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**IMPACT OF INTERNATIONAL SANCTIONS ON IRANIAN
ECONOMY**

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"I, Ana JALILIFAR, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis."

A handwritten signature in black ink, appearing to read 'Ana Jalilifar', written over a horizontal line.

ANA JALILIFAR

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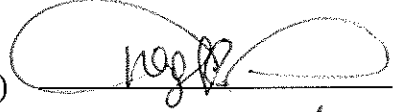
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IMPACT OF INTERNATIONAL SANCTIONS ON IRANIAN ECONOMY


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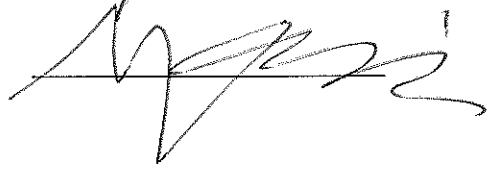
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ABSTRACT

IMPACT OF INTERNATIONAL SANCTIONS ON IRANIAN ECONOMY

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Since the World War II governments have thought economic sanctions as an option in order to influence the behavior of target countries. The question which economic sanctions can influence the behavior of a country without resulting into military actions, exists. Most of previous studies investigated different ways in which and how economic sanctions can be effective through impose of pressure on the targeted country. In this study, the importance of the problem and the impact of economic sanctions by USA and other countries on Iranian economy, were analyzed through investigation in historical data analysis and reviewing main macroeconomic indicators and Iran's trade policies.

Keywords: Iran's Economy, Revolution, Iran-Iraq War, US Sanctions, Exports and Imports

ÖZET

ULUSLARARASI YAPTIRIMLARIN İRAN EKONOMİSİNE ETKİLERİ

Ana JALILIFAR

Ekonomi, Yüksek Lisans

Danışman: Doç. Dr. Mustafa Eray YÜCEL

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İkinci Dünya Savaşından bu yana ülkeler hedef aldıkları diğer ülkelerin davranışlarını etkilemeye dönük olarak ekonomik yaptırımlara başvurmakta olup, askeri müdahaleleri kullanmaksızın hangi ekonomik yaptırımların istenen sonucu doğurduğu sorusu hala mevcuttur. Önceki çalışmalarda hedef ülke davranışlarını etkilemede hangi yaptırımların nasıl kullanılması gerektiği sorusu ele alınmıştır. Bu çalışmada, bu önemli problem ve ABD ve diğer ülkelere İran'a uygulanan ekonomik yaptırımların etkileri, başlıca makroekonomik göstergeleri ve İran'ın ticaret performansını kapsayan tarihsel veri ışığında ele alınmaktadır.

Anahtar Kelimeler: İran Ekonomisi, Devrim, İran-Irak Savaşı, ABD Yaptırımları, İhracat ve İthalat

List of Abbreviations

GDPLCU: Gross Domestic Product, Local Currency, Constant

GDPUSDC: Gross Domestic Product, US Dollar, Constant

IMPVOL: Imports Volume, Index Number, 2000=100

IMPGSLCU: Imports Goods and Services Local Currency

IMPCHEMUSD: Imports Chemical US Dollar

IMPAMEDREALPC: Imports Medical Real Per Capita

EXVOL: Exports Volume, Index Number, 2000=100

OILEXPAN: Crude Oil Exports Annual (thousand barrels)

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1-INTRODUCTION

Since the Second World War, organizations and governments have thought of economic sanctions as alternatives to armed confrontations in order to influence the behaviors of target countries. The question is, “How can economic sanctions influence the behavior of a country without resorting to military power? Or “What are the mechanisms?” The majority of previous studies have investigated the ways in which economic sanctions impose pressures on target countries in order to persuade them. The current study deals with this important problem and analyze the impact of economic sanctions, imposed by other countries and the USA in particular, on the economic conditions in Iran.

1-1-The Importance of Problem

The importance of this problem is quite obvious in Iran many years after the revolution when economic sanctions were intensified against Iran. With the US Embassy takeover on November 4, 1979, a new trend was formed in sanctions imposed on Iran. In fact, Iran faced the trade and economic sanctions officially imposed by the US and its European allies. Since the revolution, almost all the sanctions have been imposed on Iran by the US or at the instigation of the US. Therefore, it is important to consider the purposes and views of the US on the economic sanctions. After uranium enrichment and the nuclear energy problem in the recent years, the US has managed to find some allies among European countries to impose financial and trade sanctions on Iran and intensify the previous sanctions, too. This has caused the recent economic problems to be thought of as a result of economic sanctions inside the country; therefore, the public and international policies of the government have been criticized. Financial and trade sanctions have direct and indirect impacts on the trade flows of a country most importantly. In addition, depending on whether Iran’s economy is welcomed in the international arena or not and with regard to trade and financial relationships with the country or countries imposing

sanctions, the impacts will vary. In the first step it is, therefore, necessary to analyze and investigate the impact of economic sanctions on trade flow in order to study their impacts on economy. Based on the types and ranges of data, appropriate models should be used. After investigating the trade flow, the impacts of sanctions on production and economic growth are highly important. The consequences of impacts on economic growth and production have also influenced other economic aspects such as employment, consumption, inflation and social evolution.

1-2-What Are Sanctions? Why Are They Imposed?

In the recent years, economic sanctions were discussed as one of the most important issues of today in Iranian scientific communities. The first and most important perspective to study economic sanctions is the historical perspective. Investigating the scale, scope, diversity and goals of economic sanctions historically along with their effectiveness and achievement of the goals of the countries issuing them would help study economic sanctions more. Since the beginning of the 21st Century, like the previous century, economic sanctions have been known as an important foreign policy and an alternative to war. However, basic questions are raised about this powerful political tool such as: what conditions make a country's government impose sanctions or change the policy of sanctions? What political and economic factors are involved in the success of sanctions to achieve the desired results? What are the costs of economic sanctions for the country imposing sanctions and the target country? (Drury, 2005).

Sanctions are a part of the international diplomacy ruling the current world. They are imposed by some countries to serve as non-military tools in order to force the governments of target countries to receive the desired reaction. Economic sanctions refer to reducing, stopping or threatening to stop ordinary economic, trade and financial relationships with the target country. They are imposed by an embargoing country. In this definition, the ordinary

relationships mean the relationships in normal states without sanctions. In fact, sanctions are economic weapons in the field of non-military battle which moves diplomacy beyond talks and puts it into action (Eyler, 2007).

The embargoing institution may be the government of one or some countries such as the US or an international organization such as the UN. The target country is a country which sanctions are directly imposed on. The purposes of foreign policy mean change in the political behaviors of the target country, a fact which is explicitly or implicitly pursued by the embargoing country (Hufbauer *et al.*, 2007).

Economic sanctions were not common in most countries when there were not wars until 1920, after which such sanctions were imposed on countries starting military invasions against other governments after ratifying the treaty of allied countries (the Allies) after the First World War. Although this treaty was signed to threaten economic sanctions in the early years of the 1920s to resolve problems and disputes on the international borders of countries, such sanctions did not work against the invasion powerful governments. In fact, these sanctions were imposed in small scales on Italy in 1935 as a result of invasion against Ethiopia. They were only meant for military weapons and special trade exchanges and did not include oil trades and other international trades. In the same way, a threatening treaty which was signed against Japan in 1931 as a result of the invasion of Manchuria Province (however, it has never been put to action). Such sanctions were meant to create global peace and to reduce international invasions. Therefore, as soon as countries witnessed military and invasive actions of other countries, they imposed economic sanctions on them to reduce such actions.

On the contrary, during the First and Second World Wars, Britain and the US complied with severe export controls, and a ban was put on the transfer of assets against the Axis (Malloy, 2001).

Many of such economic controls were experienced so that the United States of America designed the comprehensive system of economic restrictions against communist countries and other related countries including international terrorism after the Second World War (Malloy, 2001).

1-3-The Negative Impacts of Economic Sanctions

Economic sanctions are basically divided into unilateral and multilateral sanctions (Caruso, 2003). The impacts of economic sanctions fall into four types (Doxey, 1980):

- 1) Controlling and restricting trade affairs
- 2) Suspending helps and technological supports.
- 3) Confiscating properties and assets of target countries.
- 4) Prohibiting a list of the companies of target countries from doing business with the embargoing country

The likelihood of a very important economic impact on a country which is sanctioned depends on the following factors:

- (1) The economic and financial characteristics of that country.
- (2) Economic and financial relationships between that country and the US at the time of sanctions.
- (3) Global macroeconomic conditions

The type and quality of sanctions would be related to the conditions of the target country. The influential factors are as follows: gross domestic product (GDP), the ratio of GDP to capital, the growth rate of GDP and the ration of production to capital, the ratio of exports to GDP, the ratio of imports to GDP, the structure of exports, import and GDP, the amount and structure of capital and the entry and exit of capital, membership in regional or international organizations such as World Trade Organization (WTO) and similar ones. In addition, the

relative political and economic importance of the US and the target country in the world are among the factors influencing the policies of the third-party countries and other regional and international countries. Other factors include the security and stability of global economy and energy markets influencing the execution of economic sanctions.

1-4-Investigating the Effects of Economic Sanctions

In various studies, different methodologies have been used to analyze and estimate the effects of economic sanctions on the economy, trade and economic growth. The most important methods include the consumer surplus model, gravity model, the curve of offers in trade, game theory, and the public choice model (smart sanctions).

(1) The Consumer Surplus Model: Using the concept of consumer surplus and social welfare, this model investigates the effects of tax on exports and imports. However, there are slight differences between financial and trade sanctions. Trade sanctions, such as sanctioning exports to the target country or sanction imports from it, make direct changes to production and reduces economic growth by limiting the sales or purchase markets. However, financial sanctions influence the flow of cash and capital towards the inside of country and makes it harder to financially supply domestic agencies by limiting it in the capital market; thus, the rate of real interest soars. In addition to reducing the production as a result of reducing investments and foreign loans, this matter decreases the production due to reduction on investment because of increasing the costs of investments (interest rate). Therefore, it is differently analyzed by taking this matter into account.

(2) The Gravity Model: This model is used to analyze the effects of economic sanctions on the economy of the target country and its trade relationships with the embargoing country as well as the entire trade relationships of the target country. Although

restricting the trades of target country is not the primary objective of sanctions, it is one of the fulfilled goals. The gravity model is an analytical groundwork for the new analyses of international trades and investment flows. These models are based on the fact that economic interactions between two countries are in proportion with the size of the two countries and in inverse proportion with the distance between them. These models have high powers of empirical explanation. The effect of distance is very great. It does not decrease with time. The interactive system resulting from these mutual relationships form the spatial structure of global economy. In fact, this model was taken from Newtonian mechanics, according to which the gravity of two objects are directly related with their masses and inversely related with the distance between them (Feenstra, 2008). Different empirical approaches have also been proposed to solve econometric problems related to complicated frameworks (Combes, 2008).

(3) The Offers curve in Trades: The offer curve indicates the satisfaction of a country with trades with respect to exchange relationships. This curve shows how much the desired country is willing to export in return for different amounts of imported goods. This approach investigates the consequences of trade sanctions and analyzes the effects of sanctions on the exchange relationships between the target country and the embargoing country. It also shows the welfare effects of sanctions.

(4) Game Theory Models: These models describe strategic selections made by parties in economic and political relationships. These models are very useful to analyze economic sanctions. The expected gains or net income change during the game of sanctions. Decision-making can change on both sides during the game. Game theory models provide an explanation of the results of cooperation in comparison with the results of competition in uncertain conditions. The results of cooperation can explain strategic economic decisions when the strategy take by one party depends on the strategy

selected by the other party, a fact which is known as the Nash equilibrium. This bedrock of cooperation makes the decisions made by the embargoing country go beyond the current status and consider other countries' decisions (including supportive or deceptive) on the embargoing country's influence or compulsion.

(5) Public Choice Models (Smart Sanctions): Sanctions are known as two-edged diplomatic tools which potentially harm both the innocent civilians of a country and the government. In fact, innocent civilians are fined because of the political behaviors of their governments. Policies of economic sanctions seek the effectiveness of this violation of rights among civilians. Therefore, the people are motivated to demand a change in the policies of their government. At the same time, sanctions try to encourage the beneficiary groups to act against the policies and leaders of target countries in the form of political processes or through violent acts such as coup or street riots. How much are the normal civilians of the target country harmed by these policies? On the other hand, are the damages made to the people in the sanctioned country to the extent which the groups influencing the decisions of embargoing country pressure it to lift the sanctions? Are the incomes of beneficiary groups higher than the human costs of sanctions? Kaempfer and Lowenberg (1992) concentrated on the public choice theory in centralized economic policy making. They reasoned that that the beneficiary groups of embargoing countries influence the decisions about beginning, continuing and ending sanctions in a way that there seems to be a market for sanctions. This sanction market can also exist in the target country. In the target country, the leaders may demand for policies resulting in the supply of sanctions from the embargoing country. The beneficiary groups of each country act to support economic policies like the primary forces and encourage the policy-makers to act. These studies were concentrated

on the decisions made by the embargoing countries. In fact, they are the expansion of game theory.

1-5-The Objectives of this Study

The importance of the problem is obvious in Iran in the years after the revolution. In these years, economic sanctions have been intensified against Iran. With the US Embassy takeover on November 4, 1979, a new trend of sanctions was formed in Iran. In fact, Iran has officially faced the economic and trade sanctions imposed by the US and its European allies. However, almost all the sanctions were provoked or imposed on Iran by the US after the revolution; therefore, it will be important to consider the goals of the US about economic sanctions. After the uranium enrichment and the nuclear energy problem in the recent years, the US could find some European allies to impose financial and trade sanctions on Iran. This has made the recent economic problems be thought of as a result of economic sanctions, insofar as the general and international policies of the government are criticized. Since the first and most important impacts of financial and trade sanctions are directly and indirectly made on the trade flow of a country, and the impacts will be different whether the economy of a country is open or closed to the international spaces with respect to trade and financial relationships with embargoing countries, it is necessary to analyze the impacts of economic sanctions on the trade flow. Considering the type and range of data, necessary models were used. After investigating the trade flow, the effects of sanctions on the production and economic growth are very important. The consequences of these effects on economic growth and production have influenced other economic aspects such as employment, consumption, inflation and social evolution.

2- THE STRUCTURE OF ECONOMIC SANCTION AGAINST IRAN

2-1- The History of Sanctions in the World

In the past, economic sanctions were used for different purposes. However, they were often used as minor military tools during wars. In fact, Greece imposed economic sanctions for the first time in 432 BC when Athenians (residents in the capital of Greece) were prevented from importing goods from the southern peninsula of Greece. During the religious wars and evolutions in Europe, the governments used trade inhibitions and other economic sanctions to force groups to protect special Christian minority group. In the late 19th Century, economic sanctions were often used at the time of war. In other words, exporting and supplying strategic goods would be controlled, and they were not provided for some certain countries (Medicott, 1952).

