

# **CHAPTER-I**

# **INTRODUCTION**

# CHAPTER-I

## INTRODUCTION

### 1.1. General Overview

Economy of Iran largely depends on oil resources and oil price fluctuations in international markets affect the country's economy, which causes disruption in economic decision-making. In addition, the international sanctions imposed on the country severely affect the domestic economy. For instance, getting foreign currencies (mostly U.S. dollar and Euro) from export of goods becomes increasingly difficult. Further, the international banking channels have almost become non-existent.

In post-Revolution era, Iran's trade direction and pattern have changed. Presently, trade partners with higher per capita income are replaced by countries with lower per capita income. Linder (1961) asserted that the more similar the demand structure of the two countries, the more intensive potentially is the trade between these two countries. He also argued that countries, which have ability to reallocate factors of productions, probably are passing through a process of economic growth under trade that reflected in rising per capita income. Linder effects describe the effect of dissimilarity of Per Capita GDP of Iran and its trading partners on bilateral trade. There is possibility for existence of Linder effect in Iran's bilateral trade to change and affect trade direction. Further, political factors such as ideology of the Islamic Republic of Iran, international sanctions imposed on the country, domestic political instability, and other factors such as distance can affect bilateral trade.

### 1.2. Importance of Trade

Since the industrial revolution and even before it, international trade has always been a paramount issue in the economy of developed countries and nowadays has turned to an imperious necessity for the continuance of industrial evolution and development. A significant universal characteristic of the current epoch is the need for communication with other countries, and the most predominant branch of this communication is bilateral

trade flows. The position and role of international trade in a country's economy is clear, but a more important issue is the status of commercial-economical relations that must operate as an implement for economic development and growth, raising income level and enhancing welfare. Accelerating growth is one of the most critical problems of developing countries. One of the economic growth patterns is achievable through trade (export) development. The more interrelation with other countries, the greater is the economic growth.

The economic benefit that countries derive from free trade is one issue that a vast majority of economists agrees upon<sup>1</sup> (Krueger 1978; Feder 1983; Ram 1985 and 1987; Romer 1990, etc.). Economists have been well aware of the gains from trade as the key component of wealth creation ever since Adam Smith's strong exposition of the productivity enhancing effect of specialization and the division of labor (Snowdon 2002). Free trade will maximize world's economic efficiency<sup>2</sup>. This result will come about through a maximization of production with excising resources and an optimization of trade in the total volume of goods produced. Free Trade will provide marginal equivalent. (Linder 1961) Regardless of the effect of trade on the developing world, there is no doubt that trade is expanding in most of the developing countries in recent years (UN 1997).

Trade policy continues to be a real issue. There are undoubtedly other equally important policies for development, such as education, health, infrastructure and macroeconomic management, but a bad trade policy is likely to prevent effects of development. A very restrictive trade policy probably permits other policies to get further out of line.

Problems of trade can be broadly divided into two main parts; as policy-making and technical problems. Policy making issue consists of economic and political aspects.

---

<sup>1</sup> There is no clear evidence about trade's benefit in developing countries. Many economists have asserted that trade is a necessity to gain sustained economic growth. A smaller group insists that trade only deepens the dependency of developing countries on the developed world. Krueger (1978), Feder (1983), Ram (1985 and 1987), Balassa (1978 and 1985), Romer (1990), Dollar (1992), Lucas (1993), Edwards (1998) and many others found that trade and liberalization have encouraged trade.

<sup>2</sup> According to U.N., Export growth accounts for about 40 per cent of the increase in gross domestic product (GDP) of both developing and developed countries, except the United States in 2007.

Economical restrictions include high inflation, high economic risk, dependency on oil revenue, decrease in oil price, etc<sup>1</sup>. Political restrictions include political instability, loss of regulatory, etc<sup>2</sup> and technical restrictions include low quality of domestic products (quality, packing...) and loss of comparative advantages in productions (low quality/ high cost), etc<sup>3</sup> (WTO 2013; Reinikka 1996; Katzman 2003; Barth et al. 2006; Sarlak and Hastiani 2008) .

The opening of markets has improved trade and economic growth worldwide. Yet tariffs and taxes imposed by importing countries on foreign goods remain an obstacle to market access. The potential benefits of reducing these obstacles are significant. The OECD estimates that removing all tariffs on merchandise trade and reducing trade costs by 1 percent of the value of trade worldwide would boost global welfare by more than \$170 billion a year, in some areas adding the equivalent of up to 2 percent to GDP (Patrick and Ralph Lattimore 2009).

According to the World Bank Report, the world economy grew by 2.3 percent in 2012 and the share from developing economies grew to 34.3 percent. Growth was expected to remain around 2.4 percent in 2013. Low and middle-income economies estimated to have grown 5.1 percent in 2012, and projected to expand 5.5 percent in 2013. Growth in high-income economies downgraded too from the earlier forecasts to 1.3 percent in 2012 and 2013. In oil-exporting developing countries, growth has been highly volatile, with GDP contracting by 1.8 percent in 2013, reflecting production setbacks in Libya and Iraq, sanctions on Iran, and the civil war in Syria. However, oil output now appears to be recovering, averaging 7.7 (mb/d) in Q1 2014 (WB 2013). Preliminary data related to economic growth indicate that GDP changed by 4.0 percent (at constant 1997-98 prices) in 2011-12, lower than the growth of the previous year (5percent) (CBI 2013).

---

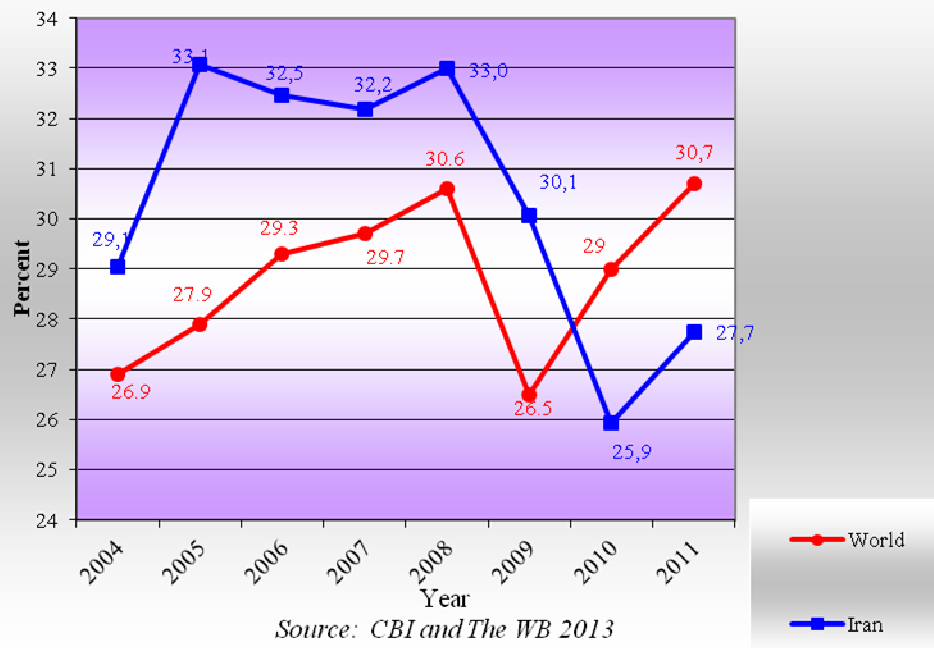
<sup>1</sup> Other economical restrictions consist of governmental monopoly in economy, loss of effectiveness in economic system, wrong and unreal nomination of exchange rate, lack of investment, lack of investment in export production sections and inconsistency among financial, monetary, and exchanging policies.

