Original Article

Studying Challenges and Opportunities of Non-Oil Export from Knowledge Components Aspect: An Approach to Cope with Economic Sanctions

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ABSTRACT: In any country, research and development activities are the main factors of economic growth and prosperity that lead to innovation, improvement of quality and variety of goods and services and also reduce in costs and increase in competition power and interdependency. According to the new theories of international trade, trade partners' research and development can play essential role in exports growth in the country through intermediate and capital goods imports, since it enables the country to imitate foreign technology and to convert it to be used within the country. This study is done to investigate and analyze the impact of knowledge components on non-oil exports with cross-sectional method and SWOT model to increase interdependency and decrease sanction degree of Iran's economy. The studied period was 1970-2010 and the needed statistics has constant price (base year 2000). The obtained results indicated deep gap of Iran's economy technology with the world economy, dependency of non-oil exports to the traditional factors of production, lack of supply and demand mechanism in research and development activities because of wrong economic policies which lead to relative price distorting of factors in favor of using physical capital and imports technology and to the detriment of other production factors such as knowledge components (human capital and research and development activities). As a result, we will observe loss of competitiveness capability and one–sided dependency of Iran's economy to the world economy.

KEYWORDS: Non-Oil Exports, Research and Development, Technology Spillover, Economic Sanction.

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1. INTRODUCTION

Export is an important factor in economic growth and accordingly in increasing welfare of countries. Moreover, research and development activities in each country lead to the innovation and thereby lead to the improvement of quality and variety of goods and services, decrease of production costs, increase of production and exports. Investment on research and development activities after the World War II which is the major difference between developed and developing countries. In developed society science and technology utilize human resources and creativity which forms the main economic structure so that has led to increased economic growth and exports. Considering economical components of developed countries and comparing it with developing countries show that 2-3 percent of gross domestic product of developed countries is allocated to research and development activities but less than 1percent of gross domestic product of developing countries is spent on research and development activities (Hughes, 1985).

Many countries have overcome recession through raising exports and some new theories of international economics have stressed on the importance of non-price factors on exports. Policies and strategies for export stimulation are generally focused on its most dynamic components. R&D and innovation intensity are the main predictive factor for exporting and the share of R&D expenditure in GDP expressed the R&D and innovation intensity (Sandu and Ciocane, 2014). Internal and external R&D activities improve product quality and increase competitiveness devising new methods and making use of advanced technical knowledge (Coe and Et al, 2008).

Endogenous growth theories claim that innovation is a major driving force of economic growth and studies have emphasized export –oriented growth as a successful development strategy (Yang & Chen, 2012). Studies show that external technology acquisition, positively influence firm's export performance and the exporting firms that acquired technology from foreign countries outperformed those relied on domestically developed technology (Wang and Et al, 2013).

Nowadays, every country must be innovative to be able to compete in the world effectively. In addition to the innovation, diffusions between countries are important. imports of capital is an effective tool for knowledge transfer between nations and innovation, and can easily be achieved through imported technology and must be replaced over time by internal technology (Mody and Yilmaz, 2005).

2. LITERATURE REVIEW

Technology and trade literature indicate that technological gaps to trade in different parts are important to countries involved in organizing economic cooperation and development and Fagerberg (1999) considers technology as a passageway to Europe to achieve rapid growth rates. Innovation and technology create relative advantage in trade and improve exports conditions of countries by creating field to new production and reducing production cost.

Pozner discussed technology gap theory of international trade in 1961 and concluded that the continuous innovation process, even among countries with similar primary factors, leads to trade among them, since it will take some time to the producers of other countries to learn new goods production. But overtime, innovative firm should create new innovations to continue exports

Montobbio and Rampa (2005) examined the role of technology and structure change in the exports of main and industrial sections of 9 developing countries over the 1985-1998 period and they stated that technology has significant role in the formation of trade patterns of developed and developing countries.

Dipietra and Anoruo (2005) examined the impact of innovative activities on exports. The obtained results showed that capital import is an important tool to knowledge transfer among nations and innovation can be achieved through imports technology.

Ledesma (2002) examines the impact of knowledge spillover on the exports of 21 organization for economic cooperation and development of member countries during 1971-1990 and states that increase of knowledge overflow through goods imports led to increased foreign knowledge reserve and this fact leads to increase the impact of foreign knowledge accumulation on the performance of imports of organization for economic cooperation and development of member countries.

Johanson and Karlson(2006) examine the impact of Research and development activities on the export of Switzerland during (1993-1999). They conclude accessing to external and internal R&D activities have a positive effect on export.

Faustino, Lima and Matos (2012) examined the evolution of Portuguese exports to Spain and its determinants during 2004-2008 using panel data. Remuneration and innovation measured by the expenditure on R&D. results confirm that R&D variable is statistically significant with a positive effect on Portuguese exports in the model.