Economic sanctions were not common in most countries, therefore, as soon as countries witnessed military and invasive actions of other countries, they imposed economic sanctions on them to reduce such actions.

On the contrary, during the First and Second World Wars, Britain and the US complied with severe export controls, and a ban was put on the transfer of assets against the Axis (Malloy, 2001).

Many of such economic controls were experienced by Iran so that the United States of America designed the comprehensive system of economic restrictions against communist countries and other related countries including international terrorism after the Second World War (Malloy, 2001).

A brief review of the history of economic sanctions throughout the world indicates that the US Government has always had the greatest part in the use of economic sanction policies. All in all, two thirds of the global economic sanctions were imposed by the US Government.

Between the First World War and 1990, a period of 75 years, a total number of 155 economic sanctions were approved and imposed on different countries. In other words, there were 1.5 sanctions on average every year. The US Government was responsible for 77 sanctions (67%) of 115 global economic sanctions from 1914 until 1990. However, after 1990 when the Soviet Union was collapsed and the Cold War was over, the role of the US in using economic sanctions became greater. In other words, the share of the US was increased to 92% in total economic sanctions from 1990 until 1999. In the first term of Clinton's Presidency, the US Government imposed merely 61 economic sanctions on 35 countries including more than 2.3 billion people, equal to 42% of the global population, to restrict 790 billion dollars of exports, equal to 19% of global exports. The apparel objectives of these sanctions were preventing the violation of human rights (22 cases), fighting with international terrorism (14 cases), prohibiting the spread of nuclear weapons (9 cases), and supporting the rights of workers (6 cases), protecting the environment (3 cases) and preventing conflicts and civil wars (7 cases). It is considerable that the US managed to persuade international institutions or other European countries into cooperation for the majority of sanctions in the 1990s and many of them after 2000. The US general policy was mainly meant not to impose sanctions on a country or a group alone so that the international reactions would be reduced against it by increasing the effects of sanctions.

2-1-1- Recent Sanctions in the World

The modern world's interpretation of the military goals of sanctions is to prevent the target country from achieving the weapons of mass destruction, especially nuclear weapons. Canada and the United States of America repeatedly used sanctions to prevent the spread of nuclear weapons in the 1970s and 1980s. In 1974, Canada took a stand against the production of nuclear weapons by imposing sanctions on India and Pakistan. The US has also joined Canada in using financial leverages against the nuclear experimentations of South Korea. In this regard, the US

imposed sanctions against the export of technology and nuclear fuels to South Africa, Taiwan, Brazil, Argentina, India and Pakistan. These efforts were successful against Korea and Taiwan; however, they have very limiting roles in preventing South Africa, Brazil and Argentina. In addition, Pakistan and India turned into atomic powers despite the execution of extensive sanctions in 1998.

The most successful sanctions related to the weapons of mass destruction were imposed on Iraq and Libya. Considering the unlimited rights of Saddam Hussein to the oil revenues of Iraq and international pressures, the UN sanctions have provided an opportunity for the UN inspectors to destroy the facilities and bases producing biological and chemical weapons of mass destruction in this country (although these operations were not exposed until the US attack on Iran in 2003). Moreover, the weird decision made by Libyan President, Gaddafi, to stop the production of weapons of mass destruction in the same year was influenced by the tendency to end sanctions and achieve the technological benefits of oil developed by the US. On the other hand, neither the US sanctions nor the UN threats prevented Pakistan and India from joining the nuclear club. They did not actually stop Iran and North Korea from achieving this technology.

In addition to military objectives and national security, sanctions have been used to seek a part of foreign policies in an explicit or implicit effort to change the regime in the target country (in the form of other political conflicts, though).

During the Cold War, this policy was used against small countries. The US sanctions against Cuba, Dominican Republic, Brazil, and Chile were such cases. The blockades had positive impacts on the dismissal of Rafael Trujillo in Dominican Republic in 1961, Alexandre Goulart, the president of Brazil, in 1964, and Salvador Allende, the president of Chile, in 1973. On the other hand, Fidel Castro has not yet yielded despite more than four decades of economic pressures imposed by the US because he received a help from the Soviet Union before 1990.

He was also supported by some countries in opposition with the Helms-Burton Act from 1990 until 2006. Moreover, Castro received limited helps from some other countries, especially Venezuela, after Hugo Chavez took the office in 2004.

Before collapse, the Soviet Union used the policy of sanctions against its neighbors. In most cases, the Soviet Union failed to overthrow the unruly governments, especially in Yugoslav Socialist Bloc in 1948 and in Albania in 1961. The only success of the Soviet Union was in the Night Frost Crisis in 1958. During this crisis, Finland was forced to take much milder stands towards the policies of the Soviet Union. Since the collapse, Russia has not benefited from sanctions to force neighboring governments to change their foreign policies; however, it used sanctions for other smaller purposes.

In the 1970s and 1980s, the US imposed unilateral sanctions to establish democracy in Latin America. However, with the interventions of some countries in 1990s, new blockades were set against freedom reforms in Africa (the US and EU in most cases). The pressures coming from the west have significant roles in providing a public election at the independence time of Malawi and ending Banda's thirty years of presidency. Sanctions had also an effective role in reforms in Nigerian Government in 2000, although no successes were gained in Togo, Guinea, Cameroon, Burundi, Colombia and Côte d'Ivoire.

In the early 1960s, sanctions were used to achieve the goals of moderate foreign policy goals (in comparison with the goals related to war, peace or regime change). For instance, an economic blockade enforced to settle the conflicts pertaining to private property claims, fight with drug mafia, and international terrorism (a moderate goal just before Al Qaeda's attack to New York and Washington on September 11, 2001) is categorized under this group. Since the Second World War, the US have used sanctions to resolve disputes over the assets forfeited by foreign states. Although private expropriation claims have been less observed in recent years,

the last record of this kind of sanctions was about expropriation conflicts against Ethiopia until the Helms-Burton Act against Cuba in 1996.

Since the beginning of the 1980s, the US has used the process of “No Certification” to force other countries to cooperate with the US Government in fighting drugs. According to historical evidence, the United States of America is the only country which uses sanctions to punish the countries producing drugs. The prerequisite of “No Certification” process for the US to identify and collect a list of the main countries producing and transiting drugs. If the name of one country is on the list, economic sanctions will be imposed on it, unless the US president confirms that that country has been in full cooperation with the US or the US Government ignores sanctions due to some security considerations. This process happened to many countries in the 1980s, and countries like Iran, Syria and Afghanistan, having limited relationships with the US, were severely affected by such sanctions.

In this period, Nigeria, was disqualified for the first time despite the explicit opposition of American companies in 1994. In the same year, Mexico and Colombia were disqualified, too. After a harsh conflict inside the US Government in 1996, the name of Mexico was wiped off the list. However, Colombia’s disqualification was voted on due to Mr. Samper’s statements on drug cartels. Many Latin America leaders criticized this paradoxical standard and criterion. Conflicts were intensified on this matter in 1977 when Mexico was reconfirmed and Colombia was rejected again according to the US declaration and despite the corruption of Mexican government. After a period of peace, Bush’s decision to disqualify Venezuela in 2005 made the US face severe criticisms on the political objectives of this process.

Fighting with terrorism is another political objective of imposing sanctions. The hijacking crisis in 1960s and 1970s, massacre of Israeli athletes in Munich Olympic Games in 1972, and the crash of Pan American Flight 103 in Scotland in 1988 drew the world’s attention to

terrorism. Plane hijacking crises were greatly decreased after an international agreement in 1973.

In 1980, the US introduced Libya, Syria, Iraq and Yemen as international rebels accused on supporting terroristic activities and immediately imposed sanctions on Iraq and Libya to restrict their activities as the suppliers of military equipment for terroristic groups. During the next years, Cuba, North Korea, Iran, Sudan and Afghanistan were added to this list. Iraq was crossed out of the list after the US attack against this country in 2003. Libya was also removed from the list because of accepting the responsibility of bombing attack in the US airplane and paying the survivors compensation.

In the 1990s, the advent of borderless terrorism, especially Osama Bin Laden's network, has resulted in the use of a new wave of sanctions against terrorists and supporters. In 1995 and 1996, the US Congress approved some laws to authorize the US Government to impose economic sanctions including forfeiture of assets and prohibition of transferring them to the known terroristic characters and groups opposing the peace process in the Middle East and foreign terroristic groups. Therefore, the US targeted Al Qaeda; however, the US treasury did not announce its evaluations of the assets of this network before 2001.

After the attacks on WTO and Pentagon on September 11, 2001, Mr. Bush pointed out the importance of economic sanctions in "fighting with terror" and the USA put greater pressures on borderless terrorist groups. This policy was used to force other countries to cooperate in "fighting with terror." In this decade, fighting with terrorism was on top of the goals of imposing economic sanctions.

Bush expanded the list of wanted terrorists who were sanctioned in 1995 and 1996 to fight with international money laundering. The US treasury evaluated the assets of foreign terrorists affiliated with the main core of the international terrorism networks to identify their financial

suppliers. In addition to the UN and other international organizations having the same purpose, multilateral sanctions were imposed against the flow of financial supports of terroristic actions.

With the expansion of antiterrorism techniques over time, the aim of the US changed to the complete destruction these groups from the correction of their behaviors.

By September 11, 2001, sanction policies were used to find more allies to fight with terroristic operations. For instance, the US policy, in parallel with imposing sanctions on countries supporting terrorism, included some economic advantages such as paying low-interest loans and lifting some sanctions in some cases as rewards due to the cooperation in fight against terrorism. Since September 11, 2001, the US policy has completely changed. Attacking Afghanistan and Iraq to fight with terrorism and overthrowing Saddam Hussein can be some instances.

2-1-2- Sanctions on Selected Countries

- (1) India:** This country experimented a nuclear bomb in 1974 and named it a peaceful explosion. Canada, having an effective role in India's nuclear power, suspended cooperation with India after this experiment. The US also canceled nuclear collaborations with India. After the collapse of the Soviet Union, Indians, supporting the left party, concluded that they had cooperated with the East for 50 years with not achievements; thus, it was the time for them to cooperate with the West so that they might bear the benefits of the western developments. This perspective brought a new movement on India's foreign policy and atmosphere. On the one hand, the US saw the development of relationships with India as a barrier to China's Influence. Both countries' tendencies towards each other made the US let go of its disagreements and sign a strategic nuclear treaty with India despite its domestic laws.

- (2) **Pakistan:** This country, which has always been in an old rivalry with India, has attempted to achieve nuclear weapons. Pakistan started its nuclear activities with the help of the US in 1962; however, sanctions were then imposed on it due to trying to achieve atomic bomb. After the Soviet's attack on Afghanistan, Pakistan became very important to the US. After the events of September 11, Pakistan turned into an important ally for the US. Influencing this country and using its capacities for its own goals, the US lifted the sanctions against Pakistan and even dispatched military assistances to it.
- (3) **Libya:** In the early years of Gaddafi's reign, this country applied anti-west policies, insofar as the US bombarded it in 1986. Two years later, an American airplane was exploded in Scotland, and the US held Libya responsible for it. Then it imposed international and unilateral sanctions on this country. Later on, Libya handed over those who were accused of this attack, and the international sanctions were lifted from this country. However, the US sanctions were still in action until Libya gave up its nuclear program, which was the cause of many disputes, and even sent its equipment to the US.
- (4) **North Korea:** This country was located in the Eastern Bloc from the beginning of establishment. It was supported by the Soviet Union and Russia; therefore, it was against the US. Sanctions were imposed on this country from the very first. After the collapse of the Soviet Union, North Korea lost its greatest protector, and China was not willing to have any conflicts with the US over North Korea. In such situations, North Korea had to either negotiate with the US or keep on its policies. This country did both at the same time. In 1994, it signed the Geneva Agreement with the US. This country was supposed to stop its nuclear, and the US agreed to lift the sanctions in return. The agreement was not finally enforced

due to the distrust of the two countries in each other, and North Korea left Non-Proliferation Treaty (NPT) in 2003. After that, the US came back into talks with North Korea and five other countries again and asked for some perks for the return to NPT. The US did not fulfill its obligations, and North Korea lost trust in the US again and kept on its policies. It then experimented its atomic bombs in 2006, 2009 and 2013. Since experimenting the first atomic bomb, seven resolutions have been approved against North Korea in the Security Council, and this country is still maintaining its policies.

(5) Cuba: This country enforced anti-American policies after the revolution in 1959. For almost 60 years, Cuba sustained sanctions. Although this country did not have a nuclear program, the US imposed some sanctions on it. The primary objective of these sanctions was to overthrow Cuban government. However, when the US could not achieve this goal, it made punishment the first goal. Not only did Cuba give up, but also it made some great achievements such as medical developments and eradication of unemployment, inflation and illiteracy under sanctions. After many years of fruitless sanctions, the UN asked the US to lift the sanctions against Cuba.

2-2- The History of Sanctions in Iran

Imposing sanctions on Iran by the West has a long history in the contemporary history of Iran, especially after the Islamic Revolution. The first sanction which was imposed on Iran was related to Mosaddegh's administration and his policy based on the nationalization of oil industry in Iran. The US and England decided to use sanctions and economic pressure on Iran, whose only revenue came from selling oil, to inhibit the movement of nationalization of oil. However, Mosaddegh's administration did not sit back. He developed foreign markets and sold

oil at lower prices than global markets to evade the circumstances the West had created, although maintaining the nationalization program caused his administration to collapse. The goals of the US and England were to cancel the nationalization of oil, a fact which was not achieved. Then they sought to unstage Mosaddegh's administration, and they finally could overthrow him soon.

The second experience of sanctions imposed by the West, especially the US, on Iran was at the time of the Islamic Revolution in 1979 and the compulsory war after it. Sanctioning the oil industry at this time began by summoning foreign experts and not supplying the infrastructures required for this industry along with the extraction of all the information pertaining to the discovery of new oil reserves. Therefore, the export of 4 million barrels of oil per day before the revolution was decreased to below 1 million barrels a day suddenly. This decreased the supply and increased demand, as a result. Therefore, the price of oil raised from 12 dollars to 34 dollars per barrel, a fact which helped Iran regain its previous revenue.

The movement of Islamic Republic of Iran after the Islamic Revolution and disobedience with western arrogant programs made the US and its allies impose sanctions on Iran to surrender it. Generally, the US sanctions (many of which were imposed with other countries) against Iran can be divided into six main periods, each of which has distinct characteristics:

- The beginning of the revolution and hostages (1971-1988)
- Reconstruction (1989-1992)
- Clinton's administration and bilateral inhibition (1993-2001)
- After September 11, 2001
- After the Security Council Resolution

Economic sanctions against Iran were unprecedented in all terms in recent years. In addition to the structure of Iranian economy, which depends on oil and oil revenues, these sanctions were supposed to target the very economic vessel to make Iran's economy face more problems

than before. Some of the factors of less effectiveness of economic sanctions on Iran's economy, despite their diversity and variety after the revolution, are: gradual and temporary sanctions, oil revenues, increased price of oil, and alternative development strategies for imports after the revolution and increase global competitions.