<sup>2</sup> Other political problems are, loss of rule of law, corruption, international boycotts, international sanctions

<sup>3</sup> Some other technical restrictions include inattention to tastes of international consumers, weakness in E-commerce, weakness in banking system and credibility problems, weakness in transportation system, customs barriers, tariffs, insurance problems, direct and indirect subsidies on export and exemption

In 2011, about 30 percent of the World's GDP came from export of goods and services, with 5.8 percent growth compared with the figure of the previous year and 5.4 percent growth compared to 2004. Iran's share of export of good and services in GDP shows some tendency to the World economy's trend. Since 2004, the nation had almost similar trends with world economy. (See Figure1.1) In 2010, the country's share of export in GDP declined sharply by 13 percent. The reason behind this fall was decline in the total value of export of goods and services by 9 percent in the review year. However, this share increased by almost 7 percent following the world's upward trend in 2011. The

**Figure 1.1: World and Iran's Export of Goods and Services (% of GDP)**



average growth rate of the country during 2004 to 2011 was -0.6 percent.

### 1.3. Linder Theorem

In this section, the Linder theory is briefly discussed. One of the main theories of demand side of international trade is Linder's theory. In his theorem, Linder asserted that the more similar the demand structure of the two countries, the more intensive potentially is

the trade between these two countries (Linder 1961: 94). Accordingly, Linder's theorem, building on other theories<sup>1</sup>, is a theoretical framework for identifying problems and restrictions of trade development and presenting related solutions to enhance economic development.

Domestic demand conditions determine form and status of domestic market for the products of an industry. Quantity and growth of demand highly affect industrial competition. Low demand for domestic market forces firms and industries to look for export opportunities. Changing factor totals means changing method of productions; changing per capita income means changing demand structures; a changing in compositions of demands implies a changing composition of production. There is a mutual interrelationship; trade affect a process of economic change and this changes the conditions of trade (Linder 1961).

Trade can have different effects on different countries (Linder 1961:12). Furthermore, gains from trade for participating countries are not same. In international trade theories, analysis is concentrated on effects of opening up on trade under different assumptions. According to the factor proportion theory<sup>2</sup>, based on supply side of international trade theories, the more capital and labor proportions hence per capita income and, consequently, demand structures differ the more widely commodity price structures will differ and the greater will be scope of trade. On the other hand, based on demand side of international trade theories, Linder asserted that a country could not get a comparative advantage in the production of a good in which there is no home market. Therefore, trade will be most intensive among countries with similar demand structures and thus trade happens between countries with similar demand structures. He proposed that trade patterns in manufactures are dependent on the similarity of preference among nations. His criteria for similarity of demand are similarity of per capita income levels. This implies that aggregate demand is affected not only by the average level of income, but also of how income is distributed. He argued that uneven income distribution in a country

---

<sup>1</sup> International trade theories such as theory of comparative advantages by Ricardo (1817), factor proportion theory by Hechscher-Ohlin (1933) and etc.

<sup>2</sup> H-O theory

widens the range of potential exports and imports and results, *ceteris paribus*, in there being a greater overlapping of demands between countries with different per capita incomes than would be the case if incomes were more evenly distributed (Linder 1961:96).

## 1.4. Evidence in Iran

### 1.4.1. Dependency of Iranian Economy on Oil

Iran is an oil developing country and oil constitutes a big part of its economy, oil price fluctuations in the international markets will affect the country's economy. The Oil Export bill constitutes about 50 percent of the government revenue in 2012 (CBI 2012). In addition, the changes of the oil prices and price shocks in the international markets cause disruption in the economic decision-making and therefore, despite having strong will to form economic policies for the economic development of the country; it cannot fulfill its policy objectives due to uncertainties in the oil market.

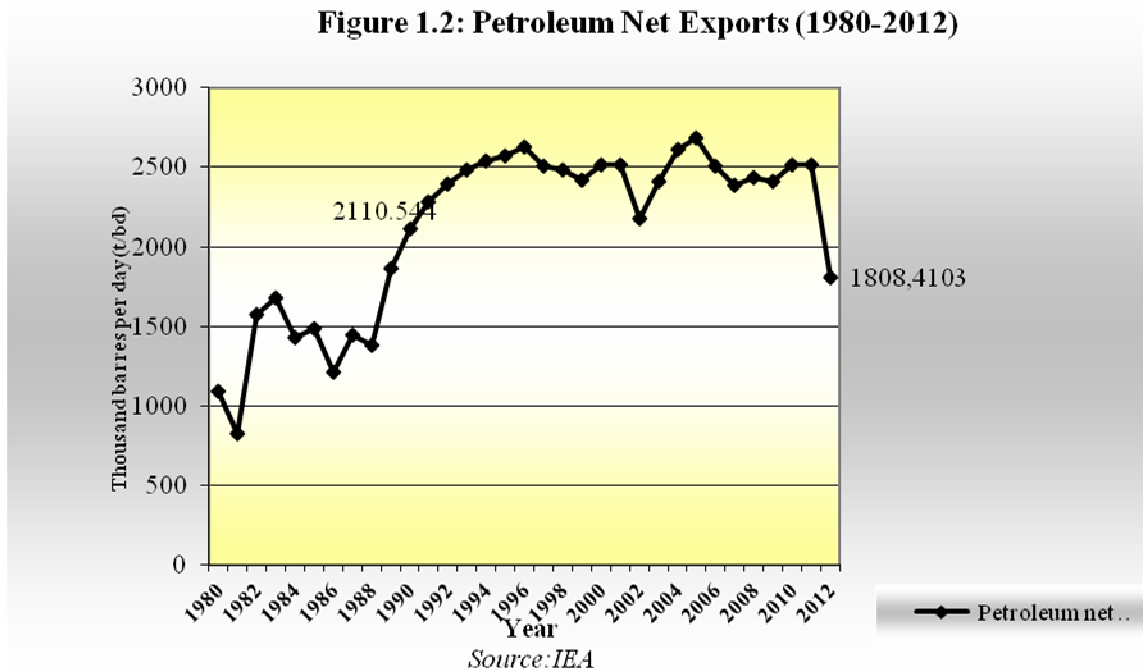
International sanctions<sup>1</sup> imposed on the country's oil industry, affected oil export bills. In 2009, the country's oil export value has reached to its lowest level in seven years. It accounted for \$55 billion in the review year. In the following year, it regained for consecutive two years. However, in 2012, it declined sharply by 11.5 percent, which amounted for \$101 billion. In the review year, the oil export reached

