use of cryptoassets in the trade and stock exchanges and, thus, stimulate demand.

In addition, the fall in gold prices may contribute to investments in cryptoassets. Recently, various studies have argued that bitcoin has become a hedge against political uncertainty (Baur 2015; Dichberg 2015; Popper 2015; Bowie 2016). Bitcoin is negatively correlated with stock prices, which contributes to its hedging capabilities. Dichberg (2015) tested hedging opportunities and proved that bitcoin can be included in a portfolio to mitigate the effects of sharp fluctuations.

Lee’s research (2014) showed that until 2014, both positive and negative news contributed to a change in bitcoin in price. This means that the dynamics of Bitcoin is influenced by news that dominates the media at certain times.

In addition, there are new individual factors of influence, such as the “hash-rate”. This is an indicator of the computing power of the Bitcoin network. When mining cryptoasset assets, intensive mathematical operations take place, which lead to an increase in hash rate and, accordingly, to an increase in the cost requirements of mining equipment.

Bitcoin hashrate is several orders of magnitude higher than the capitalized ETH asset hashrate. As of September 2017, the ETH hashrate was roughly equal
to the bitcoin hashrate as of May 2013. That is, in terms of the evolution of the system, ETH lags behind BTC by more than 4 years in terms of power [169].

The use of quantile regression is noticeable in many scientific fields from ecology to economics and finance. This is an interesting tool, as it provides a set of regression curves that differ in different quantiles of the distribution of the dependent variable.

The method is suitable to determine how time series are located for all parts of the probability distribution. However, some specific features, such as asymmetry, thick tails, outliers, breaks and heteroscedasticity are also inherent in this method.

The total number of bitcoins in circulation is determined by a known algorithm until it reaches 21 million bitcoins.

Google’s search queries can be a valuable tool for predicting Bitcoin price trends in the market (Kristoufek, 2013), as millions of users interact daily with search engines, being a valuable source of data on various aspects of the world. The frequency of search queries for a particular keyword is incomparable with the user sentiment index, but it can provide information that can be used to understand a complex process.

Bitcoin turnover is calculated as the ratio of the volume of transactions to the average market capitalization of Bitcoin in US dollars over a period of 90 days.

In addition, the creation of new Bitcoins is determined mainly by the difficulty of generating, which reflects the hashrate. Thus, the proposed model for predicting the dynamics of the Bitcoin price consists of the following variables:

1. Dependent variable. Bitcoin price index — BPI. Source: (www.coindesk.com/price);
2. Bitcoin turnover — VC. Source: (http://www.blockchain.info);
3. Volumes of stock trading — VB. Source: (http://www.blockchain.info);
4. Gold price — GP. Source: (www.thomsonreuters.com);
5. Bitcoin requests on Google — AG. (http://trends.google.com);
6. Hashrate HR. Source: (http://www.blockchain.info);

If we use the method of least squares, it turns out that most of the coefficients of independent variables are insignificant: only the coefficients of VC and BR can be considered significant [189].

Bitcoin turnover (VC) has a negative impact on the price of bitcoin. In particular, VC fluctuates between −0.14 and −0.15. This result is consistent with the quantitative theory: the price falls with increasing bitcoin stock. We should mention that Bitcoin expects a significant problem in view of the limited number of 21 million units, meaning that the money supply will not increase after
this date. In addition, we note that the volume of stock trading is strongly correlated with the price of Bitcoin, when the market is bullish.

In addition, there is a weak negative correlation between the price of gold and Bitcoin dynamics when markets fall (the GP coefficient ranges from –0.004 till –0.001. It turns out that cryptoassets and gold do not evolve in the same direction [149]. Although these assets are considered as hedging instruments in turbulent times, we can note that the factors affecting their prices differ.

Using the Google search queries, we observe that more and more attention from Bitcoin leads to higher prices as the market grows. If interest grows by 10%, the price of Bitcoin changes by 0.2–1.4%.

Increasing the hashrate by 10% increases the Bitcoin price by about 1%. The more miners join the network, the higher the hash rate in the network [239]. Mining can be perceived as a kind of investment in bitcoin (Siayan, 2016). Miners usually do not use bitcoin as an alternative to direct investment, they can become buyers of bitcoin and thereby increase demand and price (Kristoufek, 2013).