Among these factors, the most important one was the fact that sanctions were gradual and temporary, and the structure of Iran's economy was in compliance with them. Many studies such as: Torbat (2005), Impacts of the US Trade and Financial Sanctions on Iran, Amuzegar (1997b), 'Iran's Economy and the US Sanctions' and others, investigated sanctions in short term, and the structure of countries are vaccinated against sanctions in the long run; therefore, they will not have permanent effects. Thus, a new type of sanctions should be imposed, a type against which the structures of countries cannot resist.

On the other hand, oil revenues and the increased price of oil have always enabled the economy of Iran to withstand the effects of sanctions. The recent sanctions have targeted these two sources and intensified the effect of economic sanctions on Iran's economy. Moreover, there are other reasons for the intensification of recent sanctions against Iran including the internationalism of sanctions, blocking many ways of going around sanctions, the concurrency of economic sanctions with the implementation of the first parts of the economic development plans and targeting subsidies, and mismanagement of public thoughts on the effectiveness of sanctions.

2-2-1- Types of Sanctions against Iran after the Revolution

In this part, different types of sanctions which were imposed on Iran are reviewed.

1) Forfeiting the Properties and Assets of Iran (Iranians)

The long list of the US economic and political sanctions against Iran started after the revolution in 1979. On November 14, 1979 when American staff were held hostage at the US

Embassy in Iran, the then president of the US (Jimmy Carter) seized the properties of most Iranians at American banks. Many of such properties have not been returned yet. In January 1984, the forfeit of Iran's properties was intensified due to the accusation of participation in bombing the US Navy forces in Lebanon and supporting and collaborating with terrorism. Iran has also been deprived of the international assistances. This type of sanctions was imposed on Iran on October 23, 1992 in order to fight with the weapons of mass destruction such as chemical, biological and nuclear weapons. The properties of individuals who were related with the development of these weapons in Iran, Iraq, Syria and North Korea were forfeited. Many of them are still in confiscation (Executive Regulation 13382 of the US Treasury).

2) Trade (Exports and Imports) and Investment Sanctions

On April 30 1995, the then US president (Clinton) imposed an extensive prohibition on trade and investment in Iran. In 2010, Barack Obama extended this sanction as George Bush did. However, in spring 2013, a number of Iranian petrochemical companies and car-manufacturing companies were added to this black list of sanctions for the first time (Executive Regulation 12959 of the US Treasury).

3) Regulations on Nuclear Energy

A committee named Iran Sanctions Act (ISA) was formed in 1996. It was intended to impose trade sanctions on the companies and countries cooperating with Iran's nuclear program in order to stop it. Kenneth Katsman managed to pass a successful act in the US congress from 1998 until 2010. After that, Obama was also confirmed this program in his presidency and said, "ISA was used to prevent countries from cooperating with Iran's nuclear program." Therefore, it has been continuing so far. In May 2013, new sanctions (including visa bans were set for Iranians) were also determined.

4) Financial Sanctions

The US treasury imposed heavy financial sanctions against Iran in 2006. According to them, transferring more than 100 dollars was banned between organizations. This prohibition was extended more in the recent years. In November 2011, the US announced that the whole Iranian Banking System supports terrorism. Then Iran Central Bank was sanctioned. On November 20, 2011, the US president wrote a letter to the Congress and targeted Iran's oil revenues and financial transactions related to Iran's oil with Central bank. Then most countries' payment for Iran's oil was banned. In March 2012, after the US Congress approved and intensified financial sanctions on Iran, the US president said, "The global energy market is able to make up for the loss of Iran's oil; therefore, other countries have to reduce oil import from Iran." However, many countries such as Japan, South Korea and China were long excluded from this act. After that, financial sanctions targeted the reduction of value of Rial through another executive regulation in June 2013. For this purpose, and according to the approval of the US congress, foreign banks dealing with Rial or keeping it would face serious fines.

5) Forfeiture of Assets

After the terrorist attacks on New York and Washington in 2001, the forfeiture of all the assets of institutions and organizations supporting terrorism was approved in Executive Regulation 13224. The list included tens of Iranian individuals, financial organizations and institutions. During the next years (2005, 2007 and 2011), other individuals and organizations were sanctioned, and their assets were seized. In 2011, other Iranian individuals and organizations were sanctioned in Iran in order to support freedom fighters in Syria and protect the human rights. In July 2010, President Obama determined heavy fines for American domestic and foreign companies exporting oil products to Iran.

6) International Sanctions

The European Union also imposed hard sanctions on Iran. On July 1, 2012, the prohibition of importing oil from Iran decreased the export of oil from Iran by almost 1.25 million barrels in comparison with 2011. In May 2013, 700000 barrels were decreased. In June 2010, the European Union imposed the same trade and investment sanctions as the US Congress did in the energy sector. Therefore, the European agencies and organizations were also prevented from doing business with Iran. Moreover, the European Union imposed sanctions on a list of Iranian individuals, banks, companies and organizations. In November 2011, England and Canada imposed similar sanctions on Iran's Central Bank. In May 2013, Canada also prohibited imports and exports with Iran and added 82 more companies and organizations on the list. However, these sanctions are traced back to when Iran could not convince Atomic Energy Agency that its nuclear activities were peaceful, and the security council of the UN has started imposing sanctions on Iran since 2006. In December 2006, the export of all technologies and equipment pertaining to nuclear energy to Iran was banned, and some Iranian officials (including Sepah Bank's officials) were prohibited from traveling to foreign countries. Moreover, inspections were determined for Iranian Shipping Lines. In June 2010, the Security Council designed four steps of heavy sanctions against Iran including sanctions to pressure the security forces of Iran, shipping industry, and the financial and trade service sectors in Iran. However, China and Russia's opposition and resistance (these two countries had more trade and financial relationships with Iran) reduced the pressure a little. In June 2008, the assets of nearly 40 institutions cooperating with Bank Melli Iran were blocked because this bank supported Iran's nuclear energy.

The details of these sanctions can be seen in the Tables 1, 2 and 3.

Table 1. U.S. Sanctions on Iran

Date	Sanction
1980	As a result of capture of American Embassy in Iran, US shut off all property, equipment and purchased good
1984	US lock out export of chemical production to Iran
1985	Reject all licenses of export of aircraft and repair port
1987	US Sanctioned exporting diving gear and 14 type of good that could be used in military production US prohibit oil import from Iran
1992	Iraq and Iran Arms Non Proliferation Act banned exporting military goods to Iran Also US discontinued the preparation of export and import bank financing to Iran
1994	US made attempted to blocks Iran for buying uranium from Kazakhstan and made more measures to cut off Iran nuclear program
1995	US sanctioned all trade with Iran Companies was banned to boost Iranian projects Senator D Amato introduce a bill to bar should be banned all trade with Iran including humanitarian goods In the end of 1995 was approved some bills for sanction foreign companies that invest over 40 million dollars in the oil and gas industries in Iran
1996	US House of Representatives passes the Iran and Libya sanction bill Also they made more limitation of investment until 20 million dollars
1997	Prohibition more export of American product services and technology
1999	US imposed import sanction against 10 Russian organizations for helping Iran develop its nuclear and missile and rocket program Clinton sign a law to impose sanction for countries that helping Iran develop weapons
2000	Us imposed sanction under export control act against Iran tor cooperating with North Korea to develop missiles
2001	US government furbished Iran and Libya sanction act for another five years
2002	US blocks Iran from joining WTO
2003	US imposes sanction for 6 companies for selling technology to Iran
2004	Totally 24 companies were sanctioned as a result of taking part some goods and services to Iran
2006	US treasury department froze the asset of 4 Chinese's companies for helping Iran ballistic and missile program American people were banned to make any contract with Iran 2 Russian companies were sanctioned as a result of cooperative with Iran in the case of weapon and missile Iranian Saderat bank was banned from US financial system by Obama
2007	Treasure department block US bank from handling transaction on behalf of Iranian bank Sepah
2008	Sanctions shipping industry and airline sanctions
2010	Sanctions and asset freezes against individuals linked to the Iranian Revolutionary Guards sanction Post Bank and insurance, asset freeze 180 individual and companies, the ban on mining activities international partnership Uranium, a ban on the purchase of any military equipment, lack of cooperation Missile, lack of banking and financial transactions, sanctioned 61 foreign companies Because of trade with Iran
2011	Sanctions banning the purchase and signing oil and Commercial Bank Ministry of Information sanctions, embargo and a ban Quds Force and Police Collaboration with companies associated with the Department of Defense, Iranian Revolutionary Guards
2012	Iranian media sanctions and restrictions Renew sanction of purchasing oil Impose sanction for 3 foreign companies that trade with Iran
2013	Ban transactions and petrochemical industry Sanction Iran Aviation Industries Organization

Table 2. U.N. Sanctions on Iran

Date	Sanction
2006	The first resolution calls on Iran program only Nuclear stop and threatened to it Prohibit the sale or transfer of all materials and Equipment to Iran Members are required to seize assets 22 companies and individuals linked to Iran's nuclear program
2007	The resolution names of 18 companies, individuals and related bank records Nuclear and missile programs in Iran were added to the blacklist. The financial world was asked of any new financial commitments with Iran except for humanitarian or human development Ban on assault weapons purchases from Iran
2008	Resolution of the members wanted to work with banks Melli and Saderat because of what financial assistance program Iran's nuclear and missile and terrorist organizations Two banks denied out. Under the resolution, 13 people and 12 companies Iranian, were subject to asset freezes and a travel ban. This resolution allows the event to members if having "reasonable cause" air and sea cargo Iran is the destination or origin, their inspection.
2010	Renew punishment and prohibition of transfer missile technology to Iran. Also selling materials and Nuclear facilities in the Islamic Republic was banned. Specifically, Iranian Revolutionary Guards and shipping company Islamic Republic were targeted.

Table 3. EU Sanctions on Iran

Date	Sanction
2007	Cooperation with Iran for import and export of equipment to enrich uranium was banned for a number of ir and Iranians involved in nuclear and missile programs companies offer Islamic Republic were subject to as and a travel ban to Europe.
2009	Several Iranian officials, including Ali Akbar Salehi, head of the Department of Energy Iran's nuclear core comprises an active due to travel to member states Europe Union were banned.
2010	European airport, destination or source them from accepting cargo flights Iran, were banned. European countries joint venture with the Iranian side in Oil and gas were banned. Some financial sanctions on government and central bank, buying and selling, broker or assistance in the issuance of government bonds and central bank for financial institutions were imposed. Cooperation with Iran to import and export of weapons and equipment used to enrich uranium or dual military and civilian combined with the sale and transfer of equipment and technology for refining oil or liquefied natural gas to Iran also banned
2011	Iran nuclear sanctions expanded to more than a hundred individual or Including anti-sanctioned IRISL companies Iran's nuclear program.
2012	increase sanctions on Iran oil embargo by the authorities

2-2-2- Comparing the Sanctions on Iran and on Other Countries

While comparing economic sanctions in different places of the world and various periods with Iran, some points are worth mentioning:

1) Difference in the duration of sanctions against Iran and other countries: The sanctions imposed on Iran by western countries are the longest ones.

2) The sanctions against Iran are different from those on other countries in terms of intensity and type. Considering the distinctions in Iran, sanctions include forfeiture of properties and assets of Iranian individuals and organizations abroad, trade sanctions (exports and imports) and investment prohibition, knowledge and technology sanctions, oil sanction, financial sanctions, trade banks and central bank, and prohibiting interactions and trades with Iranian individuals and organizations (assets, trade, visa and travels, EU and international organizations sanctions). Therefore, the harshest and severest sanctions were against Iran in the world.

3) Iran's economic conditions compared with other countries: according to the investigations, the historical trend of sanctions against Iran indicates that Iran has been facing such circumstances with different intensities since the revolutions, and it has adjusted to it somehow.

4) The oil-dependent economic structure and the size of government in Iran: The government is very large in Iran despite many levels of privatizations. Moreover, a structure which highly depends on natural resources has stopped other sectors, especially private sector, services and technology, from growing. Therefore, trade sanctions can influence different economic sectors of Iran to a great extent.

3-ANALYSIS OF DATA

In this chapter we will provide some statistical data and figures in regard to different macroeconomic indicators and there would be assumptions and analysis based on the provided graphs.

3-1 Data Sources and Variables

GDP data

The main resource of different GDP data was from the World Development Indicator (WDI) which belongs to the World Bank, the Central Bank of the Islamic Republic of Iran (CBI) online database: Economic Time Series database (<http://tsd.cbi.ir/>) and International Monetary Fund (IMF). Both contain the GDP data from 1965 to 2014 excluding some missing data. The missing data includes the GDP (current USD) for the year 1991 and 1992 and it has been calculated by dividing the GDP (constant USD) over the average exchange rate for the missing year.

Exchange rates

The official average exchange rate series were obtained from the CBI online database for calculating the missing data.

Imports and Exports data

Similar to GDP data, WDI and CBI were used to extracted different import and export data. But also it had contained some missing data.

In term of exports and imports missing data, it includes the export/import of good and services (current USD) amount data for the 1991 and 1992. And it has been calculated by dividing

Current LCU by the average exchange rate for the missing year. Furthermore, no data found from 2008 and up.

In order to calculate the export/import of good and services (current USD) amount, first (K) was calculated by dividing the actual USD export/import by the product of (X) of export/import value index and export/import volume index, then multiplying (K) and (X) results in the export/import of good and services (current USD) amount.

For the missing data from 2008 and up, splicing for (K) values were used followed by the previous procedure for calculating the export/import of good and services (current USD) amount.

Likewise, same procedure was used to calculate the export/import of good and services (constant USD).

Oil exports and prices

Annual crude oil export series (thousand barrels per day) were available from 1978 to 2014 in the CBI online database in local currency (Rials). Crude oil revenue in USD was calculated by dividing the local currency by the average exchange rate of each year.

Medical imports

Annual medical import data were available in CBI online database from 1978 to 2012. Additionally, medical global price index was available in Federal Reserve Economic Data at (<http://research.stlouisfed.org/fred2>). Where (K') is the outcome of dividing the medical import in USD over the medical global index. Using the population data, the medical import per capita was calculated by dividing (K') over the population for each year.

Chemical imports

Annual chemical import data were available in CBI online database from 1978 to 2012.

Population

Annual data on population were available in IMF and CBI online database from 1978 to 2012.