	Oil Export	Non-Oil Export	Total
2003	26124	7867	33991
2004	34289	10114	44403
2005	53219	11147	64366
2006	57719	18471	76190
2007	84505	13162	97667
2008	89855	14670	101289
2009	55746	18369	88326
2010	72228	22596	112788
2011	114751	26642	144874
2012	101468	31792	133260

*Source: OPEC*

<sup>1</sup> Since 2006, the United Nations Security Council has imposed four rounds of sanctions against Iran in response to its nuclear program. Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1929 (2010). Since 2012, The European along with United States have imposed sanctions against Iran over the Iranian nuclear program. The new sanctions restricted foreign trade, financial services, energy sectors and technologies. Since after the Revolution of 1979, the US sanctions prohibit almost all trade with Iran. However, in 2012 the US expanded sanctions to target companies that aid Iran's oil and petrochemical industries and banned the world's banks from completing oil transactions with Iranian banks.

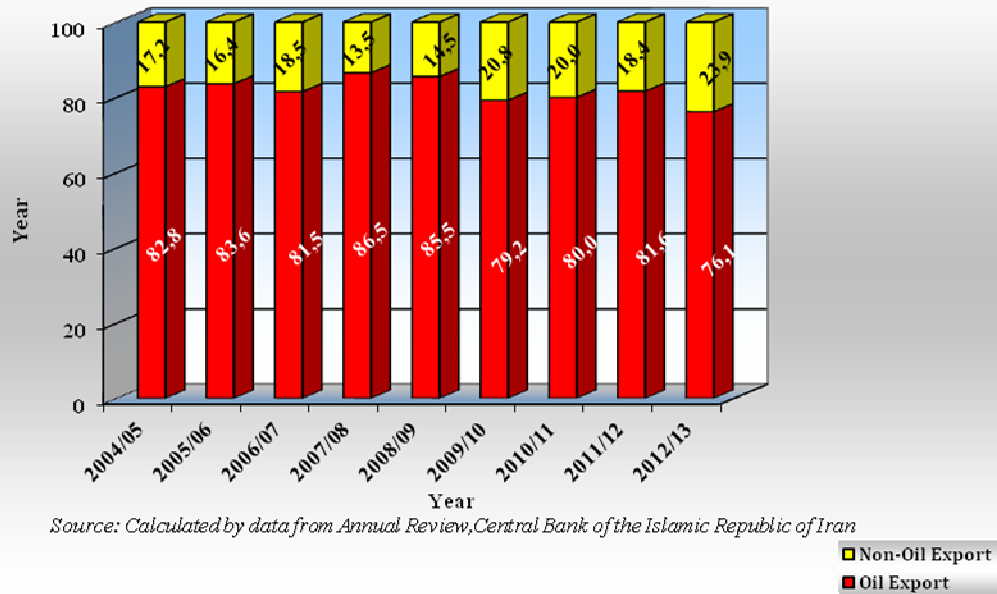
to its lowest level in the last 20 years and the post Iran-Iraq war era. (See Table 1.1 and Figure 1.2)



The country's exports are dominated by oil and gas. The share of oil export from total export was about 83 per cent in 2004-05. However, it declined to 76.6 percent in 2012-13, but still oil export constitutes the largest part of the total exports. The share of non-oil exports faced the inconsistent trends. It was gradually increasing from 2004-07 (From 17.2 percent to 18.5). In the following year, it reached to its lowest level (13.5 percent) and again increased for three successive years. It accounted to about 24 percent of total export in 2012-13. However, non-oil export still constitutes small part of the country's total export. (See Figure 1.3)



**Figure 1.3: Share of Oil and Non-Oil Export from Total Export of Iran**



Energy consumption is the highest among all the Middle Eastern countries during the last 7 years, while efficient usage of energy is at the lowest level in the world. In 2011, the country was the first consumer of primary energy among the Middle Eastern countries (9.3 quadrillion Btu), followed by Saudi Arabia. In addition, primary energy consumption per capita was following an upward trend during the past 10 years with average growth rate of 4.1 percent. In 2002, per capita energy consumption was the lowest (83.2 million Btu) and the highest level was in 2011 (126.6 million Btu) (IEA 2013).

The main reasons of this increasing trend of the energy usage are economic growth, population growth and heavily subsidized energy markets (12 percent of GDP).

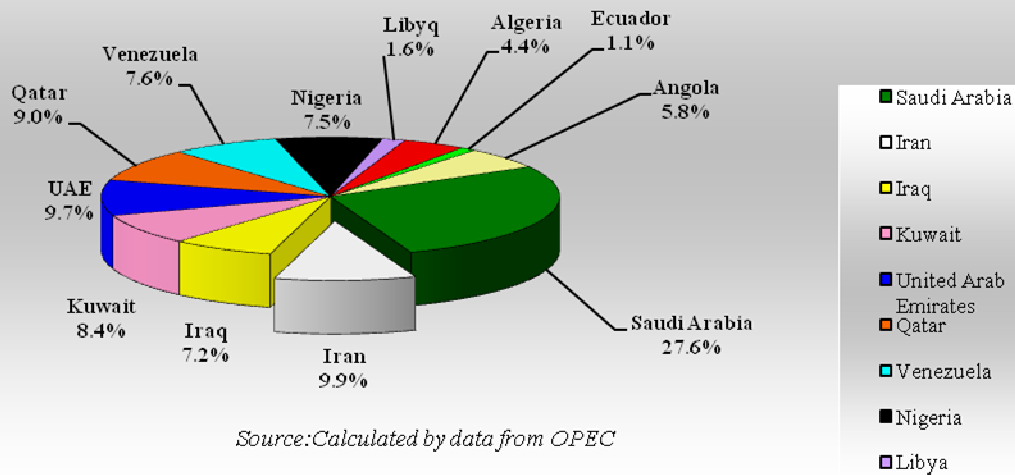
Moreover, poor management, lack of investment and state economy has led energy consumption into an inefficient level. The subsidizing of energy prices over the years also led to low productivity in the energy-intensive industries (Moshiri 2013: 33). Waste and misuse of energy is equivalent to the total budget for country's development and has been estimated to be about \$ 8 billion annually (IEEO 2013).

