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Section 1. Land management

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WAYS OF REFORMING THE LAND MANAGEMENT SYSTEM OF AZERBAIJAN

Abstract. The most important part of the economic transformations in Azerbaijan with the acquisition of independence was land reform, which embodied the idea of land privatization, the renunciation of exclusive state property. Privatization of 2005 farms was carried out, the state monopoly on land and other means of production was liquidated, state, municipal and private property was created. On the basis of 41 collective and state farms, state farms of seed and pedigree directions were formed. 42.6% of the unified agricultural land of the country has been retained in state ownership, 25.4% transferred to municipal land and 32.0% to private ownership. At present, about 1373202 hectares of land have been transferred to private ownership. The land was transferred to members of agricultural enterprises for free. As a result, 3.187.709 citizens became owners of land shares. In general, conditions for civil circulation of land have been created in the country. So, in 2013 more than 1996 transactions with land plots were carried out. Two main groups of land management methods can be distinguished: administrative and legal and economic, with their inherent measures of impact on subjects, facilities and management environments. Administrative and legal methods are a set of organizational and legal acts of measures of influence, and the effectiveness of economic methods is to use the value indicators (land tax, standard (base) price of land, compensation payments for the removal of land, the standard (basic) amount of rent, registration fees, etc.) aimed at creating conditions for the rational use of land by owners of land users. A comprehensive system of state land resources management in the republic should ensure: guarantees of property rights and their reliable protection, the effectiveness of taxation of land and other real estate, effective implementation of land reform, development and control of land markets, guarantees for mortgages; increasing the level of planning of settlements' lands and development of their infrastructure; reduction of land disputes; reduction of anthropogenic load on the environment; protection and rational use of land; collection of reliable statistical information on land and property relations.

Keywords: laws and regulations, land reform, land relations, land plots, land plots, legal status, municipal property, private property, state ownership, state monopoly, tenure rights, use and disposition of land.

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ПУТИ РЕФОРМИРОВАНИЯ СИСТЕМЫ УПРАВЛЕНИЯ ЗЕМЕЛЬНЫМИ РЕСУРСАМИ АЗЕРБАЙДЖАНА

Аннотация. Важнейшей частью экономических преобразований в Азербайджане с приобретением независимости стала земельная реформа, воплотившая идею приватизации земель, отказа от исключительной государственной собственности. Была проведена приватизация 2005 хозяйств, ликвидирована государственная монополия на землю и другие средства производства, созданы государственная, муниципальная и частная собственность. На базе 41 колхозов и совхозов образованы государственные хозяйства семеноводческого и племенного направления. Из единого земельного фонда сельскохозяйственного назначения страны 42,6% сохранено в государственной собственности, 25,4% передано в муниципальную и 32,0% в частную собственность. В настоящее время в частную собственность передано около 1373202 га земли. Членам сельскохозяйственных предприятий земля в частную собственность передана бесплатно., в результате чего 3187709 граждан стали собственниками земельных долей. В целом в стране созданы условия для гражданского оборота земли. Так, в 2013 году осуществлено более 1996 сделок с земельными участками. Можно выделить две основные группы методов управления земельными ресурсами: административно-правовые и экономические, с присущими им мерами воздействия на субъекты, объекты и среду управления. Административно-правовые методы представляют собой совокупность организационных и правовых актов мер воздействия, а эффективность экономических методов заключается в применении стоимостных показателей (земельный налог, нормативная(базовая) цена земли, компенсационные выплаты при изъятии земельных участков, нормативный (базовый) размер арендной платы, регистрационные сборы и др.), направленных на создание условий для рационального использования земель собственниками землепользователями. Целостная система государственного управления земельными ресурсами в республике должно обеспечивать: гарантии прав собственности и надежную их защиту; действенность налогообложения земли и иной недвижимости; эффективную реализацию земельной реформы; развитие и контроль земельных рынков; гарантии под ипотечные кредиты; повышения уровня планирования земель поселений и развития их инфраструктуры; сокращение земельных споров; уменьшение антропогенной нагрузки на окружающую среду; охрану и рационально использование земель; сбор достоверной статистической информации о земельно-имущественных отношениях.

Ключевые слова: государственная монополия, законы и нормативные акты, земельная реформа, земельные отношения, земельные площади, земельные участки, правовой статус, государственная собственность, муниципальная собственность, права владения, пользования и распоряжения землей, частная собственность.

Одним из определяющих условий стабильного политического, социального и экономического развития Азербайджанской Республики является создание и практическая реализация целостной системы государственного управления гражданским оборотом земельных ресурсов. Структура управления земельными ресурсами в Азербайджане возникла и строилась на основе объективных предпосылок. В Азербайджанской ССР землеустроительная служба была организована в соответствии с единой государственной собственностью на землю. Именно такая форма земельных отношений соответствовало основам землеустроительных служб.

В начале XX века в Азербайджанской ССР существовал специальный государственный орган управления земельными ресурсами – Азгоскомзем, который многое сделал для установления социалистических земельных отношений. В последующие годы Советской власти ведущую роль в управлении земельными ресурсами играло Главное Управление Землепользования и Землеустройства Министерства Сельского Хозяйства Азербайджанской ССР, опираясь на земельные подразделения других ведомств.

Наделение правомочиями государственного управления земельными ресурсами Министерства Сельского Хозяйства в период Советской власти было логичным с позиции важности сельскохозяйственной отрасли. До 90-х годов XX века, как на всей территории бывшего ССР в Азербайджане тоже в основном большое место имело внутрихозяйственное землеустройство колхозов и совхозов. В эти годы сопряжено велись съемки и обследования, укрупнение и разукрупнение колхозов и совхозов, бонитировка и экономическая оценка сельскохозяйственных угодий, контроль за использованием и охраной земель.

С образованием Азербайджана как независимого государства начались разработка и претворение в жизнь радикальных экономических реформ. В их основу легла идея денационализации государственной собственности, означающая передачу принадлежащих государству объектов в собственность граждан и негосударственных организаций. Важнейшей частью экономических преобразований стала земельная реформа, воплотившая идею приватизации земель, отказа от исключительной государственной собственности. В первую очередь земельная реформа коснулась аграрного сектора и сельскохозяйственных земель. В этой области политическое руководство страны пошло по пути капитализации сельского хозяйства, в дальнейшем негосударственные формы собственности вошли в практику земельных отношений применительно к другим категориям земель.

В содержание земельной реформы вошли также мероприятия по созданию муниципальной собственности, определению правового режима и разграничению государственной собственности. Так как, по сути, Азербайджан является аграрной страной, особый характер земельная реформа приобрела применительно к сельскому хозяйству. Развитие процесса приватизации земель в данной области занимало и продолжает занимать ключевое место. Правовую основу земельной реформы составил блок законов и подзаконных актов, призванных придать законный характер предпринимаемым реформам.

Для проведения земельной реформы была создана правовая база с принятием необходимых законов и других законодательных актов. В 1995–2015 годах было разработано и принято более 30 законов и нормативных актов относительно земли и проведения реформы. Приняты законы «О крестьянских (фермерских) хозяйствах», «Об основах аграрной реформы», «О реформировании совхозов и колхозов», «О земельной реформе», «О государственном земельном кадастре, мониторинге земель и землеустройстве», «О плодородии земель», «О предпринимательстве», «О рынке земли», «О земельном налоге», «Об аренде земли», «О территориях и землях муни-

ципалитетов» и др. Ведение земельной реформы была возложено на Государственный Земельный Комитет, которому подчинялись соответствующие районные земельные отделы и проектный институт по землеустройству.

Процесс реформы земли в республике подготавливался тщательно, все её элементы прорабатывались скрупулезно. В подготовительный период был изучен опыт зарубежных стран, эффективно решавших проблемы земельных отношений. При разработке концепции и рекомендаций по земельной реформе принимали участие также и зарубежные специалисты. Осуществляемая в стране земельная реформа была нацелена, прежде всего, на изменение форм собственности и форм хозяйствования. Это, в целом соответствовало общей стратегии преобразования экономики республики.

Земельная реформа дала толчок и создала условия для интенсивного развития не столь значимого прежде института права собственности на землю. В республике земельная реформа проводилась поэтапно, оценивая результаты предыдущего этапа, для принятия решений на следующем этапе. Последние масштабные реформы начались именно после принятия закона «О земельной реформе» 16 июля 1996 года. Была проведена приватизация 2005 хозяйств, ликвидирована государственная монополия на землю и другие средства производства, созданы государственная, муниципальная и частная собственность. На базе 41 колхозов и совхозов образованы государственные хозяйства семеноводческого и племенного направления. Из единого земельного фонда сельскохозяйственного назначения страны 42,6% сохранено в государственной собственности, 25,4% передано в муниципальную и 32,0% в частную собственность.

В настоящее время в частную собственность передано около 1373202 га земли. Членам сельскохозяйственных предприятий земля в частную собственность передана бесплатно. В результате чего 3187709 граждан стали собственниками земельных долей. Физическим и юридическим лицам иностранных государств, а также лицам, не являющимися гражданами республики, земельный участок передаётся только в пользование или в аренду. На 1 ноября 2013 года из 1395,0 тыс. га земельной площади, предназначенной для приватизации, 1373,2 тыс. га или 98% уже распределено. На каждую семью, в среднем, приходится около 1,6 га земельной площади. Обеспечена регистрация прав на земельные участки. Всем собственникам изготовлены и выданы документы, удостоверяющие право собственности на землю. Согласно законодательным актам Республики, собственники земельных участков вправе совершать в отношении своих участков любые сделки, по договорной цене, вносить в качестве взноса в уставный фонд хозяйственного субъекта, передать в залог, дарить, завещать, сдавать в аренду, то есть они могут распоряжаться им по своему усмотрению без получения каких-либо разрешений государственных органов.

Право землепользования в Азербайджане стало объектом рыночных отношений. Наличие многообразия форм собственности, в том числе частной, было определено и новой конституцией, принятой в 1995 году. В целом в стране созданы условия для гражданского оборота земли. Так, в 2013 году осуществлено более 1996 сделок с земельными участками. Таким образом, земля приобрела сложный правовой статус, став недвижимым имуществом особого рода, в котором сочетаются черты природного объекта и товарно-материальной ценности. Это означает, что в Азербайджанской Республике земля теперь является объектом не только земельных отношений, но и гражданских. Признание земель недвижимым имуществом является формальным основанием для включения права собственности на землю в категорию вещных прав и распространения на данную область подходов, принципов и решений, применяемых к отношениям собственности на имущество в целом. В частности, содержание

права собственности на землю составляют правомочия владения, пользования, распоряжения.

Все три правомочия юридически существуют как единство и закрепляются за соответствующими субъектами в виде права собственности на основании различных государственных нормативных и ненормативных актов. Наличие документа, удостоверяющего право собственности, является юридическим основанием для реализации любого правомочия собственности. К примеру, свидетельство о государственной регистрации права собственности на земельный участок достаточно для того, чтобы собственник мог входить на участок и находиться на нем, использовать его для разрешенных целей, а также продавать или иным образом отчуждать земельный участок.

Собственник по своему желанию и в соответствии с требованиями закона имеет право передать часть своих правомочий другим лицам. При передаче отдельных правомочий собственник ограничивает свое право собственности, но не теряет его. Так, собственник может передать свой земельный участок другим лицам в пользование, ограничив тем самым свои правомочия владения и пользования. В определенных случаях возможна передача не собственникам некоторой части правомочий распоряжения за исключением отчуждения права собственности помимо воли собственника.

Земельное и гражданское законодательство Республики исходит из принципа ограниченности свободы действий и усмотрения собственника по владению, пользованию и распоряжению земельной собственностью. Данный принцип основан на понимании того, что право собственности существует наряду с другими правами и интересами общества, государства, граждан и должно уравновешиваться с ними. Применительно к частной собственности данный принцип зафиксирован в Конституции Азербайджанской Республики, который гласит: «владение, пользование и распоряжение землей и другими природными ресурсами осуществляются их собственниками свободно, если это не наносит ущерба окружающей среде и не нарушает прав и законных интересов иных лиц».

Действующее земельное законодательство исходит из идеи отказа от права исключительной государственной собственности, реализующего монополию государства на землю, и его замены множеством форм собственности: государственная, муниципальная, частная.

Право государственной собственности означает принадлежность правомочий владения, пользования, распоряжения государством. Государство как субъект права государственной собственности представлено не одним ведомством, а целым рядом различных органов государственной власти, между которыми распределяются правомочия собственности.

Государственной земельной собственности принадлежит ведущее место. Государственные земли – наиболее обширны по площади, имеют наиболее существенную экономическую и экологическую значимость. На государственных землях размещается большинство промышленных предприятий, подавляющее большинство земель природоохранного назначения находятся в государственной собственности.

Земли, находящиеся в государственной собственности, можно приватизировать с учетом запретов и ограничений, устанавливаемых для отдельных категории земель. Государственные земли могут передаваться физическим и юридическим лицам в пользование на правах срочного и бессрочного пользования, пожизненного наследуемого владения, аренды. Землепользователи исполняют обязанности по рациональному использованию земель, недопущению их деградации. Согласно закону в Азербайджане землепользование является платным.

Право муниципальной собственности на землю – это правомочия владения, пользования, распоряжения, принадлежащие муниципальному образованию. В этом качестве органы местного самоуправления имеют право передать земель-

ные участки во временное и постоянное владение и пользование физическим и юридическим лицам, сдавать в аренду, продавать, отчуждать земли, находящиеся в муниципальное собственности, и совершать иные сделки.

Объектами права муниципальной собственности являются земельные участки, переданные в муниципальную собственность. Порядок передачи объектов государственной собственности в муниципальную регулируется законами Азербайджанской Республики. В отличие от государственной, муниципальная собственность не делится на виды. Она едина. Управление муниципальной земельной собственностью возложено на местные органы, в структуре которых создаются подразделения, отвечающие за содержание и регулирующие использование земель, занятых автомобильными дорогами, контроль над использованием земель, благоустройство и озеленение территории и др.

Основное назначение муниципальных земель – обеспечение проживания, работы и отдыха населения. Муниципальные земли преимущественно относятся к категории земель населенных пунктов, за исключением земель, расположенных за чертой городских и сельских поселений. Основные площади муниципальной собственности относятся к землям общего пользования и используются гражданами для прохода, проезда, размещения необходимых объектов общего пользования. Другие категории земель могут закрепляться за индивидуальными землепользователями.

Допускается приватизация муниципальных земель. Порядок и условия приватизации определяются местными органами самоуправления. Средства от продажи муниципальной собственности поступают в полном объеме в местный бюджет. Не допускается приватизация земель общего пользования в населенных пунктах.

Право частной собственности означает принадлежность правомочий владения, пользования,

распоряжения земельными участками отдельным конкретным физическим или юридическим лицам, которые выступают субъектами права частной собственности на землю.

Соответственно по субъектам право частной собственности делится на два вида: право частной собственности физических и право частной собственности юридических лиц. Объектами права частной собственности выступают земельные участки лишь некоторых категорий земель. Наиболее либерален в этом смысле правовой режим земель сельскохозяйственного назначения, на которые право частной собственности фактически не ограничивается. В отличие от этого, право частной собственности не может быть установлено на земли лесного фонда, земли, занятые объектами обороны, земли общего пользования в населенных пунктах и некоторые другие.

Земельные участки могут передаваться их собственниками другим лицам во временное пользование, в аренду, либо отчуждаться путём совершения сделок купли-продажи, наследования, дарения, мены, передачи в качестве взноса в уставные фонды, могут быть предметом залога. Собственники могут также добровольно отказаться от своего земельного участка либо могут объединить его с земельными участками других собственников для создания общей собственности.

Правомочия владения, пользования, распоряжения могут быть ограничены государством. Земельные участки, находящиеся в частной собственности, могут быть изъяты для государственных, общественных или муниципальных нужд в установленном порядке и при условии компенсации их стоимости. В определенных случаях правонарушений в качестве меры наказания собственник может быть лишен права собственности в соответствии с судебным решением без компенсации.

На лиц, имеющих земельные участки на праве частной собственности, возлагается ряд обязан-

ностей. Они должны своевременно платить земельный налог, представлять в государственные органы сведения о состоянии и использовании земель, эффективно использовать землю в соответствии с целевым назначением и др.

Право частной собственности возникает в результате различного рода сделок – купли-продажи земельных участков, приватизации, мены, дарения, наследования, ипотеки. Право частной собственности удостоверяется свидетельством о государственной регистрации прав частной собственности. Право частной собственности возникает с момента такой регистрации.

Государственное управление земельными ресурсами – это своеобразный и достаточно сложный механизм регулирования общественной жизни, направляющий действия различных субъектов на претворения в жизнь земельной политики государства, на поддержание выработанных в процессе исторического развития земельных отношений ценностей, норм, традиций. Разные политические культуры, не говоря уже о разных административных системах, требуют разных управленческих решений. Бесспорно, при определении курса государственного управления земельными ресурсами в Азербайджанской Республике, необходимо знать обо всех новых идеях и экспериментах, осуществляемых в других странах, но это знание должно быть основанием для адаптации удачных практик к конкретным условиям, а не для подражания.

Функции государства по управлению земельными ресурсами имеют разную природу. В том случае, когда государство является собственником земельного фонда, тогда государственное управление земельными ресурсами осуществляются прямо. При этом государство пользуется властными распорядительными полномочиями, адресует свои предписания пользователям, владельцам и арендаторам государственных земель. Однако и при этом оно должно предоставлять пользователям государственных земель свободу хозяйствования на земле. В тех случаях, когда зем-

ли находятся в частной собственности, государство выступает, как орган политической власти, определяет государственную земельную политику, применяет метод дозволения собственникам при принятии решений по хозяйственному использованию земельной недвижимости. Однако, эта свобода не должна вступать в противоречия с предписаниями земельного законодательства Азербайджанской Республики.

Компетенция органов местного самоуправления в области регулирования земельных отношений определяется Конституцией Азербайджанской Республики, земельным законодательством, законодательными актами по местному самоуправлению. В частности к полномочиям муниципалитетов в области регулирования земельных отношений в пределах своих административных территорий по статье 8 ЗК АР относятся:

– издание в установленном законодательством порядке распоряжений о владении, пользовании находящихся в муниципальной собственности землями и об этих землях;

– предоставление в установленном законодательством порядке находящихся в муниципальной собственности земельных участков в собственность, пользование и аренду;

– организация разработки и осуществления генеральных планов населенных пунктов, проектов по планированию и строительству, планов землеустройства и хозяйственных планов;

– получение с пользователей муниципальными землями платы за аренду земельных участков;

– изъятие в порядке, установленном Земельным Кодексом и другими законодательными актами, земельного участка у юридических и физических лиц для нужд муниципалитета;

– защита в пределах своих полномочий прав собственников, пользователей и арендаторов земли;

– разработка и осуществление программ по охране и улучшению муниципальных земель;

– установление минимальной площади земельных участков, предоставляемых (продава-

емых) в собственность, пользование и аренду юридическим и физическим лицам;

– контролирование в пределах своих полномочий использования муниципальных земель и их охраны;

– решение в пределах своих полномочий споров относительно муниципальных земель, которые должны решаться во внесудебном порядке;

– осуществление других полномочий, установленных законодательством.

Система землеустройства традиционна как составная часть единой системы государственного управления земельными ресурсами, являлся главное звено государственного управления земельными отношениями в республике. Сожалению при новых земельных отношениях, изменился спрос на различные виды землеустроительных работ. Первый этап земельной реформы в Азербайджане характеризовался преобразованием (реорганизацией) колхозов и совхозов, созданием на их территории фермерских (крестьянских) хозяйств. С этой целью за эти годы были проведены в основном работы по межхозяйственному землеустройству – перераспределению земель различным категориям землевладельцев и землепользователей. В ближайшей перспективе следует ожидать существенное расширение работ по внутрихозяйственному землеустройству, охране земель и проведению других мероприятий, обеспечивающих повышение эффективности землевладения и землепользования. В современных условиях Азербайджана все более настоятельно ощущается потребность оптимизации управленческой деятельности в государственных структурах системы землеустройства на основе учета широкого круга факторов. Коренные изменения земельных отношений, принятие новых законодательных актов и нормативов по их реализации, проведение земельной реформы вызывает необходимость реформирования и реорганизации организационной структуры, содержания и принципов функциональной деятельности землеустро-

ительной службы. Если это не произойдет, тогда потеряют всякий смысл проведенные за эти годы реформы в области землепользования. Исходя от этого, думаю необходимо организовать научно-исследовательский и проектный институт земельных отношений и землеустройства, к задачам которого на современном этапе развития земельных отношений и землеустройства можно отнести следующие:

– разработка общетеоретических и методических основ проблем развития земельной реформы;

– оценка итогов осуществления земельной реформы, исследование проблемной ситуации;

– разработка концепции антикризисной корректировки земельной реформы в республике и развитие методической базы обоснования программы перспективной её реализации;

– установление классификаций структурных элементов и зонирования регионального земле хозяйственного комплекса по условиям структурных преобразований и реформирования земельных отношений;

– формирование вариантов программы структурных преобразований и антикризисного развития земельной реформы в республике, обоснование показателей и критериев их оценки;

– обоснование поэтапной последовательности и приоритетов реализации варианта осуществления структурных преобразований и антикризисной земельной реформы.

Параллельно с вышесказанным, при управлении земельными ресурсами в Азербайджанской Республике необходимо обеспечивать также соблюдение земельного законодательства на всех уровнях управления. В республике функции управления земельными ресурсами на разных уровнях и различными ветвями власти разделена. Часть функции управления относиться к компетенции законодательной власти, а часть – к компетенции исполнительной и судебной власти. К компетенции органов законодательной власти республики относится принятие законодательных и правовых

нормативных актов в соответствии с Конституцией Азербайджанской Республики земельным законодательством, другими законами АР.

К компетенции органов государственной власти в области регулирования земельных отношений, согласно статьи 6 ЗК АР относятся:

– подготовка предложений по совершенствованию земельного законодательства Азербайджанской Республики;

– принятие нормативно-правовых актов, обеспечивающих исполнение земельного законодательства и внесение в них изменений;

– установление правил проведения государственного земельного кадастра, мониторинга и землеустройства;

– передача в порядке, установленном настоящим Кодексом и другими законодательными актами, находящихся в государственной собственности земельных участков в пользование и аренду, получение их обратно в целях обеспечения государственных и общественных нужд;

– выкуп или принудительный выкуп в порядке, установленном земельным кодексом и другими законодательными актами, земельных участков, находящихся в частной собственности;

– установление правил определения минимальных площадей земельных участков, которые могут быть взяты на государственную регистрацию;

– отнесение земель к категориям и перевод их из одной категории в другую;

– передача летних и зимних пастбищ в пользование административно-территориальным единицам;

– установление ставок земельного налога, правил их выплаты и льгот в области удержания земельного налога;

– разработка и осуществление государственных программ по рациональному использованию земель, повышению их плодородности, охране земельных ресурсов и по другим мерам по охране природы;

– проведение государственной экологической экспертизы деятельности, связанной с использованием находящихся в государственной собственности земель, и принятие решения о приостановке строительства или реконструкции объекта без положительного заключения государственной экологической экспертизы;

– организация и осуществление государственного контроля за использованием земель в соответствии с законодательством и их охраной;

– организация проведения государственного земельного кадастра, мониторинга, землеустройства;

– решение указанных в земельном Кодексе земельных споров, которые должны решаться во внесудебном порядке;

– осуществление других полномочий, установленных законодательством.

По совокупности можно выделить две основные группы методов управления земельными ресурсами: административно-правовые и экономические, с присущими им мерами воздействия на субъекты, объекты и среду управления.

Административно-правовые методы представляют собой совокупность организационных и правовых актов мер воздействия. Обычно с их помощью устанавливают нормативы, условия, требования и способы использования земель собственниками и землепользователями, регулируют отношения по поводу владения, пользования и распоряжения земельными участками. К предмету регулирования относятся: предоставление земельных участков, изъятие (выкуп) земель для государственных и общественных нужд, установление предельных размеров предоставляемых в собственность земельных участков, процедуры регистрации земельной собственности и сделок с недвижимостью, порядок компенсационных выплат и другие отношения. В рыночных условиях повышенные требования предъявляют к инфраструктурному обеспечению регулирования земельных отношений, к которому относятся ведение Государственного земельного кадастра, мониторинг земель, их оценка и нормативно-правовая база.

Однако, использование земель в хозяйственных целях не может и не должно регулироваться только административно-правовыми методами. В рамках соблюдения общеобязательных норм и правил владельцы и пользователи земельных участков должны иметь свободно прав выбора действий. Поэтому организационные и правовые меры могут быть эффективны лишь взаимодействии и взаимосвязи с экономическими.

Эффективность экономических методов заключается в применении стоимостных показателей, направленных на создание условий для рационального использования земель собственниками землепользователями. К таким показателям относятся земельный налог, нормативная (базовая) цена земли, компенсационные выплаты при изъятии земельных участков, нормативный (базовый) размер арендной платы, регистрационные сборы и др.

В качестве важнейшей составляющей экономических методов следует выделить рыночные регуляторы, оказывающие непосредственное влияние на формирование и функционирование земельного рынка. Как правило, к ним относятся: договорная (рыночная) цена при сделках купли-продажи земельных участков, договорная арендная плата, залоговая цена при ипотечном кредитовании и т.д. Сюда же следует отнести и такие элементы экономического регулирования, как прогрессивный земельный налог за находящуюся в собственности площадь сверх установленной нормы, прогрессивный налог на часть выручки, получаемой при превышении цен сверх установленного базисного уровня при купле-продаже земельных участков, как условие предотвращения спекулятивных сделок. Экономическими методами можно корректировать рыночное пространство, его конъюнктуру и цены, применяя разного рода меры, блокирующие ажиотажный спрос на земельные участки либо избыточное предложение, что особенно актуально для урбанизированных регионов. Поэтому целостная система государственного управления земельными ресурсами в республике должно обеспечивать:

– гарантии прав собственности и надежную их защиту;

– действенность налогообложения земли и иной недвижимости;

– эффективную реализацию земельной реформы;

– развитие и контроль земельных рынков;

– гарантии под ипотечные кредиты;

– повышения уровня планирования земель поселений и развития их инфраструктуры;

– сокращение земельных споров;

– уменьшение антропогенной нагрузки на окружающую среду;

– охрану и рационально использование земель;

– сбор достоверной статистической информации о земельно-имущественных отношениях.

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Section 2. Finance

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IMPACT OF MACROECONOMIC FACTORS ON THE LEVEL OF NON-PERFORMING LOANS IN THE BANKING SECTOR IN KOSOVO

Abstract. Nonperforming loans adversely affect the performance and stability of the banking industry, increasing provisioning, never lending, and in more severe cases can bring a financial institution into insolvency. The banking industry in Kosovo has also been very cautious in terms of credit portfolio quality management, making the rates of these loans very low, which has made confidence in this sector even higher.

Keywords: Non-performing loans, Inflation, Interest rate, Macroeconomic factors.

1. Indroduction

In the last decade, non-performing loans have received a lot of attention around the world as their large and uncontrolled growth would lead to the potential bankruptcy of the banking system as a whole. We should also mention the fact that many scholars prove that the cause of bankruptcy is the quality of assets, which is an important predictor of bank insolvency and that bank financial institutions that are on the verge of bankruptcy have very high levels of bankruptcy. non-performing loans just before the announcement of bankruptcy. According to studies on non-performing loans, various analysts have attempted to directly link the level of non-performing loans with two categories of factors: (1) macroeconomic factors and (2) factors of a banking or banking specific nature. There is much discussion as to whether non-performing loans are one of the major causes of economic stagnation problems and that any non-performing loans are seen as a mirror image of the failed venture. Another explanation for the high credit losses is the occurrence of banks in areas with poor economic conditions. But even specializing in a particular lending category can increase the probability of losing a loan. For example, intra-category credit may have a higher average probability of failure than loans in other categories or investing heavily in one bank category reduces the degree of diversification of the portfolio as a whole. The large variation in the level of credit losses between different markets suggests that banks would be less vulnerable to the destinies of individual areas or industries if they were to lend over a wide geographical area. The results of this study suggest policy-makers promote greater diversification to curb excessive risk-taking.

The consequences for the banking industry as a result of nonperforming loans can be severe if no precautionary steps are taken. Non-performing

loans adversely affect the performance and stability of the banking industry, increasing provisioning, never lending, and in more severe cases can bring a financial institution into insolvency. The banking industry in Kosovo has also been very cautious in terms of credit portfolio quality management, making the rates of these loans very low, which has made confidence in this sector even higher.

It is common for financial institutions to play a vital role in the economy by allocating capital from surplus agents to deficit agents in various economic sectors [1, 71–73]. This means that a sound banking sector is needed for economic growth because it provides macroeconomic stability and develops sound financial institutions [4]. However, over the past two decades, the liberalization process has strengthened competition among banks. Competition increased banks' credit risk, affecting their loan portfolios with regard to bad credit review procedures and borrowing mitigation criteria [4; 6; 8].

2. Literature review

Existing literature provides evidence suggesting a strong association between NPLs and macroeconomic factors. Some macroeconomic factors that the literature proposes as important determinants of NPLs are: real GDP growth, inflation rate, effective exchange rate, real interest rate, unemployment rate, broad money supply (M2) and GDP per capital [2].

2.1. Economic Growth (GDP)

The explanation given by the literature for this relationship is that changes in the business cycle affect borrower's ability to repay capacity. Thus, the strong positive growth of real GDP usually translates into more income that improves the borrower's debt service capacity, which in turn contributes to lower non-performing loans. Conversely, when there is a slowdown in the economy (low or negative GDP growth), economic activity is generally declining and the volume of cash for businesses or households is decreasing. These conditions contribute to the deterioration of borrowers' ability to repay loans, which

increases the likelihood of delays in their financial liabilities and thus exposes banks to increased credit risk. In this regard, Hou [4, 20–30] noted that every NPL in the financial sector is seen as an overview image of a weak loss enterprise.

2.2. Real interest rate

Asymmetric information and the selected negative selection problem can lead to "credit rationing," in which some borrowers are denied loans even when they are willing to pay a higher interest rate [5, 135–152]. This is because as interest rates rise, prudent borrowers are more likely to decide that it would not be wise to borrow, while borrowers with the most risky investment projects are often the ones willing to pay. higher interest rates. In this general environment, a higher interest rate leads to a larger negative solution; [6, 488–489]. This means that higher interest rates increase the likelihood that the lender will take a risk. bad credit and ultimately increase [9].

2.3. Inflation

Inflation affects borrowers' debt service capacity through different channels, and its impact on the NPL can be positive or negative [3]. The explanation provided by the literature for this relationship is that higher inflation can facilitate debt service by reducing the fair value of outstanding loans especially when credit rates are fixed (banks do not adjust rates in line with inflation changes to maintain their real rates of return). it may also weaken some borrowers 'ability to service debt by lowering real income. Moreover, when credit rates are variable (adjusted to inflation changes), inflation is likely to reduce borrowers' capacity to lending lenders to adjust rates to maintain their rea returns let alone to pass on the rise in policy rates resulting from monetary policy actions to combat inflation. Against this backdrop, the relationship between NPL and inflation can be positive or negative.

2.4. Real effective exchange rate

Inflation a change in the effective exchange rate may also affect borrowers' debt service capac-

ity through different channels and its impact on the NPL can be positive or negative [6]. As mentioned in Pasha and Khemraj [7], exchange rate depreciation can have mixed implications on borrowers' debt capacity, on the one hand, it can improve the competitiveness of export-oriented firms as long as the value of the local currency is depreciated (lower), export-oriented firms may dominate the international market at a lower price (since their cost of production is covered by the local currency which is lower than the foreign currency and their income is collected in foreign currency. which has a higher value than the local currency, so the exchange rate depreciation can improve the debt capacity of export-oriented borrowers and in turn may adversely affect the debt capacity of borrowers who borrow in foreign currency (import-oriented firms).

3. Methodology of research

Descriptive data analysis was used in this study, where central variable statistical analysis used highly variable regression. Descriptive research involves collecting data, describing the phenomenon, and then organizing, collecting, describing the data, in the form of graphs and tables, in order to help the reader understand the distribution of data. In the literature, two logical ways of developing a study structure can be used, namely inductive approach and deductive approach. Inductive approximation is based on the assumption that theory is developed by empirical event research. This means that from individual research to build a general model. Deductive approach is realized by identifying the ideas set by the theories and then testing the theory. This method consists of the general in a given situation and is the opposite of the inductive approach. In this paper deductive approximation is more appropriate because of the theories given in the reviewed literature on nonperforming loans.

The paper addresses the macroeconomic and banking factors of nonperforming loans in the banking sector in Kosovo. The data collection was done through secondary data from the reports and bulletins of the Central Bank of Kosovo (CBK) for the period 2007–2017.

Among the factors that will be studied in this research are:

Macroeconomic Factors:

1. Economic Growth (GDP);

2. Inflation;

3. Unemployment rate;

4. Interest rate.

The econometric model of research is:

$$Yt = C + \beta 1t + \beta 2t + \beta 3t + \beta 4t + \varepsilon$$

Where,

$$NPLt = C + GDP1t + INF2t + UR3t + IR4t + \varepsilon$$

NPL – nonperforming loans, expressed in%;

GDP – Economic Growth, expressed in%;

INF – Inflation, expressed in%;

UR – Unemployment rate, expressed in%;

IR – Interest rate, expressed in%;

4. Research questions / hypotheses

Research questions are:

1. Which macroeconomic factors have the most impact on NPLs?

2. What correlation exists between inflation and the NPL?

3. What is the correlation between the interest rate and the NPL

Hypotheses are:

H0: GDP growth has no impact on the level of nonperforming loans;

H1: GDP growth has an impact on the level of nonperforming loans;

H0: Inflation rate has no impact on the level of nonperforming loans;

H2: Inflation rate affects nonperforming loans;

5. Statistical analysis

For the estimation of the econometric model, the analysis of the exclusion of extreme variables from the regression line of the econometric model will be used. SPSS software has the "Boxplot" modeling technique for eliminating extreme variables.

Tabel 1. – Boxplot Summary

	Case Processing Summary					
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
GDP	11	100.0%	0	0.0%	11	100.0%
Inflacioni	11	100.0%	0	0.0%	11	100.0%
UR	11	100.0%	0	0.0%	11	100.0%
NPL	11	100.0%	0	0.0%	11	100.0%
IR	11	100.0%	0	0.0%	11	100.0%

The table shows that none of the variables has an "outliers" value, thus meeting the primary regression condition for the regression to have a linear line.