3-2-Macroeconomics Indicators Statistical Analysis

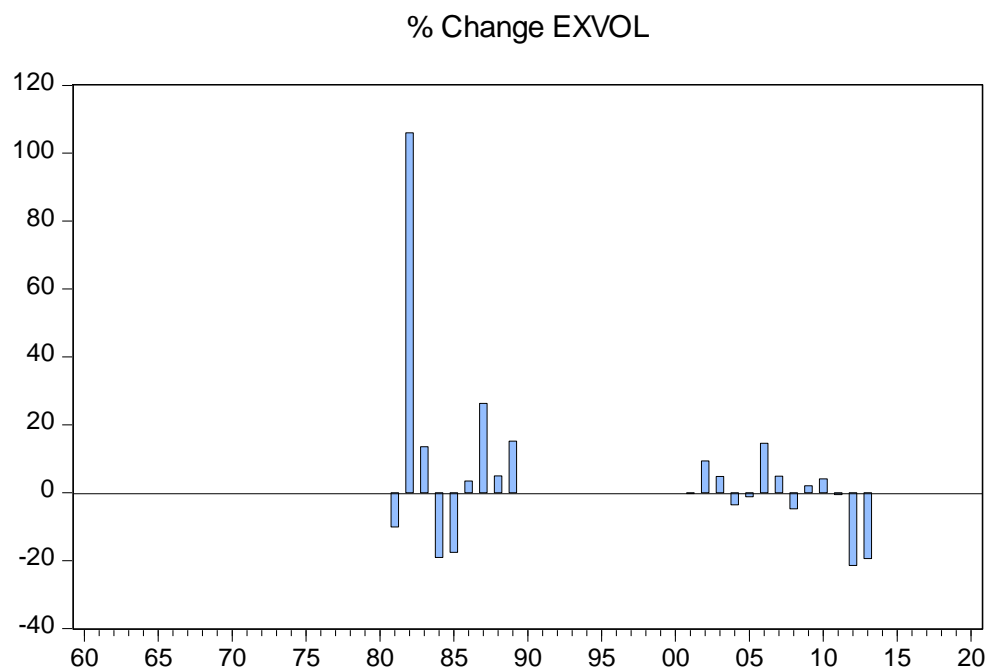


Figure 1. Percentage change in exports volume

In Figure 1 we can observe the percentage change in the Export Volume Index which is based on The World Bank database and explains the ratio of exports in volume on the base year of 2000. As we can visually observe there is some missing data in some years. Considering a great economic growth in the beginning of 1982 explains the increase in exports volume in 1982. Also considering since 1980 the war between Iran and Iraq and the expenses and the need to import more arm industry explain the decrease in the following years. In 2007 and 2008, the new EU sanctions were imposed and as we can observe there is a slight decrease

from 2007 to 2008. In 2012 the new EU and the US sanctions on oil purchase from Iran and as we can see these new sanctions caused decrease in export's volume in 2012 and 2013 as well.

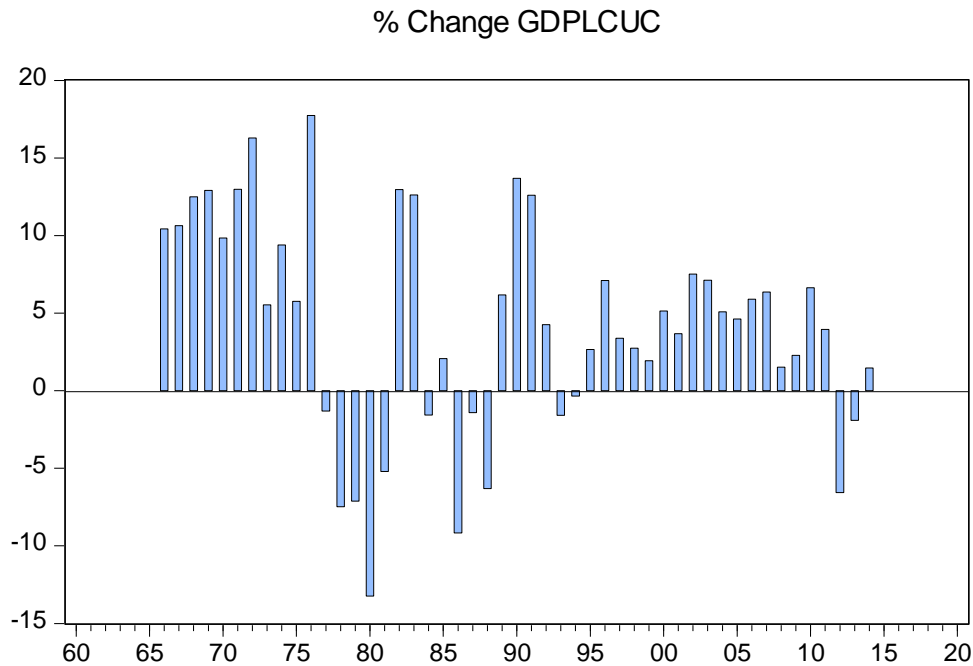


Figure 2. Percentage change in GDP in local currency

Statistical data on the subject of percentage of Gross domestic product in Iran could be observed in Figure 2 from 1965 to 2015. Figure 2 shows how Iranian GDP at constant price expressed in billions of Iranian Rials was effected by the various types of sanctions.

Back in 1976 the percentage of GDP in Iran rose sharply at little just over 18%. Meanwhile, in 1978 and 1979, reduction in internal production and recession in industry cause the GDP to be 7286767 and 5638413 billion Rials respectively and all the economic problem, deficit budget was in 1971, 1974, 1976 and 1978.

First, it was observed the GDP declines when the Islamic revolution started from 1978 till 1979 with around 7%. A remarkable decrease in GDP occurred in 1980 due to Iran-Iraq war and the first U.S. sanction imposed, and it followed a growth period to 1984. In 1985 to 2011, different sanctions were applied resulting a sharp contrast in 1986 by around 9% due to 1985

U.S. sanction and when the Iran-Iraq war was finished in 1988, the following years till 2011, Iranian GDP bounced back between a growth of 13.5 % in 1990 and a minor decrease of 1.5 % in 1993 and 1994 due to Iran accumulated huge stock of short-term debt which caused a major balance of payment crisis. In 1996/97 macroeconomic indicators showed surprisingly improved turnout after the comprehensive US sanctions imposed which not support the claim that the sanctions had negative impact on Iranian economy. These macroeconomic indicators are GDP growth, inflation reduce, foreign exchange reserve growth and budget deficit falling. Also, In 2008 In 2012 Iranian GDP contrast due to international sanctions and exchange rate fluctuation.

To sum up, the percentage of GDP in Iran almost decreases in spite of considerable shift in the meantime.

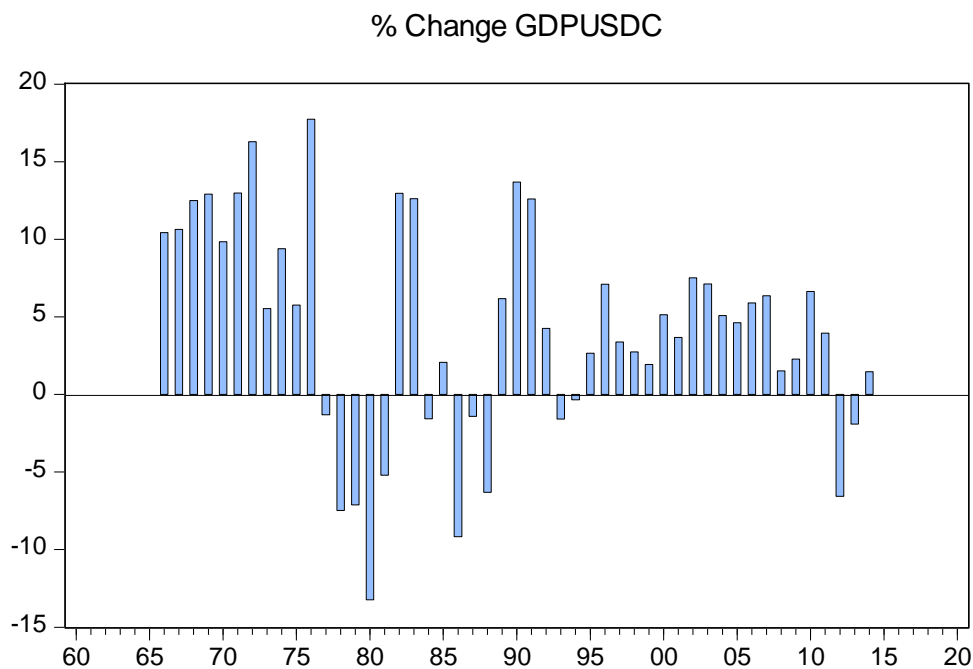


Figure 3. Percentage change in GDP in USD

In the Figure 3 we can observe the GDP percentage change from 1965 till 2013 in terms US dollars. If we look closely we observe that the changes are identical with the GDP percentage

change in terms of Local Currency. We can assume that this set of data has been provided considering a PPP adjusted fix exchange rate since all the data has the same ratio difference in comparison with the GDP percentage change in terms of Local Currency.

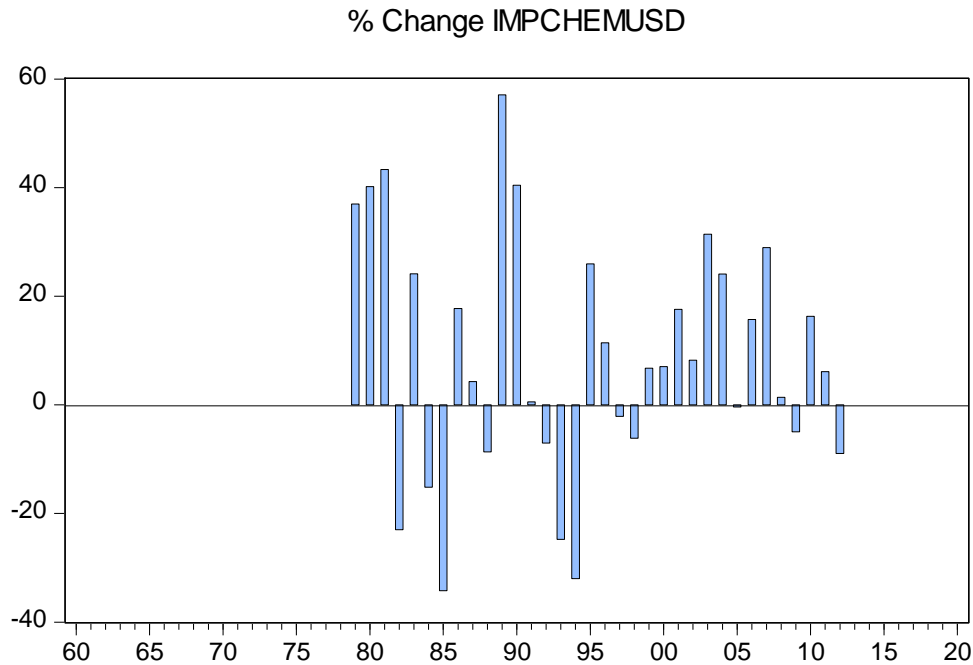


Figure 4. Percentage change in chemical imports in Iran by USD currency

Iran imports different types of chemical as a raw and support material were using in many industrial sectors like refineries, petrochemical companies, plastic, rubber, dyes, textiles and pesticides. Iran imports chemicals mainly from China, India and some European countries.

As shown in figure 4, before the Islamic revolution in 1979, chemical importing activity was undergoing regular growth rate which indicates growth in chemical industries in that period. When the revolution started, the industries generally got affected by the consequence of the revolution which result the chemical import to contrast in 1982. Many different sanctions had affected in the chemical imports later then. In 1984 US lock out export of chemical production to Iran which as the figure clearly shown in 1984 and 1985 with a reduction up to 35%. In the 90s years Iran had fluctuation in chemical imports starts with a growth of around 40 % in 1990

followed by contrast between 1992 to 1994 to around 30 %. From 2000 to 2012, the chemical import had a mainly growth period excluding 2009 and 2012 as when the comprehensive sanctions to Iran were imposed.

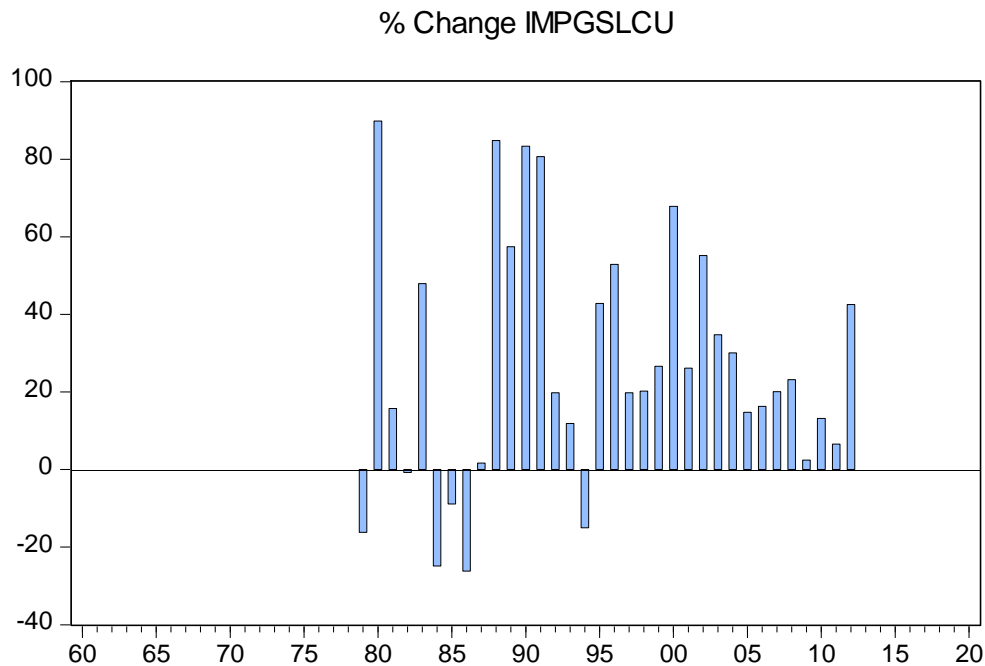


Figure 5. Percentage change in goods and services imports in Iran

In the Figure 5 the percentage change in imports goods and services to Iran from 1979 to 2013 can be observed. Overall lots of trends can be seen when it comes 1979, the crude oil exported was decreased and that caused the import of good and services to reduce by 16 % compare to 1978. In the beginning of Iran-Iraq war in 1980, the domestic intermediate products which was locally produces increased and that resulted a significant increase in imports of goods and services especially raw material used to produce these intermediate products. As a result, in 1982 the government attempt to save foreign currency and restrict the imports to essential goods and apply quotas for essential goods distribution. On 1984 to 1986 decrease in imports of goods and services were noticed which may be due to 1984 and 1985 U.S. Sanctions

followed by a growth period till 2013. In 1988, by the end of Iran- Iraq war, import of good and services increased mainly due to the high oil prices and slow down of agricultural and industrial production because of the war effect. However, this grow was excluding 1994 which had a contrast in import of goods and services due to 1994/95 U.S. sanction relating to import Uranium from Kazakhstan. In 1999 during the presidency of Clinton, US imposed import sanction against 10 Russian organizations for helping Iran develop its nuclear, missile and rocket program. Also between 2009 -2012 there had been changes in the pattern of import goods and services.