### 1.4.2. Iran's Position among OPEC Countries

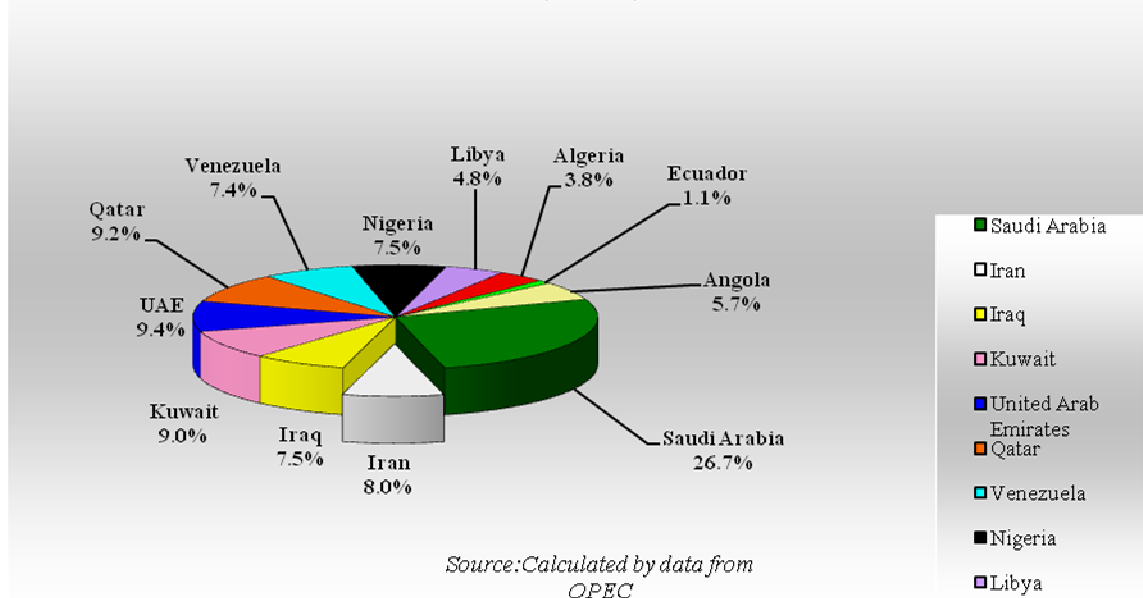
Iran is the second largest oil producer among OPEC countries. Since the country continues its nuclear program, despite warnings from international agencies and other super powers, the country may suffer from setbacks. The oil industry is targeted by widespread sanctions imposed by UN, US, and EU over its nuclear program.

In 2011, the nation's share in the OPEC was about 10 percent, the second largest exporter of oil after Saudi Arabia (27.6 percent). (See figure 1.4) In the following year, the country lost its second position in the OPEC. Saudi Arabia remained at top of the list by share of 26.7 percent, followed by United Arab Emirates (9.4 per cent), Qatar (9.2 percent), Kuwait (9 percent) and Iran (8 percent). The nations' share declined by 19 percent. (See Figure 1.5) The decline in the oil export is the result of the country's growing isolation due to its nuclear program.

**Figure 1.4: Share of OPEC Member's Value of Oil Exports(2011)  
(Percent)**



**Figure 1.5: Share of OPEC Members's Value of Oil Exports (2012)  
(Percent)**



Since 2008, the oil production quota of the country has been following an inconsistent trend. (See Table1.2) In 2008, the production was 4327 (tb/d) and it declined by about 3 percent in the following year to 4199 (tb/d). However, it increased by about one percent in the next year. In 2011, it declined by 20 percent and reached to 3356 (tb/d) as compared with production of 2008, and in the next year, the nations' quotas increase by 11 percent, but it remained lower production than it was during 2008-2010. In 2013, it also remained lower. Presently, the country's share in non-oil export from total export is small. Dependency on oil output to finance economy also makes it vulnerable against exogenous changes in international oil market such as fluctuation in oil prices and extensive widespread international sanctions, imposed by other nations.

Table 1.2: OPEC Member's Production Quotas(tb/d)								
Country	2008	2009	2010	2011	2012	2013	Percentage Change (2011-2012)	Percent Change (2012-2013)
Algeria	1993	1818	1809	1162	1199.8	1203	3.25	0.27
Angola	1875	1784	1851	1618	1704	1701	5.32	-0.18
Ecuador	514	495	495	500	503.6	526	0.72	4.45
Iran	4327	4199	4245	3356	3739.8	3576	11.44	-4.38
Iraq	2423	2442	2460	2653	2942.4	2980	10.91	1.28
Kuwait	2782	2484	2508	2659	2977.6	2922	11.98	-1.87
Libya	1820	1625	1659	489	1450	993	196.52	-31.52
Nigeria	2116	2061	2402	1975	1954.1	1754	-1.06	-10.24
Qatar	1378	1345	1569	734	733.6	724	-0.05	-1.31
Saudi Arabia	10846	9983	10007	9311	9763	9637	4.85	-1.29
UAE	2936	2750	2849	2565	2652.5	2797	3.41	5.45
Venezuela	2558	2438	2471	2881	2803.9	2786	-2.68	-0.64

*Source :OPEC*

### ***1.4.3. Changes in Iran's Trade Direction***

Iran's trade direction and pattern have changed continuously. In the period 1974-1978, Western industrialized countries were top ten trade partners of Iran and Japan was the only Asian country among ten first partners.

In the period of 1979-2000, Turkey, South Korea and United Arab Emirates have become Iran's trade partners in the place of United Kingdom, the Netherlands and Belgium. In 2012-2013, there is no European country among top 10-trade export partners of Iran. (See

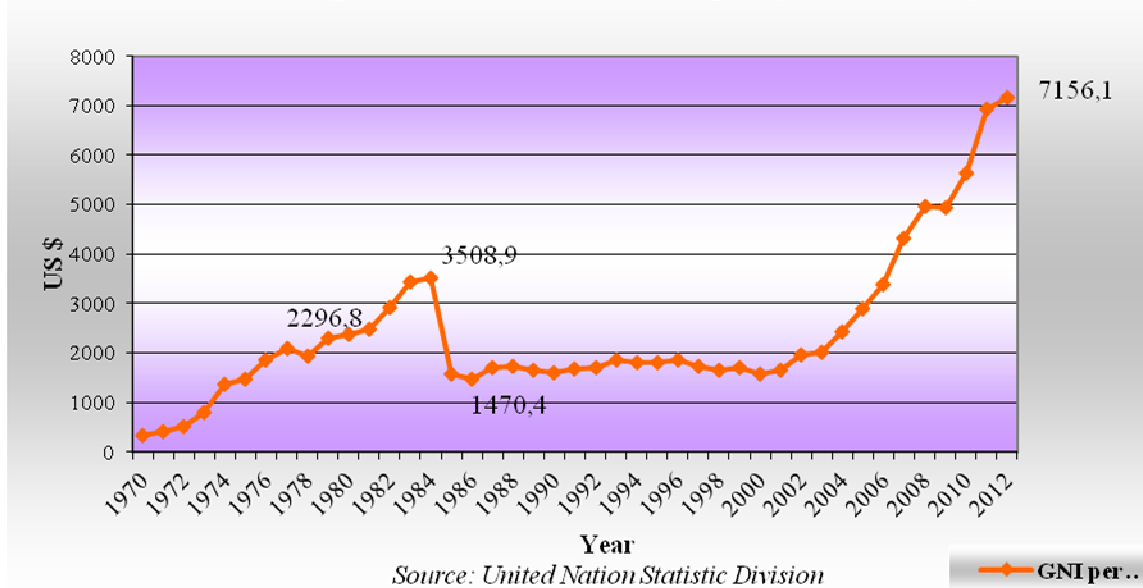
Table 1.3) Presently, countries with a higher per capita income are replaced by countries, which have the lower per capita income.