Table 2. – Summary of the econometric model

					Model Summary[b]					
					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.812[a]	.660	−.532	2.37365%	.660	.554	7	2	.767	2.081

a. Predictors: (Constant), IR, GDP, UR, Inflacioni
b. Dependent Variable: NPL

The results of the econometric model summary show that the coefficient of determination is 66%, so a fairly reliable rate indicates that the independent variables included in the model are reasonable and explain the dependent variable quite well. The Durbin Watson coefficient, which measures the presence of the correlation of the series, takes the values of 1 to 4, while the values of 1.5 to 2.5 indicate that the series has nothing to do with the econometric model used, so the value of 2.081 indicates the robustness of the econometric model. used in the paper.

Tabel 3. – Regression Summary

		Coefficients[a]							
	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	26.581	37.861		.702	.555			
	GDP	−1.702	5.541	−.754	−.307	.788	−.518	−.212	−.127
	UR	.041	.399	.095	.102	.928	.084	.072	.042
	Inflacioni	.300	1.578	.514	2.190	.007	−.385	.133	.078
	IR	−.433	.868	−.619	2.499	.012	−.077	−.333	−.206

a. Dependent Variable: NPL

Based on the regression results, we see that 2 factors affect nonperforming loans in Kosovo, macroeconomic factors include inflation with a significant level of 0.7% and an interest rate of 1.2%.

Conclusion

The consequences for the banking industry as a result of nonperforming loans can be severe if no precautionary steps are taken. Nonperforming loans adversely affect the performance and stability of the banking industry, increasing provisioning, never lending, and in more severe cases can bring a financial institution into insolvency. The banking industry in Kosovo has also been very cautious in terms of credit portfolio quality management, making the rates of these loans very low, which has made confidence in this sector even higher. Kosovo has lower rates of non-performing loans compared to the countries of the region, including Albania, Macedonia, Montenegro, Serbia etc. According to the World Bank data, at the end of 2015, Kosovo recorded a percentage of non-performing loans of 7.1% in relation to the total loans the banking industry has issued to its clients. This lower level compared to all other countries presented for comparison shows the high quality of credit portfolio that the banking industry in Kosovo has to their clients.

The overall conclusion of the research is that within the macroeconomic and banking factors that affect nonperforming loans are the inflation rate and the interest rate on household loans.

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IMPACT OF MACROECONOMIC AND BANKING FACTORS ON THE LEVEL OF NON-PERFORMING LOANS IN THE BANKING SECTOR IN KOSOVO

Abstract. According to studies on non-performing loans, various analysts have attempted to directly link the level of non-performing loans with two categories of factors: (1) macroeconomic factors and (2) bank-specific or bank-specific factors. The research will address the problem of NPLs through the econometric model, where the macroeconomic factors that are addressed in the research are: GDP, inflation, unemployment rate and interest rate, while the banking factors are: ROEA, ROAA and CAR. The research covers the period 2007–2017. The results of the research showed that inflation and interest rate have an impact on NPLs in the Kosovo banking sector.

Keywords: NPL, Inflation, Interest Rate, Macroeconomic Factors, Banking Factors.

Indroduction

The consequences for the banking industry as a result of nonperforming loans can be severe if no precautionary steps are taken. Non-performing loans adversely affect the performance and stability of the banking industry, increasing provisioning, never lending, and in more severe cases, can bring a financial institution into insolvency. The banking industry in Kosovo has also been very cautious in terms of credit portfolio quality management, making the rates of these loans very low, which has made confidence in this sector even higher.

It is common for financial institutions to play a vital role in the economy by allocating capital from surplus agents to deficit agents in various economic sectors [20]. This means that a sound banking sector is needed for economic growth because it provides macroeconomic stability and develops sound financial institutions [14]. However, over the past two decades, the liberalization process has strengthened competition among banks. Competition increased banks' credit risk, affecting their loan portfolios with regard to bad credit review procedures and borrow-

ing mitigation criteria [16, 13, 12]. led to a significant increase in NPLs, affecting banks' liquidity and profitability, and thus the financial stability of the banking system and macroeconomic stability in general. Many indicators are used to measure banks' lending activity, but the most commonly used indicators to identify credit risk are non-performing loans to total loans (NPLs) and loan loss provisions to total loans (LLPs) [19]. over the last decade, the loan portfolio loan quality remained relatively stable. Subsequently, the quality of banks' lending activity deteriorated significantly. The deterioration in the quality of banks' loan portfolios caused concerns in the banking sector in developed and emerging economies. The problem of increasing the NPL ratio is evident in the banking sector in many countries. Saba [10] points out that since 2008 the level of NPLs has increased significantly and the link between NPLs and the decline in bank credibility is considered a major factor in the failure of credit policy. It is well known that the stability of the financial sector and its likelihood of anxiety depend heavily on the share of NPLs; so NPLs serve as a common indicator in the

financial sector. A number of studies have shown that excessive credit growth often precedes the financial crisis [18].

Literature review

In recent years, more precisely, since the end of the global financial crisis, academic circles have increased their interest in the NPL, and the overview of empirical bibliography provides valuable information on the factors that influence them. However, research results need to be taken care of, and they are difficult to compare, as a definition of NPL used in all, or at least, in most countries does not exist. Although there is no internationally accepted definition, the most commonly used definitions are those given by the International Monetary Fund (IMF) and the Basel Committee on Banking Supervision (BCBS) [15].

As defined by the IMF, the NPL is a loan where the debtor is late for at least three months (90 days) with the payment of principal and / or interest in respect of the term specified in the loan contract; and a loan where the interest amount of three months (90 days) or more was capitalized (reinvested on the principal amount), refinanced, or its late payment agreed [6, 3]. According to the definition given by the BCBS, it is also recommended that the "90 days" rule is adhered to, ie it is considered to be a failure to meet the obligation if the debtor is late with the obligations to the bank for more than 90 days [1, 17].

The criteria most often used to differentiate NPL national definitions are to delay the number of days in which the bank owes its obligations, but it is not the only criterion. In addition, the debtor's financial eligibility criteria and whether a litigation against the debtor has been initiated, whether the NPL has been presented in Gross or Net Amount, and often the collateral and collateral criteria are also used. However, most of the research conducted is related to the factors that influence the NPL, while only a few studies have addressed the definition itself [4].

One of the earliest studies on the determinants of NPLs is the work of Keeton and Morris [9], who investigated the underlying drivers of loan losses for a sample of approximately 2,500 U.S. commercial banks for the period 1979–1985. Using simple linear regressions, they found that local economic conditions coupled with the poor performance of certain sectors explain the changes in credit losses recorded by banks. The study also reported that commercial banks with higher risk appetite tend to record higher losses [2].

A simple definition of omission is a loan that is not earning full payment of principal and interest is no longer anticipated or a loan that is not earning income and principal or interest is 90 days or more overdue or a loan that is not income earning and the due date has expired and payment in full has not been made. There is no global standard for determining non-performing loans at the practical level. Variations exist in terms of the system of classification, scope, and content [7]. This problem potentially adds to the disorder and uncertainty in NPL issues. For example, as described by Se-Hark Park [8], during the 1990s, there were three different methods for determining non-performing loans in Japan: the 1993 method based on banking laws; "Bank Self-Esteem" in March 1996; and "Revaluation of Debts Based on Financial Recovery Laws" in 1999. These measurements have gradually expanded the scope and degrees of the risk management method. Similar to the trend in Japan, more countries, regulators and banks are moving towards adopting and adapting best practice and consensus. In the US, for example, federally regulated banks are required to use the five-level BIS non-performing loan rating system: Pass, Special Mention, Substandard, Doubtful and Hoss. Currently, the five-tier system is the most popular method of risk classification, or, in some cases, a dual-tier reporting system according to their internal policy guidelines, as well as the five-tier system [5].

Methodology of research

Descriptive data analysis was used in this study, where central variable statistical analysis used highly variable regression. Descriptive research involves col-

lecting data, describing the phenomenon, and then organizing, collecting, describing the data, in the form of graphs and tables, in order to help the reader understand the distribution of data. In the literature, two logical ways of developing a study structure can be used, namely inductive approach and deductive approach [11]. Inductive approximation is based on the assumption that theory is developed by empirical event research. This means that from individual research to build a general model. Deductive approach is realized by identifying the ideas set by the theories and then testing the theory. This method consists of the general in a given situation and is the opposite of the inductive approach.

In this paper deductive approach is more appropriate because of the theories given in the revised literature on non-performing loans, so it is first necessary to analyze the literature on existing theories that explain the phenomenon of NPLs.

The paper addresses the macroeconomic and banking factors of nonperforming loans in the banking sector in Kosovo. The data collection was done through secondary data from the reports and bulletins of the Central Bank of Kosovo (CBK), for the period 2007–2017.

Among the factors that will be studied in this research are:

Macroeconomic Factors:

1. Economic Growth (GDP);

2. inflation;

3. Unemployment rate;

4. Interest rate.

Banking factors:

1. Average Return on Assets (ROAA)

2. Average Return on Equity (ROEA)

3. CAR – Capital adequacy ratio

To build the econometric model of research many different researches have been used in the field of NPLs. This study is also supported and inspired by previous studies conducted by various researchers such as: Khemraj and Pasha (2005), Hess, Grimes and J. Holmes (2008), Kumar Dash and Gaurav Kobra (2010), Kalluci and Kodra (2010), Bofondi and Ropele (2011).

The econometric model of research is:

$Yt = C + \beta 1t + \beta 2t + \beta 3t + \beta 4t + \beta 5t + \beta 6t + \beta 7t + \varepsilon$

Where,

$NPLt = C + GDP1t + INF2t + UR3t + NI4t + + ROEA5t + ROAA6t + CAR7t + \varepsilon$

Description of variables:

NPL – nonperforming loans, expressed in%;

GDP – Economic Growth, expressed in%;

INF – Inflation, expressed in%;

UR – Unemployment rate, expressed in%;

NI – Interest rate, expressed in%;

ROEA – Average rate of return on equity, expressed in%;

ROAA – Average rate of return on assets, expressed in%;

CAR – Capital adequacy ratio, expressed in%

C – Constant for variables;

E – random error for period t;

T – 2007 to 2017.

Table 1. – Source of data set in the model

Variable	The Source of data
NPL	The Central Bank of Kosovo
GDP	The Central Bank of Kosovo and World Bank
INF	The Central Bank of Kosovo
NP	Kosovo Agency of Statistics
NI	The Central Bank of Kosovo
ROEA	The Central Bank of Kosovo
ROAA	The Central Bank of Kosovo
CAR	The Central Bank of Kosovo

Statistical analysis

Data analysis will include the following statistical analyzes: descriptive analysis, correlation analysis, exclusion of extreme variables from the regression model, and regression analysis. Within the correlation analysis we will address the positive and negative relationship between the variables placed in the econometric model.

Table 2. – Correlation analysis

Correlations		GDP	Inflation	UR	IR	ROAA	CAR	ROAE	NPL
GDP	Pearson Correlation	1	.891	.520	.224	.147	.155	.066	−.570
	Sig. (2-tailed)		.000	.101	.508	.666	.650	.848	.067
	N	11	11	11	11	11	11	11	11
Inflation	Pearson Correlation	.891	1	.372	.602	−.084	−.137	−.067	−.391
	Sig. (2-tailed)	.000		.259	.050	.807	.688	.846	.234
	N	11	11	11	11	11	11	11	11
UR	Pearson Correlation	.520	.372	1	−.187	−.210	.439	−.247	−.033
	Sig. (2-tailed)	.101	.259		.583	.535	.176	.464	.923
	N	11	11	11	11	11	11	11	11
IR	Pearson Correlation	.224	.602	−.187	1	−.408	−.617	−.250	.044
	Sig. (2-tailed)	.508	.050	.583		.213	.043	.458	.898
	N	11	11	11	11	11	11	11	11
ROAA	Pearson Correlation	.147	−.084	−.210	−.408	1	.586	.949	−.605
	Sig. (2-tailed)	.666	.807	.535	.213		.058	.000	.048
	N	11	11	11	11	11	11	11	11
CAR	Pearson Correlation	.155	−.137	.439	−.617	.586	1	.589	−.265
	Sig. (2-tailed)	.650	.688	.176	.043	.058		.057	.431
	N	11	11	11	11	11	11	11	11
ROAE	Pearson Correlation	.066	−.067	−.247	−.250	.949	.589	1	−.488
	Sig. (2-tailed)	.848	.846	.464	.458	.000	.057		.128
	N	11	11	11	11	11	11	11	11
NPL	Pearson Correlation	−.570	−.391	−.033	.044	−.605	−.265	−.488	1
	Sig. (2-tailed)	.067	.234	.923	.898	.048	.431	.128	
	N	11	11	11	11	11	11	11	11

The correlational correlations between the variables set in the econometric model show that the two correlational correlations are positive and negative. The highest positive correlation is between ROEA and ROAA, where we have R = 0.949, so the increase of one factor influences the growth of the other factor. The weakest positive relationship is between the NPL and the interest rate, so we have R = 0.044, which is interpreted as the increase in the interest rate will have an increase in nonperforming loans. The strongest negative relationship is between the interest rate and the CAR, so we have R = –0.617, which indicates that one variable will increase while the other will decrease.

For the estimation of the econometric model, the analysis of the exclusion of extreme variables from the regression line of the econometric model will be used. SPSS software has the "Boxplot" modeling technique for eliminating extreme variables.

Table 3. – Boxplot Summary

Case Processing Summary						
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
GDP	11	100.0%	0	0.0%	11	100.0%
Inflation	11	100.0%	0	0.0%	11	100.0%
UR	11	100.0%	0	0.0%	11	100.0%
NPL	11	100.0%	0	0.0%	11	100.0%
ROAE	11	100.0%	0	0.0%	11	100.0%
CAR	11	100.0%	0	0.0%	11	100.0%
ROAA	11	100.0%	0	0.0%	11	100.0%
IR	11	100.0%	0	0.0%	11	100.0%

Table 3 shows that none of the variables has any "outliers" value, thus meeting the primary regression condition for the regression to have a linear line.

Table 4. – Summary of the econometric model

Model Summary[b]										
			Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
Model	R	R Square			R Square Change	F Change	df1	df2	Sig. F Change	
1	.812[a]	.660	−.532	2.37365%	.660	.554	7	2	.767	2.081

a. Predictors: (Constant), ROAE, IR, GDP, CAR, UR, ROAA, Inflation
b. Dependent Variable: NPL

The results of the econometric model summarization show that the coefficient of determination is 66%, which is a fairly safe rate indicating that the independent variables in the model are reasonable and explain the dependent variable quite well. The Durbin Watson coefficient, which measures the presence of the series correlation, takes the values of 1 to 4, while the values of 1.5 to 2.5 indicate that the series correlation has nothing to do with the econometric model used, so the value of 2.081 indicates the robustness of the econometric model used in the paper.

Table 5. – Regression Summary

Coefficients[a]									
	Unstandardized Coefficients		Standardized Coefficients			Correlations			
Model	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	
1 (Constant)	26.581	37.861		.702	.555				
GDP	−1.702	5.541	−.754	−.307	.788	−.518	−.212	−.127	
UR	.041	.399	.095	.102	.928	.084	.072	.042	
Inflation	.300	1.578	.514	2.190	.007	−.385	.133	.078	
IR	−.433	.868	−.619	2.499	.012	−.077	−.333	−.206	
ROAA	−4.308	6.898	−1.531	−.625	.596	−.542	−.404	−.258	
CAR	−.592	2.084	−.240	−.284	.803	−.001	−.197	−.117	
ROAE	.338	.752	1.061	.450	.697	−.394	.303	.186	

a. Dependent Variable: NPL

Based on the regression results we see that 2 factors affect nonperforming loans in Kosovo, from macroeconomic factors is inflation with a significant level of 0.7% and from bank factors is the interest rate, with a signiicant level of 1.2%.

$$NPLt = 26.581 - 1.702\,GDP1t + 0.300INF2t + 0.041\,UR3t - 0.433NI4t - 4.308ROEA5t - 0.592ROAA6t + 0.338CAR7t + \varepsilon$$

Conclusions

The consequences for the banking industry as a result of nonperforming loans can be severe if no precautionary steps are taken. Non-performing loans adversely affect the performance and stability of the banking industry, increasing provisioning, never lending, and in more severe cases, can bring a financial institution into insolvency. The banking industry in Kosovo has also been very cautious in

terms of credit portfolio quality management, making the rates of these loans very low, which has made confidence in this sector even higher.

Kosovo has lower rates of non-performing loans compared to the countries of the region, including Albania, Macedonia, Montenegro, Serbia etc. According to the World Bank data, at the end of 2015, Kosovo recorded a percentage of non-performing loans of 7.1% in relation to the total loans the banking industry has issued to its clients. This lower level compared to all other countries presented for comparison shows the high quality of credit portfolio that the banking industry in Kosovo has to their clients.

The results of the econometric model are treated on the basis of highly variable regression, which contains the two elements of the topic, macroeconomic factors and banking factors. Testing of this model fulfills the parameters and conditions foreseen for testing of econometric models.

The overall conclusion of the research is that within the macroeconomic and banking factors that affect nonperforming loans are the inflation rate and the interest rate on household loans.

Recommendation

The paper has addressed the two main elements affecting NPLs, macroeconomic and banking factors, so the recommendations will be general and in the context of the problem addressed:

More care should be taken for the sectoral diversification of credit. Today there is a large concentration of loans in some specific sectors such as: manufacturing, construction and trade, vehicle and household repair;

Banks should make up for lost time in executing collateral of their clients. In fact, this procedure is greatly hampered by the current judicial system, and it should be noted that despite interventions by the Central Bank of Kosovo in unlocking the difficult situation, much remains to be done;

Banks should lower the interest rates applied on loans to businesses and individuals. It is noted that the interest rates on loans in the Kosovo banking system are among the highest in the region, and this has a direct impact on the increase of non-performing loans;

Banks should review lending policy strategies. There is an inverse relationship between the level of credit and non-performing loans. Therefore banks should increase the level of credit, as this would bring down the level of non-performing loans;

The reconfirmed correct relation of the unemployment rate to the level of non-performing loans is presented as a further argument for the usefulness and need of government bodies to intensify policies that reduce the unemployment rate and subsequently affect the reduction of the unemployment rate. non-performing loans in the banking system of Kosovo.

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Section 3. Environmental economics

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CLIMATE CHANGE AND FOOD SECURITY IN SOUTH ASIA

Abstract. This research paper analyses the climate change and food security in South Asia. The impact of high temperatures, extreme weather events, and sea level rise are felt in South Asia and will continue to intensify. These changes are already having major impacts on the economic performance of South Asian countries and on the lives and livelihoods of millions of poor people. South Asian countries have high shares of agriculture in total employment. Productivity enhancement and economics growth is seen as an important cornerstone to improving food security in the region. South Asia alone accounts for approximately 40 per cent of the world's hungry population and most disturbingly, the state of food security has further worsened due to declining agricultural growth and increasing population over the past several years. Traditional knowledge about the community coping strategies should be documented and to be used in training programs to help find solutions to address the uncertainties of climate change, build resilience, adopt agriculture and reduce emissions while ensuring food and livelihood security.

Keywords: Climate change, food security, South Asia.

1. Introduction

The Food and Agriculture Organization (FAO) in its report World Agriculture Toward 2015/2030, estimated that 776 million people located in 98 countries were food insecure during the 1997–1999 calendar years, mostly concentrated in South Asia and Sub-Saharan Africa. The report also argued that the greenhouse gas-induced climate change would further worsen the food security situation, especially in tropical regions. While there is a great deal of uncertainty about climate change, some of its projected effects are all but certain to occur. Average temperatures are rising and will continue to rise over the coming decades, regardless of what mitigation measures are taken, on account of stocks of greenhouse gases already in the atmosphere. This rise in temperature is already having measurable impacts.

Over the last three decades a large number of studies has been undertaken to explore the social and economic impacts of climate change. Research has long since established climate change's numerous adverse effects on the natural ecosystem and humankind, manifesting itself through declining rainfall and rising temperatures. Consequently, severe drought and flooding that threaten food security and economic livelihoods in rural areas could become prominent and frequent results of climate change. Crop production in developing countries and transition countries still relies heavily on the carrying capacity of the surrounding ecosystems for adequacy of water, soil quality, climate regulation and other attributes associated with a cleaner atmosphere. Despite technological advances, such as improved crop varieties and irrigation systems, weather and climate continue to play critical roles in agricultural productivity. Loss of weather and climate benefits to the ecosystem seems to coincide with increasing bio-fuel production in several parts of the world. All of these factors could reduce the amount of land available for food crops (UNEP, 2010).

There is growing concerned about the effect of climate change on human life, as the scientific consensus grows that significant climate change is very likely to occur over the 21st century (Christensen and Hewitson, 2007). Climate change can have both direct and indirect negative impacts on the general well-being of people, in which communities of people who depend highly on natural resources such as agriculture and forestry for their livelihoods are most affected by the climate change. In regards to agriculture, the general consensus is that changes in temperatures and precipitation will result in changes in land and water regimes that will subsequently affect agricultural productivity (World Bank, 2003). There is an increasing concern about the impact of climate change on agriculture in developing countries with changing in global climate (IPCC, 1996). The impact of climate change on the agricultural sector is therefore a matter of grave concern, particularly in low income countries where a majority of people are living in rural areas. An understanding of the impact of climate change on agriculture in the developing world is likely to be critical for the distributional effects of climate change as well as the potential benefits of policies to reduce its magnitude.

Agriculture provides essential nourishment for people and is the necessary basis for many economic activities. In the most development countries, agriculture accounts for between 20 to 60 percent GDP. The industries and services linked to agriculture in value chains often account for more than 30 per cent of GDP even in largely urbanized countries (Hoffman, 2011).

2. Climate change and its impact

Climate change has an indirect impact on food utility. Climate change is already having big effects on southern Asia. Deadly heat waves like one that killed 3500 people in India and Pakistan in 2015 are becoming more frequent. The summer monsoon rains are effecting the farmers Janson Mclure (2018). From the foregoing, climate change ultimately influences household food security and livelihoods. It affects food availability, accessibility, utilization and stability, and livelihoods in general. Low household income as a consequence of climate change has an impact on output that translates into the inability of households to diversify their diets, generating situations of chronic malnutrition and poor quality of life. It also leads to deterioration in food quality due to increased temperatures and lack of refrigeration equipment, and water scarcity which generates health hazards and poor living conditions especially among poor and vulnerable households who depend on agriculture for their survival. According to FAO report (2016) climate change brings a cascade of risks from physical impacts to ecosystem, agro-system, agricultural production, food chains, incomes and trade with economic and social impacts on livelihood and food security and nutritions.

The climatic conditions, combined with tenuous socio economic situations make South Asia one of

the most vulnerable regions in the world with regard to climate change. The climate of South Asia is characterized by extremes and natural hazards like cyclones, wind storms, droughts and heat waves, floods, Glacial Lake Outburst Floods (GLOS), land slides, pest and disease outbreaks, and more. The assessments of the impacts of natural disasters revealed that South Asia accounts for almost 80% of the total population affected and 86% of total damage due to drought in Asia. Similarly, this sub-region accounts for 35% of the total population affected and 28% of the total damage due to floods in Asia (CRED, 2007). Moreover, the productive sectors which include agriculture accounted for over half of associated damages and losses. Climate change will superimpose itself on these existing trends, significantly increasing production risk and rural vulnerability, particularly in regions that already suffer from poverty and hunger.

Climate change is a most critical issue in South Asia. The South Asian countries, particularly the poorest people, are most at risk. The impacts of high temperatures, more extreme weather events, and sea level rise are felt in South Asia and will continue to intensify. These changes are already having major impacts on the economic performance of South Asian countries and on the lives and livelihoods of millions of poor people. The impacts result not only from gradual changes in temperature and sea level but also, in particular, from increased climate variability and extremes, including more intense floods, droughts, and storms (World Bank Group Operations, 2006). The uncertainties associated with climate change do not permit a precise estimation of its impact on agriculture and food production. However, what is happening already in terms of changing seasonal patterns and respective increases in temperature, moisture concentrations and CO2 levels is likely to have diverse impacts on ecosystems — and therefore on crops, livestock, pests and pathogens.

South Asia suffers from stressed and largely degraded natural resources base resulting from geography coupled with high levels of poverty and population density. Water resources are likely to be affected by climate change, through its effect on the monsoon, which provides 70 percent of annual precipitation in a four month period, and on the melting and on the melting of Himalayas glaciers. Rising sea levels are a terrible concern in the region, which has long and densely populated coastlines, agricultural plains threatened by salt water intrusion, and many low-lying islands. In more severe climate change scenarios, rising seas would submerge much of the Maldives and inundate of 18 percent of Bangladesh's land (World Development Report, 2010). The World Bank has identified the following key development areas directly affected by climate change: human health, water supply and sanitation, energy, transport, industry, mining and construction, trade and tourism, agriculture, forestry and fisheries, environmental protection, and disaster management (World Bank Group Operations, 2006). The fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC) states that warming of the climate system is unequivocal, as is now evident from observations of increase in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level (IPCC, 2007).

Significant climatic variations have occurred in Afghanistan in the last several decades. Since 1960, the country's temperature has risen by 0.6 degree centigrade at an average rate of 0.13 degree centigrade per decade (Savage et al., 2009).The country has observed exceptionally hotter days and warmer nights in recent years. Presently, the country suffers from severe droughts, with little to no precipitation at all. Mean rainfall has decreased by 6.6 percent per decade since 1960 (UNDP, 2008). UNEP (2005) revealed that 26 lakes in Nepal are categorized as dangerous due to threat to glacier lake outburst floods (GLOFs). As highlighted by the IPCC (2001), glacial melt is expected to increase under changed climate conditions, which would lead to increased summer flows in some river systems for a few de-

cades, followed by a reduction in flow as the glaciers disappear. Shrestha et al (2003) revealed increasing number of flood days and consecutive days of flood events in Nepal, and 26 lakes have been identified as dangerous with respect to glacier lake outburst floods (WWF 2005).

3. Challenges for food security in context of climate change and growing populations

South Asia is vulnerable to several climate change issues and impacts tied closely to region's geography, economy and population patterns (ADB). Population growth, paucity of resources, and lack of economic opportunities create pressures on ecologically fragile areas and natural resources (Kelkar U and Bhadwal S, 2007). Securing world food security in light of the impacts of climate change may be one of the biggest challenges we face in this century. Another major factor affecting food availability is transportation — i.e. after food is produced, it needs to be moved from the point of production to the point of consumption. This often depends on transport systems. In many developing countries, food accessibility is negatively influenced by inefficient and ineffective transport systems which retard the delivery of food items from producers to consumers. This in most cases creates artificial food shortages thereby pushing prices of food items up and making food inaccessible to the poor and vulnerable. The fact that climate change is expected to place a strain on transport systems (IPCC, 2001a) will further worsen the situation in less developed countries.

According to the 2006 Human Development Report of the UNDP, 2.5 billion people in South Asia will be affected by water scarcity by the year 2050. Rising temperatures, changing precipitation patterns, and an increasing frequency of extreme weather events are expected to be the main reasons for the reduced regional water availability and impacting hydrological cycles of evaporation and precipitation. This will drastically affect agriculture production in a region where over 60 percent of the agriculture relies on rainfall for irrigation.

South Asia, comprising of eight countries i.e., Afghanistan, Bangladesh, Bhutan, India, The Maldives, Nepal, Pakistan and Sri Lanka, is home to over one fifth of the world's population and is the most densely populated geographical region in the world. South Asia is known to be the most disaster-prone region in the world (UNEP, United Nations Environment Programme, 2003). Although the agricultural sector in South Asia continues to grow, it is declining in relative importance, both in terms of its contribution to GDP its share of the labour force (FAO, 2006). Urbanization is increasing, and farm households are diversifying their sources of income beyond agriculture. This relative decline of agriculture is inevitable in countries that experience economic growth, which has been widespread in the region. Nevertheless, a significant percentage of the economically active population is still involved in agriculture in South Asia, and agricultural employment is especially important for the livelihoods of the poor. South Asia is also home to a majority of the worlds poor. According to FAO (2009), 1.02 billion people are undernourished worldwide in 2009. About 456 million people in South Asia are estimated to be undernourished.

South Asia faces key development challenges such as population growth, high incidence of poverty, urbanization and the degradation to the environment. Climate change could make this region more vulnerable and reverse countries' efforts towards achieving the goals by causing reduction in agricultural yields, increased water stress due to changes in precipitation patterns and glacier melting, decline in fishery products, degradation of natural grasslands and impacts on forest products. South Asia lags on most human development goals, although it will likely meet the poverty reduction MDG (World Bank, 2008).

South Asia is the largest sub-region in terms of population in the world. Although declining, the contribution of agriculture to GDP is still substantial in this sub-region. South Asian countries have high

shares of agriculture in total employment. Countries like Nepal, Bhutan, and Afghanistan have more than 60% with India having 56% of workers in agriculture. The South Asian region is highly sensitive to the consequences of climate change. It is known to be the most disaster-prone region in the world supporting a huge population of more than 1.3 billion (UNEP 2003). This is critical as climate predictions for the future highlight increases in frequency and intensity of extreme weather events like droughts and floods (IPCC2001), indicative of the huge population that is likely to be exposed and affected in the region.

Agriculture is the principal occupation of nearly 70 percent of Afghanis and accounts for approximately 40 percent of the country's GDP. Nevertheless, only 12 percent of Afghanistan's total land mass is arable. Out of the 12 percent of total arable land, only four to five percent is irrigated, while seven percent is rain-fed and cropped opportunistically [United Nations Development Programme, 2005]. Bhutan and Nepal have fragile mountainous ecosystems; Bangladesh and Sri Lanka have low-lying coastal areas, while India and Pakistan depend on cultivation in arid and semiarid lands. These countries have already experienced frequent natural disasters (Kelkar, U and Bhadwal, S, 2007). Sea level has risen between 1.06 to 1.75 mm per year (IPCC, 2007). Such changing climatic patterns will dominate India even by the end of the 21st century. Lal et al., (2010) revealed that India will experience intense rainfall, leading to massive soil erosion and landslides. 'While the number of rainy days will decline by 15 days, the intensity of rainfall will increase by one to four mm per day'.

More than half of the population of Nepal lives in remote hill and mountain regions. Agricultural development in these areas has been neglected for years, and food production fails to meet the needs of the population. Low production is compounded by climate insecurity. Climate change affects agriculture through its impact on crop yields; forests which feed on the agriculture are vulnerable to the change

on forest composition, geographic range of forest, forest health and productivity. Similarly the water resources — water supply, water quality, composition of aquatic species and natural areas- experience loss of habitat and species (Bhandari D).

4. Role of enhancing productivity for food security in South Asia

Food accessibility depends both on market and non-market distribution mechanisms and is at the mercy of climate change. The capacity of individuals and households to buy food may be significantly reduced as income for farmers in developing countries depends mostly on the capacity to sell surplus production. The fact that climate change affects the availability of certain food products will also change the prices households can charge. Particularly, small scale farmers who are often not protected by social safety nets such as insurance schemes may suffer from changes in market prices. Too low market prices will make farmers generate low incomes; if too high, farmers may not be able to sell their products (either because there are no buyers or because they themselves are not able to buy other food and so keep the surplus for their own consumption) all of which affect the accessibility of food. Adequate food utilization is realized when proper food processing, storage and utilization techniques are employed, adequate knowledge of nutrition and child care techniques exist and are applied, and adequate health and sanitation services exist (USAID, 1992).

The majority of the South Asian countries share similar economic and sustainable development challenges. The most prominent similarities are frequent occurrence and susceptibility to natural hazards, excessive dependence on agriculture, widespread poverty and vulnerability to climate change. Five out of eight countries in the region are characterized as Least Developed Countries (LDC), and of these five LDCs, three are Land-Locked Least Developed Countries (LLDC) possessing low-income, weak human resources and economic vulnerability. The

South Asia region contains a population of 1507.5 million (2007) and projections anticipate 1727 million by 2015. Agriculture represents a high share of GDP and approximately 150 million households, with 751 million people classified as agriculture-dependent. Since 1990, millions more people have become chronically hungry in sub-Saharan Africa and in Southern Asia, where half the children under age five are malnourished (UN Millennium Development Goals Report, 2005).

The food and Agricultural Organization (FAO) projects global food consumption per person (expressed as kilo calories/person/day) to rise by an average of 0.29% yearly through 2030 (FAO 2006). As average income level rise and more people gain access to adequate diets (Moir and Morries, 2011) the growth of food consumption will moderate to 0.15 a year during 2030–2050. South Asian food consumption per person during 2000–2030 and during 2030–2050 will be 0.51% and 0.33% respectively (Table 1).

Table 1. – Projected growth in population and food consumption

	Average annual growth rates (%) 1970–2000			Average annual growth rates (%) 2000–2030			Average annual growth rates (%) 2030–2050		
	Kcal/ Person a	Population b	Food consumption	Kcal/ Person a	Population B	Food consumption	Kcal/ person a	Population b	Food consumption
World	0.49	1.70	2.20	0.29	1.03	1.32	0.15	0.48	0.63
Developing countries	0.77	2.05	2.83	0.36	1.20	1.56	0.18	0.57	0.75
Sub-Saharan Africa c	0.15	2.80	2.95	0.57	2.23	2.81	0.42	1.48	1.91
North Africa c	0.00	2.57	2.57	0.17	1.56	1.74	0.09	0.82	0.92
Latin America And Caribbean	0.74	2.02	2.77	0.32	0.94	1.26	0.13	0.28	0.40
South Asia	0.47	2.23	2.71	0.51	1.29	1.81	0.33	0.53	0.86
East Asia c	0.49	1.48	1.97	0.35	0.47	0.82	0.06	-0.17	-0.10
Industrial Countries	1.19	0.74	1.94	0.07	0.47	0.54	0.03	0.13	0.16
Transition countries	0.41	0.80	0.49	0.28	-0.64	-0.37	0.19	-0.78	-0.59

Kcal=1000 calorie. A measure of the energy contained in food.a =calculated from FAO (2006) table, b =UN population data, FAQ developing regions Japan, Israel and South Africa are not included.

Source: Moir and Morries (2011).

Agriculture remains an important cornerstone to improving food security in South Asian countries. It is also largest source of employment and several economies. The sector continues to be the single largest contributor to the GDP in the region. As such, it will require effective management of the changing context such as urbanization, declining interest in agriculture, chronic land disputes, and uncertainties surrounding the adaption of food production system to climate change.

The FAO study (2002 and 2006) suggested that climate change will affect the four dimensions of food security, namely availability (i.e., production and trade), access to food stability of food supplies

and food utilizations. The importance of various dimensions and overall impact of climate change on food security will differ across regions and most significantly will depend on the overall socioeconomic status that a region has achieved as the result of climate change (Schmidhuber and Tubiello, 2007). They assessed that climate change will adversely affect food security. Climate change may increase the dependency on imports.