To sum up, the percentage of import goods and services in Iran had lots of fluctuation overall these years due to impact of sanctions and international pressure.

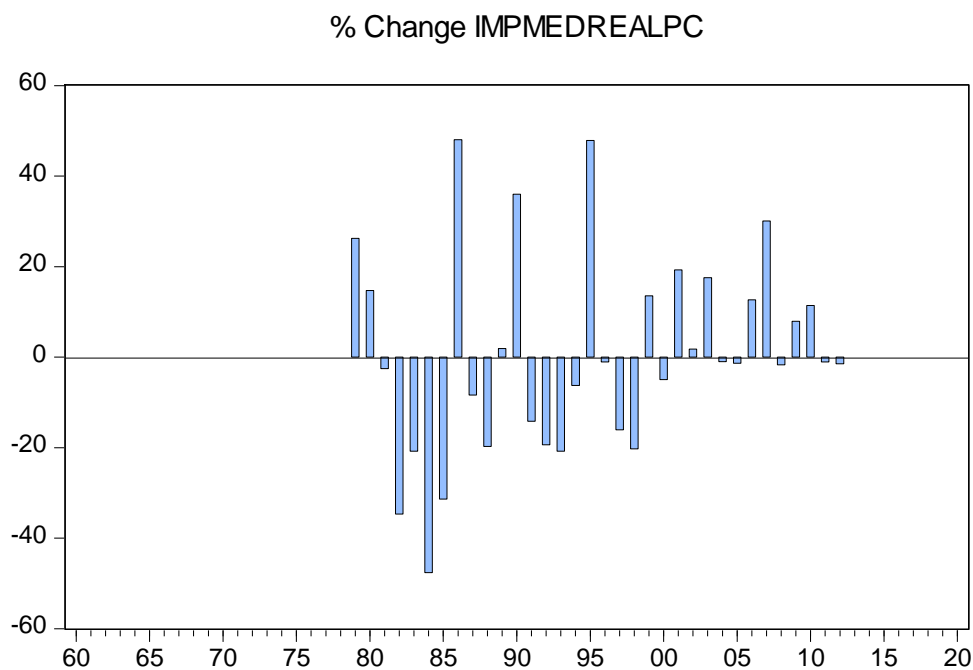


Figure 6. Percentage change in medical imports in Iran

Statistical data on the subject of the percentage of real medical import per capita (figure 6) in Iran could be observed in total course of 33 years. Limitations and sanctions have made the provision and transportation of medicine more difficult. Iranian pharmaceutical markets are

able to produce %96 of medicine but %4 of them are imported including essential items or raw materials for producing a few medicine locally.

Back in starting years of Iran-Iraq war, the percentage of real imports medical per capita dipped for much of this time. However, the figure 6 shows a remarkable rise for the 1986 at a little just over %50. Also, a more dramatic rise can be seen in 1995. During the 2000- 2008 the percentage of imported drug decreased. Downward trends are obvious due to the banning Iranian banks to connect to global system for secure electric financial transaction access to import drug and medical. Besides, in 2009- 2011 access to finding the thalassemia and haemophilia decreased which was attributed to impose of sanctions.

To sum up, in spite of sanctions against Iran, a few considerable changes could be seen through the percentage of real medical import per capita. The effect of economic sanction could be observed to access to import medicine in the meantime. Iranian government made attempt to impose %65 tariff on same importer in order to protect local producers. It is worth nothing that the main problem was about raw materials that imported.

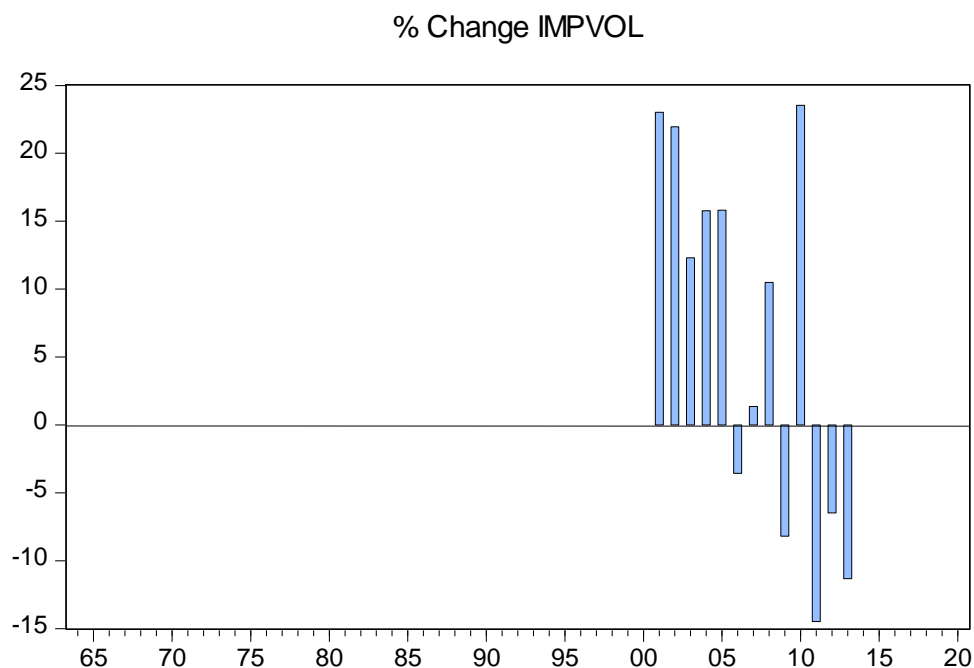


Figure 7. Percentage change in imports volume in Iran

The Figure 7 shows the percentage change in Import Volume Index which the data has been extracted from the World Bank database and explains the percentage of volume in import on the base year 2000 (according to The World Bank indicator definition). The data is provided from 2000 to 2013. As we can observe there is almost 25% increase in 2000 which there has been an increase since Iran started to import more from China however, in the following years this amount decreases which in 2006 reaches a negative percentage. After 2012 and banning Iranian banks from SWIFT due to difficulties in money transactions and need of intermediaries the overall imports decreased and this trend continues. Another reason for this matter could be regarding to the EU and the US sanctions on imports and exports in 2007. However, China had become the main exporter to Iran and somehow this effect caused a shift for Iran's import from Europe to China which we will discuss in chapter 3.2 in detail.

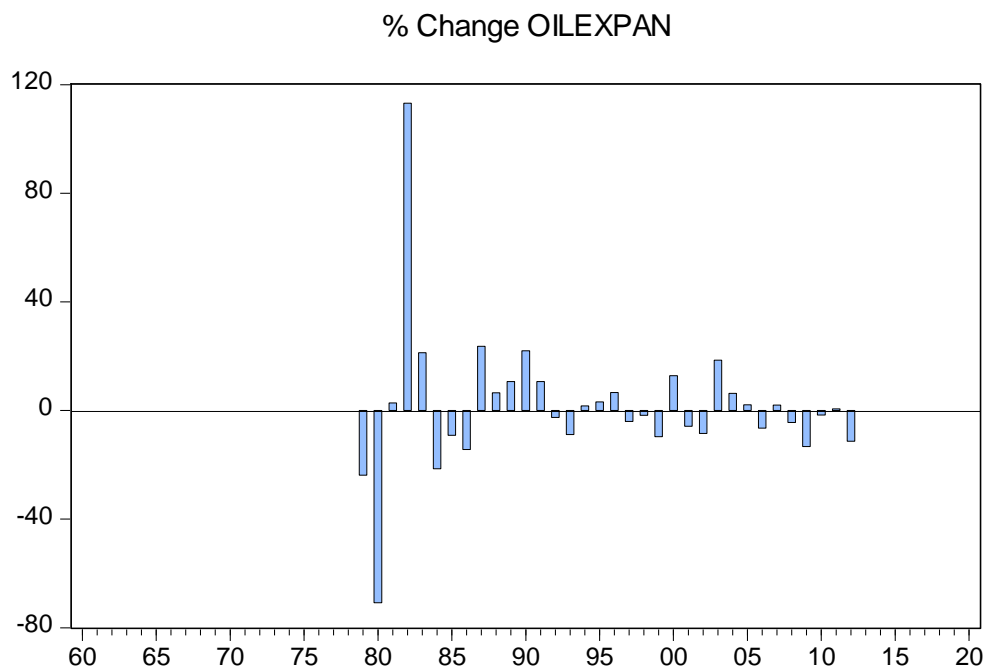


Figure 8. Percentage change in annual oil exports in Iran

Statistical data on the important factor in Iran on the subject of percentage of oil exports (figure 8) can be seen in the total course of 34 years. First oil well found in Iran was in 1908, after the revolution the government nationalize the oil companies as most of it was managed

by western companies before the revolution in 1979. Also, oil trade is fully controlled by the government. Iran is among the biggest five countries in oil reservoir in the world with around 154 billion barrels. Economically, Oil revenue is the biggest contributor of GDP in Iran. Therefore, Iran's oil industry specifically and energy sector generally were being a major target for economic sanctions against Iran. Because of that Iran's crude oil export production rate went through considerable fluctuation as it is shown in Figure 8 between 1979 and 2013.

In the beginning of the Islamic revolution in Iran on 1979 and 1980, the crude oil export suffers a reduction of about 70%. However, In the following two years it recovers significantly and reach 113 % in 1982 and has not reached such high levels of production ever since then and that was because of selling crude oil at lower price than global market. It is worth nothing that the percentage reached a peak considerably for the first time. From 1982 to 1988 Iranian crude oil production remains at low level because of the Islamic revolution and Iran-Iraq war. In 1995, the US imposed the comprehensive sanction on Iran and the purchase of Iranian oil by American companies was ended and the companies could no longer buy Iranian oil. But Iran managed to find new buyers for its oil because of its good quality. When a sharp decline observed when new sanctions on oil exports imposed from the U.S, EU and UN in last decades. In spite of some fluctuation in the Iranian oil export were probably continue to decrease from 2003-2013.

3-3 Trade policies and partners

In the following section we will discuss about Iran's trade-partners from 1995 until 2014. The data is provided for imports and exports in main sectors such as manufacturing, food, pharmaceutical, mineral fuel, medical and chemical devices. In the data and charts, top 20 trade-partners have been shown for exports and imports and sectors separately; respectfully

there would be analysis for each sector and how does sanctions effected trade-partners. Data have been extracted from United Nations Commodity Trade Statistics Database.

Pharmaceutical Imports

As it is shown in figure 9 we observe, most of pharmaceutical import partners are Germany and France; Switzerland also can be considered as the 3rd top partner. The amount of imports in this sector has increased specifically from Germany and France. In 2012 after banning Iranian's banks to connect to global system for secure electronic financial transactions (SWIFT), 25 national organizations wrote a letter to President Barak Obama in order to provide authorities in order to sell drugs to Iran which the actions failed. Therefore, Iran had to find some third party intermediaries in order to transact payments for medicine imports and also for medical devices which effected the domestic production of pharmaceutical as well. Another issue in the recent years was shifting the imports of specific drugs for cancer treatment which there was a jump in number of patients suffering from cancer. As conclusion Iran somehow maintain to import the needed medicine from Germany and France as the main exporters to Iran.

Food Imports

We can consider in figure 10 neighbor countries (India, Pakistan and UAE) as main import partners for food sector. Especially after 2011 which there is a huge increase in amount of imports from mentioned countries. Mostly imported item form India and Pakistan is rice. Other trade partners such as Argentina and Brazil also have a great share in Iran's food import, however it is considered that over time and impose of more sanctions Iran shifted his import partners to neighbor countries since these countries had a smaller share of imports to Iran before 2008.

Other Manufacturing Imports

As we discuss in the previous chapter, China for many reasons has been one of the main trade partners of Iran for the past decade, especially in manufacturing sector. Considering China's industrialization through time and becoming one of the biggest economies in the world, we can assume that most of Iran's import in this sector has been shifted from Europe to China (figure 11); mainly after 2012 and closing SWIFT in Iran which in total effected all Iran imports since there were difficulties in transactions, however China's share increased over the time even through sanctions. Republic of Korea also can be considered as another import partner in this sector but not as significant as China.

Medical devices

It is quite clear that in the figure 12 Iran's imports from EU shifted basically to China and UAE after 2007 EU sanctions regarding imports and exports of equipment to enrich uranium which generally many sectors have been effected to the issue; medical devices as well as other manufacturing and other equipment, has been effected too. As we can observe in figure 12 most imports of this sector was from Germany, France and United Kingdom which after 2009 (especially 2013 and 2014) China has become the main provider of medical devices for Iran.

Other Chemical Imports

China always has been one of the top trade partners of Iran. Cheaper products and strategic issues caused increase in import from China since 1990. We can observe this matter in figure 13 as well; not only China has been one of the main import-partners in other chemical sector besides Germany and France in 2006, 2007. From 2008 Iran imported more and more from China which can be result of imposing new EU sanctions on Iran regarding imports and exports to Iran. United Arab Emirates-one of the Iran's top trade-partners-as well as China has a high share in Iran's import in other chemicals specifically in 2010 and 2011, however for 2013 and

2014 there has been a switch to China and UAE does not have much exports in other chemicals to Iran.

Mineral Imports

Kazakhstan is a country with rich mineral mines and one the main exporter to Iran in this item; access through Caspian Sea which was a convenient way in order to export to Iran, Specifically, for steel industry since Iran has steel production some of the minerals regarding to production of steel, are imported from Kazakhstan and also in mining sector. However as visually we can observe in figure 14 this share decreased for last couple of years and UAE was the main exporter to Iran. Besides Kazakhstan, India as a close neighbor was a provider in the sector, iron ore and limestone specifically, however there has been shift from India too, and UAE in 2005 was the main export-partner.

Other Imports

For this sector we can observe in figure 15, different fluctuations in between the different trade-partners. Switzerland and UAE has the highest share in this sector except Turkey in 2012 which had a significant huge amount in the year 2012, mostly consisting gold exports to Iran. Other European countries almost have similar share in this sector though after 2007 EU sanctions the amount of import decreased and mostly imports shifted to UAE. China as the first trade-partner does not have a great share but still China is on the top 20 imports-partner in the sector.

Manufacturing Exports

Based on the observations on figure 16, we can see there has never been much export in this sector to European countries such as Germany or France compare to China or Japan. However, for instance in case of France after 2007 EU sanctions we can observe there is a decrease of export and respectfully increase in amount of trade with China (even though the amount of export is much higher comparing to France). We can see the same happening for Japan as well

however the shift is not that much. Republic of Korea trade trend has the same shift almost and the amount of trade is decreasing while the amount for China has an increase.

Other Exports

Considering the figure 17 in other exports, China still has the highest share of imports from Iran. India has the 2nd place and UAE in 3rd with slight change in amount throughout time. Based on visual observation we can assume that over time, Germany's share has not change much regarding to impose of sanctions. Iraq also as one of the Iran's neighbors has a significant share in 2010 and 2011. The overall conclusion we can assume that this sector has not been effected much because of sanctions, since there is not much shift in the export destinations.