It appears that the country is trading more with developing countries. Seemingly, the countries with similar per capita income levels trade more with each other. Reviewing the trend of the country's GNI per capita implies that in pre-Revolution, it had an increasing trend amounted to \$2297 in 1979. In the post-Revolution era, it still followed an increasing trend to reach to \$3509 in 1984. In the following years, it has experienced a severe low trend. Since 2003 onwards, this figure shows a consistent increasing trend. Overall, since 1970, this figure describes an inconsistent trend with lowest figure in 1986 (\$1470) and highest in 2012 (\$7156). (See Figure 1.6)

Table 1.3: Top 10 Trade Partners of Iran	
1973/75	2012/13
USSR	Iraq
West Germany	China
USA	United Arab Emirate
Japan	Afghanistan
Iraq	India
France	Turkey
Kuwait	Turkmenistan
UK	Azerbaijan
Italy	Pakistan
Switzerland	Tajikistan

*Source: IRICA*

**Figure 1.6: Iran's GNI Per Capita (Current US \$)**



Reviewing the trend of the country's GNI per capita in the pre and post-Revolution eras has shown more similarity toward lower per capita income developing countries especially in recent years. (See Table 1.4)

<b>Table 1.4: Comparing Iran's GNI Per Capita and its Trade Partners in Pre and Post Revolution</b>							
Pre	*USSR (Former)	United States	Germany	Iran	China	UAE	Iraq
1974	2,453	7,159	5,422	1,362	160	23,822	318
1975	2,704	7,696	5,985	1,475	177	25,666	403
1976	2,691	8,461	6,351	1,857	164	28,699	515
1977	2,861	9,335	7,335	2,097	184	31,730	544
1978	3,227	10,432	9,091	1,946	226	26,806	671
1979	3,434	11,491	10,806	2,297	269	31,979	864
1974	2,453	7,159	5,422	1,362	160	23,822	318
2004	3,993	41,875	32,794	2,416	1,470	40,597	984
2005	5,157	44,347	33,370	2,886	1,700	44,230	1,352
2006	6,652	46,991	35,370	3,394	2,042	46,526	1,975
2007	8,799	48,016	40,454	4,304	2,625	45,973	2,659
2008	11,221	48,243	43,967	4,963	3,387	46,870	3,856
2009	8,232	46,828	40,640	4,931	3,687	35,441	3,895
2010	10,279	48,427	40,672	5,621	4,342	35,099	3,993
2011	12,822	50,326	44,758	6,928	5,339	40,379	4,246
2012	13,711	52,013	42,364	7,156	5,958	43,207	4,675
<i>Source: United Nation Statistic Division</i>							
*Since 1990 Russian Federation							

Linder (1961) asserted that countries with an ability to reallocate factor of productions probably are passing through a process of economic growth under trade that reflected in rising per capita income. He argued that if the domestic market were small, the economic development would be possible through foreign trade and manufacture exports. If the domestic market permits an industry to attain a sufficiently large scale of operation, then it becomes competitive on the world market. The strongest import market for one country's products will be in countries with similar per capita income levels. High quality manufactured export products of rich countries will find a good market in other rich countries where people demand such a product. Linder, in his famous trade thesis based

on trade in manufactures, has mentioned the significance of the relation between international trade and subjects such as economic growth, demand-consumption patterns and income level distribution.

### **1.5. Identifying Problems**

Iran's trade direction has changed towards developing countries during last 30 years. During 1974-1978 (pre-Revolution), Western industrialized countries and Japan (the only Asian country) were top ten trade partners of Iran. During post-Revolution (1979-2000), Turkey, Republics of Korea and United Arab Emirates have become top trade partners of the country in place of United Kingdom, The Netherlands and Belgium. During 2000-2007, United Arab Emirates, Iraq, China, India, Germany and Italy (only two European countries) were main trade partners. Since 2009 onwards, there is no European country in the list of Iran's top 10 trade partners. Presently, the nation is trading more with developing countries. It seems that countries with higher per capita income have been replaced by the countries, which have the lower per capita income levels.

It appears that Iran's trade pattern has changed during past decades. Pre-Revolutionary period can be seen as an almost free trade system. Prior to the Revolution, the country was America and West's closest partner in the Persian Gulf. The nation was one of the fastest growing countries in the world. In mid 1970s, the upward trend in industrial exports began and in 1978/79, industrial exports accounted around 22 percent of total non-oil export. After the Islamic Revolution, the trend of development was halted. From a fast developing, rich friend of the West, Iran changed to an oil economy with more dependency on oil, and an enemy of the World. The diversion from being a western oriented developing country and the related change in trade pattern/direction has had a great impact on Iran's economy.

One of the main issues in the reviewing Iran's trade patterns during pre- and post-Revolution era is to determine causes and criteria behind the country's decisions to choose its foreign relation and trade pattern and in addition, study the factors, which could affect the trade patterns during time. There are many possible ways to analyze how

these changes in trade occur. In this research, specific focus is aimed at the Linder hypothesis. Moreover, other possible stimuli behind trade patterns are studied.

Linder (1961) argues that structure of preferences is the major determinant of trade flows between two countries. The Linder theory focuses on demand-side. Linder asserts that “overlapping demand” determines the pattern of trade. It means that countries generally produce goods for the domestic market and then export the surplus. Consequently, countries that have an interest in acquiring this surplus would have similar demand patterns as those exporting countries.

While, some facts discussed above is showing the possibility of the existence of Linder effect for the Iran bilateral trade, review of the country’s trade history also implies the effects of other factors. Since the Revolution, Iran’s foreign economic relations were affected by several factors. The early revolutionary ideology (neither east, nor west), giving especial priority to trade with its neighbors first, then Muslim countries, non-aligned developing countries and finally developed counties, diplomatic disputes with the United states and West, war with Iraq, international sanctions imposed on country due to its nuclear program , etc changed the country’s trade directions in past decades.

Change in Iran’s trade direction from developed world (with higher per capita income) toward developing countries, which have lower per capita income, regardless to the causes, has important consequences for the economy. Diversion of trade toward countries such as China and India replaced the high quality products of rich countries by low quality products imported from developing countries. It damages the domestic industries especially in recent years. Domestic producers cannot compete with the imported cheap products.