Despite being afflicted by serious famines in the past, Bangladesh today has emerged as an agriculturally self-sufficient country. Agriculture is the principal occupation of nearly two-thirds of Bangladeshis and contributes to 20 percent of nation's GDP (Table 3.1). In order to secure food for all, Bangladesh underwent intensive food reforms over the past few decades. Food reforms were initiated by employing the latest agricultural technologies, subsidizing fertilizers and introducing new breeds of seeds from foreign laboratories. Titumir and Bosak (2010) revealed that the government expanded irrigation networks and liberalized import of agricultural commodities, thus easing the food deficit. Successive Bangladeshi governments prioritized food security and invested in enhancing the agricultural productivity of the country. India's agricultural sector has boomed, achieving food self-sufficiency. But, despite achieving food self-sufficiency in the last 30 years, India's food security has worsened over the past 15 years. After independence, the Indian Government initiated major reforms in food policies to achieve food self-sufficiency. High yielding varieties (HYV) of wheat were adopted and major irrigation facilities were built. Consequently, there was a remarkable improvement in wheat and rice output during the '70s. This era is termed as the Green Revolution. However, over the course of time, agricultural growth has been slower, making an average Indian food insecure. India has the most densely populated coastal region in the world (UN World Resource Index, 1998).

Pakistan suffers from serious consequences of climate change on food security. With the rise in global temperature, the snow-capped Himalayan Mountains in the north are melting at an alarming rate. The Gangotri glacier is retreating 98 feet per year. Such melting of glaciers has resulted in the loss of agricultural output. In the past, severe cyclonic storms in coastal areas and worst droughts have adversely affected Pakistan's agricultural output (Mohamood 2008) and (Mohamood 2008) revealed that increased heat waves across the Indian Sub-Continent in 2005 reduced agricultural yields by 10 to 40 percent of the harvests for that year. Simulation studies of climatic models portray a negative impact of future climatic variations on agricultural output.

5. Conclusion

The conclusion drawn from various studies in this papers shows that climate change is a grave and immediate issue for South Asia. Productivity enhancement and economic growth is seen as an important cornerstone to improving food security in the region. This will require effective management of the changing context of agriculture, such as urbanization, decline of interest in agriculture, chronic land disputes, and the uncertainties of adapting food production systems to a changing climate. The impacts of climate change on food security, access to water, human health, ecosystems, urban areas, and frequency of disasters will have severe implications for the achievement of sustainable development. FAO report (2016) has show, that climate change is already impacting and will increasingly impact, food security and nutrition.

To counter the effects of adverse climate conditions, technical policies and research-based adaptation strategies may be employed. Regional shifts in cropping patterns, heat-resistant varieties, land expansion, development of high-yielding varieties and trade adjustments were found to be very important in providing higher economic benefits and its improving food security conditions. South Asia alone accounts for approximately 40 percent of the world's hungry population (IFPRI, 2010). And, most disturbingly, the state of food security has further worsened due

to declining agricultural growth (1993–2006) and increasing population over the past several years (Mittal and Sethi, 2009). The IPCC defines vulnerability as a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity. Within countries, there are many areas which are vulnerable to climate change. Livelihoods are more vulnerable in mountainous areas like Himalayas, arid and semi-arid areas like Pakistan and India. Vast coastal areas in the south and small islands are extremely vulnerable due to high exposure of population and agricultural infrastructure to sea level rise (e.g. Maldives) and increased storms. Poor and highly-vulnerable groups include women, children, indigenous people, coastal dwellers, mountainous population and island dwellers. Indigenous population forms the most vulnerable group due to climate change. A special package for adaptation should be developed for rain-fed areas based on minimizing risk. Traditional knowledge about the community's coping strategies should be documented and to be used in training programs to help find solutions to address the uncertainties of climate change, build resilience, adapt agriculture and reduce emissions while ensuring food and livelihood security.

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Section 4. Recreation Economics

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ANALYSIS OF THE MODERN TOURISM MARKET IN COUNTRIES OF EUROPE, AMERICAS, ASIA AND THE PACIFIC, AFRICA AND THE MIDDLE EAST

Abstract. This study aims to investigate the indicators and changeability of the tourism industry in Americas, Europe, Asia and the Pacific, Africa and the Middle East and the most popular countries of that region as the Unites States, France, China, Morocco and the Unites Arab Emirates over the past three years. Based on data on tourist arrivals, tourism revenue and GDP of countries and using comparative analysis methods, it was found that the number of arrivals is not a key indicator of tourism income, and GDP data shows the importance of this sphere in the economies of that countries. The research results show how differently the tourism industry is developed in five regions and their countries and the price category for tourism service.

Keywords: Tourism industry, tourism arrivals, tourism income, GDP.

1. The role of tourism in the global market

Attention to tourism as a specific type of socio-economic activity has been growing rapidly in recent decades around the world. It should also be noted that the process of globalization, which was gaining momentum with the development of means of communication throughout the history of humanity, gained its scale and intensity in the second half of the twentieth century.

As known, organizational legal registration of this process took place in 1994, when the world trade organization was established, whose activities, primarily in the economic sphere, fully extended to the tourism sector.

According to the annual World Tourism and Travel Council (WTTC) study, in 2018 the volume of the tourism market reach USD 8.8 trillion. The industry has been growing, showing a 3.9% increase in money in 2018. This is higher than growth rate of the world economy (3.2% in 2018), and the growth rates of such sectors as healthcare (+3.1%), information technology (+1.7%), financial services (+1.7%). Only industry sector is faster than tourism (+4%) in 2018.

According to WTTC, the share of income from foreign tourists increased from 27.3% in 2017 to 28.8% in 2018. This means that 71.2% of the global tourism market is generated by domestic tourists. In terms of employment, the travel, the travel and

tourism sector supported 319 million jobs, or every tenth job in the world in 2018.

According to WTTC forecasts, over the next ten years, tourism and travel sector will create 100 million new jobs. (According to wttc.org).

1.1 Global arrivals and income

The beginning of mass tourism is associated with the internationalization of all spheres of public life, improving living standards, increasing free time, changes in transport and communications. International tourist arrivals grew 5% in 2018 to reach the 1.4 billion mark. This figure was reached two years ahead of UNWTO forecast. (According to UNWTO International Tourism Highlights 2019 edition). France remains the most visited country and open top 10 destination:

million	Arrivals in top destinations	% change
89	France	3
83	Spain	1
80	United States of America	4
63	China	4
62	Italy	7
46	Turkey	22
41	Mexico	5
39	Germany	4
38	Thailand	8
36	United Kingdom	-4
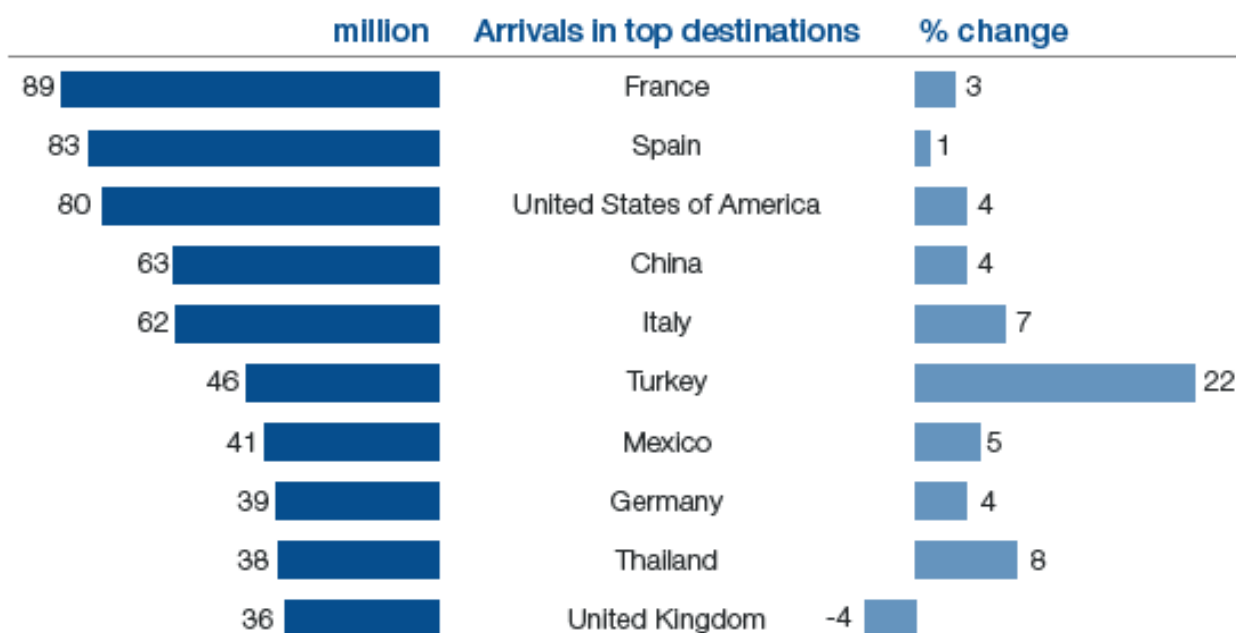
Diagram 1. Top ten destinations by international tourist arrivals, 2018 Source: World Tourism Organization (UNWTO)

The top 10 destinations receive 40% of worldwide arrivals. According to the diagram 1, the largest increase in tourists was in Turkey (22%), in second place Thailand (8%), Italy in third place (7%) compared to 2017. United Kingdom lost 4% compared 2017 (According to UNWTO International Tourism Highlights 2019 edition)

For convenience, all tourist spots are divided into four regions: Europe, Americas, Asia and the Pacific, Africa and the Middle East. In 2018 the most popular region was Europe. All regions have different tourism indicators in tourist arrivals over the past years.

There are changes in tourist arrivals in each region for the last 3 years. Tourist arrivals in all regions are absolutely not the same. On the diagram we can see how the number of tourist arrivals changed for every region.

According to the diagram 2, in 2018 Europe has 710 million arrivals and +5% tourist growth (8% in 2017); 216 million tourist visited Americas in 2018 and it is +2% of tourist growth (+5% in 2017); Asia and the Pacific had 348 million arrivals, +7% tourist growth (+6% in 2017), Africa had 67 million arrivals, +7% tourist growth (+9% in 2017); and Middle East had only 60 million arrivals, +5% tourist growth (the same as in 2017).

On average, about 51% of all international tourist trips are in Europe, about 25% – in Asia and the Pacific, 24% – in other regions in 2018.
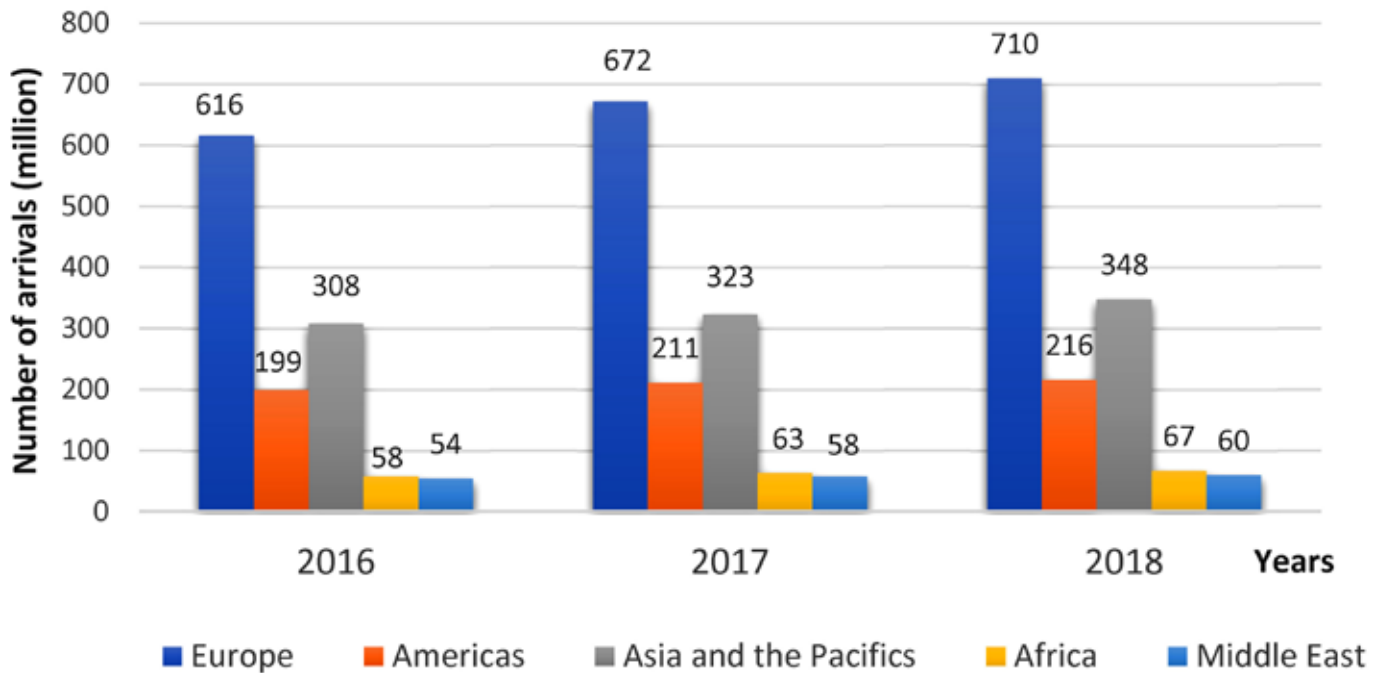
Diagram 2. Changes of tourist arrivals in every region from 2016 to 2018 (million).
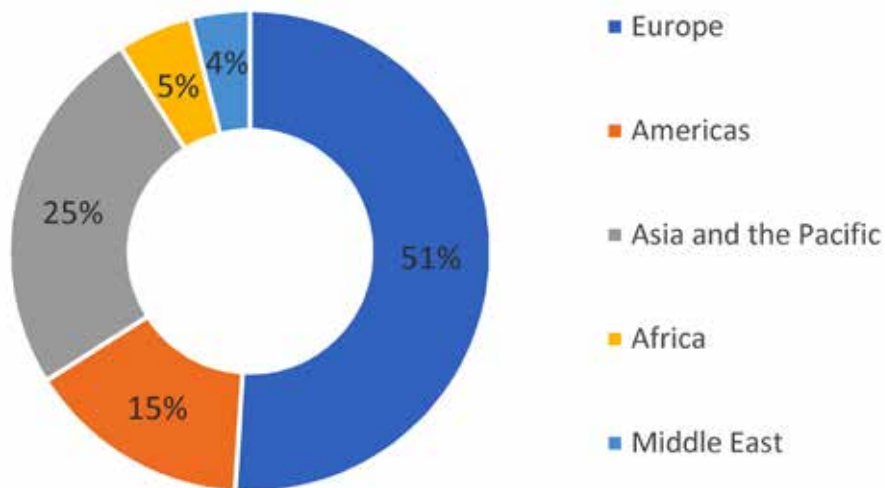According to UNWTO

Diagram 3. International tourist arrivals, 2018 (% share)

This chart shows that more than half of tourist arrivals are in Europe in 2018, on the second position is Asia and the Pacific and the third is Americas.

Income is also an important indicator of tourism development in the region. Nowadays income from tourism accelerates the investment process not only in tourism, but also in other sectors of the regional and national economy, contributing to the development of regions.

Direct income is the income received from real money spent by tourists for hotel, food, drinks, transport, entertainments, etc., in the country or in any other districts. The income of a region are taxes paid from this revenue.

With the development of international tourism, the tourism industry of industrialized countries is quickly growing, which include the hotel industry, transport, food, footwear, clothing and other industries are involved. Increasing the demand for medical car, the development of handicraft industries specializing in the manufacture of souvenirs is stimulated, new jobs also appear, increases the income.

Export earnings from international tourism are an important source of foreign revenues for many destinations in the world. Tourism is an important component of export diversification both for emerging and advanced economies, with a strong capacity to reduce trade deficits and to compensate for weaker export revenues from other goods and services. 2018 saw an extra USD121 billion in export revenues from international tourism (travel and passenger transport) compared to 2017. In 2018, tourism generated USD5 billion a day and reached USD1.7 trillion exports from international tourism (USD1.5 trillion receipts in destination + USD256 billion passenger transport) and it is 7% of global export and 29% of world's services export. (According to UNWTO International Tourism Highlights, 2019 edition). In all tourist regions the situation with tourism income over the last three years is different.
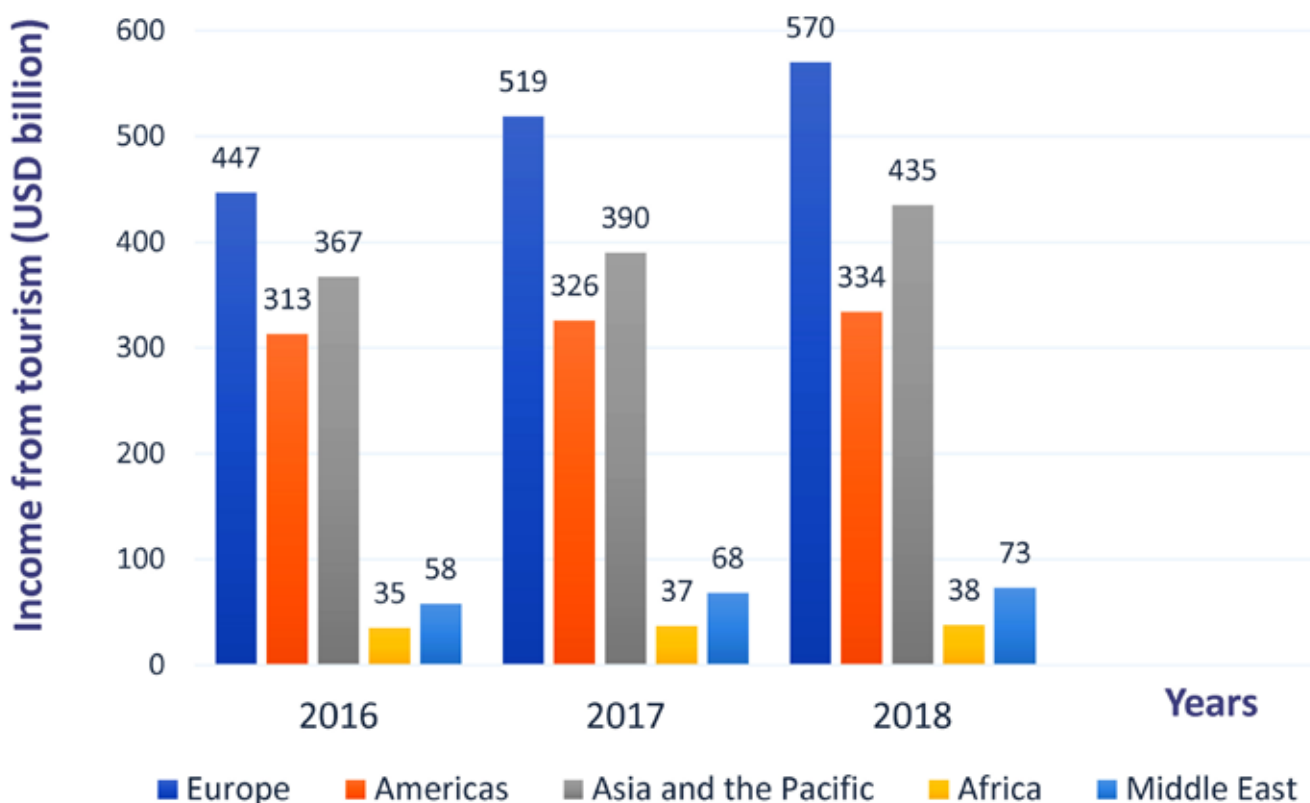
Diagram 4. Changes of income from tourism in every region from 2016 to 2018 (USD billion). According to UNWTO

According to the diagram 4, Europe has the highest income: USD570 billion for 2018 and +5% of growth compare 2017 (USD 519 billion), Asia and the Pacific reached USD435 billion and +7% growth of income (USD390 billion in 2017). Americas income in 2018 was USD334 billion and almost does not have growth (USD326 billion in 2017). Lowest income in 2018 had Africa (USD 38 billion and +2% of growth) and Middle East (USD73 billion and +4% of growth).

There are top 10 countries who has highest income from tourism in 2018. The top 10 tourism earners account for almost 50% of total tourism receipts.
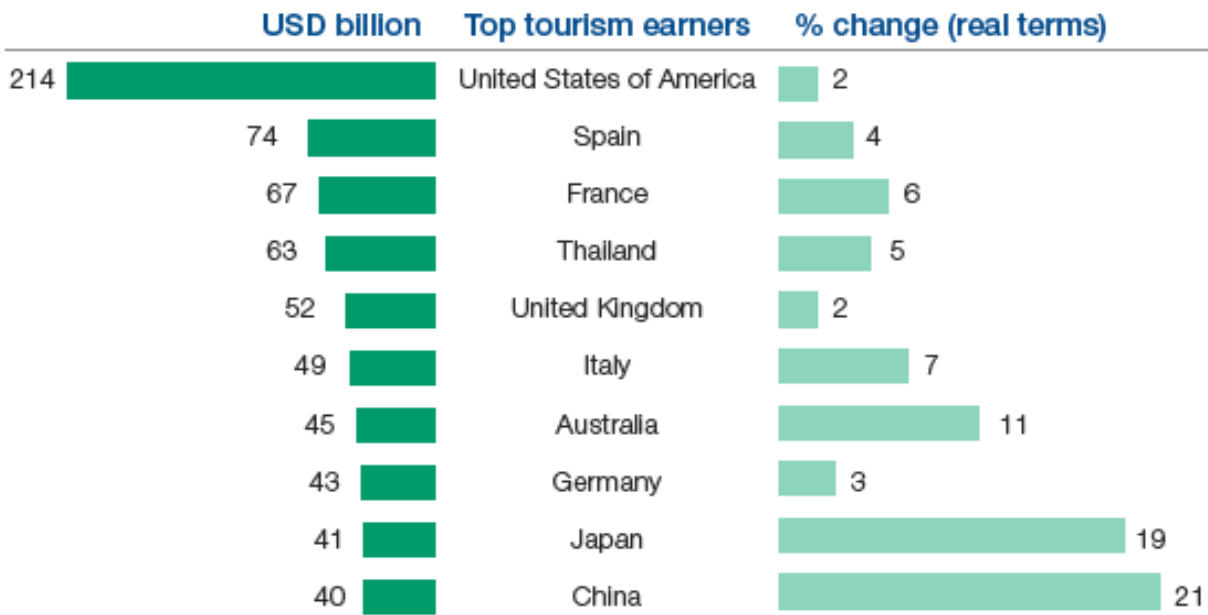
Diagram 5. Top ten destinations by tourism income, 2018
Source: World Tourism Organization (UNWTO)

The first place took The USA (USD214 billion), the same as in 2017, but growth was only +2%, on the second position is Spain (USD74 billion), and in third position is the leader in tourist arrivals – France (USD67 billion). The highest growth had China (+21%) and Japan (+19%).

In order for better understanding the tourism situation in each region, making a detailed review of these five regions.

1.2 Arrivals and income in Europe

Europe for long years is the leader on tourist arrivals. In 2018, there were over 700 million international tourist arrivals to Europe, an increase of 5% over 2017. In 2018, the top ten destinations in Europe were:
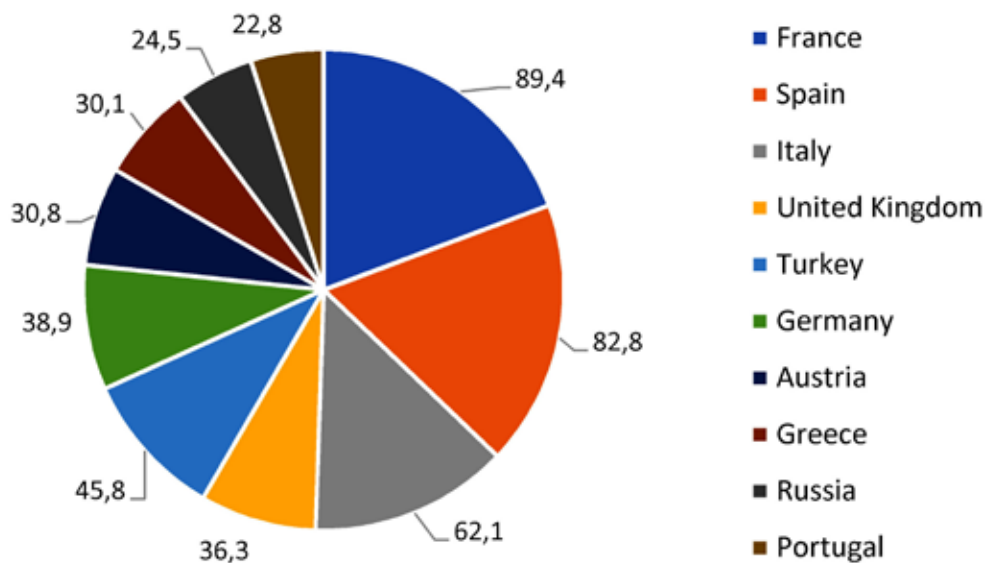
Diagram 6. The most visited countries in Europe for 2017 year
(million arrivals). According to statistic of UNWTO

According to the diagram 6, France became the leader in arrivals in Europe in 2018 (89.4 million persons), on the second place is Spain (82.8 million persons) and the third is Italy (62.1 million arrivals). Compared to 2017, the number of visits to each country in Europe increased. The largest increases in tourist attractions have Turkey (24.7% growth), Portugal (7.5% growth) and Greece (10.8% grow), but United Kingdom have lowering the number of tourists compare 2017 (minus 3.5%). For France tourist arrivals increased only for 2.9% growth. (According UNWTO).
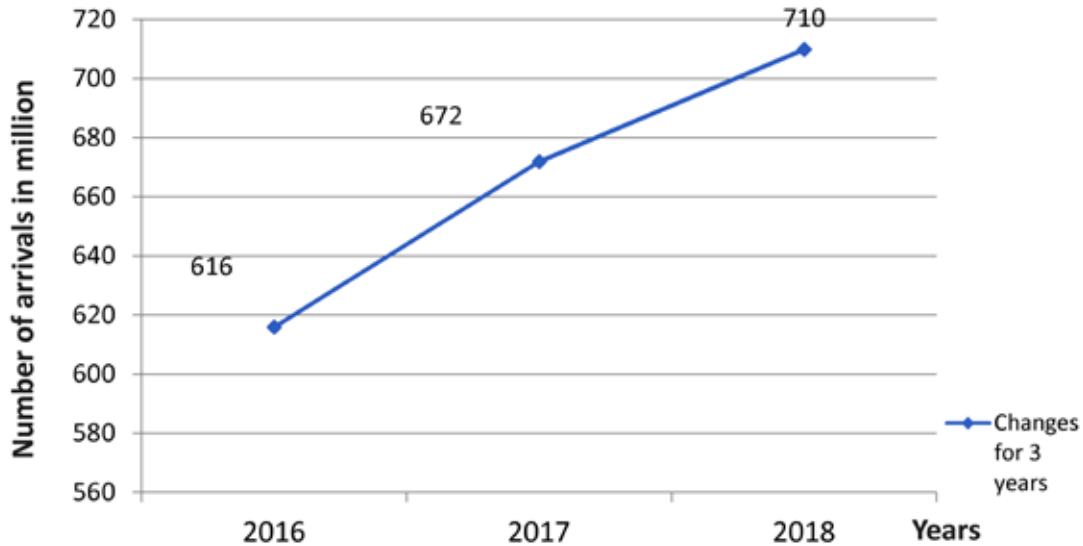
Diagram 7. Statistics of arrivals in Europe over the past three years (Million). According UNWTO

According to the diagram 7.710 million tourists visited Europe in 2018, which is 5% more than in 2017 (672 million tourists) and in 2016 were 616 million tourists. It shows us annual increase in tourists in Europe.

Europe remains the most popular destination for travelers: 710 million arrivals (+5% growth in 2018) and USD570 billion in expenses (+5% in 2018). This is big increase in absolute figures. From all the tourist regions of the world, the European countries show the most impressive growth in the number of arrivals. Italy and Spain have recorded 6 million visits plus to the figures of 2017. France is the undisputed leader. 89.4 million arrivals and USD67.3 billion in revenues. There is the income of the 10 most visited Europe countries for 2018.
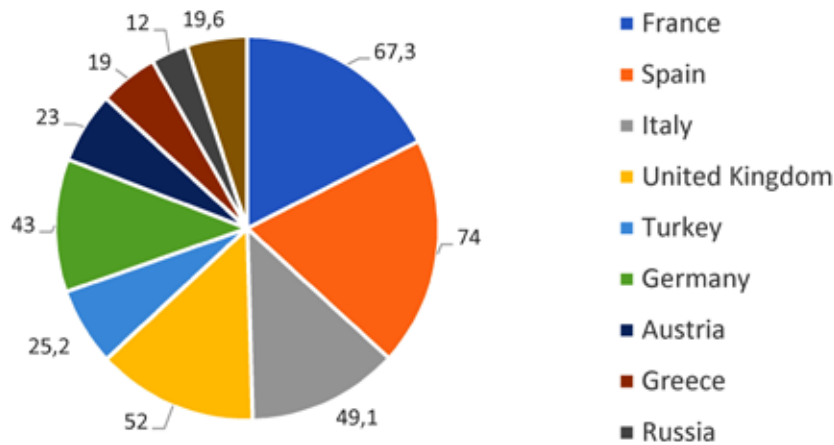

Diagram 8. Tourism income in Europe by most visited countries for 2018 (USD billion) According to statistic of UNWTO

In Europe, Spain brought the highest income in 2018 (USD 74 billion), but France was on the top position in arrivals and on the second place in Eu-rope for income (USD 67.3 billion), lowest income had Russia (USD 12 billion).
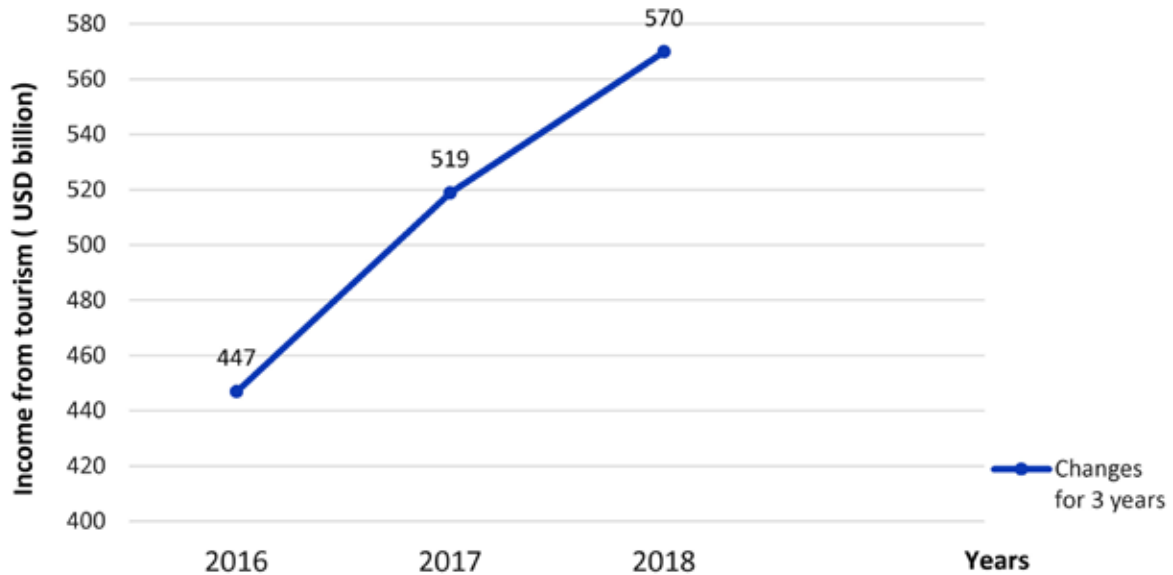

Diagram 9. Income from tourism in Europe over the past three years (USD billion). (According to UNWTO)

According to the diagram 9, tourism income in Europe is constantly growing. In 2018, tourism revenue reached USD 570 billion and +5% growth compare 2017 (USD 519 billion).

According to the data for the last three years about tourist arrivals in Europe and receipts from tourism, it can be concluded that tourism in Europe is constantly developing.

1.3 Arrivals and income in Americas

In 2018, there were 216 million international tourist arrivals to the Americas, an increase of 2%. In 2018, the top ten destinations were
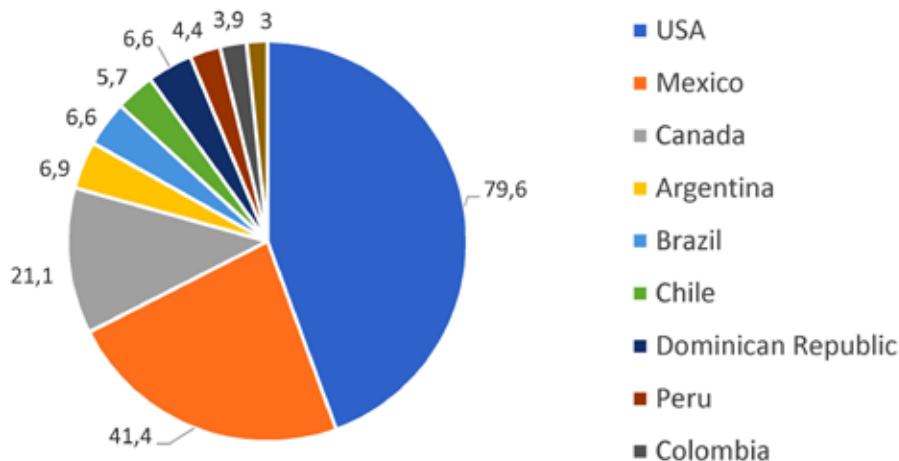

Diagram 10. The most visited countries in Americas for 2018 (million arrivals). According to statistic of UNWTO

According to the chart the largest number of tourists visited the United States – 79.6 million of tourists. Mexico on the second place with 41.4 million arrivals and Canada get third place in America

region with 21.1 million arrivals in 2018. Compared to 2017, the number of visits to each country in Americas increased. The largest increases in tourist attractions have Peru (4.4% growth), Colombia (7.4% growth) and Dominican Republic (6.2% growth). For USA tourist arrivals increased only for 3.5%. (According UNWTO).