Mineral Fuel Exports

As we can visually observe in figure 18, China, India, Republic of Korea and Japan are the top partners. There has been a slight shift mostly to China after 2008. We can observe that China as one of the biggest trade-partners of Iran has the highest share of imports, however even after imposing the sanctions there is not much shift considering that European countries do not have much imports from Iran in this sector. Taiwan also has a high amount of imports from Iran in 2010 and 2011. In overall we can assume that this sector did not have much change through the sanctions imposed.

3-4 A Short Econometric Analysis of Iranian Economic Growth

In order to understand whether sanctions on Iran affected the economic performance, we use a regression framework where we first estimate economic growth as a function of its own lags and the growth rate of real oil revenues. Upon this baseline equation we add, in turn, the following binary variables. Each variable takes the value of 1 if the specific kind of sanction is introduced in a given year, and 0 otherwise.

- SANC1: Forfeiting the Properties and Assets of Iran (Iranians)
- SANC2: Trade (Exports and Imports) and Investment Sanctions

- SANC3: Regulations on Nuclear Energy
- SANC4: Financial Sanctions
- SANC5: Forfeiture of Assets
- SANC6: International Sanctions

The baseline specification of growth (Table 4) provides us with the starting point of our analysis of sanctions. In addition to capturing annual growth dynamics within an autoregressive structure, the baseline equation reveals the positive effect of oil revenues on Iranian economic activity.

Table 4. Baseline Specification of Economic Growth

Dependent Variable: GDP growth rate	
Explanatory Variables	Coefficient
Constant term	0.01774 (0.0658)
GDP growth rate – last year	0.49840 (0.0004)
GDP growth rate – three years ago	-0.30837 (0.0120)
Growth rate of real oil revenues	0.06526 (0.0018)
R ²	0.530
Adjusted R ²	0.484
Standard error of regression	0.04579
Sum of squared residuals	0.06291
Log likelihood	58.726
F-statistic	11.3218 (0.0000)
Schwarz information criterion	-3.039
Mean dependent variable	0.02630
Standard deviation of dependent variable	0.06375

p-values are given in parentheses. (***) (** and *) denote significance at 1%, 5% and 10% levels, respectively.

Next the six variables defined above have been added to the baseline specification of Table 4, one at a time. The results of this empirical exercise are summarized in Table 5. Since the coefficient estimates and significance levels of the baseline variables are not affected considerably, Table 5 reports the coefficient estimates along with significance levels of SANC1 to SANC6.

Table 5. Effects of the Six Sanction Categories on Economic Growth

Variable	Coefficient
SANC1: Forfeiting the Properties and Assets of Iran (Iranians)	-0.084*** (0.001)
SANC2: Trade (Exports and Imports) and Investment Sanctions	0.007 (0.696)
SANC3: Regulations on Nuclear Energy	0.034** (0.018)
SANC4: Financial Sanctions	0.003 (0.911)
SANC5: Forfeiture of Assets	0.008 (0.724)
SANC6: International Sanctions	-0.010 (0.651)

p-values are given in parentheses. (***) , (**) and (*) denote significance at 1% , 5% and 10% levels, respectively.

Base on the table 5 we can observe that SANC1 had a negative effect since there is a negative coefficient. Considering the p-value 0.001, there has been a significant effect. SANC1 as we mentioned in chapter 2-2-1 are set of sanctions regarding forfeiting the properties and assets of Iran which first was imposed in 1980. The following sanctions in this category imposed in 1984 and 1992.

SANC3 as another significant set of sanctions regarding regulation on nuclear energy, there has been fifteen set of sanctions in this category. Somehow by looking at the coefficient in table 5, the positive value indicates a positive effect, however the p-value indicated a significant effect in overall Iran's economy. The sanctions in this category were imposed in 1994, 1996, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009 and 2010.

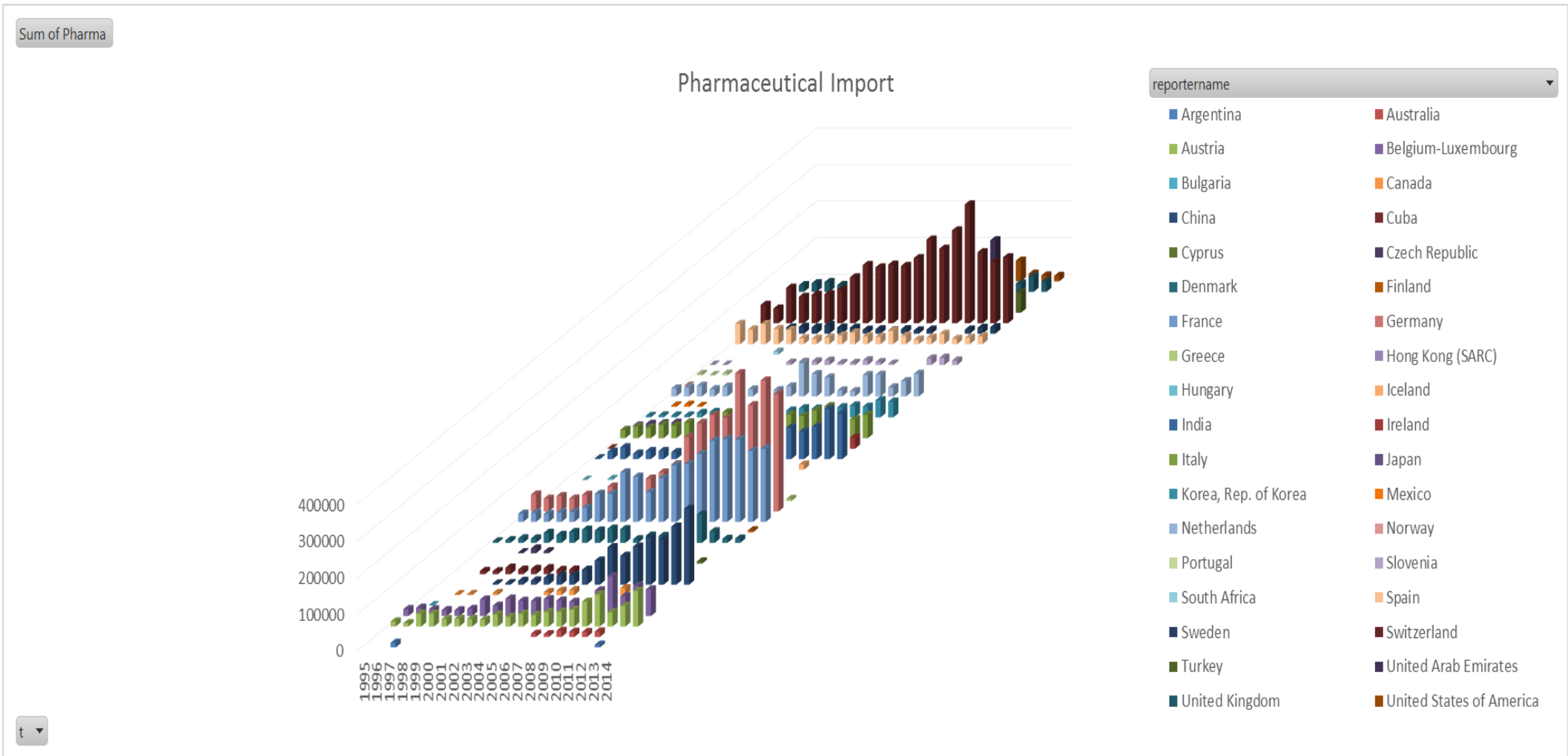
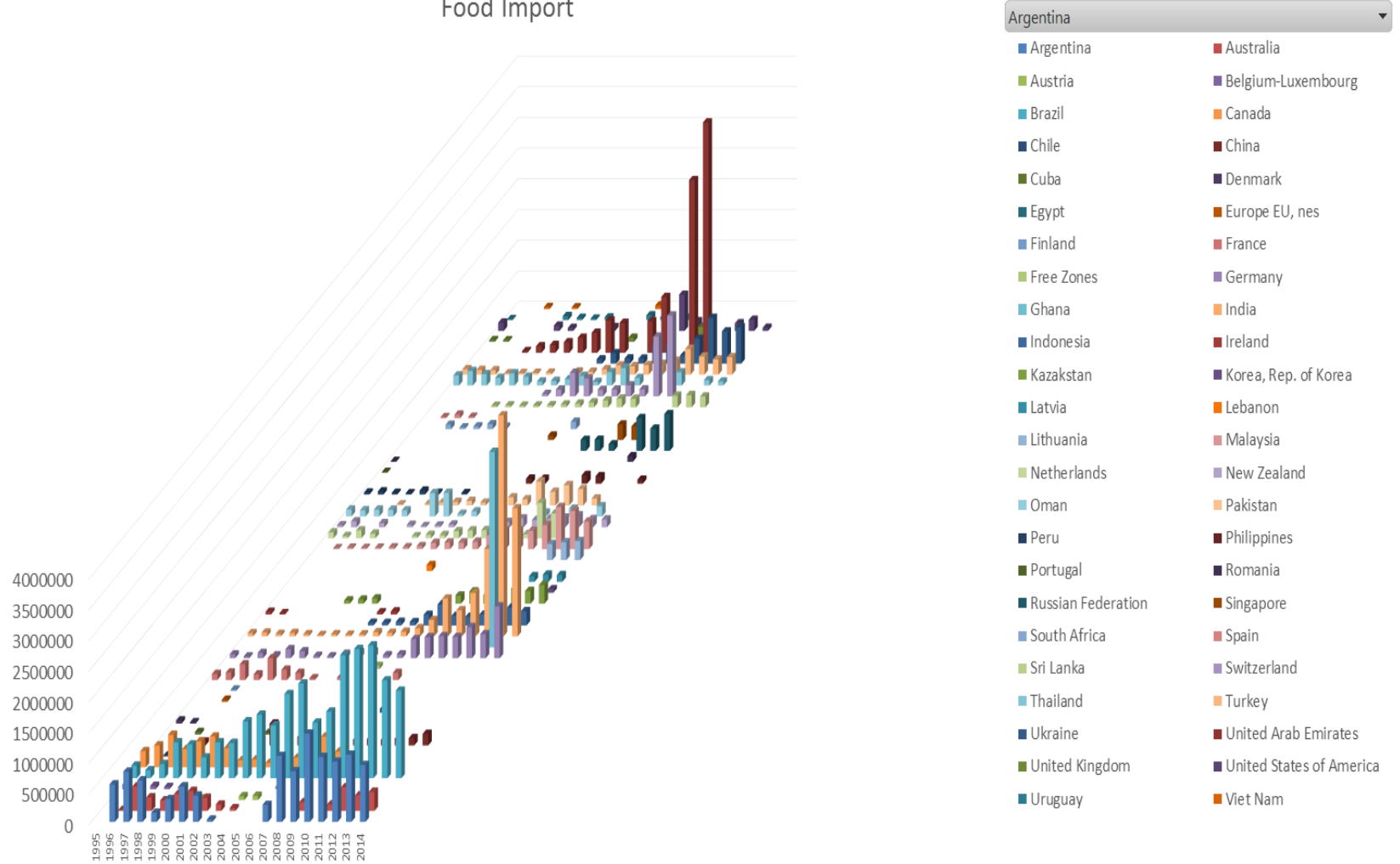


Figure 9. Top 20 import-partners in pharmaceutical

Sum of 490277,3

Food Import

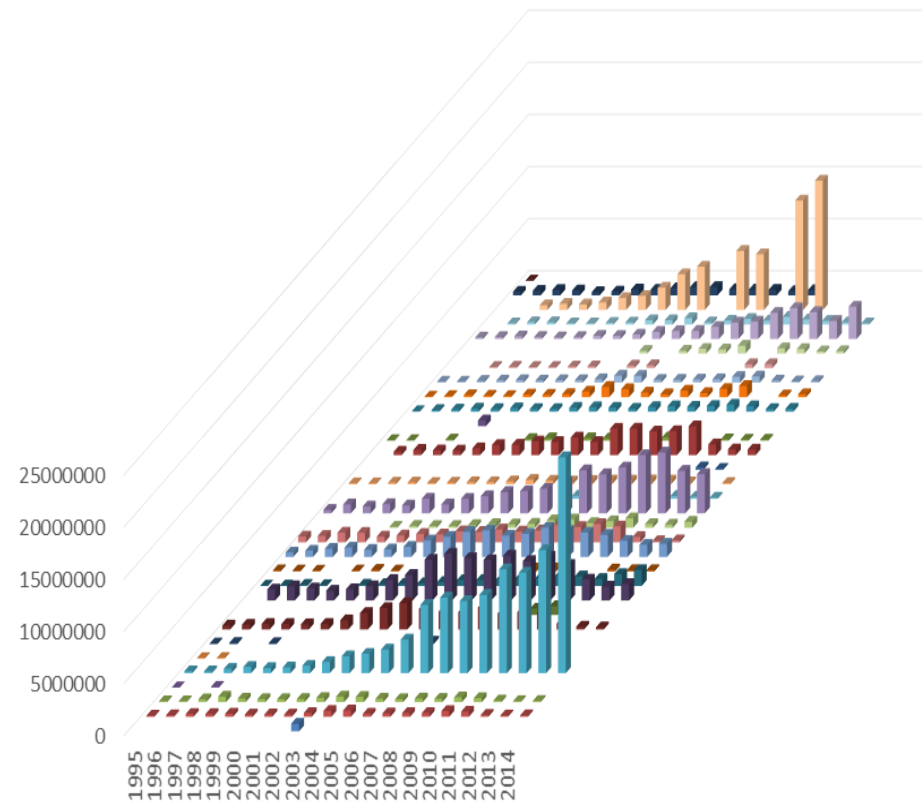


1995

Figure 10. Top 20 import-partners in food

Sum of 1089425

Other Manufacturing Import



Germany

- Areas, nes
- Belgium-Luxembourg
- China
- Finland
- Free Zones
- India
- Italy
- Kazakstan
- Malaysia
- Romania
- Singapore
- Spain
- Switzerland
- Thailand
- Ukraine
- United Kingdom
- Austria
- Brazil
- Czech Republic
- France
- Germany
- Indonesia
- Japan
- Korea, Rep. of Korea
- Netherlands
- Russian Federation
- South Africa
- Sweden
- Taiwan, Province of (China)
- Turkey
- United Arab Emirates
- United States of America