The unilateral economic sanctions imposed on the country make it increasingly difficult to get cash for energy exports, as the international banking channels have gradually become non-existent. China and India found ways to provide goods and services in exchange. Sanctions trapped much of Iran's oil revenues in those countries bank accounts. This gives those countries double advantages, allowing them to access Iran's energy as well as investment opportunities in non-oil sectors. These reserves will give



them more bargaining power. Until now, the only way for Iran to get its money is through accepting barter products of those countries in return. Small and medium industries play an important role in the country economy, but the flow of cheap Chinese and Indian goods (which in some cases are low quality) is making it increasingly difficult for them to compete, especially since the falling national currency increased the cost of imported raw materials<sup>1</sup>.

Another important aspect of this study is to test the Linder effect for Iran as a developing country, since there are few studies about the Linder effect in developing world. Most of the empirical tests of Linder focused on trade and existence of Linder effect among high-income countries.

This study intends to investigate about the factors that affect Iran's trade direction by the examination of the "Linder theory". In addition, effects of other important variables in forming the nation's trade patterns will be studied, factors such as influence of Islamic Revolution, political ties, international sanctions, distance, etc (in the form of both, theoretical and econometric analysis). Linder's theory will be investigated for Iran and its trade partners by reviewing empirical tests of the hypothesis, analyzing data of international trade and computing the econometric models using panel data regression.

### ***1.6. Research Questions***

Since the country's trade direction has been changed during past decades, in this study, the following research questions are being investigated:

- What is the economic position of Iran in the world?
- Does the nation experience any economic problem such as double-digit rate of inflation and unemployment?
- What is the economic growth rate in the country?
- How are Iran's main economic sectors performing?

---

<sup>1</sup>For more information, see (Guardian 2013 and Harold & Nader2012)

- What are the reasons behind the changes in the country's trade pattern?
- Which factors do affect trade pattern during time?
- What are the criteria on which the nation chooses its foreign relations?
- With what countries trade actually occurs?
- What motivates the country to export and import particular goods?

## **1.7. Objective of Research**

1. To study the Iran's economy and foreign relations (Chapter II and IV)
2. To Investigate the economic and political factors that affect bilateral trade through trade data and an examination of the Linder hypothesis (Chapter III, IV and V)
3. To study about crucial causes that motivate a country to trade with specific countries (Chapter IV and V)
4. To test a model like gravity model and to test the impact of similarity in demand preferences to determine the direction of trade (Chapter V)
5. To test the effect of economic mass(GDP,GDP per capita, aggregate GDP, aggregate GDP per capita and population), common borders and membership in trade treaties on the amount of bilateral trade (Chapter V)
6. Testing the role of distance difference in amount of international trade (Chapter V)

## **1.8. Hypothesis**

The following research hypothesis is being studied in this research:

1. Changes in per capita income differences between trading partners show a negative effect on bilateral trade.
2. Physical distance between countries inversely affects bilateral trade.

## **1.9. Methodology**

To infer and test the hypothesis, and to answer the research questions, the following method and techniques are applied:

Firstly, the related data (secondary), information and literature are collected from various sources such as Iran's Central Bank, Islamic Republic of Iran Customs Administration, World Bank, United Nation, etc. In the second step, the data is organized, modified, evaluated and analyzed mostly by using Microsoft Excel software. Thirdly, by using descriptive research, the literature of the Linder hypothesis and empirical tests of it are reviewed. In the next step, for more exploration, the history of Iran's economy and trade (in pre- and post-Revolution eras) are studied. Finally, to discover the existence of the Linder effect and to clarify the state and quality of this effect, the three models are computed through Panel Data analysis by using Eviews 7 software.

- Linder Hypothesis( Linder Effects)

Linder stated that consumer demand is determined strongly by income levels. Countries with high per capita incomes will demand high quality manufactured goods and nations with low per capita income will demand lower quality goods. Consequently, countries with similar per capita income will have overlapping demand structure and will likely demand similar manufactured goods. The more similar the demand structures of two countries, the more intensive, potentially is the trade between these two countries. The level of average income is one of the most important forces influencing the demand structure of a country. There is strong relationship between the level of per capita income and the types of consumer or capital goods demanded. According to Linder theory, Linder effect implies that similarity of per capita income levels among trading partners affect trade positively. In this study, Linder Hypothesis will be tested in Fixed-Random

Effect model, Gravity model A, and Gravity model B, through three effects (Linder effects) which are given as follows:

*LINDER1: This variable shows the degree of dissimilarity of per capita GDP among trading partners.*

*LINDER2: This variable shows the absolute differences in Logarithm of per capita GDP among trading partners.*

*LINDER3: This variable shows the Logarithm of share of the absolute differences in per capita GDP among trading partners from aggregate per capita GDP.*

The procedure of evaluation econometric models is given by:

- Data gathering method:

Data will be collected for Iran and its trade partners. The related statistics will be gathered from statistical yearbooks of The Islamic Republic of Iran, Islamic Republic of Iran Custom Administration, Central Bank of Iran, Tehran Chamber of Commerce and industries and mines, the World Bank and the United Nations.

- Classification of Countries

To test the validity of the Linder hypothesis for Iran and its trading partners, Data related to 152 countries has been collected. Twenty-five cross-sections were omitted due to the lack of related data. In this study, 127 cross-sections are being analyzed. These countries are divided into 5 groups. The first group (Base group) includes all cross-sections, and the rest four groups are divided based on their GNI per capita levels according to the World Bank Atlas Method (2012) classification<sup>1</sup>. Countries classified according GNI per capita levels which are Low income (23 countries), lower middle income (27 countries), upper middle income (36 countries) and high income (41 countries).

The classification has been made as follow:

**a. Base group**

---

<sup>1</sup> Countries are classified according to their gross national income (GNI) per capita i.e. the dollar value of a country's final income in a year, divided by its population. In this study the classification of the World Bank Atlas method 2012 based on 2011 GNI per capita, has been used. List of classified countries in each group may be changed every year.

Base group includes 127 countries: Afghanistan, Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Benin, Bosnia, Brazil, Brunei, Bulgaria, Burkina Faso, Cameroon, Canada, Central Africa, Chile, China, Colombia, Congo, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Djibouti, Dominican, Ecuador, Egypt, Estonia, Ethiopia, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guinea, Hong Kong, Hungary, India, Indonesia, Iraq, Ireland, Italy, Ivory Coast, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyz republic, Lebanon, Libya, Lithuania, Luxemburg, Macedonia, Madagascar, Malaysia, Malta, Mali, Mauritania, Mauritius, Mexico, Moldova, Morocco, Mozambique, Myanmar, Namibia, Nepal, Nigeria, Netherlands, New Zealand, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russia, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovak Republic, Slovenia, Somalia, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syria, Tajikistan, Tanzania, Thailand, Togo, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia and Zimbabwe.