In perfect markets, price with an increase in turnover and bitcoin stock, while an increase in the size of crypto-economics contributes to an increase in price.

Despite their popularity and gradual recognition throughout the world, most people still do not understand what it really is. The status of bitcoin as an alternative currency, financial instrument or commodity is still the subject of ongoing discussion. Therefore, we were forced to return to the question of the determining factors of bitcoin price.

Currently, the legal status of Bitcoin in many countries of the world is becoming known, and many large companies accept Bitcoins as a legitimate source of payment. As demand increases and supply decreases, the price of bitcoin increases. We also believe that Bitcoin and the dynamics of gold are likely to be moderately interdependent in a falling market, since both assets are considered a safe haven.

At the end of 2017, about 10,000 enterprises in the world are mentioned on the bitcoin map (Source: https://coinmap.org/#/world/50.80593473/-50.53710938/3), which indicates a marked distribution of bitcoin as a means of payment.

From a legal point of view, bitcoin is hardly a safe haven, from a financial point of view, bitcoin is a liquid asset, even in times of instability in the market. Currently, the bitcoin and cryptoasset assets market is no longer too narrow and mature enough to integrate into global financial markets [139].

In this part of the work, we study the dynamics of realized volatility of the Bitcoin price (BTC) and comparison with the volatility of the S & P 500 indices, the VIX index, the market index for blockchain technology.
Understanding bitcoin volatility is relevant to national governments, investors, and regulators. By understanding the price dynamics and volatility of this cryptocurrency, you can create rules for official use in various countries around the world.

Understanding these aspects of Bitcoin can reduce the risks of use and investment [189]. Thus, investors could consider the possibility of hedging risks using Bitcoin, given the relationship of BTC with the S&P 500 and VIX indices.

After some research conducted earlier, we decided to study the relationship between the implemented volatility of Bitcoin and the global development of blockchain technology.

It is important to note that causation can be bidirectional. Using various tests to find correlations between the dynamics of Bitcoin and the S&P 500 index, we did not reveal a clear relationship between them [180].

Similarly, we find that the price of Bitcoin is largely dependent on the sharp jumps in Google trends (10% or more).

We also found a strong bidirectional relationship between the bitcoin price volatility and the dynamics of the VIX volatility index.

The scientific literature on the volatility of Bitcoin prices focuses only on relationships with certain financial variables [210].

In addition, there are several articles on how online requests for Bitcoin in Google, Wikipedia or Twitter affect the price of Bitcoin — Kristoufek (2013) and Davis (2014).

But now there is a steady increase in the number of research projects in relation to cryptocurrency. In recent years, most research has been devoted to the formation of prices for bitcoin, and to a lesser extent, to the volatility of prices for bitcoin.

The conclusion is that the bitcoin price is largely determined by the interaction of supply and demand. However, the hypothesis that the attractiveness of Bitcoin for investors strongly influences the price of Bitcoin.

Found fundamental factors influencing the price of Bitcoin, such as: use in trade, money supply and price level Kristufek (2015). He concludes that bitcoin prices are driven primarily by investor interest in cryptocurrency. We also managed to conclude that there is a strong correlation between the price level of Bitcoin and the number of requests on Wikipedia and Google.

The relationship between realized volatility and the popularity of cryptocurrencies from research on Google or Twitter has been studied by Davies (2014). The author believes that Twitter activity has no effect on bitcoin volatility.

Thus, we want to consider financial variables that affect the price of Bitcoin and its dynamics. In addition, we are also interested in assessing the effect of the popularity of blockchain technology on the price of this cryptocurrency.
From our calculations, it is clear that the correlations between the BTC time series and the S&P500 index are weak.

In our case, Google trends give us weekly data on the popularity of the terms “bitcoin” and “blockchain” from May 6, 2012 to October 26, 2017.

The Granger test shows that, on the one hand, the relationship between Bitcoin dynamics and stock markets means that negative changes in financial markets force investors to turn to new assets. This is reflected in the bitcoin price volatility.