Over the past three years, the number of tourists visiting Americas has continuously increased. But North America remains the most popular part.
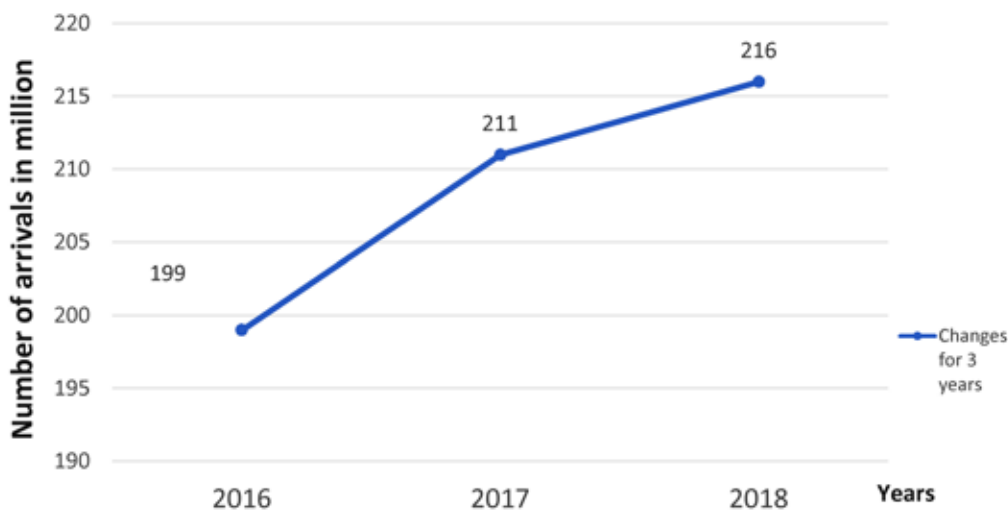

Diagram 11. Statistics of arrivals in Americas over the past three years (Million). According UNWTO

Over the past three years, the number of tourists arriving in Americas growing. In 2016 tourist growth was 3.5%(199 million arrivals), in 2017 tourist growth was 4%(211 million arrivals), in 2018 tourist growth was 2%(216 million arrivals).

The most profitable per traveler is Americas: around 216 million arrivals (+2% growth) account for USD334 billion of income in 2018. There is the income of the 10 most visited Americas countries for 2018.
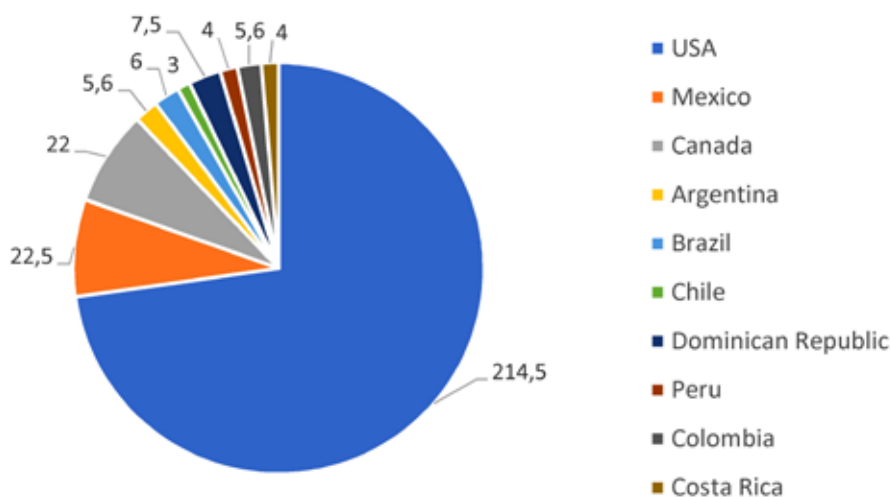

Diagram 12. Tourism income in Americas for 2018 (USD billion) According to statistic of UNWTO

Statistics show that the main income of America in 2018 comes from the United States (USD 214.75 billion) and it is more than 60% of all tourism income in Americas. Mexico reached USD 22.5 billion) and it is almost the same revenue as in Canada (USD 22 billion), while the rest of the countries have a relatively low profits from tourism (Argentina – USD 5.6 billion, Chile – USD 3 billion, Peru – USD 3.8 billion etc.).
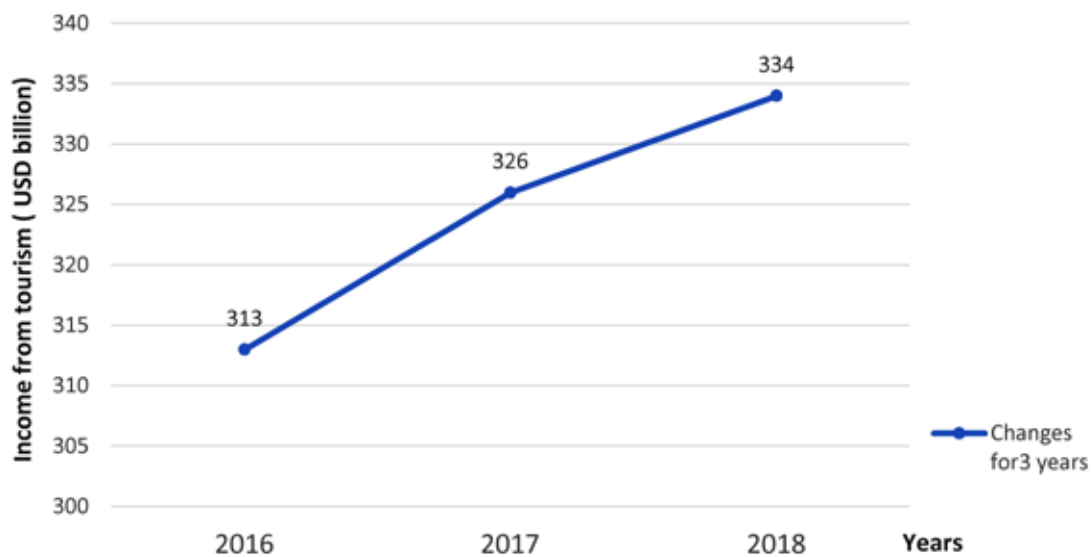
Diagram 13. Income from tourism in Americas over the past
three years (USD billion). (According to UNWTO)

According to preliminary data, in 2018 Americas earns USD 334 billion. For the past three years income is constantly growing.

In accordance with all the data, it can be summarized that tourism in most of the countries of Americas is developing, but the highest revenue is in the USA (almost 70% from all Americas revenue).

1.4 Arrivals and income in Asia and the Pacific

In 2018, there were over 348 million international tourist arrivals to Asia and the Pacific, an increase of 7% over 2017. In 2018, the top ten destinations were:
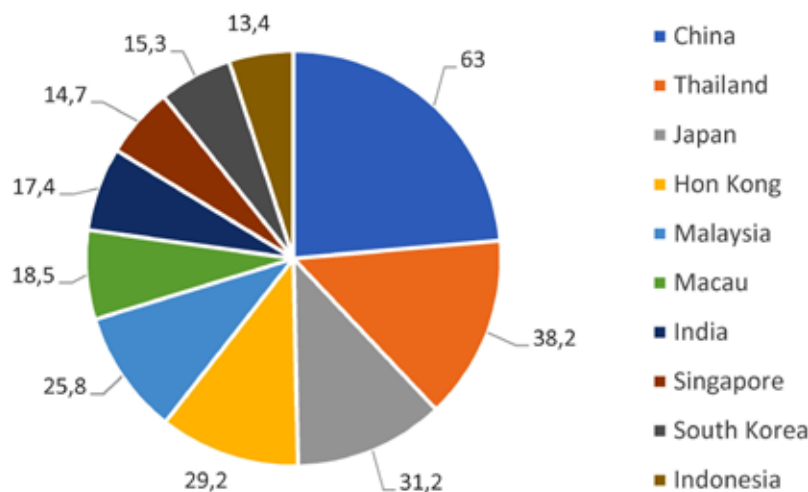

Diagram 14. The most visited countries in Asia and the Pacific for 2018
year (million arrivals). According to statistic of UNWTO

According to the chart the largest proportion of tourists came in China in 2018 (63 million visitors), vacation by the sea in Thailand choose 38.2 million tourists and 31.2 million tourists were interested in Japan in 2018. Compared to 2017, the number of visits to each country in Asia and the Pacific increased. The largest increases in tourist attractions have South Korea (15.1% growth), India (12.1% grow) and Thailand (11% growth) compare 2017. For China tourist arrivals increased only for 3.6% (According UNWTO).
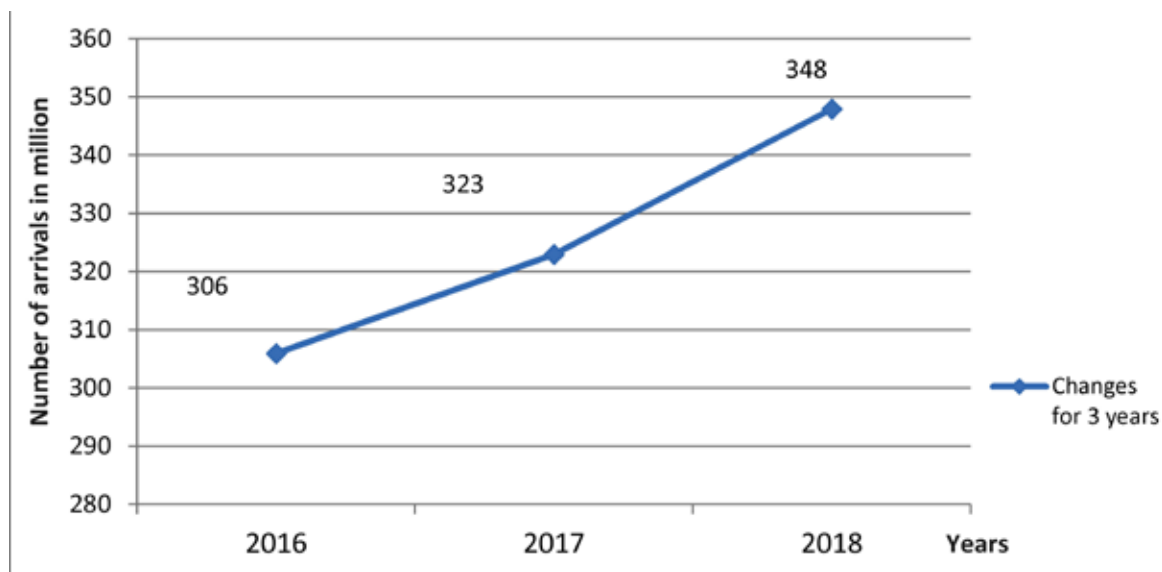
Diagram 15. Statistics of arrivals in Asia and the Pacific region
over the past three years (According to UNWTO)

According to the diagram 9, 348 million tourists choose Asia and the Pacific region in 2018, which is 7% more than in previous year (323 million for 2017). But in 2017 tourist's growth was 5.6%. This diagram shows annual increase in tourists to the Asia and the Pacific region.

One of the popular regions for tourists is the Asian and Pacific: 348 million arrivals and earning more than USD390 billion. But tourists from China are leaders both in the number of trips and in the amount of cash abroad. In 2018, they accounted for USD 257.7 billion spent on tourism – plus 4.9% compared to last year. There is the income of the 10 most visited countries in Asia and the Pacific for 2018.
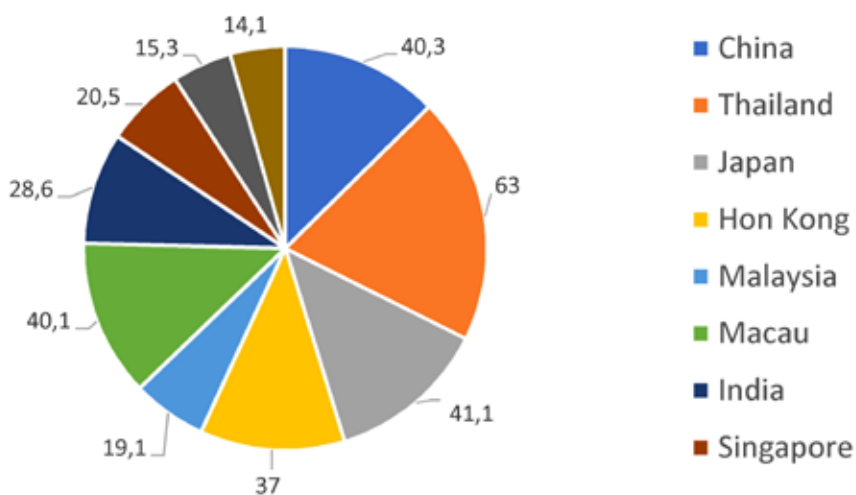

Diagram 16. Tourism income in Asia and the Pacific for 2018
(USD billion) According to statistic of UNWTO

According to the diagram 16, in Asia and the Pacific region, on average, one country has income from 20 to 40 USD billion. But the main income from tourism comes from Thailand (63 USD billion) and China (USD 32.6 billion).
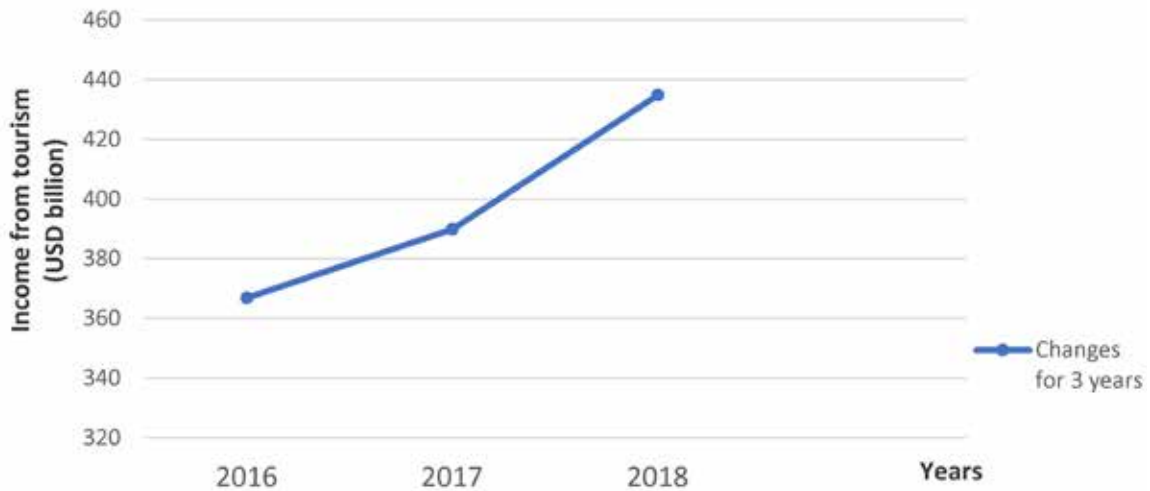
Diagram 17. Income from tourism in Asia and the Pacific region over
the past three years (USD billion). According to UNWTO

In 2016 the was highest growth for Asia and the Pacific (+30%) and income reached USD367 billion, in 2018 tourism revenue reached USD435 billion and income growth was +7%.

In accordance with all the data, it can be summarized that tourism in Asia and the Pacific is developing very rapidly showing good indicators both in the growth in the number of tourist arrivals and in tourism revenue.

1.5 Arrivals and income in Africa

The number of foreign tourists visiting Africa, and the proceeds from them are relatively small and only 2–3% from total global. In 2018, in Africa were 67,1 million arrivals what is 7% more than in previous year (63 million in 2017). But Africa does not yet have a list of ten countries that have more than a million tourist arrivals. For the moment there are only eight:
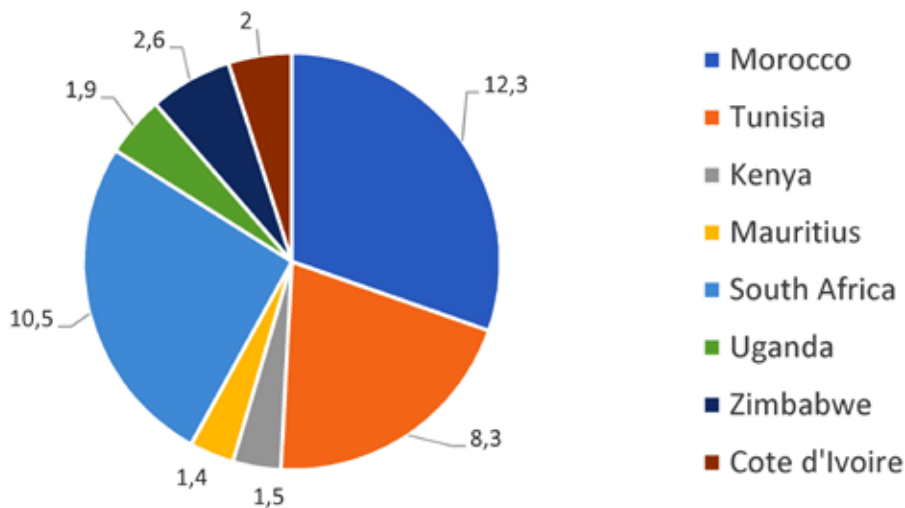

Diagram 18. The most visited countries in Africa for 2018 year
(million arrivals). According to statistic of UNWTO

According to the diagram 18, it showed that the most popular country in Africa in 2018 was Morocco and it had 8.3% growth of tourists compares with last year. The highest growth has Tunisia (17.7%) and Uganda (31.9). In common, 67.1 million arrivals

were in whole Africa and it is even less than had France in 2018.

Despite low rates, over the past three years the number of tourist arrivals in Africa has increased.
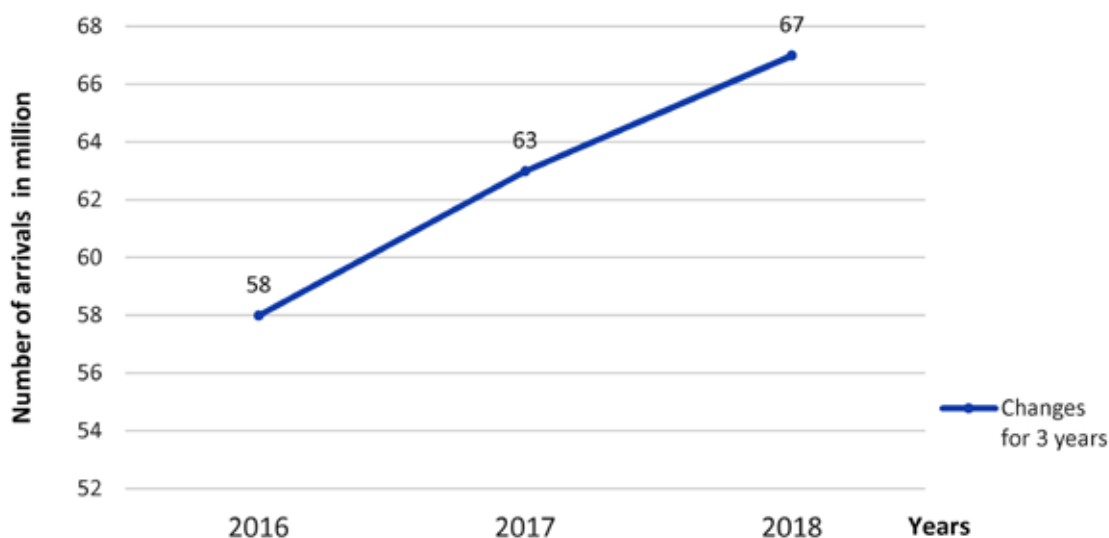

Diagram 19. Statistics of arrivals in Africa over the past three years (million). According to UNWTO

In 2016, Africa had 58 million arrivals, in 2017–63 million arrivals (8.6% growth), in 2018–67.1 million arrivals (7% growth). Over the past three years, the number of tourist arrivals in Africa is constantly growing.

Tourism revenue from Africa's countries is very law compared to Europe, Americas and Asia and the Pacific. This is due to the fact that the government pays little attention to the development of the tourism industry. In 2018, only 5 countries in Africa reached tourism income of more than USD1 billion:
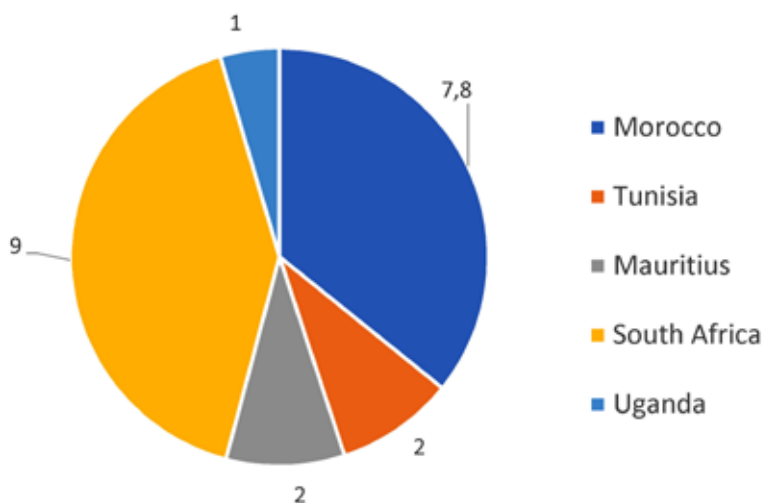

Diagram 20. Tourism income in Africa for 2018 (USD billion) According to statistic of UNWTO

Africa's main tourism revenue comes from Morocco (USD7,8 billion) and South Africa (USD9 billion), because Morocco is popular among some

European countries, and South Africa the service is much more expensive than in other countries of the region.

Despite the low income of countries, tourism revenues, like international tourism arrivals, have been slowly but increasing over the past three years.
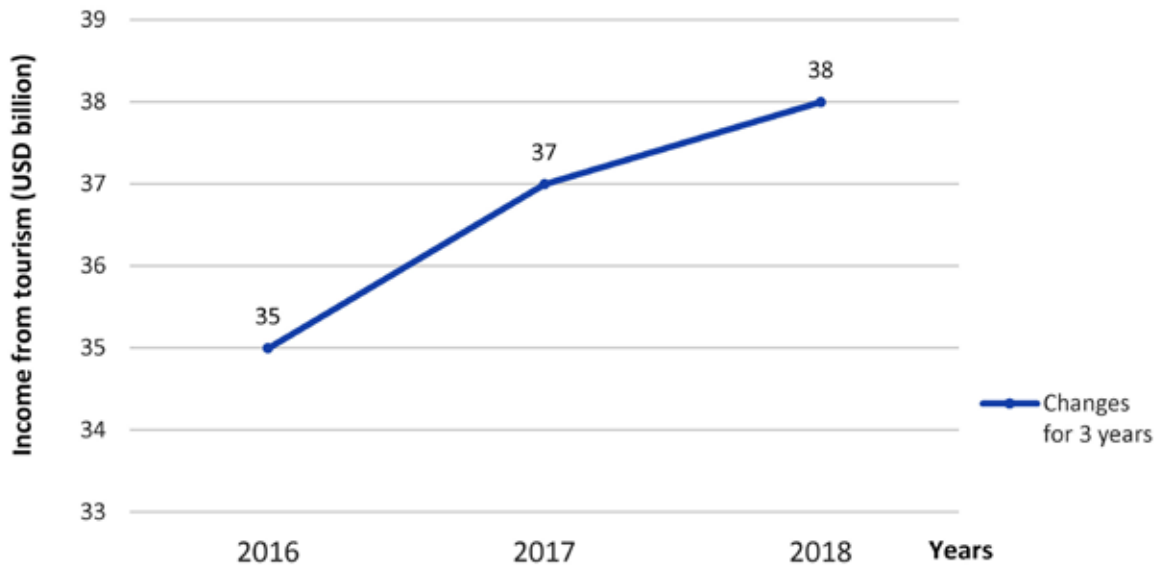
Diagram 21. Income from tourism in Africa over the past three years (USD billion). According to UNWTO

In 2016, tourism income in Africa was USD35 billion and had 3% growth; in 2017, revenue reached USD 37 billion and for 2018 tourism revenue reached USD 38 billion and had only 2% growth.

Africa is very perspective region for tourism, but there are some factors such as the disadvantage of some countries, underdevelopment of tourism, service and transport reduce the level of tourists visiting in this region. However, every year number of arrivals increase.

1.6 Arrivals and income in the Middle East

In 2018, there were over 60.5 million international tourist arrivals in the Middle East, an increase of 4.7% over 2017. In 2018, the Middle East has only 6 countries who has number of arrivals more than one million:

Diagram 22. The most visited countries in the Middle East for 2018 year (million arrivals). According to statistic of UNWTO

According to the diagram 22, the most visited place was Arab Emirates – 16 million arrivals, but only 0.8% growth compare 2017. Egypt had the highest growth (36.8%) compare 2017, but only 11.3 million arrivals. Saudi 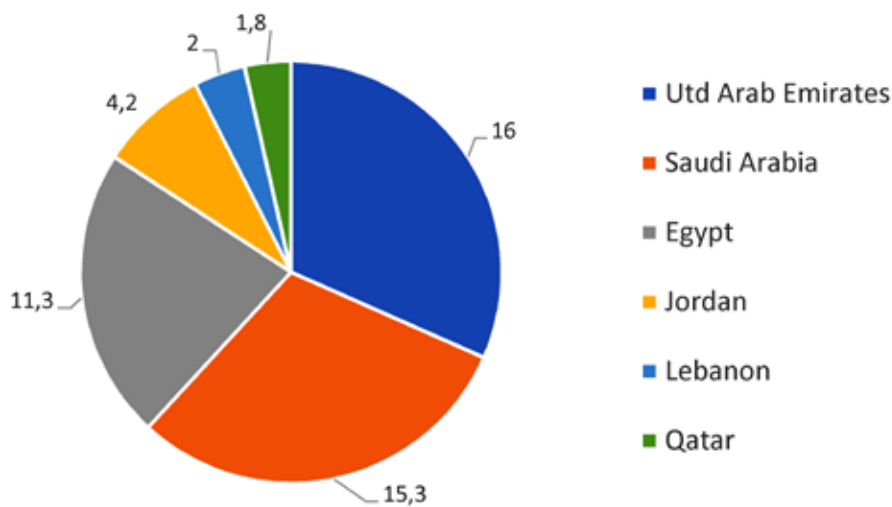Arabia lost 5.1% growth of tourist arrivals and reached 15.3 million arrivals. Qatar lost in 2018 19.4% of growth and reached only 1,8 million arrivals (2.3 million in 2017).

Despite losses in arrivals of some countries, the rate of arrivals in the Middle East continues to grow.
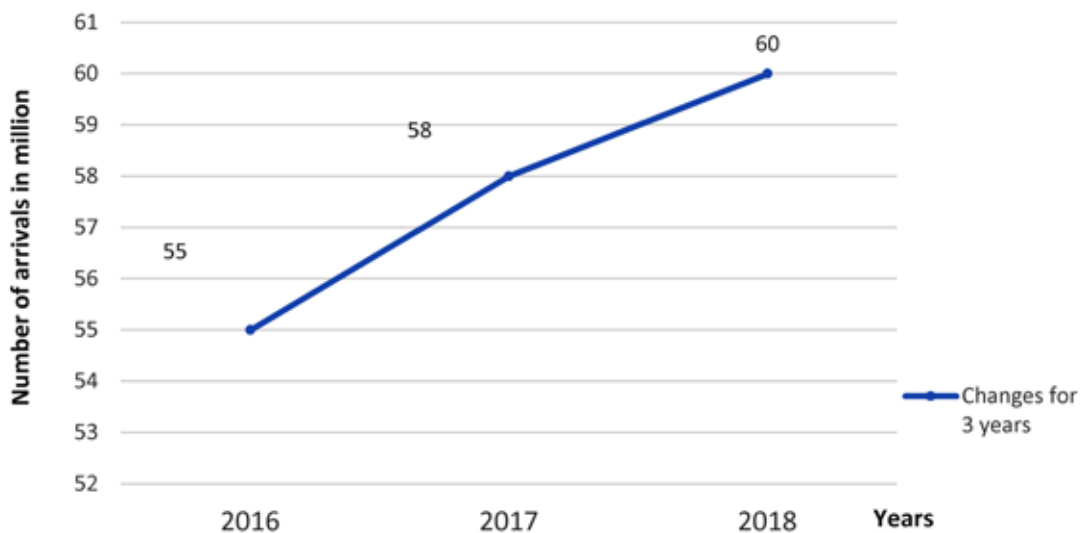
Diagram 23. Statistics of arrivals in the Middle East over the past three years (million). According to UNWTO

In 2017, the Middle East had over 58.3 million arrivals and it is 4.6% more than in 2016 (55.6 million arrivals). In 2018, number of arrivals was grown for 4.7% and reached 60.5 million arrivals.

Tourism income in the Middle East is not as large as in another region. Only six countries have a big number of tourist arrivals and only three of them have a big income:

Diagram 24. Tourism income in the Middle East for 2018 (USD billion) According to statistic of UNWTO

According the diagram 24, in 2018 the most profitable country in the Middle East was the United Arab Emirates (USD 21.3 billion) and it is 30% of all tourism income of the Middle East. Saudi Arabia had 16.5% of income for this region (USD 12 billion) and Egypt 15.9% from tourism region income (USD 11.6 billion).

Tourism income over the past three years in the Middle of the East is less than in Americas, Europe and the Asia and the Pacific, but more than in Africa.

In 2017, income in the Middle East reached USD68 billion what is USD10 billion more than in 2016 and had +13% growth. In 2018, the Middle East earned from tourism USD73 billion and had +4% growth.
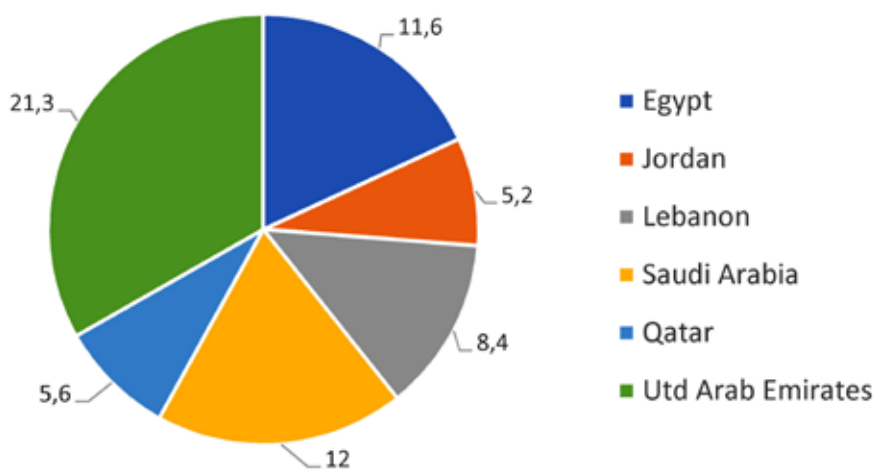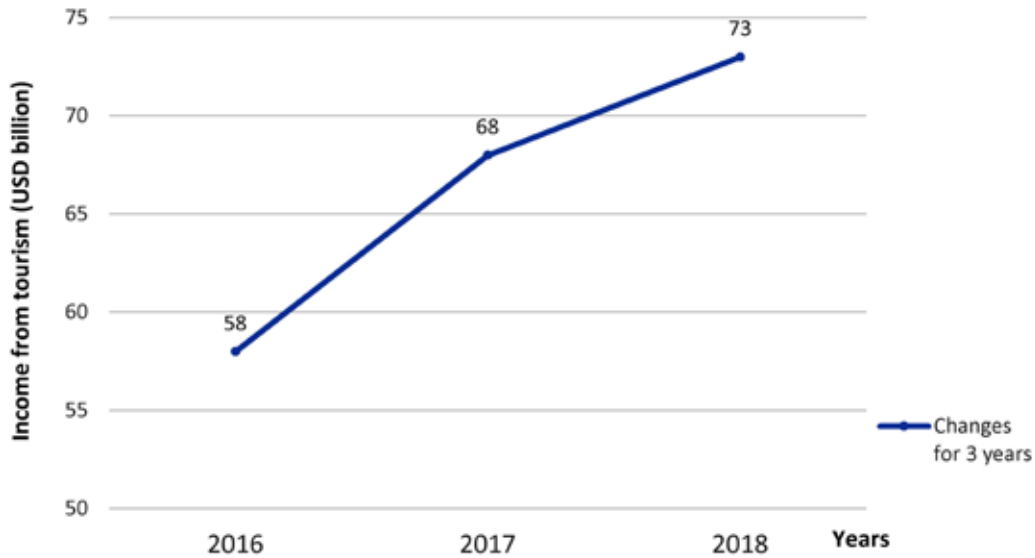

Diagram 25. Income from tourism in the Middle East over the past three years (USD billion). According to UNWTO

Based on the data, it can be concluded that some countries in the Middle East have a good base for the development of tourism. Today, tourism in the Middle East is better developed than in Africa, but worse than in other regions.

2. Tourism in France, the USA, China, Morocco and the United Arab Emirates.

Tourism in each region is developed differently. This is also noticeable in the leader countries in each region. France has the first place for tourist arrivals, the USA is the leader of tourism revenues, in China tourism is developing rapidly and, according to UNWTO forecasts, could overtake France in terms of the number of tourist arrivals soon. While Morocco and the United Arab Emirates are behind them both in the number of tourists and in income.