**b. Low Income (LI)**

LI group includes twenty-three countries: Afghanistan, Bangladesh, Benin, Burkina Faso, Central Africa, Ethiopia, Gambia, Guinea, Kenya, Kyrgyzstan, Madagascar, Mali, Mauritania, Mozambique, Myanmar, Nepal, Sierra Leone, Somalia, Tajikistan, Tanzania, Togo, Uganda and Zimbabwe.

**c. Lower Middle Income (LMI)**

LMI group includes twenty-seven countries: Albania, Armenia, Cameroon, Congo, Ivory Coast, Djibouti, Egypt, Georgia, Ghana, India, Indonesia, Iraq, Moldova, Morocco, Nigeria, Pakistan, Paraguay, Philippines, Senegal, Sri Lanka, Sudan, Syria, Ukraine, Uzbekistan, Vietnam, Yemen and Zambia.

### **Upper Middle Income (UMI)**

UMI group includes thirty-six countries: Algeria, Argentina, Azerbaijan, Belarus, Bosnia, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Cuba, Dominican, Ecuador, Gabon, Jordan, Kazakhstan, Lebanon, Libya, Lithuania, Macedonia, Malaysia, Mauritius, Mexico, Namibia, Panama, Peru, Romania, Russia, South Africa, Thailand, Tunisia, Turkey, Turkmenistan, Uruguay and Venezuela.

### **High Income (HI)**

HI group includes forty-one countries: Australia, Austria, Bahrain, Belgium, Brunei, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Ireland, Italy, Japan, Korea, Kuwait, Luxemburg, Malta, Netherlands, New Zealand, Norway, Oman, Poland, Portugal, Qatar, Saudi Arabia, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Arab Emirates, United Kingdom, and United States.

### **1.10. Scope of Study**

For the analysis of Linder hypothesis, Fixed-Random effects model (Model I ) includes time series variables as; RTRADE, GDPP, GDPIRI, REXCHANGE<sub>P</sub> and LINDER<sub>1</sub>. Before using this model, Unit Roots test is computed to determine if time series variables are stationary or not. The Co-integration test is estimated to test whether there are long-run relationships among time series variables. While estimating model I, Poolability test is applied to determine whether regression is pool or not. If it is not pool, it must be determined, whether it is fixed or random. Hausman test is one, which determines Fixed or random effects. Tobit Model (Censored Regression Model) performs to determine the effects of countries that have zero trade with Iran and excluded from the Base group in model I.

Gravity model A (Model II) includes time series variables as; LTRADE<sub>2</sub>, LOG (SUM<sub>2</sub>), LNDIS, LINDER<sub>2</sub>, LOG (POPP), and LOG (REXCHANGE<sub>P</sub>). Gravity model B (Model III) includes time series variables such as; LTRADE, LOG (SUM<sub>2</sub>), LNDIS, LINDER<sub>3</sub>, LOG (POPP), and LOG (REXCHANGE<sub>P</sub>). Before Estimating the model II and III, Unit

roots and Contigeration tests are performed. For analysis of these variables in all three models, data is collected for the period 1992 to 2012.

### a. Fixed-Random (FE-RE) Effect Model

Model I Specification:

$$RTRADE_{ij} = \beta_1 + \beta_2 GDP_{jt} + \beta_3 GDP_{IRI_{it}} + \beta_4 REXCHANGE_{jt} + \beta_5 LINDERI_{ij} + \varepsilon_{ij} \quad (1)$$

Where,

Indices, i refers to Iran, j refers to trading partners and t refers to time.

$RTRADE_{ij}$  = Dollar value of total trade between Iran and potential trading partner in constant 2005 US \$

$GDP_{jt}$  = Gross domestic products of potential trading partner in constant 2005 US \$

$GDP_{IRI_{it}}$  = Gross domestic products of Iran in constant 2005 US \$

$$REXCHANGE_{jt} = \frac{e_{jit} P_{jt}}{P_{it}} = \text{Real exchange rate}$$

$e_{it}$  is the exchange rate of potential trading partner (measured in units of the currency of Iran per unit of the currency of potential trading partner);  $p_{jt}$  is the GDP deflator of potential trading partner and  $p_{it}$  is the GDP deflator of Iran.

$LINDERI_{ij}$  = The absolute difference in the level of real per capita GDP of Iran and potential trading partner in constant 2005 US \$

*LINDERI* variable shows the degree of dissimilarity of Per Capita GDP among trading partners. If the Linder hypothesis is supported by the data of this model then the coefficient on this variable should be negative and statistically significant.

$\varepsilon_{ij}$  = Error term

### b. Gravity Model A

Model II is an augmented gravity model.

$$LTRADE2_{ij} = \alpha_1 + \alpha_2 LOG(SUM1_{ij}) + \alpha_3 LNDIS_{ij} + \alpha_4 LINDER2_{ij} + \alpha_5 LOG(POPP_j) + \alpha_6 LOG(REXCHAMGEP_{jt}) + d_1 DUM1 + d_2 DUM2 + d_3 DUM3 + \omega_{ij} \quad (2)$$

Where,

Indices , i refers to Iran, j refers to trading partners and t refers to time.

$LTRADE2_{ij}$  =Logarithm of Dollar value of total trade between Iran and potential trading partner in constant 2005 US \$

$$SUM1_{ij} = GDPP + GDPIRI$$

$LNDIS_{ij}$  =Logarithm of geographic distance between countries i and j that is calculated by distance between capital cities of Iran and potential trading partner in kilometers.

$LOG(REXCHAMGEP)_{jt}$  =Logarithm of real exchange rate

$$LINDER2_{ij} = | LOG(PCGDPIRI_{it}) - LOG(PCGDPP_{jt}) |$$

PCGDPIRI=Per capita gross domestic products of Iran in constant 2005 US \$

PCGDPP= Per capita gross domestic products of potential trading partner in constant 2005 US \$

*LINDER2* variable shows the absolute differences in Logarithm of per capita income GDP among trading partners. If the Linder hypothesis is supported by the data of this model then the coefficient on this variable should be negative and statistically significant.

$LOG(POPP_{jt})$  = Logarithm of total population of potential trading partners

DUM1 is a time dummy variable stand for the period of 2005-2012. This variable is included in model to consider economic and political uncertainties, shocks and instability.

DUM2 is dummy variable stands for countries with common border with Iran includes Afghanistan, Armenia, Azerbaijan, Iraq, Kuwait, Oman, Pakistan, Qatar, Russia, Saudi Arabia, Turkey, Turkmenistan and United Arab Emirates.