On the other hand, these results also show that rapid price movements of a biquin can scare investors and force them to invest in well-studied financial assets.

In addition, this means that the VIX index can be a useful tool for predicting periods of high price volatility in Bitcoin and cryptoasset assets. As well as the volatility of cryptoasset assets can be a useful tool for predicting periods of volatility in the US stock market.

On the one hand, we see that fluctuations in the price of Bitcoin can cause the curiosity of investors and companies to introduce blockchain technology. On the other hand, we don't see a clear correlation between Google’s search queries and Bitcoin dynamics, because there are probably many more factors (keywords in the search) for the Bitcoin price.

In our analysis, we did not find a statistically significant causal relationship when analyzing the time series of Bitcoin dynamics and the S & P 500 index.

These results indicate that the price of Bitcoin has no causal relationship with the prices of assets on the stock, which is consistent with the results of the study by Ciaian (2014).

At the same time, the Granger test reveals a statistically significant causal relationship when analyzing the dynamics of the volumes of deals with Bitcoin and with the S & P 500 index.

There is also a negative relationship between the volume of transactions with Bitcoin and the dynamics of the VIX index.

Changes in Bitcoin prices can provoke investors’ curiosity about cryptocurrencies and blockchain technology, affecting the number of search queries associated with the words “bitcoin” and “blockchain.”

The information presented in this paper may be useful primarily to investors, regulators and governments.

We provide results that link the bitcoin price volatility to the volatility of financial indices, such as the S & P 500, which ultimately can provide a path to understanding the cryptoasset assets market in general.

In addition, investors might be interested in these results in order to use the price of Bitcoin as a derivative of market volatility.
Cryptocurrencies can be defined as digital assets using cryptography to protect transactions and control the creation of additional currency units. In recent years, the popularity and use of cryptocurrency has increased dramatically.

For example, the UK government is considering blockchain technology to track taxpayer money.

Because of this growing interest, there is a need for quantitative prediction of cryptocurrency dynamics.

It is well known that cryptocurrencies are very volatile compared to traditional assets [216]. Of course, their exchange rates cannot be considered independent of one another and equally distributed [219].

The most popular models for predicting the volatility of exchange rates for traditional currencies are based on generalized autoregressive conditional heteroscedasticity models (GARCH). Nevertheless, there are scientific papers on the use of long memory models for cryptocurrency courses. The first work focuses on GARCH bitcoin dynamics modeling: Katsyampa (2017) estimated bitcoin volatility based on the GARCH model and the AR-CGARCH model.

Urquhart (2017) showed that HAR models are more reliable for modeling bitcoin volatility than traditional GARCH models [119].

Stavrovianis and Babalos (2017) investigated the dynamic properties of bitcoin based on the GARCH model and vector autoregressive models. Sermak (2017) uses GARCH (1, 1) to simulate the bitcoin volatility based on macroeconomic variables in countries where bitcoin has the most trade [189]. The results showed that bitcoin behaves similarly to unsecured currencies in China, the USA and Europe. In particular, Bitcoin has become an attractive asset for investment and value preservation in China.

Asymmetry in the Bitcoin market is still significant, suggesting that the price of Bitcoin is more dependent on negative rather than positive economic shocks.

Letra (2016) uses the GARCH (1, 1) model of analyzing daily bitcoin prices and searching trends in social networks and Google.

Dichrberg (2016) applied the asymmetric GARCH methodology to investigate the possibility of hedging risks using Bitcoin purchases. It was shown that Bitcoin can be used as a tool to hedge a stock portfolio and against the decline of the US dollar in the short term.

Bitcoin can be classified as something between gold and US dollar.

Bowrie (2017) used the asymmetric GARCH models for the relationship between price yields and changes in the volatility in the crypto market after prices fell in 2013.

The data that we used in our analysis: daily closing prices of cryptocurrency indexes were obtained from the BNC2database base Quandl.
We analyzed the top 10 cryptocurrencies, ranked by market capitalization, for the period from 01/01/2014 to 10/31. 2017. The most current market capitalization indicators for all cryptocurrencies are published by CoinMarketCap.