The chart 26 shows the arrival of tourists in France, the USA, China, the United Arab Emirates over the past three years. According to statistics, it noticed that there is big difference in tourist arrivals in Morocco, Utd Arab Emirates and France, the USA, China. In 2018, France had 89,4 million arrivals (87 million in 2017, 83 million in 2016), + + 2.9% tourist arrivals increase (in 2017 + 5.1%), the USA had 80 million arrivals (77 million in 2017, 75.6 million in 2016), +3.5% growth (in 2017 + + 0.7%), China had 63 million arrivals (61 million in 2017, 59.3 million in 2016), + 3.6% growth (in 2017 + + 2.5%), Morocco had 12.3 million arrivals (11.3 million in 2017, 10.3 million in 2016), +8.3% growth (in 2017 +9.8%), the United Arab Emirates had 16 million international arrivals (15.8 million in 2017, 15 million in 2016), +0,8% growth (in 2017 +6.2%). France is popular among neighboring countries and attracts tourists with its architecture; the United States has an excellent level of service. In China, most of the tourists come from Hong Kong, Macau and Taiwan. Most of the tourists in Morocco arrive from European countries and in the United Arab Emirates the tourism industry is well developed, but it has a high price.
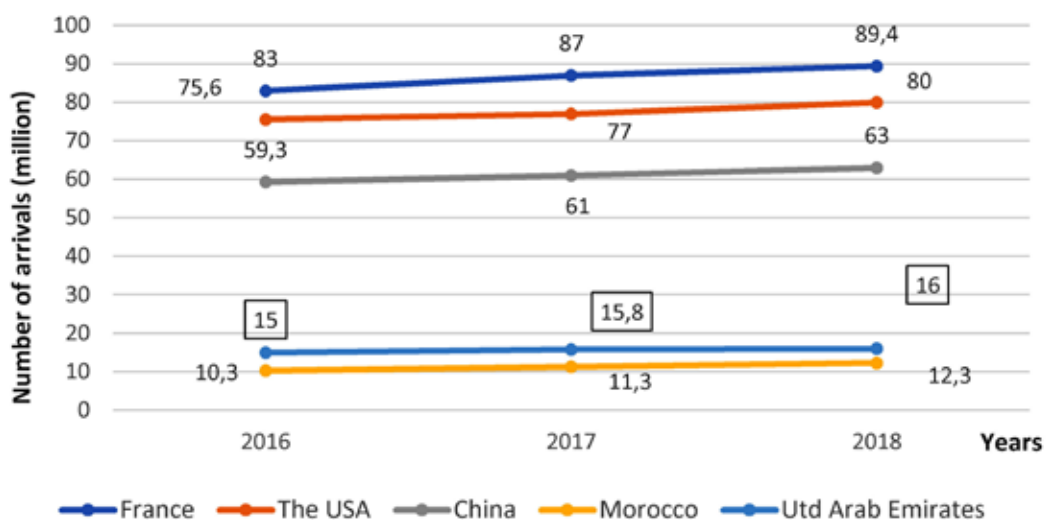
Diagram 26. Statistic of tourist arrivals for countries over the
past three years (million). According to UNWTO

Despite the number of arrivals, France ranks second in the top five countries in terms of tourism revenue. Over the past three years, the United States remains the leader in tourism income.
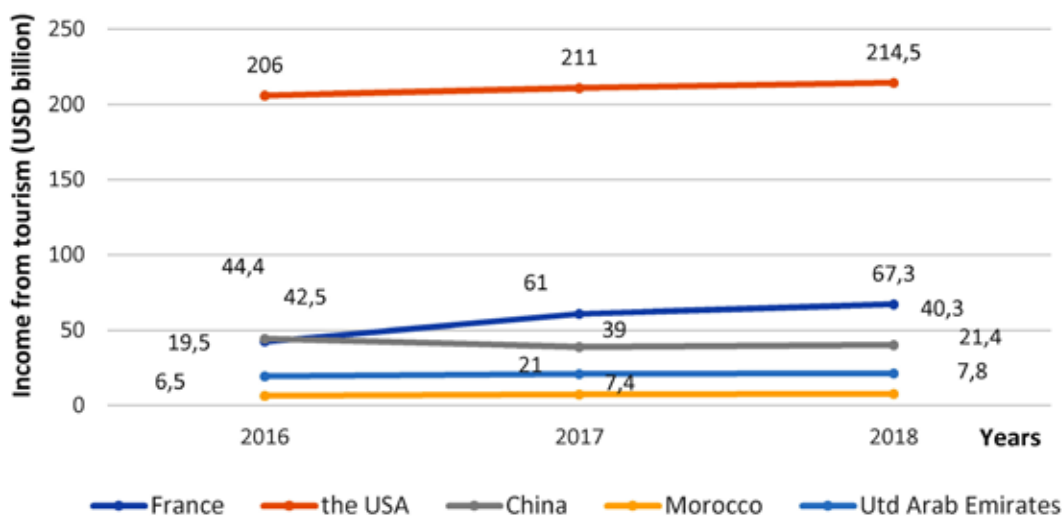
Diagram 27. Income from tourism in France, the USA, China, Morocco and the Utd
Arab Emirates over the past three years (USD billion). According to UNWTO

The chart 27 shows income from tourism in France, the USA, China, the United Arab Emirates over the past three years. According to statistics, the United States has the first position during three years. Lowest tourism income in Morocco. In 2018, France had USD 67 billion of revenue from tourism and this is 11.8% of all tourism income in Europe over the past year (USD 61 billion in 2017, USD 42.5 billion in 2016);

in the United States income has reached USD 214.5 billion, 64.3% of all revenue in Americas from tourism in the last year (USD 211 in 2017, USD 206 in 2016); in China tourism revenue in 2018 is USD 40.3 billion and this is 9.3% of all income from tourism in Asia and the Pacific (USD 39 billion in 2017, USD 44.4 billion in 2016); in Morocco tourism revenue is USD 7.8 billion and 20.2% of all income in Africa (USD 7.4 billion

in 2017, USD 6.5 billion in 2016); and in the United Arab Emirates the income is USD 21.4 billion in 2018 and 29.3% of all revenue in the Middle East (USD 21 billion in 2017, USD 19.5 billion in 2016).

GDP of countries also shows the level of money generated and effects the economy. Gross domestic products (GDP) is a monetary measure of the market value of all the final goods and services produced in a specific time period. Tourism revenues are also part of the country's total GDP. Diagram 28 shows GDP of countries:
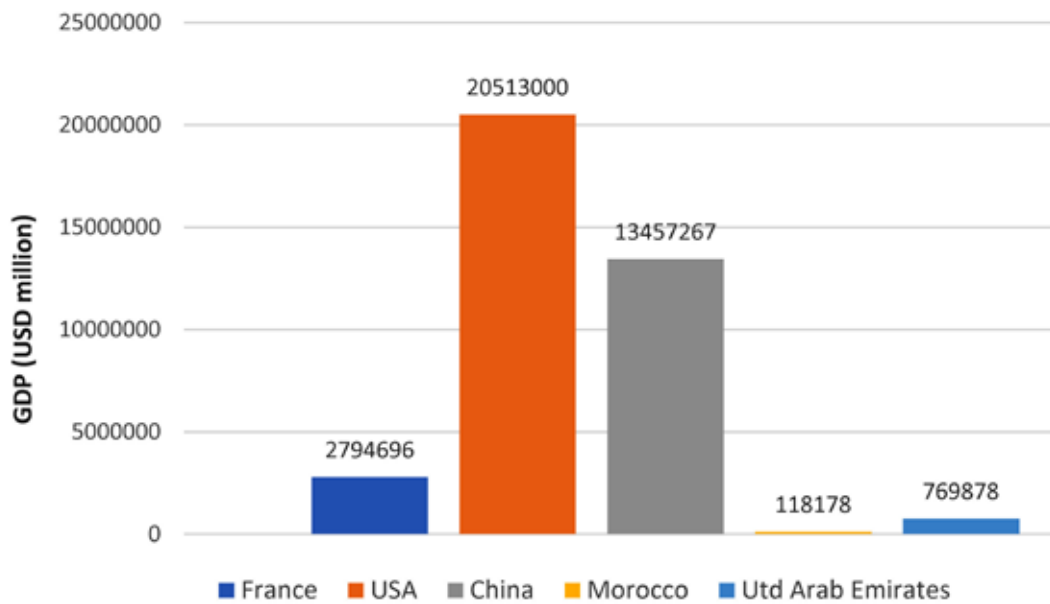
Diagram 28. GDP of France, the USA, China, Morocco and the Utd Arab Emirates in 2018 (USD million). According statistictimes. com data

Statistics show the GDP level in France, the United States, China, Morocco and the United Arab Emirates in 2018. Based on the data the highest level of GDP in the United States (USD 20 trillion) and this is the first position in the world statistics of the GDP countries; in second place China (USD 13 trillion), the second place in the world statistics; in the third place France (USD 2.7 trillion) and the sixth position in the world. GDP in Morocco (USD 118 billion, sixtieth position in the world statistics) and the United Arab Emirates (USD 769 billion, the eighteenth position in the world) did not reach one trillion dollars in 2018.

Summing up, despite the fact that France ranks first in terms of tourist arrivals, it is on the second place in terms of tourism revenues and third in terms of GDP. The USA got the second place in tourist arrivals, but first place in tourism income and GDP. China ranks third in term of tourist arrivals and tourism revenue, but on the second place in the country's GDP. Morocco and the United Arab Emirates take the last places by all criteria.

3. Comparative analysis

France, the United States, China, Morocco and the United Arab Emirates are leading countries in their region. However, their income and tourist arrivals are not the same. The United States on the first place in the world in revenue from tourism, and France on the first place in tourist arrivals. Moreover, GDP of France in the five countries is only in third place and sixth in the world ranking. To identify the differences and their possible causes, it was made the comparative analysis of that five countries.

To understand the difference in profit from tourism, first it needs to find out how much one tourist spends in the country in 2018. To do this, divide the tourism income by the number of tourist arrivals.

Table 1.

	Arrivals (mil. person)	Income (USD billion)	1 person spent (USD)
The United States	79.6	214.5	2695
France	89.4	67.3	753
China	63	40.3	640
Morocco	12.3	7.8	634
Utd Arab Emirates	16	21.4	1338

Calculation of the average amount spent in each country by one person in 2018.

According to (Table 1), the highest the largest amount of money one tourist spends in the United States (USD 2695) and the United Arab Emirates (USD 1338), in France average amount spent by one person was USD 753, in China USD 640 and USD 634 in Morocco. The USA leads both in tourism revenue and in the spending of one tourist, but the United Arab Emirates is on the fourth position of tourism revenue and on the second position in the spending of one tourist.

In order to find out why one tourist spends a different amount of money in each country, it is necessary to analyze the average price of tourist services in each country:

Table 2.

	Hotel for 1 day (USD)	Food for 1 day (USD)	Bottled water for 1 day (USD)	Local transport (taxis, local buses, subway) (USD)	Entertainment (Entrance tickets, shows) (USD)	Travel between cities (USD)	Alcohol (drinks for 1 day) (USD)	Average daily cost per person, per day (USD)
The USA	104	42	14	36	51	147	19	223
France	96	34	2.68	26	28	48	11	161
China	30	19	0.83	15	10	35	5.8	67
Morocco	21	12	1.86	4.13	5.37	11	6.51	41
Utd Arab Emirates	136	41	78	16	15	17	18	276

Average travel prices in the USA, France, China, Morocco, Utd Arab Emirates (USD). According to Budgetyourtrip.com.

According to (Table 2), the most expensive countries for vacation are the United States and the United Arab Emirates. Morocco is the cheapest country for tourists. In the United States for one week in average one tourist spends around USD 1564 and USD 6705 for one month; in France one tourist spends for one week USD 1131 and for one month USD 4847; in China one tourist spends for one week USD 459 and for one month USD 1965; in Morocco for one week one tourist spends USD 286 and USD 1225 for one month; in the United Arab Emirates one tourist spends for one week USD 1929 and USD 8268 for one month. This is the average prices for all countries and this amount may vary depending on the needs of the tourist. All of these prices are calculated from the budgets of real travelers (According to Budgetyourtrip.com).

An indicator of the level of well-being in a country is GDP. To find out what proportion of tourism income in the total GDP of a country it needs:

$$\frac{Income\ from\ tourism}{GDP} * 100$$

This formula shows what share of tourism profits in the country's total GDP. It needs to take data for 2018 on GDP of each country and on tourism revenue.

Table 3.

	GDP (USD billion)	Income from tourism (USD billion)	Percentage of tourism income in GDP
France	2.796	67.3	2.41
The USA	20.513	214.5	1.04
China	13.457	40.3	0.2
Morocco	118	7.8	6.6
Utd Arab Emirates	769	21.4	2.78

Indicator of the share of tourism revenue in the country's total GDP in 2018.

According to (Table 30, the highest share of tourism income in the country's total GDP in Morocco (6.6%), in France 2.41%, in the United States 1.04%, in the United Arab Emirates 2.78% and the smallest percentage in China (0.2%). This is a percentage of tourism revenue in the country's total GDP, which shows how important the tourism industry is to the country's economy. The higher the percentage, the more important tourism is for the country's economy. Thus, to summarize that for these five countries, the tourism industry plays the largest role in the Morocco economy, while the share of tourism in the Chinese economy is very small.

Summing up the analysis, France ranks first in terms of tourism arrivals, but not in terms of revenue from tourism and GDP of country (the sixth position in the world); the share of the tourism industry in the country's GDP is 2.41%. The USA has 9 million less tourist arrivals than France, but it ranks first in terms of tourism revenue and GDP (the first place in the world ranking); the share of the tourism industry in the country's GDP 1.04%. China has the second place in the world ranking of GDP and has the smallest share of tourism in the country's GDP. Tourism revenues in Morocco are small compared to other countries, but the share of tourism in the country's GDP is largest than in another four countries,

which means that tourism is more important there for economy. The United Arab Emirates have average indicators for all parameters. The share of tourism in the country's total GDP is 2.78%.

Conclusion

This article examined four global tourist areas: Europe, Americas, Asia and the Pacific, Africa and the Middle East. Also, the most popular country for tourists was selected from each region. The comparative analysis was made, which revealed the country with the highest income from tourism, the country with the highest number of tourist arrivals, the country whose GDP is more dependent on tourism than others, and made it possible to find out how much one tourist spends on average for his trip in each country and the average prices for tourist service in all countries. The data on tourism arrivals, tourism income, GDP of countries over the past three years have been collected.

According to the data, Europe has been in first place for tourist arrivals over the past three years: 710 million tourist arrivals in 2018 and +5% growth and this is 51% of all world arrivals. Europe also comes first in terms of tourism revenue: USD 570 billion and +5% growth in 2018. France was chosen from Europe, as this country is the leader in tourist arrivals both in Europe and in the world: 89.4 million of tourist arrivals in 2018 (+2.9%). France ranks second from these five countries in tourism

revenue and ranks third in the world: USD 67 billion and this is 11,8% of all tourism income in Europe. This country has the sixth place in the world in total GDP (USD 2.7 trillion) and the share of tourism income in the country's total GDP is 2.41%. On average, a tourist spends USD 753 in his trip and about USD 161 per one day.

In second place for tourist arrivals and income is Asia and the Pacific. In 2018, number of tourist arrivals reached 348 million (25% of all worlds arrivals), and the growth was 7%. Tourism revenue in 2018 was USD 435 billion and 7% growth. In Asia and the Pacific region, China was selected for analysis. In 2018, China had 63 million tourist arrivals and this is the fourth place in the world ranks (+3.6% growth), and revenue from tourism was USD 40.3 billion, 10th place in the world in tourism revenue (9.3% of all income from tourism in Asia and the Pacific). In terms of tourism arrivals and tourism income, China on the third place from the five analyzed countries. In China a tourist spends USD 640 on average per trip, and average tourist spending per day is USD 67. China is in second place in world ranking by GDP (USD 13 trillion) and the share of tourism income in the country's total GDP is 0.2% (According to UNWTO International Tourism Highlights 2019 edition).

Now the Chinese Government has launched a new tourism policy, with the aim of significantly enhancing tourism development in the country and establishing China's tourism industry as a significant economic force in China's domestic and international tourism markets. This new policy document gives an insight into the modernization and development of China's tourism industry. In common with many national tourism policies, including the latest UK Tourism Policy, it makes no mention of China's outbound tourism sector, and focuses wholly on the development of the national tourism product. Despite the widely held perception that China does things differently to the rest of the world, this is actually a very orthodox form of tourism policy. It concen-

trates on product diversification and development and contains some standard aims to increase education and training and to improve tourist information. This policy takes a very broad overview of the Chinese tourism industry, aiming to increase quality and diversity in all of its aspects. The lack of a clear set of targets or implementation plans in the policy document means that it will be difficult to evaluate it is success, but the strength of the central Chinese state suggest that the many of the aspirational aims of the policy will be funded and delivered and that this will be carried out on an immense scale. (Source: James Kennell. China's new tourism policy 2013–2020. April 2, 2013)

Americas ranks third in tourist arrivals and it is 15% of all tourism arrivals (216 million in 2018; +2%) and tourism revenue (USD 334 billion; +0%). The most popular country in Americas among tourists is the United States of America. In 2018, the USA received 80 million tourist arrivals (+3,5% growth); and revenue from tourism reached USD 214 billion. The United States ranks the third position in world ranking in terms of tourism arrivals, and in first place in terms of tourism income. In the Unites States one tourist spends USD 2695 per trip and USD 223 per day. By GDP, the United States ranks first in the world ranking: USD 20 trillion, and the share of tourism income in the country's total GDP is 1.04%. (According to UNWTO International Tourism Highlights 2019 edition).

The Middle East had 60 million tourist arrivals in 2018, and +5% of the increase. This is a very small number compared to other regions, only 4% of all tourist arrivals. Income from tourism in 2018 amounted to USD 73 billion (+4%). The Middle East ranks last in tourist arrivals, yielding to the African region, but ahead Africa in tourism revenue. In the Middle East was selected the United Arab Emirates. In 2018, number of tourism arrivals in the Unites Arab Emirates was 16 million (+0.8), and revenue reached USD 21.4 billion. Prices for tourist services in the United Arab Emirates are similar to prices in the United States. It

is one of the most expensive countries for tourists. One tourist spends on average USD 1338 per trip and USD 276 per day. GDP of the country takes the eighteenth place in the world ranking (USD 769 billion), and the share of tourism income in the country's total GDP is 2.78. (According to UNWTO International Tourism Highlights 2019 edition).

Most tourism to the UAE has been concentrated in Dubai and to a lesser extent Abu Dhabi. Now, the other Emirates are actively developing their tourism product offerings, providing visitors with different tourism opportunities in the process. The WTTC benchmarking study shows that [travel and tourism's] contribution to employment in the region is now larger than financial services, manufacturing and mining, and the sector is growing faster than retail and mining. For example, the UAE signed a short-stay visa waiver agreement with the European Union (EU) in May 2015, providing visa-free travel for EU citizens to the UAE and for Emiratis travelling to the EU, for up to 90 days in any 180-day period. (Source: Fanack.com; Economic Diversification Policy Sees Big Investments in UAE's Tourism Industry; January 18, 2018).

There were totally 67 million tourist arrivals in Africa in 2018 (+7% growth) and it is only 5% of all tourism arrivals; and tourism revenue was USD 38 billion (+2%), this is the last position in the world. Morocco was selected from the Africa's countries because of the highest number of tourist arrivals in this region (12.3 million; +8.3% growth). In 2018, tourism revenue in Morocco was USD 7.8 billion. One tourist spends USD 634 per trip and USD 41 per day. The country's GDP is on the sixtieth place in the world ranking and is only USD 118 billion. The share of tourism income in the country's total GDP is 6.6%, and this is means that the tourism industry in this country is important for the economy.

Based on the data, it can be summarized that the tourism industry in different countries and regions is developed differently. Moreover, tourism income is not related to the number of tourism arrivals. In general, world indicators and indicator of tourists and the profits of individual countries show that the tourism sector continues to develop everywhere, increasing the contribution of the economies of countries.

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Section 5. Labor economics

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THE YOUTH ON THE LABOR MARKET IN THE FORMATION OF KNOWLEDGE-BASED ECONOMY OF KAZAKHSTAN

Abstract. The article exploring the main problems of youth in the labor market in Kazakhstan. Against the background of general positive trends of reduction of youth unemployment highlighted problems associated with the high level of youth self-employment, the growing proportion of the NEET group, slowing growth in higher education enrollment, a mismatch of training to labor market needs.

Keywords: youth, population aged 15–28 years, youth unemployment, NEET, youth self-employment.

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МОЛОДЕЖЬ НА РЫНКЕ ТРУДА В УСЛОВИЯХ ФОРМИРОВАНИЯ НАУКОЕМКОЙ ЭКОНОМИКИ КАЗАХСТАНА

Аннотация. В статье рассмотрены основные проблемы молодежи на рынке труда в Казахстане. На фоне общей положительной тенденции сокращения молодежной безработицы выделены проблемы, связанные с высоким уровнем молодежной самозанятости, ростом доли группы NEET, замедлением роста охвата высшим образованием, несоответствием подготовки кадров потребностям рынка труда.

Ключевые слова: молодежь, население в возрасте 15–28 лет, молодежная безработица, NEET, молодежная самозанятость.

Повышение конкурентоспособности национальных кадров и развитие человеческих ресурсов являются приоритетной задачей и условием для стабильного экономического развития Казахстана. Реализация Третьей модернизации Казахстана обусловливает наличие высоких требований к качеству трудовых ресурсов, обладающих значительным образовательным, профессиональным, квалификационным потенциалом.

Существующие диспропорции между потребностями рынка труда в специалистах усиливают необходимость особого внимания к молодежи на рынке труда.

Из 2,1 млн. занятой молодежи в возрасте 15–28 лет 95,0% принадлежит к возрастной группе 20–28 лет и составляет более четверти экономически активного населения Казахстана.

За 2014–2018 гг. уровень молодежной безработицы снизился до 3,8% или в абсолютном выражении на 22,0 тыс чел. Уровень долгосрочной молодежной безработицы в этот же период снизился с 2,4% в 2014 г. до 2,1%. Общее количество безработных молодых людей в возрасте 15–28 лет сократилось до 81,1 тыс человек на конец 2-го квартала 2019 г. (–1,6%) по сравнению аналогичным периодом 2018 г. (82,4 тыс человек).

В первом полугодии 2019 г. самый низкий уровень молодежной безработицы наблюдался в Атырауской (2,4%), Жамбылской (2,4%) и Актюбинской (2,5%) областях, самый высокий уровень – в г. Алматы (6,3%), в Карагандинской области (5%) и в г. Нур-Султан (4,5%). В этот же период было создано 186 тысяч рабочих мест в торговле, строительстве и сельском хозяйстве, что на 7% больше,

чем за аналогичный период 2018 г. Около 30% созданных рабочих мест приходится на г. Алматы, Алматинскую и Мангистаускую области, 42% или 77 тысяч рабочих мест – на сельскую местность [1].

Несмотря на благоприятную картину, которая складывается благодаря показателям официальной статистики, реальная ситуация в регионах может отличаться от заявленных данных. Результаты исследований, проведенных аудиторской компанией «E&Y» в 2017 г., свидетельствуют о наличии высокой доли скрытой безработицы.

В стране сохраняется высокая доля самостоятельно занятого населения среди молодежи, порядка 23%. Следует отметить рост продуктивной занятости молодежи до 91% в 2018 г. Несмотря на положительную тенденцию, доля непродуктивно занятого молодого населения все еще остается довольно высокой –9% [2].

Вместе с тем следует отметить проблемы в формировании качественного и конкурентоспособного класса самостоятельно занятой молодежи, недостаточные опыт и навыки ведения собственного бизнеса. Это проявляется, в частности, в сокращении численности работодателей среди продуктивно занятой молодежи.

В 2012–2018 гг. был отмечен отраслевой переток занятых молодых людей. Так, если в 2012 г. 28,9% молодежи было занято в секторе «сельское хозяйство», то в 2019 г. наиболее востребованным видом экономической деятельности является сфера оптовой и розничной торговли (388,8 тыс человек). [2]

Наименьший уровень занятости – в таких отраслях, как горнодобывающая промышленность

(56,8 тыс. человек), в сфере водоснабжения, канализационной системы, контроля над сбором и распределением отходов (12,8 тыс. человек). Низкий уровень занятости молодежи в наукоемких и сервисных отраслях – информация и связь (47,1 тыс человек), в сфере искусства, развлечения и отдыха (42,6 тыс. человек) [3].

Последствием региональной концентрации молодежи является увеличение избытка трудовых ресурсов в крупных городах. Так, за 2013–2016 гг. из сельской местности выбыло более чем 234 тыс. молодого населения, что привело к росту внутренней миграции в города на 36,7%. Данная тенденция может стать фактором усиления уровня социальной напряженности в городах и увеличения нагрузки на социально-экономическую инфраструктуру крупных городов.

Региональный дисбаланс трудовых ресурсов молодежи усиливает дисбаланс на рынке труда по различным профессиям, который, в свою очередь, обусловлен недостаточной информацией о современных актуальных специальностях в различных секторах экономики. Более того, отсутствие эффективной оценки и прогноза требуемых специальностей приводит к несоответствию выпускаемых специальностей современным потребностям рынка труда.

Одним из важнейших показателей рынка труда является группа NEET (Not in Education, Employment or Training). Доля этой группы с 2012 г. по 2018 г. возросла в Казахстане с 8% до 8,7% [4]. Рост доли NEET имел место в большинстве регионов Казахстана. Так, в Актюбинской области ее доля возросла с 3,0% до 7,8%. Высока доля молодежи NEET в таких областях, как Жамбылская (10,7%), Карагандинская (12,4%), Кызылординская (10,6%) и Мангистауская (11,5%), Туркестанская (10,8).

Высокому риску попадания в группу NEET подвержена безработная молодежь без шансов на повышение квалификации и сельская молодежь, для которой непреодолимо высоким барьером

могут быть издержки миграции. Не случайно во внутренней миграции около 80% приходится на внутриобластную миграцию.

Для снижения численности NEET-молодежи разработана Дорожная карта по социализации молодежи категории NEET. Она позволит работать с молодежью NEET по восьми категориям: безработная молодежь, сельская молодежь, молодежь с ограниченными возможностями, занятая молодежь со средним образованием, молодежь с доходами ниже прожиточного минимума, образованная молодежь без опыта работы, молодые женщины, имеющие малолетних детей, асоциальная молодежь и шести направлениям: профориентация, профессиональное обучение, обеспечение занятости, развитие молодежного предпринимательства, социализация молодежи, организационно-методические мероприятия.

Трудоустройство не по специальности и непродуктивная самозанятость молодежи ведут к снижению уровня человеческого капитала и «потенциально упущенной» выгоде от трудоустройства молодежи и выплат ими налогов. Так, 15,5% безработной молодежи находится в поисках работы от 6 до 12 месяцев, 27% – от 3 до 6 месяцев, 20% экономически активного населения Казахстана трудятся в отраслях, не соответствующих полученному образованию, а среди молодежи данный показатель достигает 40%.

Таким образом, проведенный анализ позволил выявить следующие особенности молодежного рынка труда и занятости: положительная динамика основных индикаторов молодежного рынка труда Казахстана, в том числе рост уровня занятости молодежи; высокий показатель уровня безработицы в городах Алматы и Нур-Султан (Астана); сохранение в течение длительного периода высокой доли самостоятельно занятой молодежи в возрасте от 15 до 28 лет, особенно значима эта проблема для Жамбылской и Туркестанской областей; почти не меняющаяся картина преобладания доли сельской молодежи в составе

самозанятых; преобладание мужского контингента в гендерной структуре молодежной занятости, как и в занятости всего населения Казахстана всех возрастных категорий.

В последние 10 лет изменилось соотношение выпускников вузов и ТиПО. Если до 2009 года преобладал выпуск студентов вузов, то с 2010 года самой многочисленной категорией стали выпускники ТиПО. Такая динамика может отражать тенденцию замедления роста охвата высшим образованием и недостаточности усилий по развитию высшего образования. Так, по данным Всемирного банка расходы на высшее образование в наиболее развитых странах более 1% к ВВП. В России и Беларуси около 0,8%. В Казахстане этот показатель почти в 3 раза ниже.

В Казахстане уровень охвата высшим образованием вырос с 2000 г. с 31% до 52% к 2018 году, что соответствует уровню стран с доходом выше среднего. Однако динамика этого показателя была невысокой. Например, в Китае этот показатель также достиг 51% к 2018 г., но в 2000 г. его уровень составлял всего лишь 7%. Усилилась дистанция по этому показателю с партнерами по ЕАЭС. Если в 2000 г. разрыв по уровню охвата высшим образованием с Россией и Беларусью составлял примерно 24%, то к 2018 году он достиг 35–40% [5].

Выводы. В целом рассматривая структуру подготовки кадров в разрезе специальностей следует отметить, что она в целом отражает особенности формирования структуры экономики Казахстана: высокая доля сырьевого, в частности нефтегазового сектора, низкая доля обрабатывающей промышленности, низкая интенсивность индустриальных процессов, преждевременный характер деиндустриализации. Последний выражается в быстром росте сферы услуг, с которой связан основной рост занятости в Казахстане.

Преобладание в структуре занятого молодого населения лиц с высшим образованием говорит о всевозрастающем стремлении молодежи к получению образования и повышения своей квалификации и профессиональных навыков. Прием и подготовка кадров в Казахстане осуществлялся преимущественно за счет покупки образовательных услуг из средств населения и предприятий. В целом 70% студентов вузов обучались за счет собственных средств и средств предприятий, из них лишь 1,2% обучается за счет средств предприятий.

Меняется структура безработной молодежи по уровню образования. С 2003 года доля безработной молодежи, имеющей высшее и незаконченное высшее образование, стала расти. Рост доли безработных с высшим и средним профессиональным образованием свидетельствует о замедлении модернизации в экономике. Приведенные данные подтверждают увеличение спроса на менее квалифицированную рабочую силу на протяжении последних 15 лет и неуклонное снижение спроса на квалифицированную рабочую силу.

Описанные обстоятельства говорят о высокой роли образования в обеспечении занятости населения, однако, тенденция повышающегося уровня образования безработных может быть свидетельством снижения качества подготовки специалистов. Размещаемый государственный заказ на подготовку кадров зачастую не соответствует требованиям работодателей, в связи, с чем возникает дисбаланс между спросом и предложением на рынке труда.

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Section 6. Economic security

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DEVELOPMENT OF A PREDICTIVE MODEL FOR DENIAL OF HOME MORTGAGE

Abstract

Objective: This study aims to build a predictive model for the denial of home mortgage in Washington state using logistic regression model.

Methods: A public database was used in this study. A logistic regression was used. Area under curve, optional cutoff point, mis-classification error, sensitivity and specificity were calculated.

Results: A total of 49324(19.3%) home mortgage applications out of 255379 had were denied. According to the logistic regression, refinancing was 339.1% more likely to get denied. Home improvement was 291.8% more likely to get denied. Black were 77.8% more likely to get denied, Asian 33.5% more likely and Hispanic 36.3% more likely, and other race were 62.3% more likely to get denied. FHA, FSARHS and VA were more likely to get denied. People without co-applicants were 59.1% more likely to get a denial.

The area under curve was 0.7052. The optional cutoff point is 0.459. The mis-classification error was 0.1905. the sensitivity rate is about 5.4% and the specificity is 99.0%.

Conclusions: In this study, we identified several important predictors for the denial of home mortgage in Washington State in 2016, for example, race, mortgage type.

Keywords:

1. Instruction

There are 5 most common reasons why a home mortgage loan application could be denied: Poor Credit History; Insufficient Income/Asset Documentation; Down Payment is Too Small; Problems With the Property; Inadequate Employment History.

Recent news articles suggest that the significantly higher mortgage denial rates for black and Hispanic borrowers establish the presence of racial discrimination in mortgage lending.

This study aims to build a predictive model for the denial of home mortgage in Washington state using logistic regression model.

2. Data and Methods:

Data:

Inside this data set contains 466.566 observations of Washington State home loans – variables

include; demographic information, area specific data, loan status, property type, loan type, loan purpose and originating agency. The data is available at: https://www.kaggle.com/miker400/washington-state-home-mortgage-hdma2016.

Optimal Cutoff for Binary Classification maximizes the accuracy.

Mis-Classification Error is the proportion of all events that were incorrectly classified, for a given probability cutoff score.

Sensitivity: probability that a test result will be positive when the disease is present (true positive rate.

Specificity: probability that a test result will be negative when the disease is not present (true negative rate, expressed as a percentage). e, expressed as a percentage).

3. Results

A total of 49324(19.3%) home mortgage applications out of 255379 had were denied.
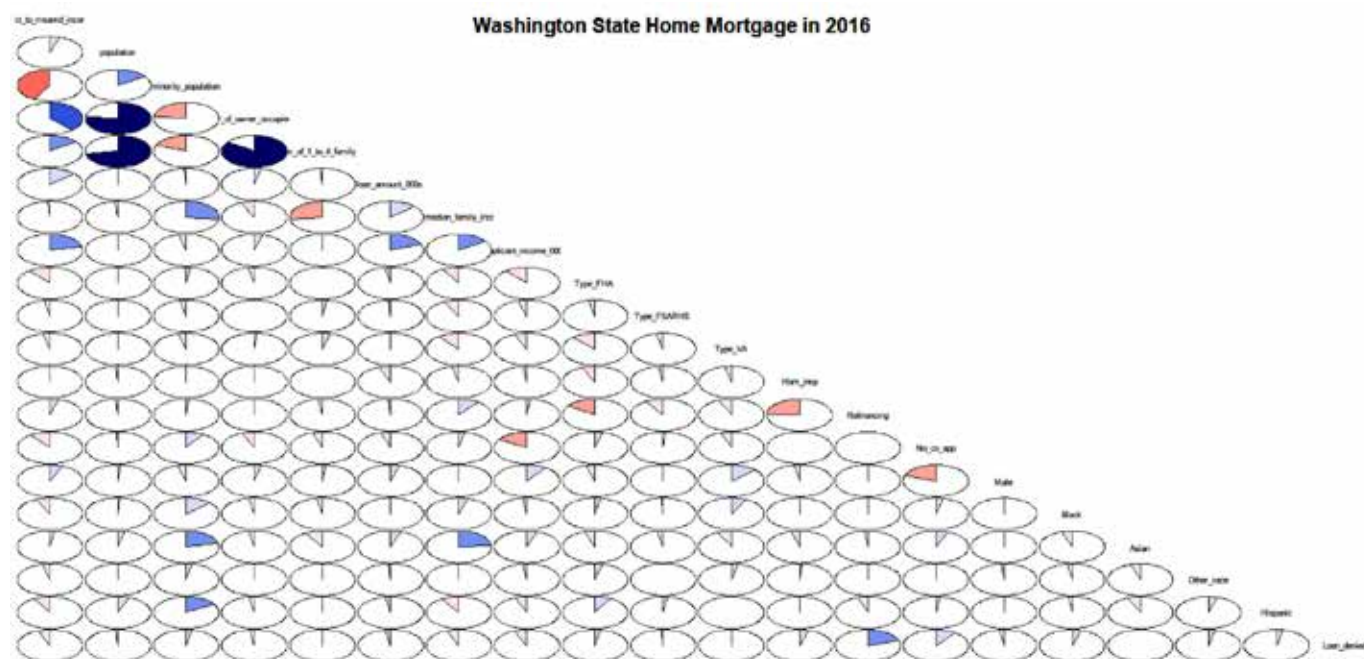
Figure 1. Matrix of correlations between variables

Table 2.– Logistic Regression for Mental Health

	Estimate	Std. Error	z value	Pr(>|z|)	
1	*2*	*3*	*4*	*5*	*6*
(Intercept)	−1.219	0.075	−16.257	< 2e-16	***
tract_to_msamd_income	−0.003	0.000	−9.400	< 2e-16	***
population	0.000	0.000	−6.016	0.000	***
minority_population	0.002	0.001	3.593	0.000	***
number_of_owner_occupied_units	0.000	0.000	−0.476	0.634	
number_of_1_to_4_family_units	0.000	0.000	5.633	0.000	***
loan_amount_000s	0.000	0.000	1.760	0.078	.
hud_median_family_income	0.000	0.000	−20.314	< 2e-16	***
applicant_income_000s	−0.001	0.000	−10.018	< 2e-16	***

1	*2*	*3*	*4*	*5*	*6*
Type_FHA	0.523	0.024	22.182	< 2e-16	***
Type_FSARHS	0.456	0.085	5.364	0.000	***
Type_VA	0.137	0.027	5.115	0.000	***
Hom_imp	1.366	0.031	44.105	< 2e-16	***
Refinancing	1.480	0.018	81.418	< 2e-16	***
No_co_app	0.465	0.016	29.803	< 2e-16	***
Male	0.001	0.017	0.032	0.975	
Black	0.575	0.042	13.627	< 2e-16	***
Asian	0.289	0.026	10.954	< 2e-16	***
Other_race	0.485	0.047	10.359	< 2e-16	***
Hispanic	0.310	0.031	9.925	< 2e-16	***

According to the logistic regression, refinancing was 339.1% more likely to get denied. Home improvement was 291.8% more likely to get denied. Black were 77.8% more likely to get denied, Asian 33.5% more likely and Hispanic 36.3% more likely, and other race were 62.3% more likely to get denied. FHA, FSARHS and VA were more likely to get denied. People without co-applicants were 59.1% more likely to get a denial.