1995

Figure 11. Top 20 import-partners in other manufacturing

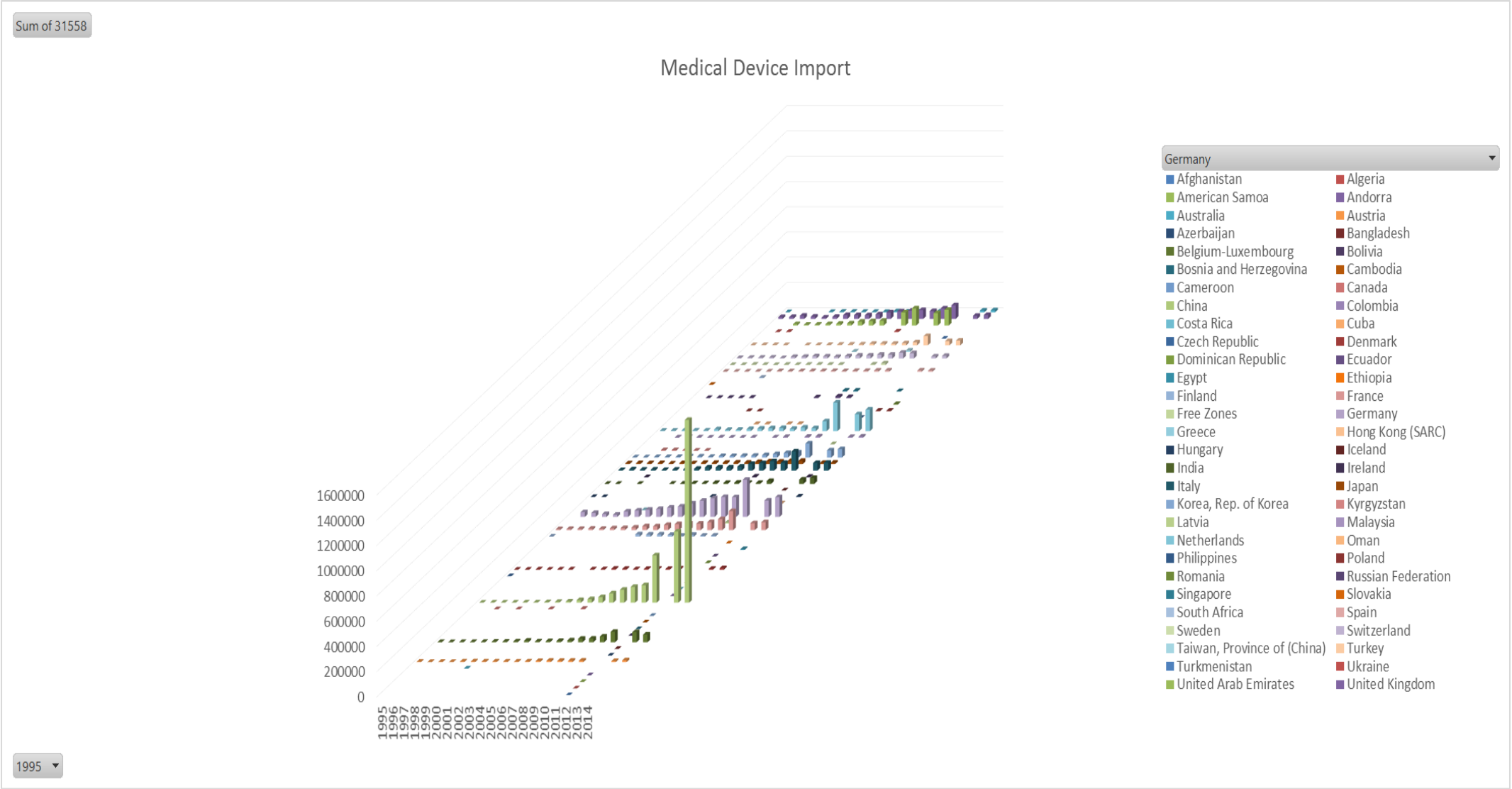
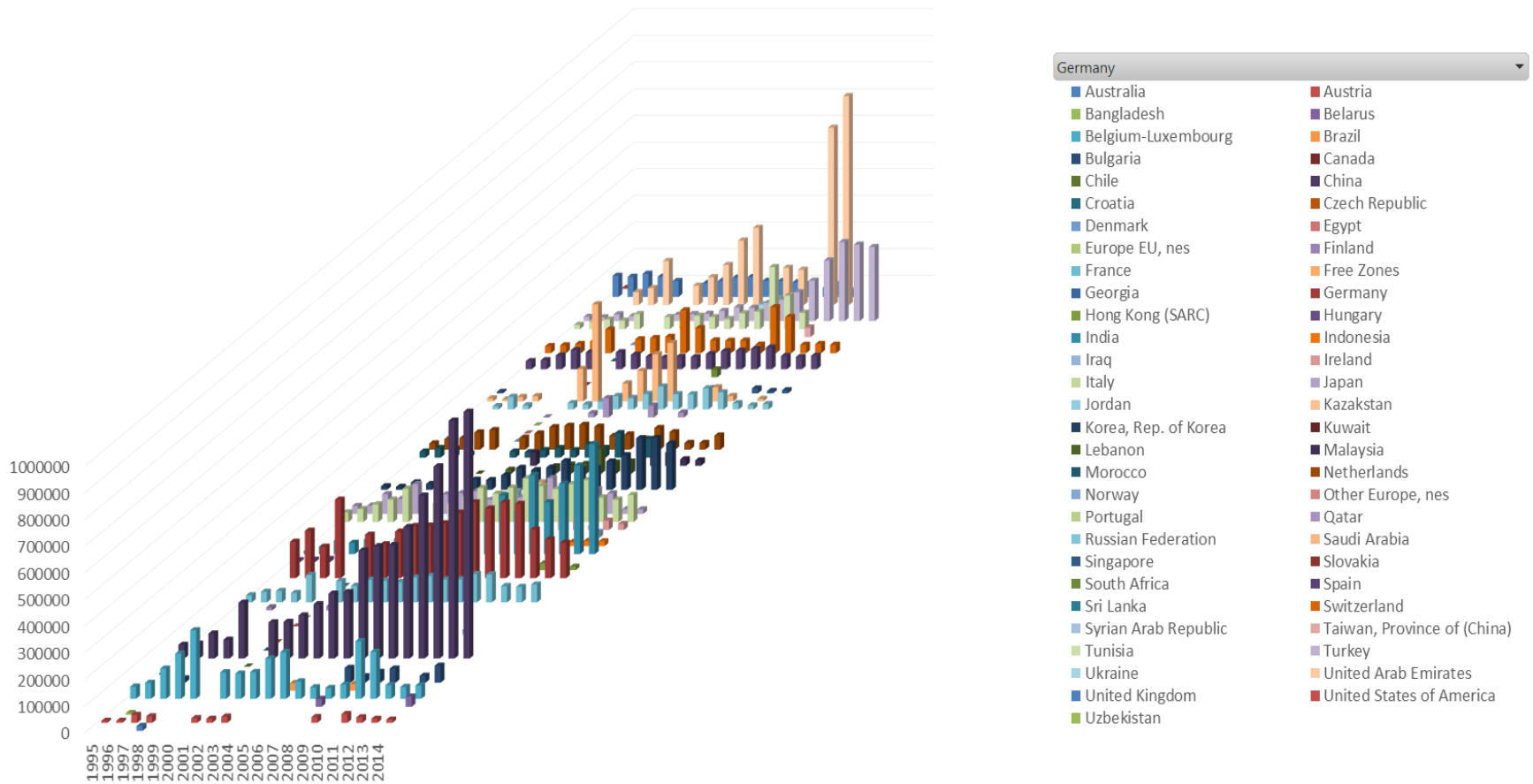


Figure 12. Top 20 import-partners in medical devices

Sum of 124660

Other Chemical Import

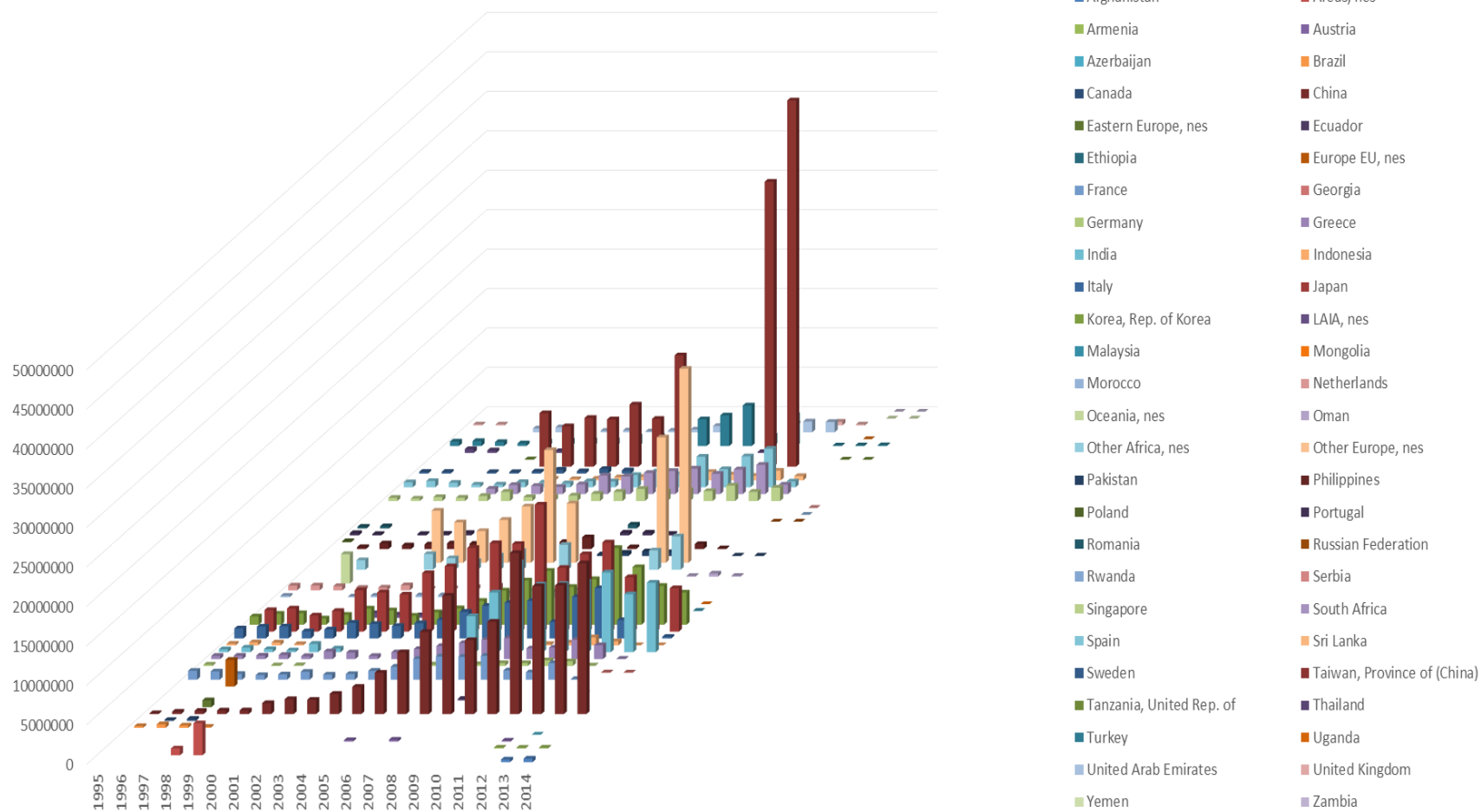


1995

Figure 13. Top 20 import-partners in other chemical

Sum of 2267193

Mineral Import



1995

Figure 14. Top 20 import-partners in mineral

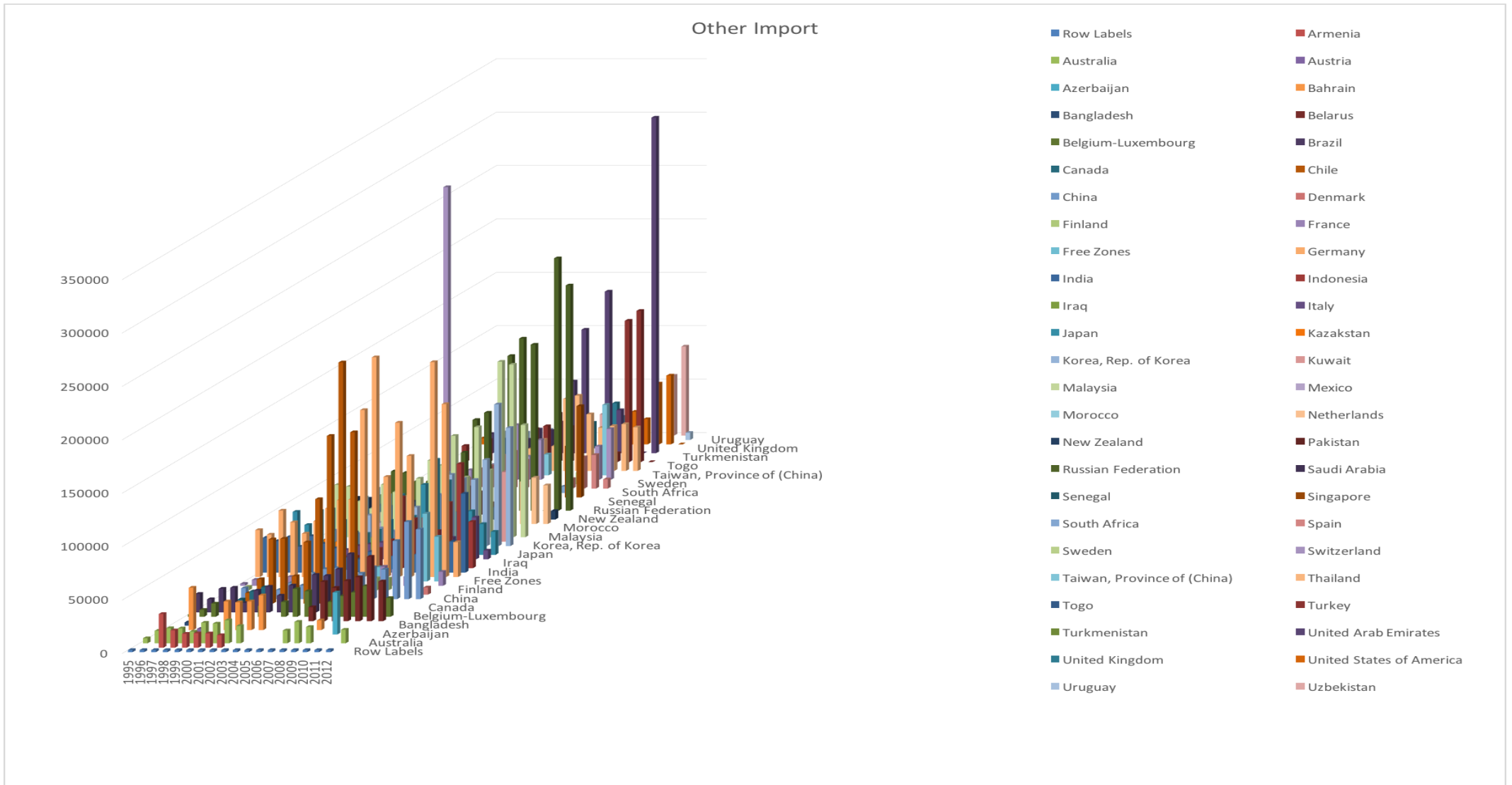
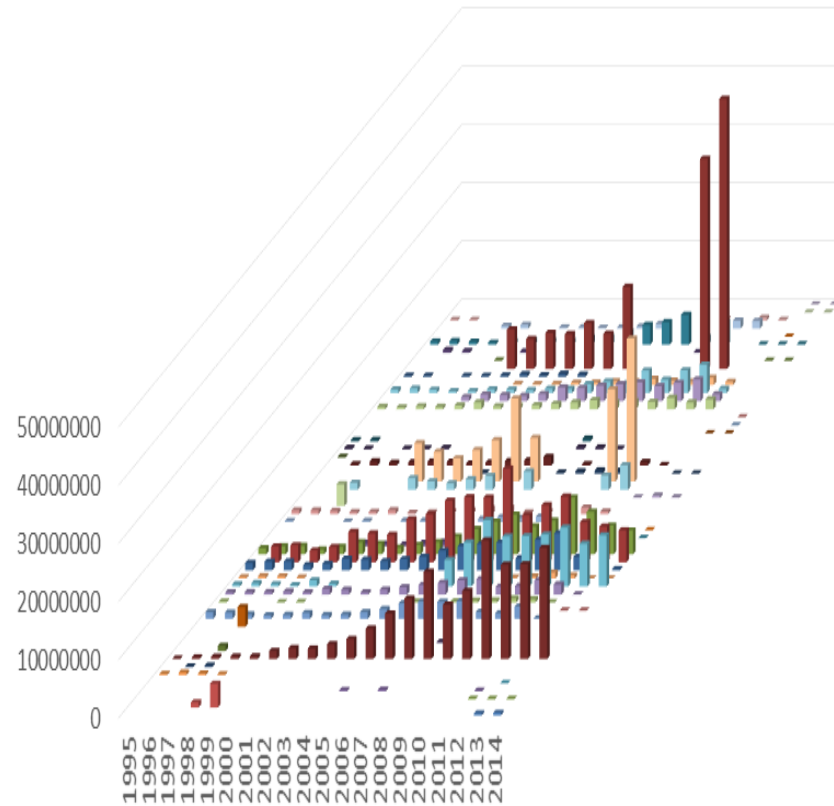