It should be noted that in October 2017, the seven most popular cryptocurrencies accounted for 90% of the total market capitalization [279].

Table 12.3. — Largest cryptocurrency capitalization as of 10/23/2017

<table>
<thead>
<tr>
<th>Name</th>
<th>Capitalisation, USD</th>
<th>Rate</th>
<th>Turnover, USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Bitcoin</td>
<td>97,616,077,585</td>
<td>5864.95</td>
<td>1,911,230,000</td>
</tr>
<tr>
<td>2 Ethereum</td>
<td>27,162,233,458</td>
<td>284.11</td>
<td>339,247,000</td>
</tr>
<tr>
<td>3 Ripple</td>
<td>7,562,816,333</td>
<td>0.196276</td>
<td>69,500,300</td>
</tr>
<tr>
<td>4 Bitcoin Cash</td>
<td>5,378,286,039</td>
<td>321.89</td>
<td>212,043,000</td>
</tr>
<tr>
<td>5 Litecoin</td>
<td>2,885,891,472</td>
<td>53.94</td>
<td>105,841,000</td>
</tr>
<tr>
<td>6 Dash</td>
<td>2,027,362,857</td>
<td>264.42</td>
<td>45,401,200</td>
</tr>
<tr>
<td>7 NEM</td>
<td>1,806,138,000</td>
<td>0.200682</td>
<td>5,147,160</td>
</tr>
<tr>
<td>8 BitConnect</td>
<td>1,458,805,252</td>
<td>201.48</td>
<td>12,464,800</td>
</tr>
<tr>
<td>9 NEO</td>
<td>1,356,175,000</td>
<td>27.12</td>
<td>25,707,300</td>
</tr>
<tr>
<td>10 Monero</td>
<td>1,290,547,663</td>
<td>83.59</td>
<td>26,770,500</td>
</tr>
</tbody>
</table>

Source: CoinMarketCap.com

To assess the possibility of predicting the profitability of cryptocurrency, we considered various modifications of the models of long memory: SGARCH (1, 1), EGARCH (1, 1), GJRGARCH (1, 1), APARCH (1, 1), IGARCH (1, 1), CSGARCH (1, 1), and GARCH (1, 1), TGARCH (1, 1), AVGARCH (1, 1), NGARCH (1, 1), NAGARCH (1, 1), ALLGARCH (1, 1).

Table 12.4. — Confidence interval for predicting positive (negative) dynamics of the 10 most popular cryptocurrencies, 30.10.2017

<table>
<thead>
<tr>
<th>Model</th>
<th>0.05</th>
<th>0.001</th>
<th>0.0001</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGARCH</td>
<td>0.078 (0.312)</td>
<td>0.264 (0.104)</td>
<td>0.350 (0.138)</td>
</tr>
<tr>
<td>EGARCH</td>
<td>0.287 (0.125)</td>
<td>0.231 (0.094)</td>
<td>0.094 (0.091)</td>
</tr>
<tr>
<td>GJRGARCH</td>
<td>0.242 (0.120)</td>
<td>0.299 (0.118)</td>
<td>0.341 (0.300)</td>
</tr>
<tr>
<td>APARCH</td>
<td>0.398 (0.334)</td>
<td>0.267 (0.137)</td>
<td>0.284 (0.184)</td>
</tr>
<tr>
<td>IGARCH</td>
<td>0.128 (0.086)</td>
<td>0.398 (0.249)</td>
<td>0.145 (0.261)</td>
</tr>
<tr>
<td>CSGARCH</td>
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<td>0.137 (0.109)</td>
<td>0.261 (0.319)</td>
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<tr>
<td>GARCH</td>
<td>0.323 (0.336)</td>
<td>0.334 (0.238)</td>
<td>0.097 (0.092)</td>
</tr>
<tr>
<td>TGARCH</td>
<td>0.253 (0.189)</td>
<td>0.213 (0.102)</td>
<td>0.143 (0.143)</td>
</tr>
<tr>
<td>AVGARCH</td>
<td>0.203 (0.347)</td>
<td>0.371 (0.052)</td>
<td>0.208 (0.240)</td>
</tr>
<tr>
<td>NGARCH</td>
<td>0.097 (0.194)</td>
<td>0.100 (0.127)</td>
<td>0.266 (0.186)</td>
</tr>
</tbody>
</table>
The best predictor performance has the IGARCH model (1, 1). It gives the smallest error values for cryptocurrencies: Bitcoin, dash, lightcoin, maidsafe-coin and monero.