DUM3 is dummy variable stand for membership in OPEC. This variable includes Algeria, Angola, Ecuador, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela

$\omega_{ij}$  =Error term



### c. Gravity Model B

Model III is an augmented gravity model

$$LTRADE_{ij} = \alpha_1 + \alpha_2 LOG(SUM2_{ij}) + \alpha_3 LNDIS_{ij} + \alpha_4 LINDER3_{ij} + \alpha_5 LOG(POPP_j) + \alpha_6 LOG(REXCHAMGEP_{jt}) + d_1 DUM1 + d_2 DUM2 + d_3 DUM3 + \sigma_{ij} \quad (3)$$

Where,

Indices, i refers to Iran, j refers to trading partners and t refers to time.

$$LTRADE_{ij} = LOG\left(\frac{RTRADE_{ij}}{SUM1_{ij}}\right)$$

$$SUM2_{ij} = PCGDPP_{ij} + PCGDPIRI_{it}$$

$LNDIS_{ij}$  = Logarithm of geographic distance between countries i and j that is calculated by distance between capital cities of Iran and potential trading partner in kilometers.

$LOG(REXCHAMGEP)_{jt}$  = Logarithm of real exchange rate

$$LINDER3_{ij} = LOG\left(\frac{|PCGDPIRI_{it} - PCGDPP_{ij}|}{SUM2_{ij}}\right)$$

*LINDER3* variable shows the Logarithm of the share of an absolute differences in per capita income GDP among trading partners from sum of per capita income GDP. If the Linder hypothesis is supported by data of this model then the coefficient on this variable should be negative and statistically significant.

$LOG(POPP_{jt})$  = Logarithm of total population of potential trading partners

DUM1 is a time dummy variable stand for the period of 2005-2012. This variable is included in model to consider economic and political uncertainties, shocks and instability.

DUM2 is dummy variable stands for countries with common border with Iran includes Afghanistan, Armenia, Azerbaijan, Iraq, Kuwait, Oman, Pakistan, Qatar, Russia, Saudi Arabia, Turkey, Turkmenistan ,and United Arab Emirates.

DUM3 is dummy variable stand for membership in OPEC. This variable includes Algeria, Angola, Ecuador, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

$\varpi_{ij}$  = Error term

### **1.11. Chapter Scheme**

The First chapter will elaborate general overview, importance of trade, Linder theory, some evidences in Iran, identifying problems, research questions, objectives, hypothesis, and methodology of research.

In the second chapter, for general acquaintance, Iran's economy will be briefly reviewed. In the third chapter, the theoretical framework, important international trade theories including the Linder theory, and existing empirical studies on Linder theory will be discussed.

In the fourth chapter, pre- and post-Revolution economical-political relations of Iran will be discussed. Furthermore, export and import data according to volume and composition of trade of Iran , and impacts of international sanction on the country's foreign trade will be discussed.

In the fifth chapter, methodology of the econometric model, including panel data regression, Fix-Random effects model and gravity models will be reviewed. Moreover, chapter five contains the model, which has been used to test the hypothesis and attempt to answer research questions.

Chapter six focuses on analyzing and discussing the result of econometrics models.

The last chapter consists of a brief summary of findings and conclusions. This chapter also adds suggestions and recommendations.

### **1.12. Research Limitations**

One of the major problems of any study about Iran's economy is the lack of reliable and proper data and information. The other main restriction is different and sometimes-paradoxical data from different sources in Iran like Iran's Central Bank or the Statistical Center of Iran. For example in the years 2010 and 2011, there was no reliable data about inflation and economic growth while according to some international sources economic

growth of Iran in these years was zero. According to the Statistical Center of Iran, inflation rate in 2011 was 28.1 and Central Bank of Iran reported a rate of 13.2 for inflation. Moreover, in the past three years no official report about economic growth has been given. Furthermore, since summer 2011, the Statistical Center of Iran did not report any information related to unemployment. The other important and serious problem is that the government (especially during Ahmadinejad's presidency) had announced fake and sometimes opposite data to pretend that economic situation is good.

One more restriction relates to countries classification, which is used in models of this study. Countries are classified according to the World Bank Atlas Method (2012) on the basis of 2011 GNI per capita. This classification could be different in different years. All analysis are made based on the Scope of study that is restricted to 1992-2012, and the latest data is collected from World Bank according to the year 2012.

## References

- Barth, J.R., Marchetti, J.A., Nolle, D.E. and Sawangngoenyuan, W. (2006), Foreign Banking: Do Countries' WTO Commitments Match Actual Practices?, *Economic Research and Statistics Division*, World Trade Organization, Staff Working paper, ERSD-2006-11
- Central Bank of the Islamic Republic of Iran (1970-2012), *Annual Review*.
- Feenstar, Robert C. (2003), *Advanced International Trade; Theory and Evidence*, Princeton University Press
- Tehran Bureau correspondent (2013), China floods Iran with cheap consumer goods in exchange for oil, *Guardian online*, <[www.theguardian.com](http://www.theguardian.com)>.
- Harold, S. and Nader, A. (2012), China and Iran Economic, Political, and Military Relations, *Center for Middle East Public Policy*, RAND Corporation
- Iran Energy Efficiency organization (IEEO) (2013)
- Independent Evaluation Office of International Monetary Fund (2008), "The IMF's Approach to International Trade Policy Issues"
- Islamic Republic of Iran Customs Organization, Statistics, "Annual and Monthly Report"
- Kahnamoui, Farrokh (2013), Do Trade Restrictions or Openness Affect Economic Growth Differently in the Presence of Export Credits?, *Business and Economics Journal*, Vol. 2013
- Katzman, K. (2003), Iran: Current Developments and US Policy, *Issue Brief for Congress*, Congressional Research Service
- Khajepour, B. (2013) The Future of the Petroleum Sector in Iran, *Legatum Institute*, Global Transition
- Linder, S.B. (1961), *An essay on trade and transformation*, John Wiley & Sons, Stockholm

Love, Patrick, Lattimore, Ralph (2009), OECD Insights International Trade Free, Fair and Open, *OECD Publishing*, Columbia University.

Moshiri,S. (2013) Energy Price Reform and Energy Efficiency in Iran, *International Association for Energy Economics*.

Organization of Petroleum Exporting Country (OPEC), “Annual Statistical Bulletin”

Statistical Center of Iran, “Database and statistics”

Snowdon, Brain (2002), Conversation on growth, stability and trade, An Historical Perspective, *Edward Edgar Publishing Limited*, UK

Reinikka,R.(1996), The Credibility Problem in Trade Liberalizations: Empirical Evidence from Kenya, *Journal of African Economies*, Volume 5, Number 3, pp. 444-68

The World Bank (1990-2013) , *Data, Indicators*.

United Nations (1970-2012), *Statistical Database, National Statistics*.

United States Trade Representative (2013), 2013 Report on Technical Barriers to Trade  
World Trade Organization (2009), Global Problems, Global Solutions, *WTO Public Forum*

World Trade Organization (2013), *World Trade Report*