Table 2. – Odds Ratio According to Logistic Regression

Variable	OR	Risk Increase
Refinancing	4.391	3.391
Hom_imp	3.918	2.918
Black	1.778	0.778
Type_FHA	1.687	0.687
Other_race	1.623	0.623
No_co_app	1.591	0.591
Type_FSARHS	1.578	0.578
Hispanic	1.363	0.363
Asian	1.335	0.335
Type_VA	1.146	0.146
minority_population	1.002	0.002
Male	1.001	0.001
number_of_1_to_4_family_units	1.000	0.000
loan_amount_000s	1.000	0.000
hud_median_family_income	1.000	0.000
number_of_owner_occupied_units	1.000	0.000
population	1.000	0.000
applicant_income_000s	0.999	−0.001
tract_to_msamd_income	0.997	−0.003
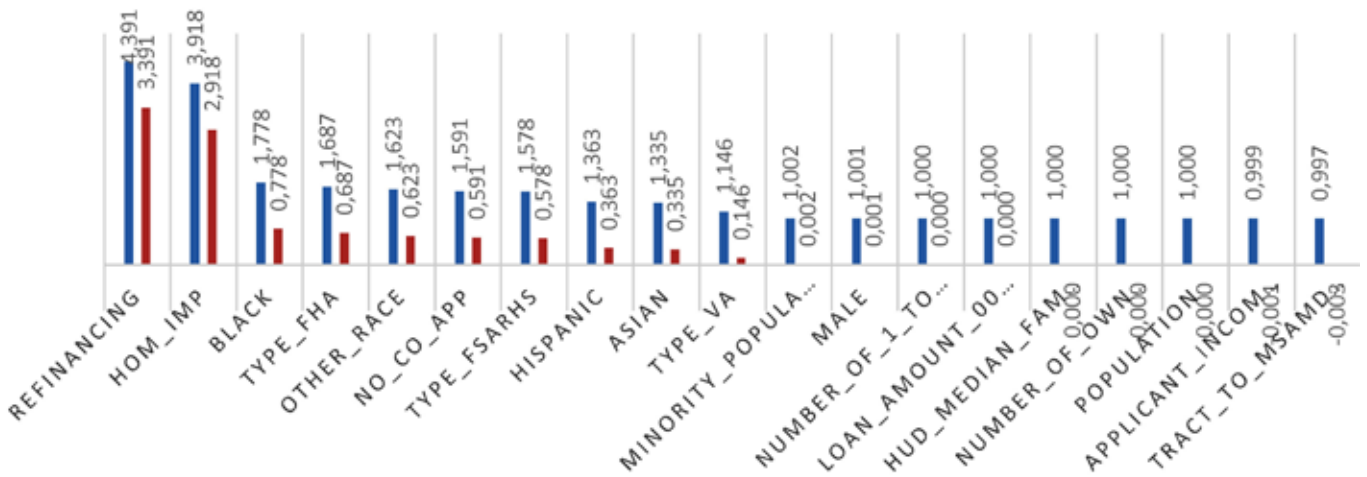
Figure 2. Odds Ratio (blue) and Risk Increase (red) According to Logistic Regression
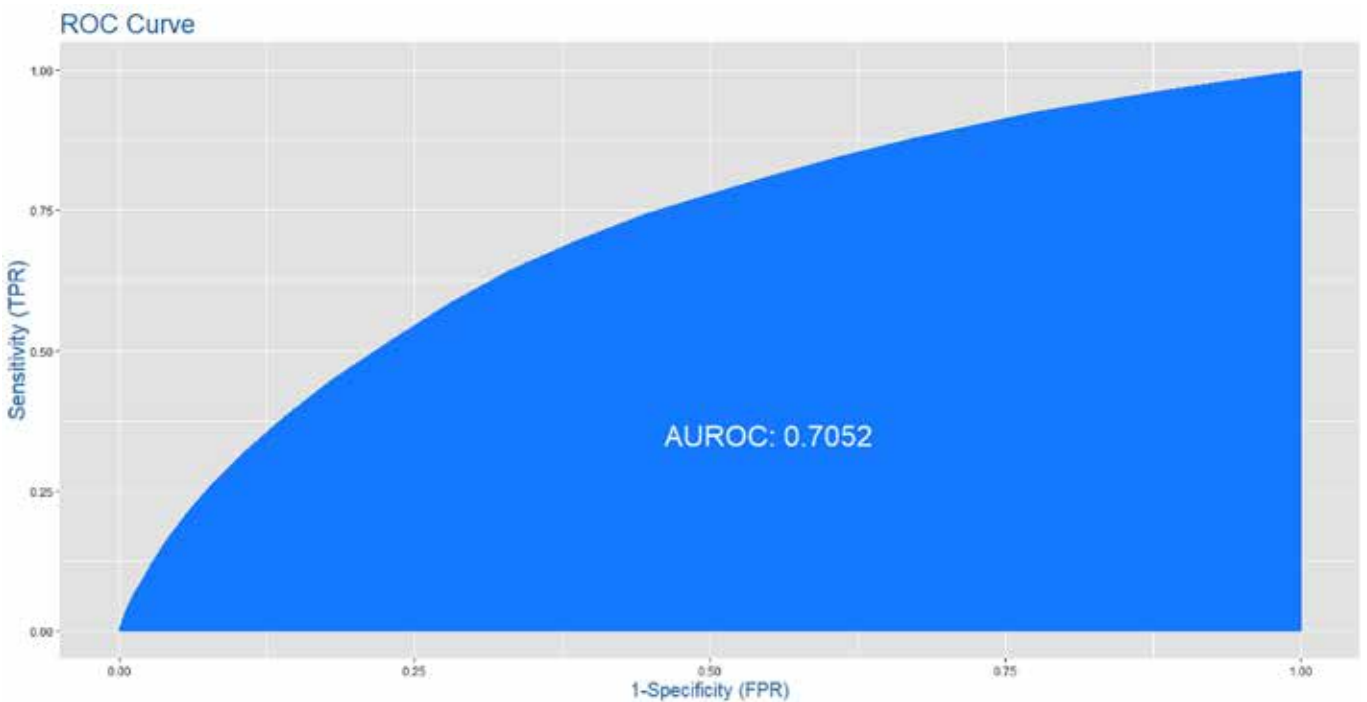
Figure 3. ROC in testing sample for Logistic Regression

The area under curve was 0.7052. The optional cutoff time is 0.459. The mis-classification error was 0.1905. the sensitivity rate is about 5.4% and the specificity is 99.0%.

4. Discussions

A total of 49324(19.3%) home mortgage applications out of 255379 had were denied. According to the logistic regression, refinancing was 339.1% more likely to get denied. Home improvement was 291.8% more likely to get denied. Black were 77.8% more likely to get denied, Asian 33.5% more likely and Hispanic 36.3% more likely, and other race were 62.3% more likely to get denied. FHA, FSARHS and VA were more likely to get denied. People without co-applicants were 59.1% more likely to get a denial.

The area under curve was 0.7052. The optional cutoff point is 0.459. The mis-classification error was 0.1905. the sensitivity rate is about 5.4% and the specificity is 99.0%.

In this study, we identified several important predictors for the denial of home mortgage in Washington State in 2016, for example, race, mortgage type.

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FINANCIAL WORRIES OVER CREDIT CARD PAYMENTS AMONG ADULTS IN 2017

Abstract

Aim: This study aims to:

1. examine the predictors of adults' financial worries over Credit Card Payments in 2017;

2. build a predictive model for adults' financial worries over Credit Card Payments using a logistic regression model.

Method: The National Health Interview Survey (NHIS) in 2017 was used for data analysis. All the participants who were eligible were randomly assigned into 2 groups: training sample and testing sample. A logistic regression model was built using the training sample data. Receiver operating characteristic (ROC) was calculated.

Results: A total of 2789 (14.30%) participants out of 19508 had worried about the credit card payments. About 15.95% of female participants and 12.30% male participants had worried.

According to the logistic regression, the younger population were less likely to worry about credit card payment than the elderly population. Male is 27.0% less likely to worried about housing cost. The non-Hispanic population was 64.1% less likely to worry. Compared to the unmarried, married people were 29.2% less likely to worry. Compared to other races while the black population was 71.0% more likely to worry. Compared to the people in the northeast region, people in the Midwest were 24.1% less likely to worry. Compared to people who were looking for a job, the employed and the one not looking for a job were 45.0%, 43.4% less likely to worry about housing cost, respectively.

The area under the curve was 0.6407. The optional cutoff time is 0.62. The misclassification error was 0.144. the sensitivity rate is about 0.07% and the specificity is 100%.

Conclusions: In this study, we identified several important predictors for financial worries over credit card payments in 2017 e.g., age, gender, regions, working status. The findings can help identify people at higher risk of having the financial worries over credit card payments.

Keywords:

Introduction:

In modern society, credit card has become one of the most pervasive ways to pay. A credit card works as a card that issued to the cardholder in order to pay for his or her goods based on the promise that he or she pays back the money to the card provider. In this way, the cardholders can purchase the items they can not afford now but will have to pay the money back later. Such convenience, more and more people choose to use the credit card. Bankruptcy Protection

Act of 2005 made people harder to file bankruptcy, so more people turned to use a credit card to pay their bills. Herman stated, accordng to the American Banking Association, the population of using credit cards has grown to a staggering number: there were 364 million open credit card accounts in the United States as of the end of 2017 (Herman [5]). According to the Boston Federal Reserve, 75.7 percent of consumers had at least one credit card. The staggering number will continue to increase in the future (Jamie Gonzalez-Garcia [1]).

However, the credit cards also brought concerns: the amount owed by the consumers is rising. Consumer debt is what the cardholders owe to the bank. With higher debt, people start to concern about the devastating consequences the credit card will bring: losing their job and ruining their credit. Now, Americans are drowning in debt. Once the economic recession come, people with high debt will be sunk.

"Consumer debt in total hit a little more than $4 trillion – the largest amount ever – as of December 2018." according to the latest data from the Federal Reserve. That includes auto loans, student loans, personal loans, credit cards but not mortgages (Samuel Stebbins [3]).

Stebbins noted, according to the Federal Reserve, "Americans owe a record $1.04 trillion in credit card debt – up from less than $854 billion five years ago." According to Ted Rossman, "an industry analyst at research group creditcards.com, about 40 percent of Americans have enough income to pay off their balance – and do so in full every month." Leonhardt has argued. For them, a high credit card balance is not a problem. For the remaining 60 percent, however, maintaining a high credit card balance can mean hundreds of dollars in interest payments a year and possibly a low credit score (Samuel Stebbins [3]). With these concerns, people's financial worries have become unprecedently high. To delve into these concerns, I did this study.

This study is to examine the financial worries of people. It aims to examine the predictors of adults' financial worries over credit card Payments in 2017 and build a predictive model for adults' financial worries over credit card Payments using a logistic regression model.

2. Data and Methods:
Data:

The National Health Interview Survey (NHIS) is the principal source of information on the health of the civilian noninstitutionalized population of the United States and is one of the major data collection programs of the National Center for Health Statistics (NCHS) which is part of the Centers for Disease Control and Prevention (CDC).

The National Health Interview Survey (NHIS) Data 2017 was used in this study.

https://www.cdc.gov/nchs/nhis/about_nhis.htm

Optimal Cutoff for Binary Classification maximizes the accuracy.

Mis-Classification Error is the proportion of all events that were incorrectly classified, for a given probability cutoff score.

Sensitivity: the probability that a test result will be positive when the disease is present (true positive rate.

Specificity: the probability that a test result will be negative when the disease is not present (true negative rate, expressed as a percentage). e expressed as a percentage).

Models:

We used logistic regression models to calculate the predicted risk. Logistic regression is a part of a category of statistical models called generalized linear models, and it allows one to predict a discrete outcome from a set of variables that may be continuous, discrete, dichotomous, or a combination of these. Typically, the dependent variable is dichotomous and the independent variables are either categorical or continuous.

The logistic regression model can be expressed with the formula:

$$\ln(P/P-1) = \beta_0 + \beta_1{}^*X_1 + \beta_2{}^*X_2 + \dots + \beta n{}^*Xn$$

Variables:

The outcome variable is the percentage of How worried are you about…credit card payments (ASICCMP).

Table 1.– Variables used in this study

SEX	1: male
	2: female
ORIGIN_I	Hispanic Ethnicity:
	1: yes; 2: no
RACRECI3	1: White
	2: Black
	3: Asian
	4: All other race groups*

AGE_P	Age <18 years old
	0–17
Region	1 Northeast
	2 Midwest
	3 South
	4 West

3. Results

A total of 2789 (14.30%) participants out of 19508 had worried about the credit card payments. About 15.95% of female participants and 12.30% male participants had worried.
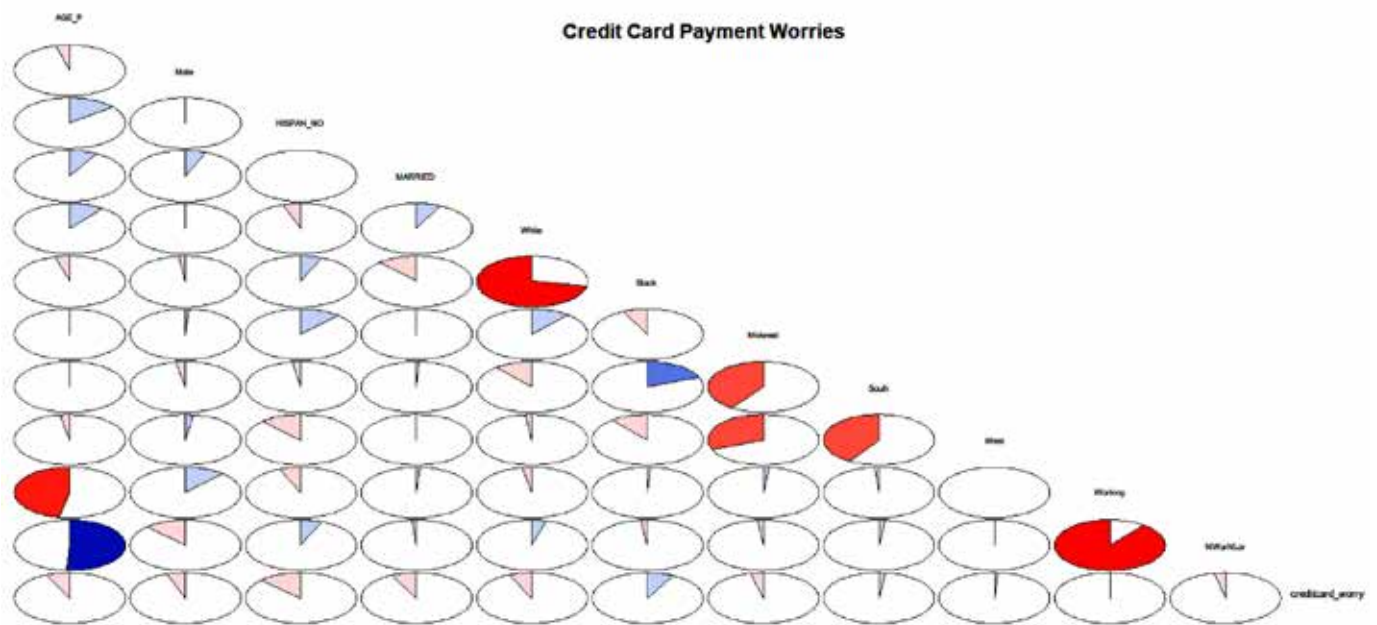
Figure 1. matrix of correlations between variables

Table 2.– Logistic Regression for Credit Card Payments

	Estimate	Std. Error	z value	Pr(>|z|)	
1	*2*	*3*	*4*	*5*	*6*
(Intercept)	0.330	0.187	1.765	0.078	.
AGE_P	−0.440	0.127	−3.474	0.001	***
Male	−0.314	0.061	−5.148	0.000	***
HISPAN_NO	−1.024	0.082	−12.523	< 2e-16	***
MARRIED	−0.346	0.061	−5.686	0.000	***
White	−0.135	0.115	−1.174	0.240	
Black	0.536	0.138	3.884	0.000	***
Midwest	−0.276	0.095	−2.897	0.004	**
South	−0.115	0.085	−1.348	0.178	

1	2	3	4	5	6
West	−0.162	0.092	−1.751	0.080	.
Working	−0.597	0.116	−5.149	0.000	***
NWorNLor	−0.569	0.125	−4.566	0.000	***

According to the logistic regression, the younger population were less likely to worry about credit card payment than the elderly population. Male is 27.0% less likely to worried about housing cost. The non-Hispanic population was 64.1% less likely to worry. Compared to the unmarried, married people were 29.2% less likely to worry. Compared to other race while the black population was 71.0% more likely to worry. Compared to the people in the northeast region, people in the Midwest were 24.1% less likely to worry. Compared to people who were looking for a job, the employed and the one not looking for a job were 45.0%, 43.4% less likely to worry about housing cost, respectively.
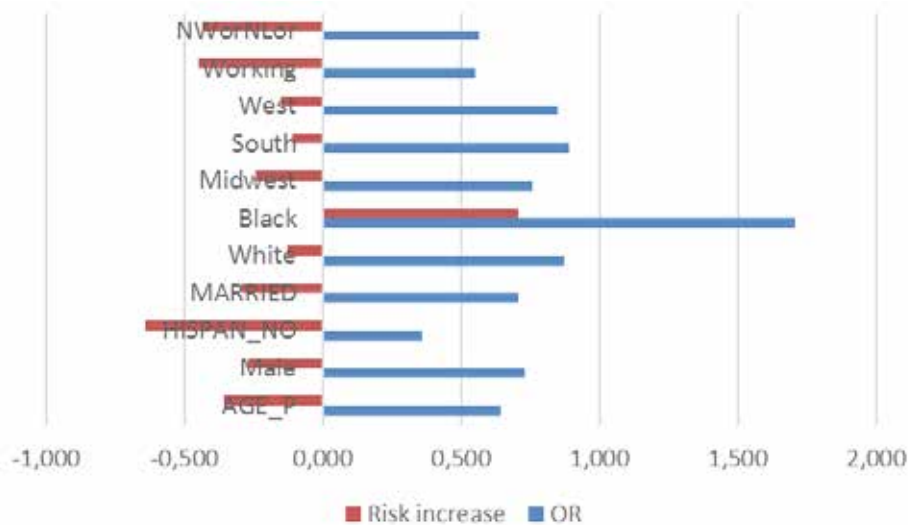

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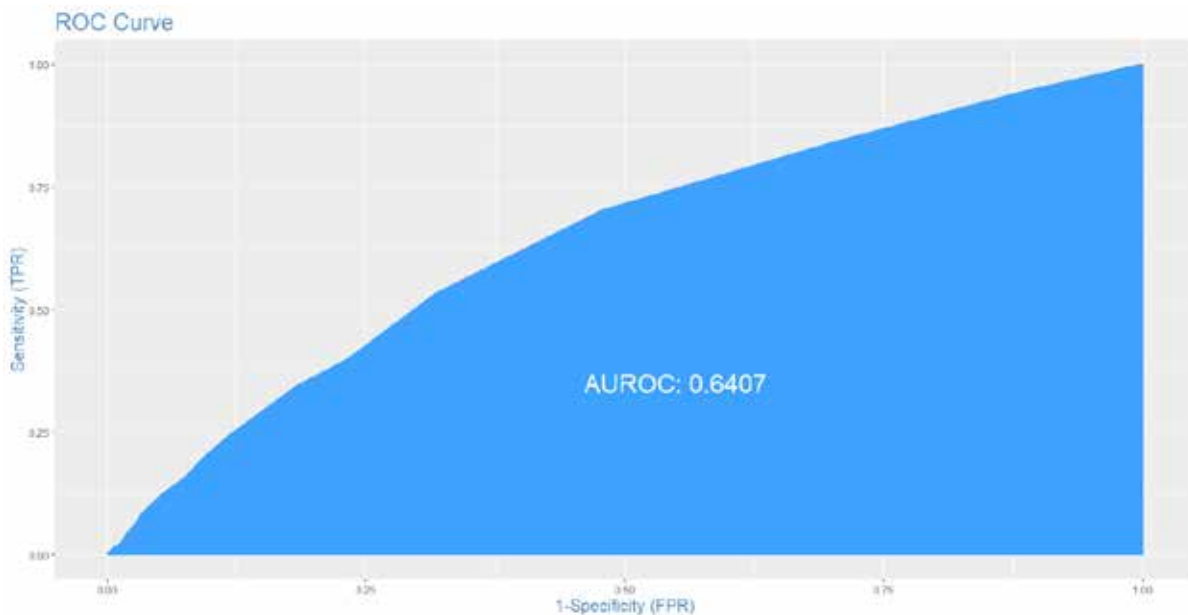

Figure 3. ROC in the testing sample for Logistic Regression

Table 3.– Odds Ratio According
to Logistic Regression

	OR	Risk increase
AGE_P	0.644	–35.6%
Male	0.730	–27.0%
HISPAN_NO	0.359	–64.1%
MARRIED	0.708	–29.2%
White	0.874	–12.6%
Black	1.710	71.0%
Midwest	0.759	–24.1%
South	0.892	–10.8%
West	0.851	–14.9%
Working	0.550	–45.0%
NWorNLor	0.566	–43.4%

The area under the curve was 0.6407. The optional cutoff time is 0.62. The misclassification error was 0.144. the sensitivity rate is about 0.07% and the specificity is 100%.

4. Discussion

A total of 2789 (14.30%) participants out of 19508 had worried about the credit card payments. About 15.95% of female participants and 12.30% male participants had worried.

According to the logistic regression, the younger population were less likely to worry about credit card payment than the elderly population. Male is 27.0% less likely to worried about housing cost. The non-Hispanic population was 64.1% less likely to worry. Compared to the unmarried, married people were 29.2% less likely to worry. Compared to other race while the black population was 71.0% more likely to worry. Compared to the people in the northeast region, people in the Midwest were 24.1% less likely to worry. Compared to people who were looking for a job, the employed and the one not looking for a job were 45.0%, 43.4% less likely to worry about housing cost, respectively.

It shows, that about one person among ten is worried about credit card payments; the proportion is high. Female tends to be more worried about the housing-cost, and married people are less likely to worry. The students in college are likely to worry about it, because they don't yet have a stable job, and they are not married. It showed that the black population and Hispanic population will be more likely to worry, indicating that there are still racial inequalities when finding jobs. With these problems, people who have high debt will be sunk when the wave of economic recession crushes the United States. Overall, there are still plentiful problems left for Americans to solve, such as job opportunities and cheaper housing cost for students just graduated. This study warned us that it is time for us to pay more attention to the credit card problem.

There are still some limitations that are left to fix in this study. For example, we did not include the income and other debts and mortgage in this study when examing the factors of the financial worries of the credit card payments. These will make the results of the experiment deviate from the true results.

In this study, we identified several important predictors for financial worries over credit card payments in 2017 e.g., age, gender, regions and working status. As the data of the financial worries of Americans demonstrates, problems like job opportunities, ethnic groups, and the ability to pay the housing cost make people worried. The prosper of the country will not be able to sustain without making people less worried about credit card payment.

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INTERNATIONAL LEGAL EXPERIENCE IN THE FIELD OF HYGIENIC CONTROL OVER THE CIRCULATION OF FOOD PRODUCTS OBTAINED FROM GENETICALLY MODIFIED OBJECTS

Abstract. This article provides an analytical overview of international legal issues of food security. The principles of hygienic control over food products obtained using genetically modified sources are identified and systematized. The necessity of creating a national system for ensuring the safety of genetic engineering activities based on post-registration monitoring of this type of goods is shown.

Keywords: hygienic control, genetically modified sources, equivalence principle, transgenic products, registration, food products, labeling, processed products, agricultural products.

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МЕЖДУНАРОДНО-ПРАВОВОЙ ОПЫТ В ОБЛАСТИ ГИГИЕНИЧЕСКОГО КОНТРОЛЯ ЗА ОБОРОТОМ ПИЩЕВОЙ ПРОДУКЦИИ, ПОЛУЧЕННОЙ ИЗ ГЕННО-МОДИФИЦИРОВАННЫХ ОБЪЕКТОВ

Аннотация: В данной статье представлен аналитический обзор по вопросам международно-правового обеспечения продовольственной безопасности. В работе выделены и систематизированы принципы гигиенического контроля за пищевой продукцией, полученной с использованием генно-модифицированных источников. Показана необходимость создания национальной системы обеспечения безопасности генно- инженерной деятельности на основе проведения пострегистрационного мониторинга данного вида товаров.

Ключевые слова: гигиенический контроль, генно-модифицированные источники, принцип эквивалентности, трансгенные продукты, регистрация, пищевая продукция, маркировка, переработанные продукты, сельскохозяйственная продукция.

«Если мы серьёзно говорим о глобальной продовольственной безопасности, то мы должны серьезно относиться к науке, которая позволит нам быть максимально продуктивными».

Интервью изданию «Financial Times» Министра сельского хозяйства США Том Вилсака на встрече министров сельского хозяйства G20

Современная биотехнология и объекты её разработки в продуктах питания. В современном мире инновационных технологий, повышения уровня жизни населения требует установления стратегических приоритетов государственной политики в различных областях. Следует отметить, что продовольственная политика представляет собой одно из важных направлений государственного управления, т.к. непосредственно влияет на уровень и качество жизни, а также определяет достижение баланса социальных интересов всех слоёв общества и создаёт условия для экономического прогресса в целом.

На сегодняшний день, особо актуальным направлением в решении вопросов продовольственной безопасности, является выделение и систематизация принципов санитарно-гигиенического контроля за сельскохозяйственной продукцией и продовольственными товарами, полученными с использованием генетически модифицированных организмов [1].

Следует отметить, что решение вопросов обеспечения контроля за торговым оборотом ГМО на практике может осуществляться только путём использования определенных научных и организационных мероприятий, направленных на получение исчерпывающей информации о имеющихся разновидностях используемых ГМО. Особое внимание уделяется учету ГМО, не прошедших процедуру допуска, т.е. нелегализованных согласно соответствующих им маркерных системах видам продуктов, в которые они вводятся, а также объемам мирового производства и торговли ГМ-продовольствием. Важное значение, в данном направлении, имеет обоснование выбора адекватных, чувствительных и высокоспецифичных методов контроля [2–3].

Что такое генетически модифицированные продукты и отношение к ним международного сообщества. Согласно определению «генетически модифицированные (или трансгенные) продукты» – это продукты, полученные из трансген-

ных растений и животных, а также содержащие добавки, полученные из ГМО, под которыми следует понимать организмы или несколько организмов, любые неклеточные, одноклеточные или многоклеточные образования, способные к воспроизводству или передаче наследственного генетического материала, отличные от природных организмов, полученные с применением методов генной инженерии и содержащие генно- инженерный материал. При этом, изменения внесены целенаправленно, например, в отношении сельскохозяйственных культур – повышение урожайности, улучшения вкуса и питательных ценностей продуктов, устойчивости к вредителям [4].

Начиная с 90-х годов XX столетия, производство и оборот генетически модифицированных продуктов приобретает все большее значение в международной торговле. На сегодняшний день, учёные не могут однозначно подтвердить безопасность ГМО. Важно отметить, что неправильное использование и применение ГМО при производстве пищевых продуктов, а также в области сельского хозяйства, может привести к возникновению определённого рода потенциальных рисков в отношении здоровья людей. Однако, не смотря на такие расхождения во взглядах на практическое применение ГМО, современный рынок генетически модифицированной продукции (ГМП), представляющий собой важный сектор сельскохозяйственной продукции, должен находиться под пристальным вниманием государства, т.к. методы генной инженерии, используемые при создании ГМО, позволяют преодолевать один из наиболее мощных запретов органической эволюции, т.е. абсолютный запрет на обмен генетической информацией между отдельными видами [1, 4].

С точки зрения необходимости обеспечения населения безопасными продуктами, отмечается проблема производства продуктов питания с использованием новых технологий, а именно, с применением генной инженерии с целью получения заданных по своим свойствам объектов. В данном

направлении особое внимание уделяется не только качеству потребительских характеристик, но и устойчивости сельскохозяйственных культур к природным воздействиям. Имея столь положительные характеристики, у мирового сообщества возникают опасения в отношении безопасности продуктов, полученных в результате применения биотехнологических процессов. Имея определённые возможные преимущества, важно отметить, что появление трансгенных растений и животных, обуславливает создание монокультур в различных регионах мира одних и тех же сортов и пород. Такая тенденция может привести к нарушению биологического разнообразия и угрозе возникновения различных заболеваний у таких растений и животных [5–6].

На сегодняшний день, применение генно-модифицированных технологий обуславливает возможность существенно ускорить процесс создания новых сортов растений, по сравнению с общепринятой селекцией, и тем самым, получить заданное свойство или нужный признак. Как показывает статистика, наиболее крупные посевные площади генетически модифицированных растений (по культурам):

Соя – 48.8 млн. га (60% общей ГМ площади);

Кукуруза – 19.3 млн. га (23% общей ГМ площади);

Хлопчатник – 9.0 млн. га (10% общей ГМ площади);

Рапс – 4.3 млн. га (5% общей ГМ площади) [7–8].

В сравнительном аспекте, трансформированный организм приобретает набор новых качеств, дальнейшее действие которых невозможно предсказать, в результате недостаточной изученности механизмов регуляции работы генома. Перенос чужеродной информации в виде фрагмента ДНК, непосредственно связано с эффектом плейотропии встроенного гена, что приводит к нарушению стабильности генома и изменению его функционирования. Как показали исследования бельгийских учёных, наиболее распространенные ком-

мерческие сорта сои, такие как ГМ-соя 40–3–2 (фирма «Monsanto»), характеризующаяся устойчивостью к гербециду раундапу, не сохраняют генетической стабильности после трансформации исходного растения, что представляет потенциальную опасность для человека и окружающей среды [7–8]. Кроме того, полученные результаты в области генетической инженерии, позволят мировому сообществу получать необходимые лекарственные препараты, решать проблемы дефицита продовольствия, улучшить экологическую ситуацию за счёт частичного отказа от пестицидов при выращивании устойчивых к вредителям и сорнякам сельскохозяйственных культур [19].

Влияние научных разработок в области генной инженерии на развитие агропромышленного комплекса, свидетельствуют о том, что ряд вопросов в данной области остаются недостаточно изученными, особенно с точки зрения использования ГМП. Научные данные, а также сообщения в средствах массовой информации в отношении ГМО и разработок в области биотехнологии, их возможного воздействия на человека, в частности, мутагенность, тератогенность, несовершенство инструкций и соглашений по безопасности и ГМО-продуктам, подтверждают актуальность и необходимость детального изучения данных вопросов [5, 18–19].

Международно-правовое регулирование безопасности пищевых продуктов. В связи с тем, что сложившаяся система производства и распределения пищевых продуктов, в том числе кормов, требует существенных изменений в условиях интеграции, возникла необходимость разработки концепции безопасности продуктов питания, окружающей среды и здоровья человека.

Современное состояние международно-правового регулирования безопасности пищевых продуктов характеризуется тем, что нет единого подхода к процессу использования ГМО. Действующее законодательство государств существенно различается в зависимости от принципов,

лежащих в его основе. В таких странах, как США, Канада, Бразилия, правительства придерживаются принципа «существенной эквивалентности», согласно которого генетически модифицированные продукты питания можно считать также безопасными, как и обычные продукты питания. При этом, их токсикологические и питательные компоненты эквивалентны компонентам традиционных продуктов питания. Кроме того, в США и Канаде разницы между генно-модифицированными и традиционными сортами не делают: производство регулируется одинаковыми нормами. Приведённый принцип нашёл своё практическое применение в деятельности как национальных, так и международных организаций, в частности, Министерство здравоохранения и благополучия населения Японии, Агентство пищевого контроля Канады, Управление по санитарному надзору за качеством пищевых продуктов и медикаментов США, а также ФАО, ВОЗ и ОЭСР [6–7].

В настоящее время, биотехнологические фирмы США («Monsanto», «Du Pont») планируют зарегистрировать право доступа к новым ГМО растениям, созданным на базе из научно-исследовательских лабораторий. Новые виды растений, в отношении которых получены патенты, не могут быть проданы или экспортированы другим фирмам. Такая ситуация свидетельствует о том, что компании-владельцы ГМО семян, получат существенную выгоду и прибыль от права доступа. Кроме того, учитывая свои экономические и политические интересы, эти компании стремятся отстаивать свой бизнес путём регистрации новых видов ГМО растений в ведущих международных организациях, таких как Организация ООН по вопросам продовольствия и сельского хозяйства (ФАО), Всемирной торговой организации (ВТО). Представленные компании стремятся к свободной торговле без любых ограничений в отношении использования ГМО и содержащих их продукты [9–10].

Противоположной точки зрения в отношении использования генно-модифицированных объектов, изложенной в правовой концепции принятия мер предосторожности, придерживаются страны Европейского Союза. Принцип предосторожности должен быть широко применим странами в соответствии с их возможностями. Недостаток абсолютной научной обоснованности не должен быть причиной задержки действий по предотвращению возможных рисков и необратимой деградации [20]. В Евросоюзе действуют строгие нормы в отношении продукции, полученной с использованием ГМО, т.е. с 2001 года на ГМО действует мораторий. Такая продукция может быть реализована после прохождения разрешительных процедур одобрения Европейским Агентством по безопасности продуктов питания (EFSA) (по состоянию на 2014 год одобрение было получено в отношении 52 наименований продуктов) [11].