The GJRGARCH model (1, 1) gives the smallest error values for cryptocurrencies: ethereum, dogecoin, ripple.

Thus, all the most suitable models provide an adequate error at the level of a 5% confidence interval.

We believe that the IGARCH and GJRGARCH models provide the best results in terms of modeling the volatility of the most popular cryptocurrencies. The IGARCH model is similar to the standard GARCH model with the addition of a conditional volatility process with infinite memory, as was shown in the scientific literature of Kaporeyl (2003).

Due to the growing demand and interest in cryptocurrencies and cryptoassets in general, we believe that they should be considered as a new segment of the financial market. There are still many questions about whether cryptocurrencies should be classified as currencies or as a commodity. Our analysis suggests that cryptocurrencies are financial assets [249]. Most of the operations with them are made for investment purposes: either as a long-term investment in new technologies, or in order to obtain short-term profit [248].

The study of cryptocurrency volatility is important in terms of financial instruments for hedging traditional assets, as well as in terms of pricing.

The above results would be particularly helpful in terms of portfolio management and risk management [228]. They can help make more informed decisions regarding financial investments and avoid the risks of using cryptocurrencies.

Our results can also assist regulators in creating a favorable legal environment for the functioning of the cryptocurrency market.

Regulation and economic policies associated with the use of cryptocurrencies are gradually tightened by many countries [229].

The introduction of new market regulation rules for cryptocurrencies will occur as investment attractiveness improves [129].

In addition, the use of the indicator VAR (value at risk) raises doubts when analyzing cryptocurrency risks, although this is the most popular measure of risk in finance.

### Table 12.4

<table>
<thead>
<tr>
<th>Model</th>
<th>0.05</th>
<th>(0.069)</th>
<th>0.001</th>
<th>(0.121)</th>
<th>0.0001</th>
<th>(0.099)</th>
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<tbody>
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<tr>
<td>ALLGARCH</td>
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<td>(0.327)</td>
<td>0.162</td>
<td>(0.180)</td>
<td>0.167</td>
<td>(0.249)</td>
</tr>
</tbody>
</table>

*Source: Author’s calculations*
Conclusion

Based on the structure of the dissertation research and the main results of the work submitted for defense, the conclusions should be divided into two groups.

First of all, the conclusions of the theoretical and methodological direction, and secondly, the applied developments and recommendations that are based on empirical analysis and can contribute to the validity of judgments when making decisions regarding state economic policy and financial market regulation.

The theory of the development of financial markets and the influence of the financial market on economic growth has not yet been fully formed, although the fact of influence today is indisputable.

The stock market liquidity level positively and statistically significantly correlates with current and future rates of economic growth, capital accumulation and increase in labor productivity.

An efficient stock market contributes to attracting additional investments to finance projects, which leads to accelerated economic growth, mobilizing domestic savings and reducing risks through diversification [233]. Stock market liquidity is still a reliable indicator of future long-term growth.

Volatility of stock indexes and financial market liquidity indicators can be used as leading indicators of general economic conditions. The interdependence between macroeconomic indicators volatility and asset price volatility in the financial market was confirmed.

The current stage of development of the Russian financial market can be seen as an opportunity for structural reform in the face of tight budget constraints and a reduction in the overall debt burden [273].

Strengthening the role of state-owned companies in the financial market of Russia does not provide transparency of pricing and leads to increased segmentation of the financial services market. On the one hand, such a structure contributes to financing the real sector of the economy, on the other hand, only state and quasi-state structures can be obtained on non-market conditions.