Yan Aw, Roberts and Yi Xu (2009) estimated the model using plant-level data from the Taiwanese electronic industry. The obtained results show that investment in R&D or new technology raise productivity and increase the payoff to exporting.

Fernandez and Tang (2014) study how learning from neighboring firms affects new exporter's performance. They develop a model based on several factors including the number of neighbor currently selling there, the level and heterogeneity of their export sales and the firm's own prior knowledge about the market. They find supporting evidence for the main predictions of the model from transaction – level data for all Chinese exporters over 2000-2006 period. Findings are robust to control for firm's supply shocks, countries demand shocks and city-country fixed effects .

Artopoulos et al (2013) explore the underlying factors that enable developing countries firms to successfully export differentiated goods to developed countries. Their findings point to the importance of foreign market knowledge and production knowledge, as the constraint to achieve consistent export to developed countries.

Wang and et al (2013) study the determinants of export performance by examining the impact of inter-organizational dimension of innovation strategy to export performance. They used a sample of 141 Chinese indigenous manufactoring firms that engaged in inward technology licensing 2000-2003 period. Results indicate that external technology acquisitions positively influence Chinese firm's export performance and the firms that acquired technology from foreign countries outperformed those relied on domestically developed technology.

Yang and Chen (2012) examine the relation between productivity and export in Indonesian manufacturing firms. Estimates show that R&D has a positive impact on both productivity and exports, suggesting the importance of R&D to Indonesian economic growth.

Sandu and Ciocanel (2014) assessed at the European level the relationship between medium and high-tech exports and main determinants of innovation. Results confirm a positive correlation between total R&D expenditure volume and the level of high-tech exports.

Shakeri (2004) examined pricey and non-pricey effective factors on the exports of non-oil economy of Iran during 1961-2001. The obtained results show that non-oil export has been mainly related to the basic variables of productivity and competitiveness but the effect of pricey variable is not determinant and considerable.

Shahabadi(2004) examined the impact of total factor productivity on the non-oil exports of Iran's economy during 1959-2003 and he states that total factor productivity, increases sing real exchange rate and global imports level have positive effect on non-oil exports.

Karimi and Rashedi (2001) investigate the relationship between non-oil exports and gross domestic product of Iran's economy during 1959-1997 and they consider variables as exchange rate, labor, capital and imports as determinant factors of non-oil exports.

3. THEORETICAL FRAMEWORK

Development attitudes focus on research and development centrality, so that if a country cannot have significant investment in research and development field and cannot exploit it, it will not be able to develop other thing. But, due to paying less attention of developing countries to research process and lack of allocation of appropriate research fund, it has been considered as a preventing factor in economic development process (Dipietro and Anoruo, 2005). According to the new theory of international trade, trade partners research and development like domestic research and development can play essential role in export growth of the country through importing intermediate and capital goods and it enables international trade of country to imitate foreign technology and convert them for domestic usage. As a result, transferring research and development activities spillover and appropriate technology and converting exportable raw materials to goods exports, high technology exports is substitute for exporting raw material (Ledesma, 2002).

In Dixit and Stieglitz's(1977) model, knowledge accumulation variable has been considered as accumulation of thoughts and ideas that is used in productive activities. In this model, innovation, invention and technology are subsets of idea and thought accumulation. Thus, countries with more developed universities and developed research sectors will use more opportunities to use productive knowledge in different economical sections to improve product's quality and diversity(Dixit and Stiglitz, 1997).

Thus, developing countries like Iran can transfer technology and technical methods through international transactions in the form of exports and imports to bridge the technology gap and can attract and localize research and development increase competitiveness and create interdependency with other countries of the world through significant investment in the field of research and development and human resource. Therefore, it could be stated that domestic and foreign research and development investment accumulation plays crucial role in exports development and interdependency in reducing vulnerability that is resulted from the possible sanctions, however, due to the fact that domestic research and development capital accumulation are scarce in developing countries, so, with the proper economy management, foreign research and development, capital accumulation has more influence on exports compared to domestic research and development capital accumulation. Also, it is worth mentioning that a developing country with more human capital and more open economy will be capable of attracting more foreign research and development of capital accumulation and new evolution in export (Shakeri, 2005).