Как показывает практика, Европейский Союз, главный торговый партнер и конкурент сельского хозяйства США, не обладает сопоставимой биотехнологией производства ГМО продуктов. Успех США в биотехнологии и ГМО затрагивает непосредственно соответствующие экономические области ЕС, предлагая более низкую цену, и большие возможности внедрения ГМО в сельское хозяйство. Важно отметить, что политика Европейского союза по биотехнологии и ГМО призвана защитить себя от сомнительных ГМО продуктов и торгового дефицита сельского хозяйства. Руководство ЕС пытается создать определенные правила и инструкции на ГМО продукты, которые импортируются в ЕС. Это означает, что импортированные продукты сельского хозяйства должны быть защищены от ГМО инструкциями ЕС, политикой торгового протекционизма. При этом, с точки зрения Европейского союза торговля ГМ культурами и продуктами основывается на соблюдении следующих требований, в частности:

– принятие каждой стороной ограничений на продажу ГМ пищевых продуктов;

– возможность моратория, в том числе и возможность для государств – членов сформировать

блокирующее меньшинство, чтобы остановить процесс принятия решений;

– требования маркировки, включая пищевые добавки и красители пищи;

– более строгие формальные критерии одобрения для ГМ продуктов через введение новых правил [5, 12–13].

На сегодняшний день, особую значимость приобретает деятельность международных организаций в регулировании деятельности транснациональных корпораций, в целях обеспечения продовольственной безопасности, особенно при производстве и реализации ГМО- продуктов. В том числе определены основные направления их деятельности, предусматривающие усиление их методической роли в разработке принципов и стандартов по данному направлению на основе соблюдения основных положений, изложенных в Картахенском протоколе [12].

Рассматривая вопросы международно-правового опыта в области гигиенического контроля за оборотом пищевой продукции, полученной из генно-модифицированных объектов, нельзя не отметить значимость данного документа, основная цель которого заключается в содействии обеспечению надлежащего уровня защиты в области передачи, обработки и использования живых изменённых организмов, являющихся результатом применения современной т и способных неблагоприятно воздействовать на сохранение и устойчивое использование биоразнообразия, с учётом рисков для здоровья человека, а также с уделением особого внимания их трансграничному перемещению [12–13].

Современные разработки в области использования генно-модифицированных объектов и требования к их безопасности. Управление по санитарному надзору за качеством пищевых продуктов и медикаментов США дали «зелёный свет» на торговлю в продуктовых магазинах ГМО- лосося, который растёт в два раза быстрее, чем обычные представители этого вида рыб. Более того, на этикетках не надо ставить пометки, что человек покупает подобный продукт. У обычного лосося гормон роста активен только в определённые время года, а биоинженеры увеличили срок его действия. Теперь, ГМО-рыба всего за полтора года вырастает до размера, которого обычные виды лосося достигают лишь к трём годам. При этом, выращивать новый вид буду не США, а в Панаме и Канаде, только в изолированных аквариумах, чтобы такая рыба не попала в дикую природу, т.к. последствия от этого могут быть непредсказуемыми [9, 14].

Не меньший интерес представляют разработки в области получения новых модификаций одного из представителей злаковых. Обычный рис, относящийся к главной еде азиатских народов, лишён витамина А. В связи с этим, в этом регионе распространена слепота, вызванная его нехваткой. Для преодоления такого барьера, учёные, в геном обычного риса, встроили ген, отвечающий за синтез каротина. Новый сорт риса приобрёл ярко-жёлтый оттенок. Как показали экспериментальные исследования, достаточно съесть 100–200 грамм «золотых» зёрен, чтобы получить суточную норму каротина. Но, распространить новую культуру в Юго-Восточной Азии не удаётся, т.к. её настороженно принимает местное население, а Гринпис активно развернул серьёзную «антирисовую» кампанию [9, 15].

«Золотой рис» – это один, из большого количества, пример научных разработок в области генной инженерии. Альтернативным изобретением российских учёных является создание нового сорта сверх сладкой земляники. Новые качества были обусловлены особым белком, но при этом, концентрация сахара в ней наименьшая, что даёт возможность её употребления людям, страдающим диабетом. Прогрессивные успехи были достигнуты в получении необходимого состава молока. Изменив геном козы, была достигнута необходимая концентрация белка лактоферина, что делает такое молоко максимально приближённым по иммуногенным свойствам к женскому.

В Канаде и Англии поступили в продажу фиолетовые помидоры, в которых с помощью встроенного гена львиного зева, запущен процесс синтеза антоцианов. Как показали предварительные экспериментальные данные, такой вид помидор оказывает положительное действие на деятельность мозга, глаз, а также являются мощными атиоксидантами, обладающими противораковыми свойствами. Кроме того, добавление сока трансгенных фиолетовых помидоров, повышает продолжительность мышей на 30%, а также снижает частоту рака [9].

Одна из крупнейших в мире компаний в области генетики животных «Genus Pic», разработала генно-модифицированных свиней, устойчивых к вирусному заболеванию, которое распространилось на фермерских хозяйствах Китая. В то же время, противоположной точки зрения в отношении ГМО и их продвижения на рынок, придерживаются в европейских странах, таких как Германия, Австрия, Венгрия, Франция, где их выращивание запрещено, а Швейцария продлила мораторий до 2021 года. Такая пауза была необходима для разработки законодательной базы, которая позволит в будущем отделить участки с ГМ- культурами от «обычных» естественных полей.

В России собственное производство ГМО, а также трансгенных продуктов, запрещено. Можно только ввозить, как готовые продукты. Так и сырьё (кукуруза, соя для кормов). Но такая продукция требует прохождения длительных и серьёзных контрольных процедур регистрации. По информации «Роскачества», в 2017 году из 26000 образцов, исследуемой продукции, генно-модифицированные организмы были обнаружены в 17. При этом, в компании отмечают, что допустимо применение только генетически модифицированных растений, прошедших процедуру государственной регистрации, а также определяются их показатели безопасности. В данном случае, речь идёт о кукурузе, сое, рисе и сахарной свекле. В соответствии с Техническим регламентом

«Пищевая продукция в части её маркировки», знак ГМО должен находится рядом с единым знаком обращения продукции на рынке ЕАЭС. При этом, в России маркировке подлежит продукция с ГМО, если содержание ГМ-компонентов больше 0,9%. Данные нормы также соответствуют требованиям ЕС. Контроль за импортируемой сельскохозяйственной продукцией, которая была произведена с использованием незарегистрированных в России ГМО, будут осуществлять Россельхознадзор, а пищевой продукции- Роспотребнадзор, а также Федеральная таможенная служба. При обнаружении подобных товаров их будут перерабатывать и продавать готовую продукцию за рубеж. Таким образом, только зарегистрированная ГМО-продукция может поступать на российский рынок. В отношении трансгенных продуктов животного происхождения, следует отметить, что в России почти их нет. Однако, в данном случае, речь идет о мясе, а не о переработанных продуктах. Например, в составе колбасы может быть добавлена трансгенная соя [14–15].

Как показывает практика, работая над новыми ГМ-суперкультурами, учёные обязаны применять все меры предосторожности, чтобы ГМО оставались только на отведенных им экспериментальных участках и не шагнули на обычные поля и сады. Маркировка «ГМО» нужна для того, чтобы потребитель мог принято осознанное решение о покупке такого рода товара [16–17].

Таким образом, представленные разработки мировых компаний в области генной инженерии свидетельствуют о том, что в этом направлении науки отмечается существенный шаг в достижении поставленных целей по разработке селекционных объектов. Интересно, что споры по поводу ГМ-еды продолжаются уже много лет. Но, хотелось бы отметить, что в медицине генно- инженерный инсулин, интерфероны и прочие биопрепараты, нашли своё успешное практическое применение и сомнений в их безопасности не возникает. В связи с этим, учитывая

высокий уровень экономического развития Республики Узбекистан, стремление нашего государства к вступлению во Всемирную торговую организацию, на сегодняшний день, возникла необходимость создания Национальной системы обеспечения безопасности генно-инженерной деятельности к оценки рисков, полученных форм ГМО в соответствии с общепринятыми международными стандартами в данной области [12–14, 18–19].

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FINANCIAL WORRIES AMONG ADULTS OVER MAINTAINING A STANDARD OF LIVING 2017

Abstract

Aim: This study aims to examine the predictors of adults' financial worries over maintaining a sustainable standard of living in 2017 and to build a predictive model for these financial worries by using an artificial neural network and comparing its performance to a logistic regression model.

Method: Data for the analysis was gathered from the National Health Interview Survey (NHIS) in 2017. All eligible participants from the survey were randomly assigned into 2 groups: the training sample and the testing sample. For both the training sample and testing sample, two models were built – one artificial neural network and one logistic regression for each. Finally, receiver operating characteristics (ROC) were calculated and compared for these two models in order to gauge discrimination capability.

Results: From the data, it can gathered that about 35.8% of the 26.029 adults experienced financial worries over maintaining standard of living, about 38.2% among females and 32.9% among the male.

According to the logistic regression, several variables contributed to likelihood of experiencing financial worries over standard of living. Males were 22.84% less likely than females to have financial worries over maintaining standard of living. The non-Hispanic adults were 39.51% less likely to have financial worries over maintaining standard of living than Hispanic adults. The married adults were 14.38% less likely to have financial worries over maintaining standard of living. The black population was 37.10% more likely to be worried. Compared to unemployed workers who were still looking for employment, people who were employed or unemployed but not looking were 29.62% and 48.80%, respectively, less worried. Similarly, according to the neural network, the most important predictors were age, working status, marital status, and race.

For the training sample, the ROC was 0.58 for the logistic regression and 0.66 for the artificial neural network. In the testing sample, the ROC was 0.58 for the logistic regression and 0.65 for the artificial neural network.

Conclusions: In this study, we identified several important predictors for adults' financial worries over maintaining a standard of living in 2017. The most prominent factors were gender, race, marital status and working status. As a culmination of the project, we built a predictive model using both an artificial neural network and a logistic regression to serve as a potential tool for early detection.

Keywords:

Introduction

Being an essential factor in people's lives, the cost of living represents the amount of money needed to sustain a certain standard of living by affording basic expenses such as housing, food, taxes, and health care [1].

According to a GOBankingRates' analysis of the Bureau of Labor Statistics' Consumer Price Index, the cost of living in America has climbed 14 percent over the past three years. The Consumer Price Index measures the change in prices paid for goods and services including food, shelter, energy, transportation and medical care, all of which are essential for living a sustainable lifestyle [2]. Thus, a rise in the Consumer Price Index could indicate an overall rise in cost of basic living, which could impose an increased burden on significant portions of the population.

With these considerations in mind, this study aims to examine the predictors of adults' financial worries over maintaining standard of living in 2017 and build a predictive model for these financial worries using an artificial neural network and comparing its performance to a logistic regression model.

Data and Methods

Data

The National Health Interview Survey (NHIS) is the principal source of information on the health of the civilian noninstitutionalized population of the United States. It is one of the major data collection programs of the National Center for Health Statistics (NCHS), which is part of the Centers for Disease Control and Prevention (CDC) [3].

The National Health Interview Survey (NHIS) Data for 2017 was used as the primary source of data in this study.

Models

We used logistic regression models as one method of calculating the predicted risk. Logistic regression is a part of a category of statistical models called generalized linear models, and it allows one to predict a discrete outcome from a set of variables that may be continuous, discrete, dichotomous, or a combination of these. Typically, the dependent variable is dichotomous and the independent variables are either categorical or continuous.

The logistic regression model can be expressed with the formula:

$$\ln(P/P-1) = \beta_0 + \beta_1 {}^* X_1 + \beta_2 {}^* X_2 + \ldots .+ \beta n {}^* X n$$

Additionally, a package called "neuralnet" in *R* was used to conduct neural network analysis. The "neuralnet" package focuses on multi-layer perceptrons which are well applicable when modeling functional relationships.

Variables

The outcome variable is the percentage of "How worried are you right now about not having enough money for Maintaining Standard of Living?" (ASIRETR)

Table 1.– Variables used in this Study

SEX	1: Male
	2: Female
ORIGIN_I Hispanic Ethnicity	1: Yes
	2: No
RACRECI3	1: White
	2: Black
	3: Asian
	4: All other race groups*
AGE_P	1: Age >18 years old
	2: 0–17
Region	1: Northeast
	2: Midwest
	3: South
	4: West

Results

According to the data sample, about 35.8% of the 26.029 adults surveyed had financial worries over maintaining standard of living, about 38.2% among the female and 32.9% among the male. Below we have included a thorough description and analysis of the data, providing a more detailed portrayal of the results.

The first model we used to display results in a corrgram. Foundationally, a corrgram is a graphical

representation of the cells of a matrix of correlations. The graph is intended to display the pattern of correlations in terms of their signs and magnitudes using visual thinning and correlation-based variable ordering. Moreover, the cells of the matrix can be shaded or colored to show the correlation value. In the figure below, the positive correlations are shown in blue, while the negative correlations are shown in red; the darker the hue, the greater the magnitude of the correlation.

Figure 1. Matrix of Correlations Between Variables

Table 2. – Logistic Regression for Having Financial worries over Maintaining Standard of Living

	Estimate	Std. Error	z value	Pr (>|z|)	
(Intercept)	0.361	0.091	3.946	0.000	***
AGE_P	0.000	0.001	0.489	0.625	
Male	−0.259	0.027	−9.748	0.000	***
HISPAN_NO	−0.503	0.040	−12.665	0.000	***
MARRIED	−0.155	0.027	−5.770	0.000	***
White	0.074	0.052	1.419	0.156	
Black	0.316	0.064	4.934	0.000	***
Midwest	−0.067	0.043	−1.577	0.115	
South	0.015	0.039	0.391	0.696	
West	0.079	0.043	1.848	0.065	
Working	−0.351	0.055	−6.413	0.000	***
NWorNLor	−0.669	0.058	−11.514	0.000	***

According to the logistic regression, males were 22.84% less likely than females to have financial worries over maintaining standard of living. The non-Hispanic adults were 39.51% less likely to have financial worries over maintaining standard of living than Hispanic adults. The married adults were 14.38% less likely to have financial worries over maintaining standard of living. The black population was 37.10% more likely to be worried. Compared to unemployed workers who were still looking for employment, people who were employed or unemployed but not looking were 29.62% and 48.80%, respectively, less worried. These results can be seen in the data demonstrated by Table 2 and Figure 2.

Table 3. – Odds Ratio and Risk Increase Based on the Logistic Regression

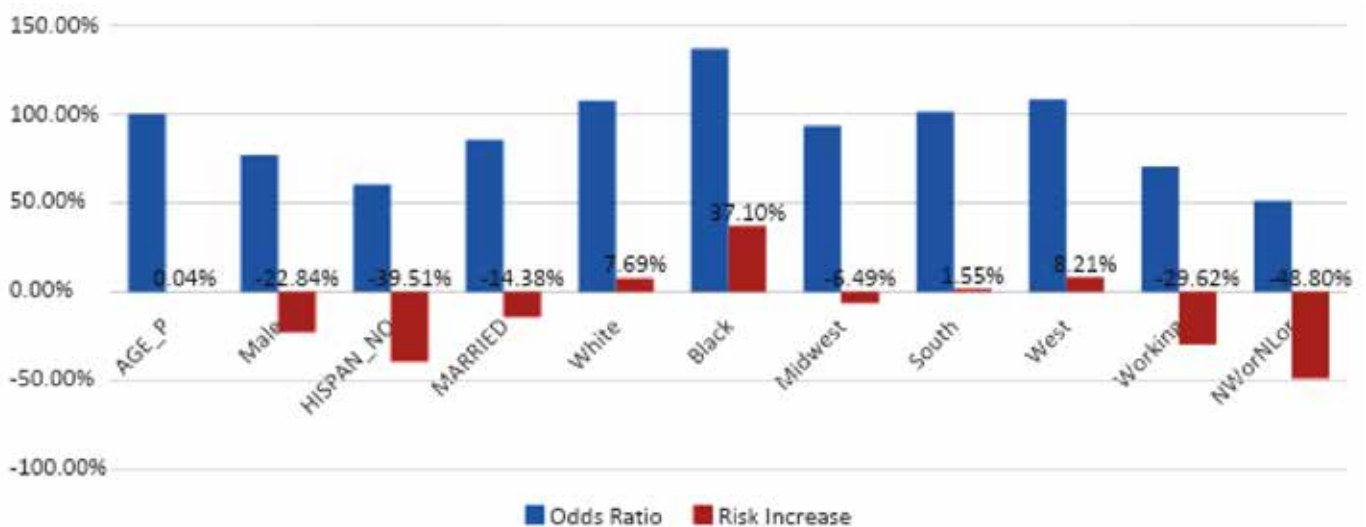|	Estimate	Odds Ratio	Risk Increase
AGE_P	0.000	100.04%	0.04%
Male	−0.259	77.16%	−22.84%
HISPAN_NO	−0.503	60.49%	−39.51%
MARRIED	−0.155	85.62%	−14.38%
White	0.074	107.69%	7.69%
Black	0.316	137.10%	37.10%
Midwest	−0.067	93.51%	−6.49%
South	0.015	101.55%	1.55%
West	0.079	108.21%	8.21%
Working	−0.351	70.38%	−29.62%
NWorNLor	−0.669	51.20%	−48.80%

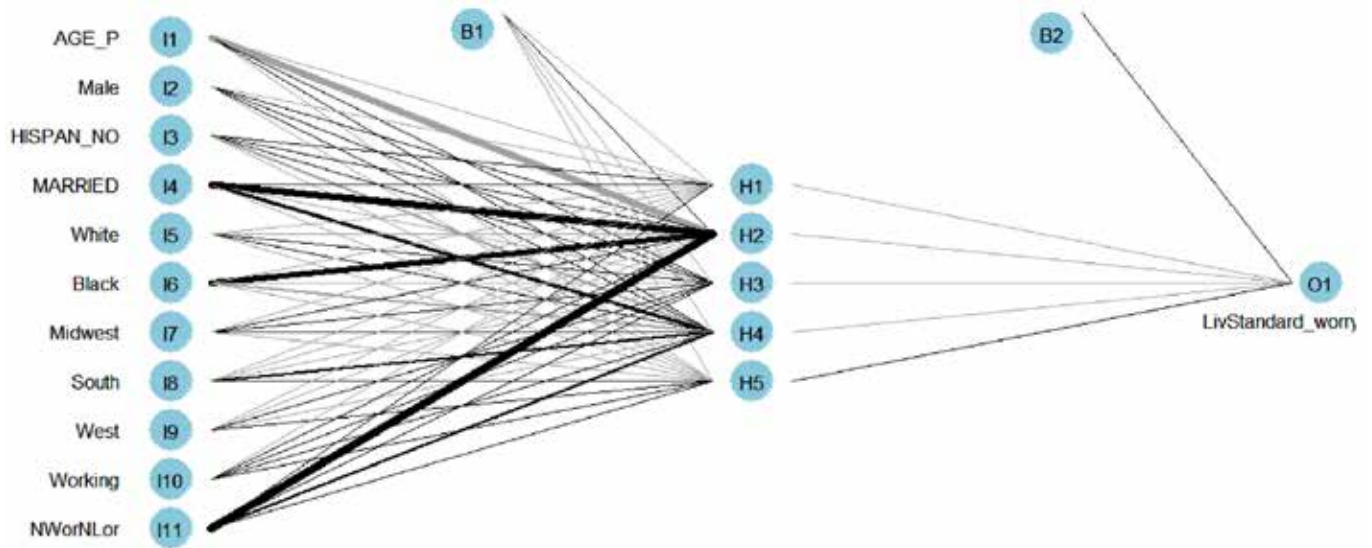Figure 2. Odds Ratio and Risk Increase Based on the Logistic Regression

Figure 3. Artificial Neural Network in the training sample

In the above plot, line thickness represents weight magnitude, and line color represents weight sign (black = positive, grey = negative). The net is essentially a black box, so it is difficult to make claims regarding the fitting, the weights and the model. However, it is suffice to say that the training algorithm has converged, and therefore the model is sufficiently ready for use.
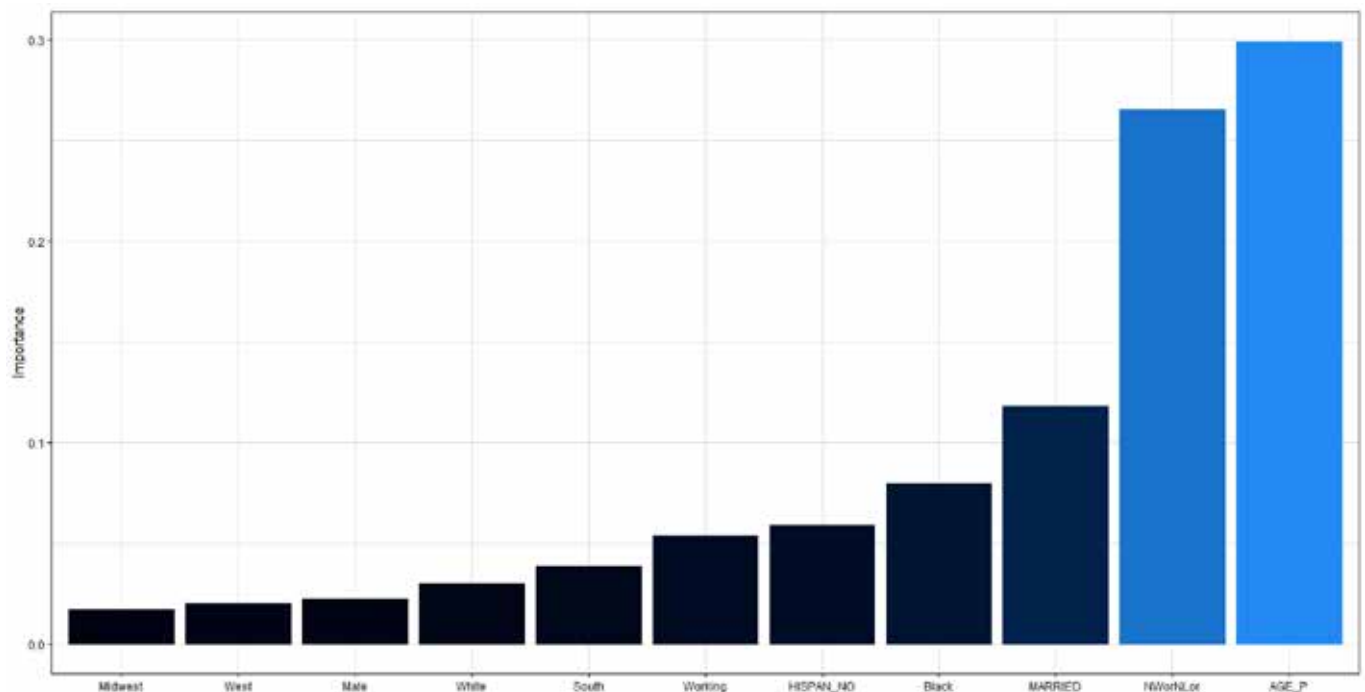

Figure 4. Variable Importance in Artificial Neural Network

As demonstrated by the distributions in (Figure 3), according to this neural network, the most important predictors was age, working status, marital status, and race.
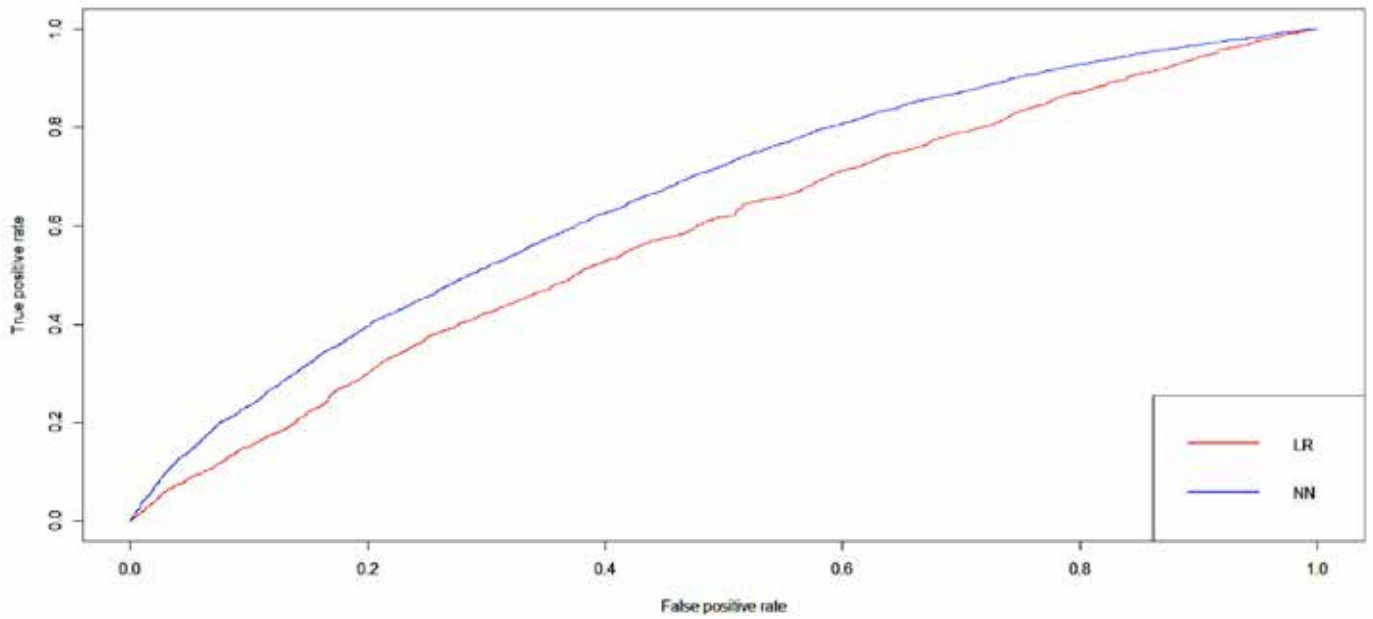
Figure 5. ROC in training sample for Logistic Regression (Red) vs Neural Network (Blue)

Figure 5 reveals the ROC in the training sample for both the logistic regression and the neural network. The ROC was 0.58 for the logistic regression and 0.66 for the artificial neural network. In the testing sample, as demonstrated by (Figure 6) below, the ROC was 0.58 for the Logistic regression and 0.65 for the artificial neural network.
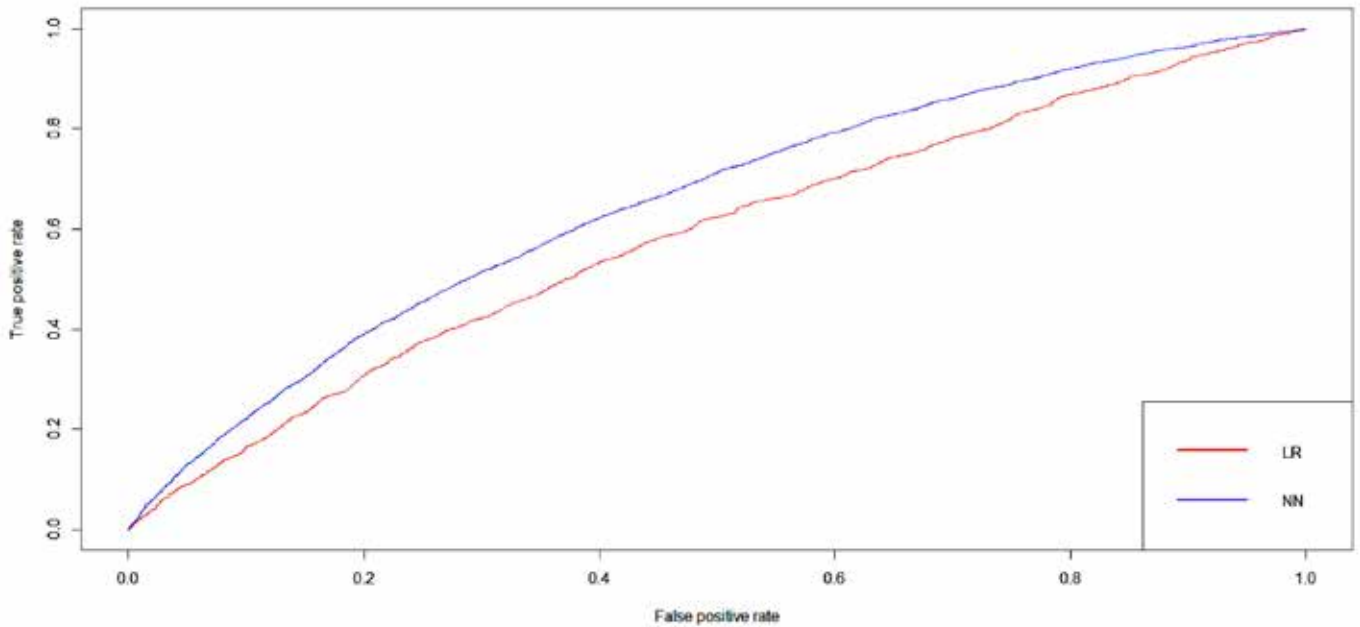

Figure 6. ROC in testing sample for Logistic Regression (Red) vs Neural Network (Blue)

Discussion

This study aimed to first examine the predictors of adults' financial worries over Maintaining Standard of Living in 2017 and then build a predictive model for adults' financial worries over Maintaining Standard of Living. This involved using an artificial

neural network and comparing its performance to a logistic regression model.

Upon processing the data, it was revealed that about 35.8% of the 26.029 adults involved in the data collection had financial worries over maintaining standard of living, about 38.2% among the female and 32.9% among the male.

Next, through data analysis, we discovered a range of associations between different factors and likelihood of having worries over maintaining a standard of living. As detailed in the results of this study, according to the logistic regression, factors such as gender, hispanic origins, marital status, and state of employment were key factors in likelihood of having those financial worries. The neural network suggested the involvement of similar factors. According to the network, the most important predictors were age, working status, marital status, and race.

In both the training sample and testing sample, the ROCs were similar for the logistic regression and neural network, suggesting that they both had similar functionality in regards to prediction accuracy. The neural network in both cases had a slightly higher ROC, however, meaning that the network may in fact be slightly more accurate than the regression.

In this study, we identified several important predictors for adults' financial worries over maintaining standard of living in 2017. Some of the most important factors included gender, race, marital status and working status. We built a predictive model using artificial neural network as well as logistic regression to provide a tool for early detection, and discovered that while both have similar degrees of accuracy, the neural network may give a slight advantage.

Using these models, and keeping the relevant factors in mind, perhaps early detection could help identify more potentially prominent areas of need at a faster rate. This way, federal or private organizations seeking to provide assistance to those in financial need could allocate resources more effectively.

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Section 6. Economic theory

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A QUANTITATIVE ANALYSIS OF ENTRY POINTS WITH THE WINNING PROBABILITY IN THE TRADING OF THE DOW JONES INDUSTRY AVERAGE (DJIA)

Abstract. The Dow Jones Industrial Average (DJIA) is the most influential and authoritative stock price index in the world. Its components are chosen by the editors of the Wall Street Journal and modified occasionally based on market condition. When a company is replaced, the individual weights will be adjusted to mitigate the direct impact on the DJIA. Since 1980, the United States has experienced five recessions, corresponding to 1980.2–1980.7, 1981.8–1982.10, 1990.8–1991.3, 2001.4–2001.11 and 2008.1–2009.6, respectively. The Dow Jones Index sets new record highs in 2019 and is attracting the attention of investors around the world. Although technical analysis offers little value in the medium-to-long-term prediction of individual stocks, it is quite valuable in prediction of DJIA. It is feasible to implement a trading strategy to improve the winning probability, in which an entry point is carefully selected based on quantitative analysis of DJIA, through the high-low-nine pattern and structural quantification of technical means.

Keyword: Winning Probability, Quantitative Trading, DJIA.

1. Introduction
1.1 40-Year Trend Analysis of DJIA

Since the beginning of 2019, the new orders in the Purchasing Managers Index (PMI) for the manufactory industry, the leading indicator of the US economy, fell to 50% from 58%. Meanwhile, the PMI index for imports, inventories, and prices have fell below the line of prosperity and decline multiple time.

Figure 1. DJI Index (1980–2019)
Data information: Bloomberg

As the economy retreats, the concerns of US recession have heated up. According to the New York Fed's Recession Probability Index, the probability to have a US recession in the next 12 months is as high as 32.9%, the highest since 2012. (Since 1960, whenever this index rose above 30%, a US economy recession occurred during the following 12 months.) Despite poor economy, the three major US stock indexes have rebounded more than 15 percents from their lows and hit record highs.

As of August 18, 2019, the overall valuation of U.S. stocks has reached an all-time single digit (75% quantile), with some top performing and heavily weighted sectors' valuations rising to record highs. At the industry level, the valuations of public utilities, essential consumption, information technology, and optional consumer industries, which have the highest increments and a combined weight of nearly 40%, rose to historical 100%, 93%, 73% and 82% of the scale, respectively.
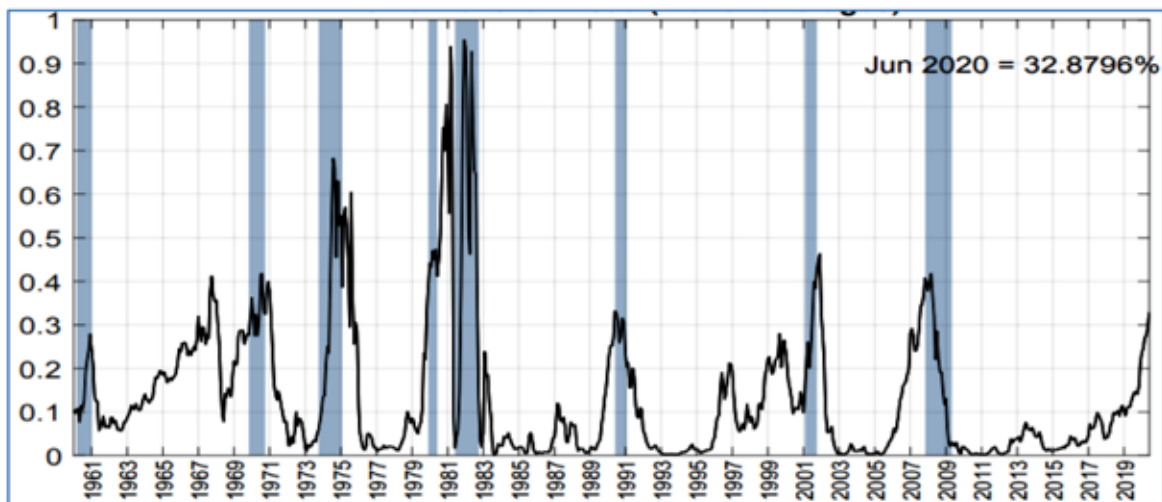

Figure 2. New York Fed's U. S. Recession Probability Index rises to 32.9%, the highest level since 2012.**Data information:** NY Fed

1.2 The Value of DJIA Index Analysis to Investors

The trend and performance of the DJIA reflect the valuation of the major components of the U.S. stock market. It further indicates the price level and movement of the overall level of U.S. stock market, and it also reflects other information, such as stock price changes and trading volume. Therefore, it is immune to manipulation caused by short-term factors and human factors.