From a substantive point of view, the results of asset price forecasts indicate a sluggish recovery in the financial market after crises: the dynamics of macroeconomic indicators indicate an L-shaped trajectory, Russia's exit from the crisis. The financial situation will slowly improve over the forecast interval until 2020. At the same time, the parameters of the Heston model do not differ significantly for the period 2007–2016, that is, the global financial crisis has had a significant effect on the probability distribution of stock returns, because the stock market has not resumed growth so quickly.
The main difference is in the average rate of increase in volatility? Which became negative after the crisis in 2009 against 13–20% per year in the 1990s and early 2000s.

Statistics for the post-crisis (2009–2017) years indicate that the stock market has moved into a different mode of operation compared with the previous time period. However, analysis of empirical financial data indicates that the correlation function has a power dependence. In addition, the Heston model can be improved by including earlier periods of relaxation [293].

Although the Heston model was tested on the Dow Jones industrial index, it is possible that it can also be used to predict prices for other assets, in particular: foreign currencies, commodity futures, crypto assets.

In addition to models of long memory, to predict the volatility of prices for financial assets, the thesis proposes to use data on the number of Internet user requests in the Google search system. Internet queries are terms for the market of cryptoasset assets that allow you to define shifts in relation to Internet users to a new type of assets.

1. The regularities of the historical evolution of financial theories of asset prices and models of forecasting the volatility of asset prices in capital markets are revealed. Collected evidence of high accuracy and reliability of long memory models for predicting the volatility of price movements for various classes of financial assets. The theoretical basis for the evaluation of cryptoasset assets as a new segment of the global financial market has been proposed.

2. Despite the reduction in liquidity, sectoral sanctions and other difficulties, the stock market is represented by a fairly wide range of different bidders. The main volumes of exchange trades with shares fall on private Russian financial organizations, as well as state-controlled companies [228]. Some shifts in 2016 in the structure of transactions in favor of private intermediaries rather indicate that the exchange managed to build a more diversified refinancing mechanism for the banking system, and the market itself became more stable. An analysis of the structure of investors on the stock exchange shows a tendency of growth in the activity of non-residents, which was not prevented even by the introduction of sectoral sanctions.

In 2016, the issue of shares of Russian companies played an imperceptible role in the general sources of investment (less than 1%). The Russian stock market remains a source for refinancing or debt repayment, as well as for financing individual investment projects.

Therefore, the Russian stock market over the past 10 years does not contribute to the accumulation of real assets of companies and is not a driver of economic growth.
3. Russian funds with the highest net profit over the previous year demonstrate significant indicators of asset allocation efficiency. Approximately 5% of Russian stock funds can successfully pick up assets over a period of 6 years compared with the MICEX index. Most of the mutual funds managed by major financial institutions of Sberbank, VTB and Alfa-Bank outperformed the MICEX index in terms of profitability from 2012 to 2017 due to the informational advantage and the influence of social responsibility [223].

4. Aversion to risk and negative sentiment in the behavior patterns of Russian debt market funds vary seasonally. Cash flows to Russian bond funds are above average values in autumn and winter. Different investment abilities and behaviors can be alternative drivers for specific fund differences. For Russian bond funds, a negative relationship has been revealed between the growth in incoming cash flows and the fund’s return rates. The relationship between the size of the bond fund in Russia and the Alpha coefficient is negligible.

5. At the level of empirical analysis for a wide range of countries, the significant impact of the global economic crisis on the state of the global financial market in general, and the Russian financial market in particular, has been confirmed [229]. It is proved that the Russian capital market does not fulfill its key functions: the accumulation of “long money” in the economy and the financing of long-term investment projects. Identified segments of the financial market, in which the unfolding of the crisis processes. A periodization of the development of the financial market in Russia is proposed on the basis of sufficiency of liquidity in the banking system from 2000 to 2017.

6. The slope of the nominal yield curve is a strong predictive factor of economic growth and inflation during a specific business cycle.

The growth channel plays an important role in explaining the average time spread with an increase in the maturity of a bond [219]. In addition to generating long-term growth risks, endogenous growth is also important for assessing the negative long-term relationships between inflation expectations and economic growth.

The model described above allows us to make a forecast of economic indicators. The current trends in the strengthening of the US dollar can presumably continue until 2018–2019, based on the long macroeconomic cycles identified in recent years characteristic of the world economy after the signing of the Bretton Woods agreement.