Figure 15. Top 20 import-partners in other

Sum of 2267193

Manufacturing Export



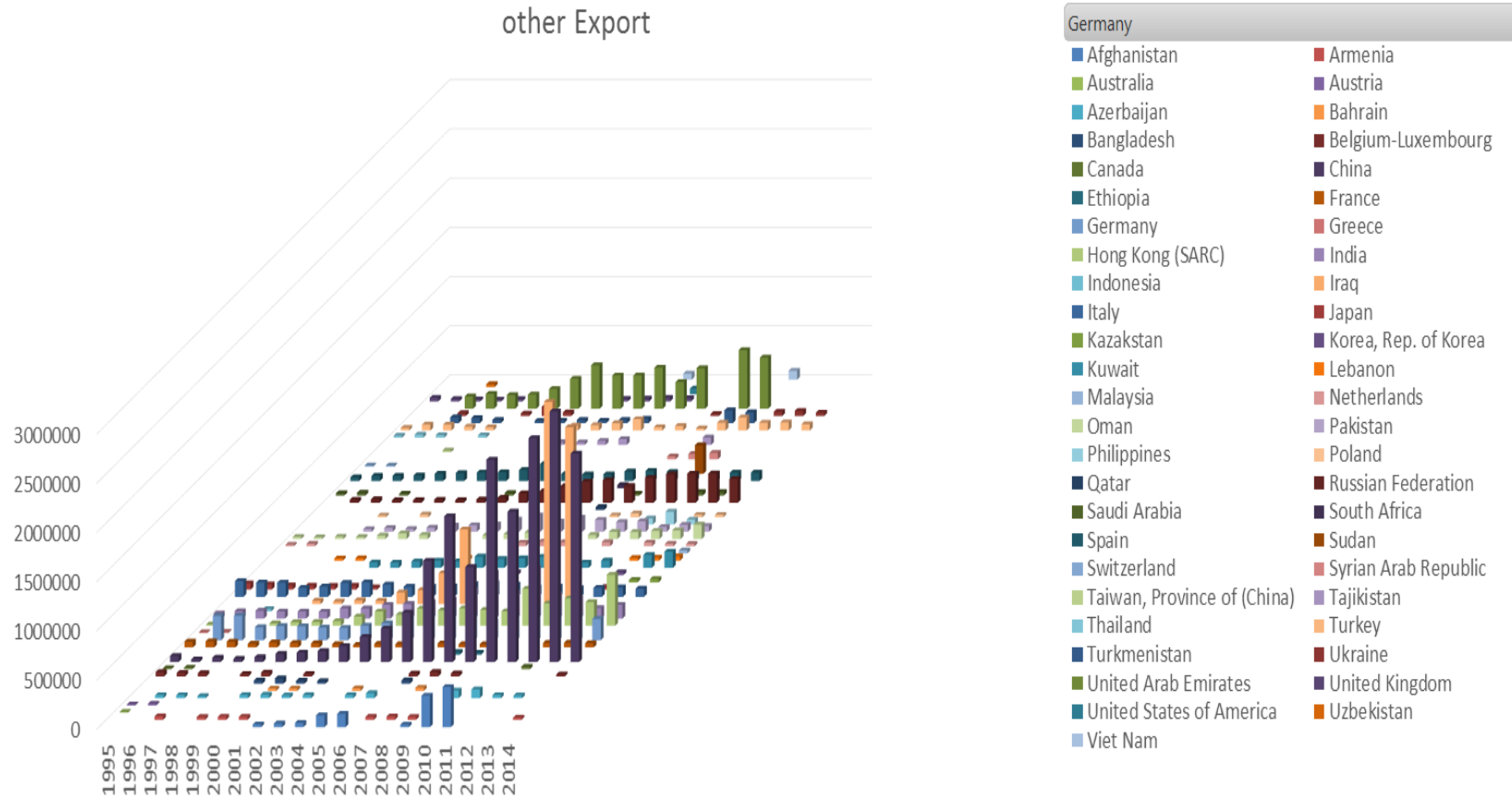
Japan

- Afghanistan
- Armenia
- Azerbaijan
- Canada
- Eastern Europe, nes
- Ethiopia
- France
- Germany
- India
- Italy
- Korea, Rep. of Korea
- Malaysia
- Morocco
- Oceania, nes
- Other Africa, nes
- Pakistan
- Poland
- Romania
- Rwanda
- Singapore
- Spain
- Sweden
- Tanzania, United Rep. of
- Turkey
- United Arab Emirates
- Yemen
- Areas, nes
- Austria
- Brazil
- China
- Ecuador
- Europe EU, nes
- Georgia
- Greece
- Indonesia
- Japan
- LAI, nes
- Mongolia
- Netherlands
- Oman
- Other Europe, nes
- Philippines
- Portugal
- Russian Federation
- Serbia
- South Africa
- Sri Lanka
- Taiwan, Province of (China)
- Thailand
- Uganda
- United Kingdom
- Zambia

1995

Figure 16. Top export-partners in manufacturing

Sum of 213888

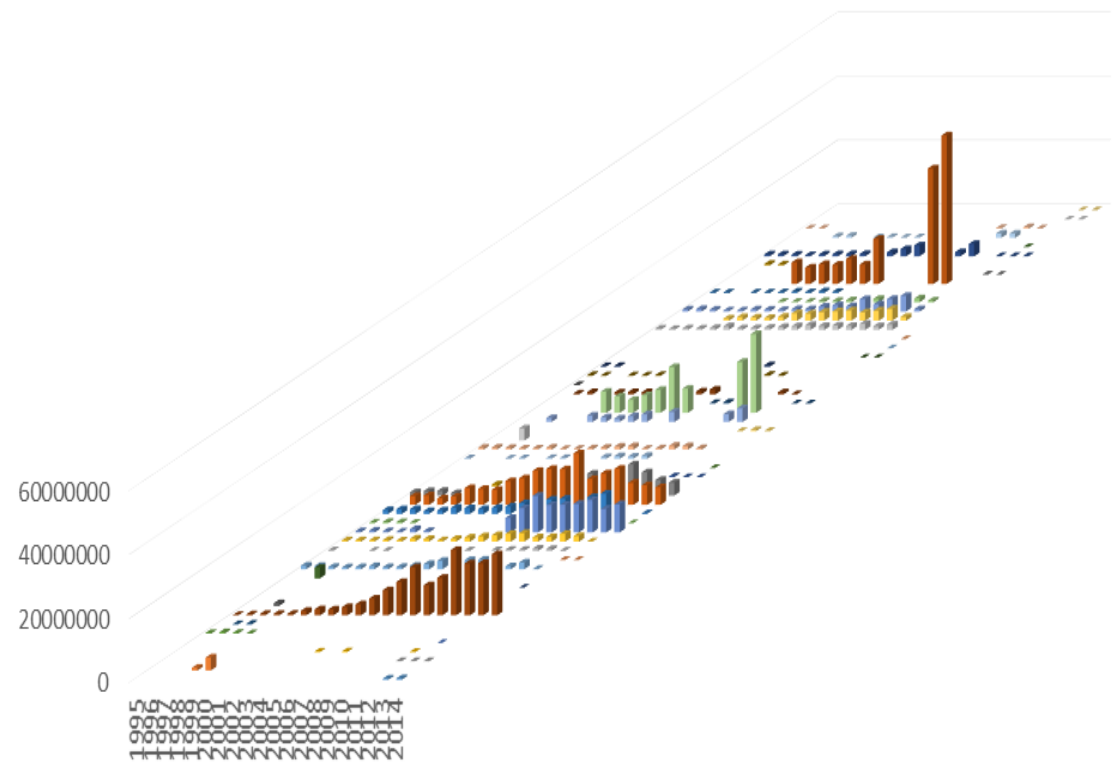


1995

Figure 17. Top 20 export-partners in other

Sum of 2267193

Mineral Fuel Export



- Japan
- Afghanistan
 - Armenia
 - Azerbaijan
 - Canada
 - Eastern Europe, nes
 - Ethiopia
 - France
 - Germany
 - India
 - Italy
 - Korea, Rep. of Korea
 - Malaysia
 - Morocco
 - Oceania, nes
 - Other Africa, nes
 - Pakistan
 - Poland
 - Romania
 - Rwanda
 - Singapore
 - Spain
 - Sweden
 - Tanzania, United Rep. of
 - Turkey
 - Areas, nes
 - Austria
 - Brazil
 - China
 - Ecuador
 - Europe EU, nes
 - Georgia
 - Greece
 - Indonesia
 - Japan
 - LAIA, nes
 - Mongolia
 - Netherlands
 - Oman
 - Other Europe, nes
 - Philippines
 - Portugal
 - Russian Federation
 - Serbia
 - South Africa
 - Sri Lanka
 - Taiwan, Province of (China)
 - Thailand
 - Uganda

1995

Figure 18. Top 20 export-partners in mineral fuel

4-CONCLUSION

In this thesis, Iran's economy situation has been observed before Islamic Revolution in 1979, during the Iran-Iraq War and ex-ante ex-post of US, EU and UN sanction and the effects of mentioned sanctions on overall GDP, Imports-Export value and volume and also Iran's trade policy regarding to trade-partners and variation in export and imports in different sectors.

Before Iran-Iraq war in 1980 we observed a decreased in domestic production because lack import of raw materials which was followed by first US sanctions in 1980 and froze of some of Iran's overseas assets. On the other hand, import share of goods and services increased. High inflation and lower oil export which was followed by lower oil income resulted in lower GDP and government budget deficit in between 1978 and 1980.

During the war from 1982 there was a growth till 1986. In the same years' oil exports increased; Iran stopped gas export during the war and replaced the local consumption of oil with gas therefore oil export increased and goods and services export decreased in the same years. In case of imports since government wanted to prevent more use of foreign currencies, they imposed higher tariffs which resulted in lower amount of imports as well as set of new sanctions imposed by the US, Japan and some other countries. Overall trend of economy growth was positive and also slightly positive in last years of the war till 1988.

In 1990s, the overall macroeconomics indicators present that there has been growth except a slight decrease in 1993. Increase in world oil prices and increase government expenditure in order to reconstruct the casualties from Iran-Iraq war, resulted in increase of GDP. However, impose of new sanctions in 1992 which targeted the banking financials regarding to exports and imports of Iran, followed by 1995 US sanction on all trade with Iran, made a decrease in

Iran's trade. As we discussed in chapter 3-3 before 1990s most of Iran's imports exports was with Europe specifically Germany and France, however over time and after impose of new sanctions, Iran's trade in most sectors as we mentioned, shifted to China, UAE and India; sectors such as Manufacturing, Medical devices and Chemicals imports, mainly imported from China. In case of Mineral imports, Kazakhstan is the 1st Iran's imports-partner. In pharmaceutical imports, Germany and France are the first exporters to Iran, however considering that in 2012 ban of Iranian banks from SWIFT system resulted difficulties in transactions in many imports sector but somehow in the pharmaceutical sector boost domestic production besides the imports in the sector. For food sector most of the Iran's imports are from neighbor countries such as Pakistan and India. There has been imports from Brazil and Argentina as well with some fluctuations over time, however, most food imports are from Pakistan and India.

In case of exports there has been shifts as well; manufacturing exports main used to be towards Europe, nonetheless after 2007 EU sanction on exports and imports, amount of exports to Europe decreased and most exports were to China. In Other sector exports and Mineral Fuels also China has the highest share; amount of export to Germany however has not changed much even with sanctions but the overall amount is not as much as China's imports from Iran.

Mineral Fuel exports destinations are respectfully China, Republic of Korea and Japan. Considering most European countries do not have much imports from Iran therefore main exports are to China even after the impose of sanctions. In total we can assume this sector has not been effected by sanctions.

In regards to the analysis mentioned in chapter 3-4 we can assume only two sets of sanctions had significant effects of Iran's economy, first set of sanctions imposed in 1980 regarding to forfeiting Iran's assets and the third set of sanctions starting from 1994 in regards to regulations on nuclear energy. Frist set had a negative effect on overall economy, however the third set

even though there has been significance in terms of analysis they had a positive effect on Iranian economy aspects.

As we consider Iranian economy we can conclude some advantages such as big market, oil and gas industry and domestic manufacturing; Iran a big country with population of almost 78 million had this opportunity even after impose of sanctions could use its domestic market in order to provide what was needed. Besides oil and gas as important sources of energy in the world, made for Iran a lot of revenue which we can say is the most considerable advantage of Iran.

To sum up Iranian GDP growth had fluctuation over the years due to impose of sanctions, a shift from west to east in trade mostly Iran's imports more than exports and the short econometrics analysis revealed sanctions regards to forfeiting the properties and assets of Iran and sanctions regarding to regulation nuclear energy had significant effect on Iranians economy growth.

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