Through quantitative analysis of the trend of DJIA, we can grasp the general condition and changes in the overall stock market. A understanding of wave-like movement of the overall market in the medium and long-term, in combination with the price movement of individual stocks, an optimal entry point could be established to improve the winning probability of investment.

2. Method

2.1 TD Nine-turn sequence

TD Buy structure, for 9 consecutive days, the closing price is lower than their corresponding 4 days ago closing price (low-9, see Fig. 3). TD Sell structure, for 9 consecutive days, the closing price is higher than their corresponding 4 days ago closing price (high-9, see figure 4). The nine-turn sequence is about timing the buying and selling point of a stock. The appearance of a high-9 indicates that the market is currently at a relative high position and could head into an adjustment. Therefore, it is not reasonable to buy. In case an investor is eager to acquire this stock in near future, a low-9 on a finer time scale would be a good entry point. For stock buying, when a high-9 emerges from an established rising trend, the next low-9 on finer scale would be good

entry point. If a high-9 forms on a declining trend, the next low-9 on coarser time scale indicates a good entry point of stock buying.

The idea of nine-turn sequence originates from DeMak's TD sequence, which contains both nine-turn buy structure and sell structure.
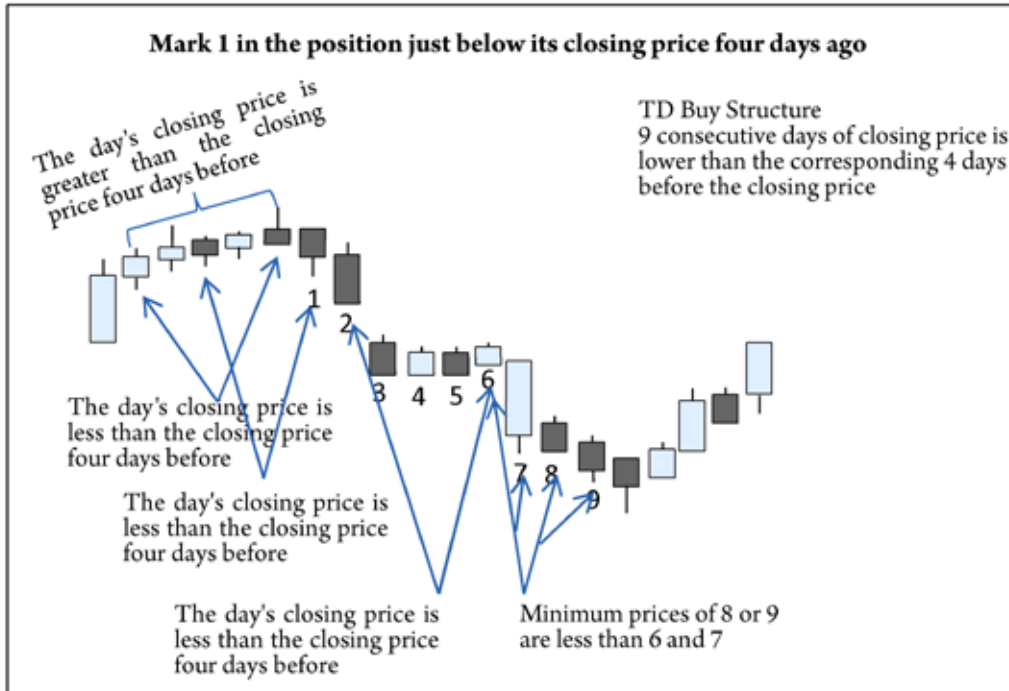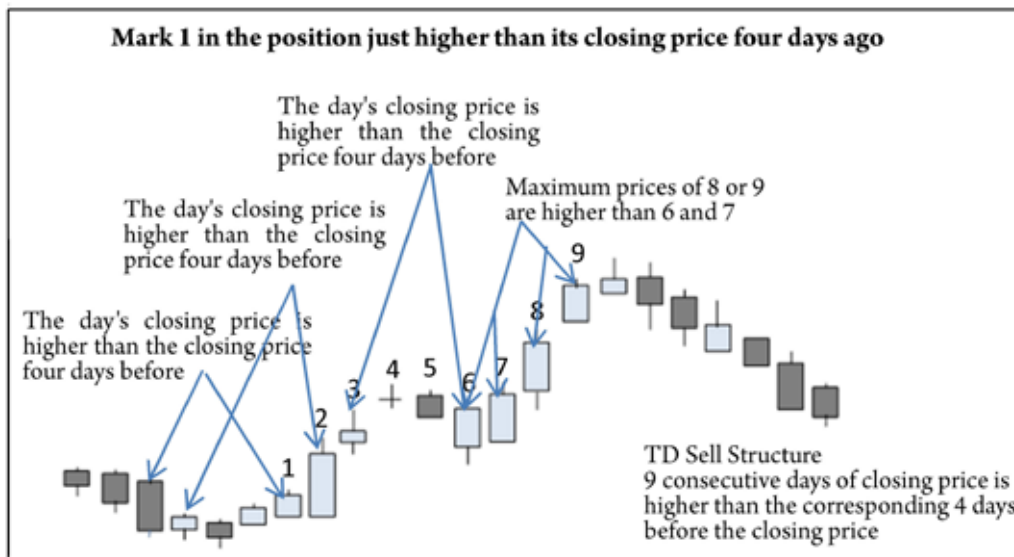

Figure 3. TD Buy Structure

Figure 4. TD Sell Structure

Nine-turn sequence formula:

A1: = C > REF(C,4);
A2: = C < REF(C,4);
T1: = A2 AND REF(A1,1);
T2: = A2 AND REF(T1,1);

T3: = A2 AND REF(T2,1);
T4: = A2 AND REF(T3,1);
T5: = A2 AND REF(T4,1);
T6: = A2 AND REF(T5,1);
T7: = A2 AND REF(T6,1);

T8: = A2 AND REF(T7,1);
T9: = A2 AND REF(T8,1);
T10:=A2 AND REF(T9,1);
T11: = A2 AND REF(T10,1);
T12: = A2 AND REF(T11,1);
T13: = A2 AND REF(T12,1);
T14: = A2 AND REF(T13,1);
DRAWTEXT(T1, L*0.98,'1'), colorgreen;
DRAWTEXT(T2, L*0.98,'2'), colorgreen;
DRAWTEXT(T3, L*0.98,'3'), colorgreen;
DRAWTEXT(T4, L*0.98,'4'), colorgreen;
DRAWTEXT(T5, L*0.98,'5'), colorgreen;
DRAWTEXT(T6, L*0.98,'6'), colorgreen;
DRAWTEXT(T7, L*0.98,'7'), colorgreen;
DRAWTEXT(T8, L*0.98,'8'), colorgreen;
DRAWTEXT(T9, L*0.98,'9'), colorblue;
B1: = C < REF(C,4);
B2: = C > REF(C,4);
D1: = B2 AND REF(B1,1);
D2: = B2 AND REF(D1,1);
D3: = B2 AND REF(D2,1);
D4: = B2 AND REF(D3,1);
D5: = B2 AND REF(D4,1);
D6: = B2 AND REF(D5,1);
D7: = B2 AND REF(D6,1);
D8: = B2 AND REF(D7,1);
D9: = B2 AND REF(D8,1);
D10: = B2 AND REF(D9,1);
D11: = B2 AND REF(D10,1);
D12: = B2 AND REF(D11,1);
D13: = B2 AND REF(D12,1);
D14: = B2 AND REF(D13,1);
DRAWTEXT(D1, H*1.010,'1'), colorblue;
DRAWTEXT(D2, H*1.010,'2'), colorblue;
DRAWTEXT(D3, H*1.010,'3'), colorblue;
DRAWTEXT(D4, H*1.010,'4'), colorblue;
DRAWTEXT(D5, H*1.010,'5'), colorblue;
DRAWTEXT(D6, H*1.010,'6'), colorblue;
DRAWTEXT(D7, H*1.010,'7'), colorblue;
DRAWTEXT(D8, H*1.010,'8'), colorblue;
DRAWTEXT(D9, H*1.010,'9'), colorgreen;

2.2 Quantified structure

The structure is determined by the divergence of the stock price (stock index index) and the trend indicator MACD. The criteria to determine the formation of the structure are:

A. The desensitization established under the following two conditions: 1) the stock price (or market index)reaches a new high, while the difference value (DIF) of the Moving Average Convergence Divergence (MACD) is not a new high; 2) the stock price (or stock index) reaches a new low while the DIF of the MACD is not a new low. A desensitization refers to a specific period of time. Although it is the necessary process to generate a structure, the establishment of desensitization may not lead to a structure.

B. Desensitization's amplitude, time span, and speed are important factors in the determination of the structure.

C. With the status of sensitization, the flipping of the DIF value's positive/negative sign indicates the establishment of a structure. In other words, the unequal red-green diagonal line turns red or green.

D. The price (stock index) is determined by the closing price of each period.

E .DIF value is determined by the first two effective numbers (the first two on the left are numbers that are not equal to zero).

The contradiction between new low in stock price and not-new low in DIF, or the contradiction between new high in stock price and not-new high in DIF, indicates the desensitization phenomenon.

Desensitization is an inevitable process to form a bottom or top structure, although it is not reversible. The establishment of the top or bottom structure must undergo through the desensitization process. However, a formed desensitization may not eventually lead to a structure because desensitization could be transient and disappears swiftly.

Under the premise of desensitization, the DIF value of MACD often leads the changing trend, i.e. the top structure changes from up to down, and the bottom structure changes from down to up (only in

integer bits). Such switching indicates 75% completion of the structure.

The color switch of the MACD value of MACD (MACD has three values, DIF DEA MACD, DIF is the most important and most commonly used,

MACD value is the result of golden cross and dead cross), is a strong complement or reinforcement of the formation of the structure. When this phenomenon appears, the structure is 100% completed.

Figure 5. Quantitative Structure Formation

Generally speaking, the structure is very effective. Often the trade happens on the left side and trend is on the right side. In unilateral market, the structure is not effective, neither does the nine-turn sequence. For a fluctuating market, the structure is very effective on cycles with various size. The pattern may sometimes appear rather complex due to the interaction between multiple cycles.

Quantified structure formula

DIF:100*(EMA(CLOSE, 12)-EMA (CLOSE, 26));

DEA: EMA(DIF, 9);

MACD:(DIF-DEA)*2, COLORSTICK;

Death Cross:=CROSS(DEA, DIF);

N1: = BARSLAST(Death Cross), NODRAW;

N2: = REF(BARSLAST(Death Cross), N1 + 1), NODRAW;

N3: = REF(BARSLAST (Death Cross), N2+N1+2), NODRAW;

CL1: = LLV(C, N1+1), NODRAW;

DIFL1: = LLV(DIF, N1+1), NODRAW;

CL2: = REF(CL1, N1+1), NODRAW;

DIFL2: = REF(DIFL1, N1+1), NODRAW;

CL3: = REF(CL2, N1+1), NODRAW;

DIFL3: = REF(DIFL2, N1+1), NODRAW;

PDIFL2: = IF(DIFL2 > 0, INTPART (LOG(DIFL2))-1, INTPART(LOG(–DIFL2))-1);

MDIFL2: = INTPART(DIFL2/POW(10, PDIFL2));

PDIFL3: = IF(DIFL3 > 0, INTPART (LOG(DIFL3))-1, INTPART(LOG(–DIFL3))-1);

MDIFL3: = INTPART(DIFL3/POW(10, PDIFL3));

MDIFB2: = INTPART(DIF/POW (10, PDIFL2));

MDIFB3: = INTPART(DIF/POW(10, PDIFL3));

Direct bottom deviation: = (CL1 < CL2) AND (MDIFB2 > MDIFL2) AND (MACD < 0 AND REF(MACD, 1) < 0) AND MDIFB2 <= REF(MDIFB2,1);

Peak Separation Bottom Deviation: = (CL1 < CL3 AND CL3 < CL2) AND (MDIFB3 > MDIFL3) AND (MACD < 0 AND REF(MACD, 1) < 0) AND MDIFB3<=REF(MDIFB3,1);

B: Direct bottom deviation OR Peak Separation Bottom Deviation, NODRAW;

BG:((MDIFB2 > REF (MDIFB2,1))*REF (Direct bottom deviation,1)) OR ((MDIFB3>REF(MDIFB3,1))*REF(Peak Separation Bottom Deviation,1)), NODRAW;

Bottom deviation disappears: = (REF(Direct bottom deviation,1) AND DIFL1 <= DIFL2) OR (REF(Peak Separation Bottom Deviation,1) AND DIFL1 <= DIFL3);

STICKLINE(B OR BG, DIF, DEA, 8, 0), colorred;

DRAWTEXT(FILTER (B, MACD > 0,1), (DIF+MACD),' passivation '), colorred;

DRAWTEXT(FILTER (BG, MACD > 0,1), DIF*1.1,' structure forms '), colormagenta;

DRAWTEXT(FILTER(Bottom deviation disappears, B,1),(DIF+MACD),' disappears '), coloryellow;

STICKLINE(B OR BG, DIF, DEA,5,0), colorred;

Golden Cross: = CROSS(DIF, DEA);

M1: = BARSLAST(Golden Cross), NODRAW;

M2: = REF(BARSLAST(Golden Cross), M1+1), NODRAW;

M3: = REF(BARSLAST(Golden Cross), M2 + +M1+2), NODRAW;

CH1: = HHV(C, M1+1), NODRAW;

DIFH1: = HHV(DIF, M1+1), NODRAW;

CH2: = REF(CH1, M1+1), NODRAW;

DIFH2: = REF(DIFH1, M1+1), NODRAW;

CH3: = REF(CH2, M1+1), NODRAW;

DIFH3: = REF(DIFH2, M1+1), NODRAW;

PDIFH2: = IF(DIFH2 > 0, INTPART (LOG(DIFH2))-1, INTPART(LOG(–DIFH2))-1);

MDIFH2: = INTPART(DIFH2/POW (10, PDIFH2));

PDIFH3: = IF(DIFH3 > 0, INTPART (LOG(DIFH3))-1, INTPART(LOG(–DIFH3))-1);

MDIFH3: = INTPART(DIFH3/POW(10, PDIFH 3));

MDIFT 2: = INTPART(DIF/POW (10, PDIFH2));

MDIFT3: = INTPART(DIF/POW(10, PDIFH3));

Direct Top Deviation: = (CH1 > CH2) AND (MDIFT2 < MDIFH2) AND (MACD > 0 AND REF(MACD,1) > 0) AND MDIFT2 >= REF(MDIFT2,1);

Peak Separation Top Deviation: = (CH1>CH3 AND CH3>CH2) AND (MDIFT3<MDIFH3) AND (MACD>0 AND REF(MACD,1)>0) AND MDIFT3> = REF(MDIFT3,1);

T: Direct Top Deviation OR Peak Separation Top Deviation, NODRAW;

TG:((MDIFT2<REF(MDIFT2,1))*REF(Direct Top Deviation,1)) OR ((MDIFT3<REF(MDIFT3,1))*REF(Peak Separation Top Deviation,1)), NODRAW;

Top deviation disappears: = (REF(Direct Top Deviation,1) AND DIFH1 >= DIFH2) OR (REF(Peak Separation Top Deviation,1) AND DIFH1 >= DIFH3);

STICKLINE(T OR TG, DIF, DEA,8,0), colorgreen;

DRAWTEXT(FILTER(T, MACD < 0,1), (DIF+MACD),' passivation '), colorgreen;

DRAWTEXT(FILTER (TG, MACD < 0,1), DIF*1.02,' structure forms '), colorgreen;

DRAWTEXT(FILTER(Top deviation disappears, T,1), (DIF+MACD),' disappears '), coloryellow;

STICKLINE (T OR TG, DIF, DEA, 5, 0), colorgreen;

2.3 Data

Trader KK stock software is a trading software to provide market display, market analysis and market trading. It could be freely downloaded from the company's website. Basic market data is also freely provided to investors. In this study, DJIA's stock history data (daily DJI index) from 1980–2019 was downloaded. Monthly and yearly data was used as baseline?

2.4 Statistical Analysis

Monthly-moving-average line analysis

Figure 6. DJI nine-turn sequence high and low point chart (month line) – (1980–2019)

From the KK stock trading software, the monthly K-line data from 1980 to 2019 were retrieved. Based on the analysis of nine-turn sequence formula, high-9 selling points appeared 17 times and low-9 buying point appeared once. The specific high-9 and low-9 values and the corresponding band high (low) were summarized in (table 1).

Table 1. – DJI nine-turn sequence analysis table (month line) – (1980–2019)

No	High (Low) Nine Time Point	Nature	High (Low) Nine Index	Maximum (Low) Index in Band	Maximum (Low) Time Point	The lowest (high) index of callback	Minimum (High) Time Point	Band exponential difference	Profit Ratio
1	2	3	4	5	6	7	8	9	10
1.	1981.02	high nine selling points	908.88	1030.98	1981.04	769.98	1982.08	−138.9	−13.47%
2.	1983.04	high nine selling points	1228.04	1291.87	1984.01	1082.05	1984.07	−145.99	−11.30%
3.	1985.09	high nine selling points	1341.40	No callback					

1	2	3	4	5	6	7	8	9	10
4.	1987.08	high nine selling points	2688.78	2736.71	1987.08	1616.21	1987.01	–1072.57	–39.19%
5.	1989.08	high nine selling points	2748.10	3010.64	1990.07	2354.21	1990.10	–393.89	–13.08%
6.	1990.08	high nine selling points	3057.91	No callback					
7.	1993.08	high nine selling points	3663.83	No callback					
8.	1995.05	high nine selling points	4816.94	No callback					
9.	1997.04	high nine selling points	7057.55	No callback					
10.	1999.07	high nine selling points	11252.27	11750.28	2000.01	7197.49	2002.10	–4054.78	–34.51%
11.	2003.12	high nine selling points	10462.44	No callback					
12.	2006.03	high nine selling points	11334.96	11670.19	2006.05	10683.32	2006.07	–651.64	–5.58%
13.	2008.08	low nine buy points	11221.53	10827.71 No rise	2008.07	6469.95	2009.03	–4751.58	–42.34%
14.	2010.01	high nine selling points	10729.89	11258.01	2010.04	9614.32	2010.07	–1115.57	–10.40%
15.	2011.05	high nine selling points	12876.00	12876.00	2011.05	10404.49	2011.1	–2471.51	–19.19%
16.	2013.05	high nine selling points	15538.12	15538.12	2013.06	14515.27	2013.06	–1022.85	–6.58%
17.	2014.05	high nine selling points	16735.51	18351.16	2015.05	15370.33	2015.06	–1365.18	–8.16%
18.	2016.12	high nine selling points	19987.63	No callback					

Among those 17 high-9 sales, 7 were followed by immediate decline of DJIA more than 10%, 2 were followed by decline more than 30%, and the greatest decline was 39.19%. Six high-9 sales were not followed by decline in DJIA. The overall success rate of high-9 selling trade is 58.82%. The probability of profiting from short selling > 10% is 41.17%. The low-9 buying trade was followed by continuing decline, not rising, in DJIA. The amplitude of decline was as high as 42.34%. The trade failed miserably with huge loss.

From the KK stock trading software, the monthly K-line data from 1980 to 2019 were retrieved.

Figure 7. DJI Quantitative Structure Chart (Month Line) (1980–2019)

Note: The side chart is a quantitative structural passivation and structural formation

Based on the analysis of quantitative structure formula, the bottom of the month desensitization buy points appeared a total of 8 times, the top desensitization selling point appeared 2 times. See

Table 2: DJI Quantitative Structure (Monthline) (1980–2019) for specific buy or sell quantitative structure values and corresponding band high (low) indices.

Table 2. – DJI Quantitative Structure (Monthline) Analysis Table – (1980–2019)

No	Structure Time Point	Nature	High (Low) Structure Index	Maximum (Low) Index in Band	Maximum (Low) Time Point	Band (Selling) Buy Index	Time Point of Selling (Buying)	Band exponential difference	Profit Ratio
1	2	3	4	5	6	7	8	9	10
1.	1982.08	passivation buy point	769.98	1291.87	1984.01	1223.2	1984.07	453.22	58.86%
2.	1985.05	passivation buy point	1240.72	2736.61	1987.08	2596.12	1987.10	1355.4	109.24%
3.	1989.08	passivation selling point	2748.10	2822.95	1990.01	2782.88	1990.02	−34.78	−1.27%
4.	1990.07	passivation selling point	3010.64	3010.64	1990.07	2905.45	1990.08	105.19	3.49%
5.	1991.05	passivation buy point	2840.34	9367.84	1987.07	8816.09	1991.11	5975.75	210.39%
6.	1999.02	passivation buy point	9099.04	11750.28	2000.01	10945.53	2000.01	1846.49	20.29%
7.	2006.01	passivation buy point	10662.15	14198.1	2007.10	13863.22	2007.12	3201.07	30.02%
8.	2011.10	passivation buy point	10912.1	10912.1	2011.10	12391.56	2011.12	1479.46	13.56%
9.	2012.10	passivation buy point	13096.46	12471.49	2012.10	17169.99	2015.02	4073.53	31.10%
10.	2016.07	passivation buy point	17924.24	26598.36	2018.10	17959.95	2016.10	8638.41	48.19%

In 8 time, following buying at the bottom of de-sensitization, the subsequent selling price rose more than 10%. Among these, increment > 30% 6 times, > 50% 3 times, > 100% 2 times, and highest increment was over 210.39%. Selling at the top desensitization happened 2 times. One had selling price lower than buying price by –1.27%. The other one had price increase around 3.49%. It is a profit trade, but not very profitable.

Weekly month line analysis

Figure 8: DJI nine-turn sequence chart (weekly line) – (2009–2019)

From the KK stock trading software, the weekly K-line data from 1980 to 2019 were retrieved. Based on the analysis of nine-turn sequence formula, high-9 selling points appeared 16 times and low-9 buying point appeared 3 times. The specific high-9 and low-9 values and the corresponding band high (low) were summarized in table 3.

Table 3: DJI nine-turn sequence high and low point (weekly line) – (2009–2019)

No	High (Low) Nine Time Point	Nature	High (Low) Nine Index	Maximum (Low) Index in Band	Maximum (Low) Time Point	The lowest (high) index of callback	Minimum (High) Time Point	Band exponential difference	Profit Ratio
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1.	2009.03.02	low nine buy points	6626.95	6469.95	2009.03.02	Continuous rise			
2.	2009.05.18	high nine selling points	8277.32	8877.93	2009.06.08	8067.19	2009.07.06	–210.13	–2.37%
3.	2009.09.08	high nine selling points	9649.85	9854.58	2009.09.14	9430.08	2009.09.28	–219.77	–2.23%
4.	2010.04.12	high nine selling points	11018.66	11258.01	2010.04.26	9614.32	2010.06.28	–1404.34	–12.47%
5.	2010.11.01	high nine selling points	11444.08	11451.53	2010.11.01	10992.17	2010.11.22	–451.91	–3.95%

1	2	3	4	5	6	7	8	9	10
6.	2011.01.31	high nine selling points	12092.42	12391.29	2011.01.31	11858.52	2011.03.14	–233.9	–1.89%
7.	2011.05.09	high nine selling points	12781.06	12781.06	2011.05.09	11862.53	2011.06.13	–918.53	–7.19%
8.	2012.08.08	high nine selling points	13215.97	13653.24	2012.09.10	12471.49	2012.11.12	–744.48	–5.63%
9.	2013.02.25	high nine selling points	14149.15	No call-back					
10.	2014.06.09	high nine selling points	16970.17	16775.68	2014.06.09	16333.78	2014.08.04	–636.39	–3.75%
11.	2015.09.14	low nine buy points	16330.87	17977.85	2015.11.02	17798.49	2015.11.23	1467.62	8.99%
12.	2015.11.23	high nine selling points	17798.49	17868.18	2015.11.23	15450.58	2016.01.19	–2347.91	–13.19%
13.	2016.02.08	low nine buy points	15503.01	18167.63	2014.04.18	18167.63	2014.04.18	2664.62	17.19%
14.	2016.04.11	high nine selling points	17962.1	18167.63	2014.04.18	17331.07	2016.05.18	–631.03	–3.51%
15.	2017.06.19	high nine selling points	21394.76	No call-back					
16.	2017.11.06	high nine selling points	23602.12	23602.12	2017.11.06	23242.75	2017.11.13	–359.37	–1.52%
17.	2018.06.11	high nine selling points	25090.48	25402.83	2018.06.11	23997.21	2018.06.25	–1093.27	–4.36%
18.	2018.09.10	high nine selling points	26154.67	26951.81	2018.10.01	21712.53	2019.12.24	–4442.14	–16.98%
19.	2019.07.29	high nine selling points	27174.28	27398.68	2019.07.15	25417.61	2018.08.12	–1756.67	–6.46%

Figure 9. DJI Quantitative Structure Chart (Weekly Line) (2009–2019)

Among those 16 high-9 sales, 6 were followed by immediate decline of DJIA more than 5%, 3were followed by decline more than 10%, and the greatest decline was 16.98%. Two high-9 sales were not followed by decline in DJIA. The overall success rate of high-9 selling trade is 87.5%. The probability of profiting from short selling > 10% is 18.75%. Three low-9 buying trade was followed rising, not declining, in DJIA. All trades are successful and continue to be profitable.

From the KK stock trading software, the weekly K-line data from 1980 to 2019 were retrieved. Based on the analysis of quantitative structure formula, the bottom of the month desensitization buy points appeared a total of 7 times, the top desensitization selling point appeared 12 times. See Table 4: DJI Quantitative Structure (Weekline) (1980–2019) for specific buy or sell quantitative structure values and corresponding band high (low) indices.

Table 4. – DJI Quantitative Structure Table (Weekly Line) – (2009–2019)

No	Structure Time Point	Nature	High (Low) Structure Index	Maximum (Low) Index in Band	Maximum (Low) Time Point	Band (Selling) Buy Index	Time Point of Selling (Buying)	Band exponential difference	Profit Ratio
1	2	3	4	5	6	7	8	9	10
1.	2009.03.02	passivation buy point	6626.95	6469.95	2009.03.02	7278.38	2009.03.16		Continuous rise
2.	2010.03.29	passivation selling point	10927.07	9614.32	2010.06.28	11008.81	2010.04.28	–1394.49	–12.76%
3.	2011.02.14	passivation selling point	12391.29	11858.52	2011.03.14	12391.29	2011.02.14	–532.77	–4.30%
4.	2011.05.02	passivation selling point	12876	11862.53	2011.06.13	12521.28	2011.05.02	–658.75	–5.12%
5.	2012.01.30	passivation selling point	12869.95	12035.09	2012.04.30	12849.59	2012.04.09	–814.5	–6.33%
6.	2012.07.30	passivation selling point	13281.32	13653.24	2012.09.10	13090.84	2012.08.27	562.4	4.23%
7.	2012.09.04	passivation selling point	13306.64	12588.31	2013.12.12	13343.51	2012.10.15	–755.2	–5.68%
8.	2012.12.31	passivation buy point	12863.89	15538.52	2012.05.20	13435.21	2012.12.31	2103.31	15.66%
9.	2013.07.29	passivation selling point	15658.36	14810.31	2013.08.26	15421.44	2013.08.05	–611.13	–3.90%
10.	2013.11.04	passivation buy point	15761.78	16588.25	2013.12.30	15761.78	2013.11.04	826.47	5.24%
11.	2013.12.16	passivation selling point	16221.14	16484.51	2013.12.30	15755.36	2013.12.09	–465.78	–2.87%
12.	2014.05.27	passivation selling point	16717.17	16950.93	2014.08.04	16980.57	2017.07.21	263.4	1.58%
13.	2014.19.22	passivation selling point	17277.88	15855.12	2014.10.13	17009.89	2014.09.29	–267.99	–1.55%
14.	2014.11.03	passivation buy point	17573.93	18288.63	2015.03.02	17856.78	2015.03.02	282.85	1.61%

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
15.	2015.02.23	passivation selling point	18132.70	18351.36	2015.05.18	17856.78	2015.03.02	–494.58	–2.73%
16.	2015.05.18	passivation selling point	18232.02	15370.33	2015.08.24	18351.36	2015.05.18	–2981.03	–16.35%
17.	2016.06.27	passivation buy point	17063.08	18668.44	2016.08.15	18551.54	2016.08.15	1488.46	8.72%
18.	2017.07.31	passivation buy point	22092.81	26616.71	2018.01.22	25337.87	2018.02.05	3245.06	14.69%
19.	2019.06.17	passivation buy point	26108.53	27398.68	2019.07.15	26727.61	2019.06.24	671.07	2.57%

In 7 time, following buying at the bottom of desensitization, the subsequent selling price rose. Among those, increment > 5% times, > 10% 3 times. In one trade, the price after buying keeps rising with no adjustment. Selling at the top desensitization happened 12 times. Among those, decline > 5% happened 5 time, > 10% 2 times. In two trades, the prices did not show decline adjustment. In one particular, the price increased by 4.23%.

3. Validation

A successful trading is defined as escaping the top (stop loss over 10%) and buying in at the bottom (taking profit over 10%). With that, the success rate is 76.51% based on the nine-turn sequence in monthly line through the back-test of KK trader data. The success rate is 68.53% based on the nine-turn sequence in weekly line.

As comparison, the success rate is 58.65% based on quantitative structure appearing in the monthly line through the back-test of KK trader data. The success rate is 57.14% based on quantitative structure appearing in the weekly line.

4. Discussion

The nine-turn sequence originates from the TD sequence of Tom Dimack, a master of technical analysis, whose core function is to discover the inflection point of the current stock price trend and improve the success rate of buying-in at the bottom and escaping at the top.

Although the nine-turn sequence is mainly used in index research, it could also be used as a reference for trading individual stocks. The index determines the position and the individual stocks determine the battlefield. The nine-turn sequence is best used in conjunction with MACD divergence technology, which will improve the accuracy. Nine-turn sequence is least useful in the unilateral market, particularly in the unilateral rising market. Therefore, it is not recommended as a reference for actual operations. Identifying the top and bottom generally follows a pattern. In a downward trend, if a low-9 forms in daily line, then a high-9 on the rebound would be found in 120-minutes line, with the time scale been reduced to half.

As a technical index, the nine-turn sequence cannot be used arbitrary as basis for buying and selling stocks. Instead, trading should be based on a complete analysis which also takes consideration of the fundamentals and other technical indicators. In the process of a strong rising (declining) trend, it is possible to form a rise (down) 9 structure continuously. At this time, one should change the use strategy of the nine-turn sequence, with the first rise (down) 9 structure as a signal to strengthen the market start (down). The nine-turn sequence technical indicators, superimposed the bottom divergence (top divergence) and other signals for secondary confirmation, would be able to determine the reversal of the trend better.

5. Model improvement – Addition of Macro-Political Economy in Prediction of Delinquency

The general trend of the American Stocks in the 1980s is summarized as the following: The S. P. 500 rose 227.4 percent, which mainly come from

the rising from 1982.7 to 1987.8, and had down adjustment around 30% twice at 1980.11–1982.7 and 1987.8–1987.11. The driving forces of the rising market included the Reagan New Deal, the improvement of the Plaza Accord's trade structure in the United States, and the increased risk appetite for rising interest rates. Those might account for 86% to the gains in U.S. stocks. The U. S. stock adjustment in the early 1980s related to the "high inflation, wide fiscal, tight money" economic policy mix. The stock market crash of 197 was related to high valuation and auto-programmed trading strategy.

The general trend of the American Stocks in the 1990s is summarized as the following: The S. P. 500 rose 315.7%, and had down adjustments in 1990 and 1998 with amplitude of 20.0% and 19.3% respectively. The driving forces of the rising market included the deepening global integration, the development of the information industry, and the continued improvement of U.S. competitiveness. Those might account for 28% to the gains in U.S. stocks. The major factors contributing to the two adjustments are the savings and loan crisis in 1990 and the Asian financial crisis in 1998.

The general trend of the American Stocks between 2000 to 2008 is summarized as the following: The S. P. 500 rose over 90% between 2002.9 and 2007.10, and had two down adjustments during the periods of 2000.8 to 2002.9 (–50.5%) and 2007.10 and 2008.11 (–53.0%). The driving forces of the rising market included residents leverage to boost the prosperity of the real estate industry, tax reform, China's accession to the WTO to promote global economic and trade activity. Valuation contributes negatively to the market level. The major factors contributing to the two adjustments are the bursting of the dotcom bubble and the subprime crisis.

The general trend of the American Stocks between 2009 to 2019.8 is summarized as the following: The S. P. 500 rose over 219.6%, and had three down adjustments during the periods of 2011.4 to 2011.9, 2015.8 to 2016.2, and 2018.9 to 2018.12.

The driving forces of the rising market included Federal Reserve QE, U.S. companies increasing overseas investment and the development of big data and shale oil. Valuation contributes roughly 62% of the gain to the market level between 2012 and 2017. The major factors contributing to the two adjustments are the European debt crisis; the slowdown, the Fed's interest rate hike; and the valuation bottleneck.

Two factors should be closely monitored in stock investment. The first is the expected return on investment, the second is investment psychology. Expectations represent investors' expectations of return on investment in the current macroeconomic context, and investment psychology represents investors' confidence indices. The stock market is a battle ground for human nature. After witnessing a big market rise, people tend to have an outbreak of speculative trading. After seeing a major market decline, people tend to abandon the market in stampede. Therefore, each big rise in the stock market must be over-the-top, each big fall must be overdone.

6. Conclusion

Although fear and greed can have a big impact on the market, it cannot change the market's general trend. From the perspective of the big cycle, the stock market tends to be undervalued when macro-political and economic environment is poor and when the mood is depressed, and the stock market is often overvalued when the macro situation is good and when the mood is high. Based on the cycle of market sentiment, one should buy stocks when market sentiment is low and sell stocks when market sentiment is high. The accumulation of high sentiment (low) is a long-term process, and the process of reversal can be very long. Therefore, a nine-turn sequence and quantitative structure could be used as an indicator of the highs and lows of the index, and as an indicator of top or bottom of individual stocks' price. Nevertheless, Investors must have the patience and will to buy or sell at the right point and stick to the concept of long-term investment.

The stock market, accompanied by political and economic fluctuations, will also experience the death

of a rising and birth of a recession. The death of a rising trend of the birth of a decline. The sequence goes from birth, to growth, to peaking, to decline, and death. In quantitative structure, desensitization is a quantitative criterion from the peak to the decline, and the structure is the quantitative criterion of death. From a large number of disorderly individual trading, an overall pattern will appear at a certain time. This is the cause of the general rule the stock market price movement. However, order does not appear all the time, and the market is chaotic in most of the time. Through the analysis of DJI index, with macro trends as the basis, the nine-turn sequence as the indicator, structural quantification as operation criterion, we could help the investors to obtain stable profits by picking the winning entry point with higher probability.

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