7. The optimal parameters for carrying out the investment strategy of carry trade in the global and Russian financial markets are proposed based on the analysis of current trends in the development of the Russian financial market and the behavior of global institutional investors. The yield on currency
carry trade strategies is positively correlated with periods of increasing market liquidity and reflects an increase in yield relative to the previous period. During periods of economic crisis, the carry trade strategy becomes unprofitable and the risk associated with the parity of interest rates between the currencies of the two countries is realized.

8. In this study, it turned out that there is a positive significant relationship between the dynamics of the yen and the performance of the Japanese stock market. It contradicts the traditional theory, which expects a negative relationship between the two markets due to capital outflows that occurred in Japan [212]. Thus, the impact of yen-based trading strategies on the Japanese stock market is unconventional. It also became apparent that the relationship between the dynamics of the US dollar and the S&P 500 index is extremely uncertain.

Since 2014, the transition to the euro as a financing currency for the carry trade trade has become noticeable as the European Central Bank (ECB) does not change the amount of incentives to accelerate economic growth. There is evidence to support the use of the euro as a carry trade financing currency, for example, irrational behavior of the currency during the Greek upheaval in mid-2015.

9. Spending of savings and investment decisions should be coordinated and interconnected, since they are derived from the investor’s risk appetite from the point of view of the postmodern portfolio theory [218]. If more than usual expenses are required due to unfavorable market conditions (for example, spending GPFG funds of more than 4% of GDP), the risk-free (bond) part of the portfolio should not change after an unexpected fall in market value [238]. Instead, the risky share of the portfolio should be adjusted after each change in the securities quotes.

Analysis of optimal consumption and reinvestment depends on the level of the risk-free interest rate, which can be determined on the basis of discount rates for large infrastructure projects.

10. Periods of low volatility are similar to periods of low beta portfolio assets in the financial market. Most investors can gain additional returns by adjusting the volatility of the asset portfolio in the financial market if there are severe restrictions on the use of financial leverage.

It can be argued that periods of low volatility are similar to periods of low beta asset portfolio. While in theory, constraints may explain our findings that most investors can benefit from adjusting volatility with very tight leverage constraints.

These findings call into question many macroeconomic models [230]. In fact, many models of equilibrium asset pricing largely ignore the trade-off between risk and return [130].
Volatility tends to be high during recessions with high macroeconomic uncertainty [135]. One of the intuitive explanations is that investors are slowly abandoning their beliefs about volatility [165].

Volatility-corrected portfolios provide greater risk-based return and simple real-time implementations, which is combined with the behavior of a conservative investor, and the risk premium changing over time is the key object.

11. An assessment of the Bitcoin market was carried out in order to fulfill the functions of a protective (anti-crisis) asset. It has been established that, along with gold, Bitcoin already performs this function and will prevail over gold in the near future as the global digital infrastructure develops and investors grow in confidence in a new class of financial assets — cryptoasset assets.

It is proved that the IGARCH and GJRGARCH models provide the best results in terms of modeling the volatility of the most popular cryptocurrencies.

Due to growing demand and interest in cryptocurrencies and cryptoasset assets in general, we believe that the cryptoasset assets market should be considered as a new segment of the financial market. There are still many questions about whether cryptocurrencies should be classified as currencies or as a commodity. Our analysis suggests that cryptocurrencies are financial assets [265]. Most transactions with them are made for investment purposes: either as a long-term investment in new technologies, or in order to obtain short-term profits [257].

The study of cryptocurrency volatility is important in terms of financial instruments for hedging traditional assets, as well as in terms of pricing.

Regulation and economic policies associated with the use of cryptocurrencies are gradually tightened by many countries [250]. The introduction of new market regulation rules for cryptocurrencies will occur as investment attractiveness increases [254].
## Appendix 1

<table>
<thead>
<tr>
<th>Name</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>Total</th>
<th>Vs. MICEX</th>
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<td>Torgovaya nedvizhimost ZPIFR</td>
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<td>−4.27</td>
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Source: Thomson Reuters Datastream


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