Statistics show that in spite of the fact that Iran is one of the major-countries with large gas and oil reserves, it has decreasing trend in the world exports. Now, it's necessary to examine factors that have caused Iran to have fewer shares of the world exports. However, it is worth mentioning that if we eliminate oil exports from total exports statistics the declining trend of Iran's economy exports share from the world exports will be at inappropriate situation. It seems reasonable to eliminate oil exports from overall exports of Iran's economy, because oil exports are the exports of goods and raw materials that does not reflect very well the relative effort, planning, scientific and economic position of Iran in relation to the world and oil exports is essentially considered as an exogenous fact. Therefore, it's necessary to assess the impact of domestic and foreign research and development accumulation on non- oil exports accurately. Thus, the aim of the present study is to investigate the effect of domestic and foreign research and development accumulation (through importing goods from countries involved in organization for economic cooperation and development) on non-oil exports of Iran's economy to provide political advices to economical

politicians in order to fulfill outlook document and to deal with any economical sanction and also to provide future planning orientation (Shakeri, 2005).

4. METHODOLOGY

4.1. Data Collection

This study used cross-sectional method and SWOT model for analyzing the data. The most appropriate model of analysis is SWOT that analyzes strengths, weaknesses, opportunities and threats. Nowadays SWOT is a new tool for analyzing economic performance. SWOT model is a conceptual framework that used for the systematic analysis. In this model it is possible to compare threats, opportunities, strengths and weaknesses. Strategies in these models are based on the analysis of external environment (opportunities and threats) and internal environment (strengths and weaknesses). Investment opportunities and threats matrix is reflected in the table below (Shahabadi and Ganji, 2013).

Table1: SWOT matrix

SWOT matrix	Strengths	Weaknesses
Opportunities	SO Strategy	WO Strategy
Threats	ST Strategy	WT Strategy

Source: Shahabadi and Ganji(2013).

Data sources for the statistical tables used in this study are WDI (2012) statistical database, Central Bank of Islamic Republic of Iran, Customs of Islamic Republic of Iran, Griliches (1988) and Coe and Helpman (1995).

To make the domestic research and development capital accumulation the domestic R&D expenditure is used. In addition only the government research budget has been used. Primitive accumulation of internal research and development (S_0) is calculated whit respect to Guilloches equation.

$$S_0 = \frac{R_0}{g + S} \qquad g = \frac{\ln\left(\frac{R \& D_{t+n}}{t}\right)}{n}$$

R_0 represented the cost of R&D in the first year (1968). δ is the depreciation rate. In addition domestic R&D capital accumulation in every year is equal to:

$$S_t = (1 - \delta)S_{t-1} + R_t$$

The depreciation rate of R&D is considered 5% and 10% (Griliches, 1988).

The partners in this study are 21 developed OECD countries and United Arabic Emirates. Given that the imported goods can be transferred the R&D of partners to the country, so that the accumulation of foreign R&D capital is as a weighted sum of imports multiplied by the partners R&D expenditures accumulated. There for using the equation that is offered by Coe and Helpman (1995), partner's R&D capital accumulation is calculated (Coe and Helpman, 1995).

$$J= 1, 2, \ldots \quad S^{f-ch} = \sum_{j=1}^{22} \frac{m_{ij}}{m_j} . S_j^d$$

M_{ij}, represent the country's imports from developed partners, m_j ($m_{j=} \sum m_{ij}$) is Iran's total imports from 21 developed partners and UAE. And Sjd shows accumulation of domestic R&D of developed partners and UAE.

4.2. Data Analysis

This study is done to investigate and analyze the impact of knowledge components on non-oil exports with SWOT method to increase interdependency and decrease sanction degree of Iran's economy. Many countries have overcome recession through raising exports (Sandu and Ciocane, 2014). According to the statistics shown in Table(2), the ratio of exports to gross domestic product is very high for Iran's economy. So that in total studied period(1970-2010), the ratio of exports to gross domestic product for Iran's economy is about 27/1 percent. Although this issue is apparently indicator of openness degree of Iran's economy and it is considered as an advantage, since Iran's economy is dependent on oil exports and bulk of Iran's economy exports is through oil export thus it's necessary to pay attention to it. It should be noted that the ratio of exports to gross domestic product for Iran's economy has strong fluctuations so that during 70th, 80th and 90th decades of 20th centuries the ratio of exports to gross domestic product for Iran's economy are 43.2, 17.2, and 25.3 respectively and this ratio is 21 for the first decade of the recent century That may have been caused by intense fluctuations in oil price and sanctions against Iran. But in this period(1971-2010) the ratio of exports to gross domestic product of countries which are member of organization for economic cooperation and development is almost stable and is about 14/8 percent and industrial goods is the main exports of developed countries(the ratio of exports to gross domestic product for countries which are member of organization for economic cooperation and development have been 10/9, 13, 17/7 and 21/3 percent respectively during 70th, 80th and 90th decades of 20th centuries and the first decade of 21th century.

 It should be noted that, the ratio of exports to gross domestic product in organization for economic cooperation and development is nearly regular and additive trend, during the studied period. Also, exports growth of these countries is more than their economic growth. Additionally, during this period(1970-2010) the ratio of exports to gross domestic product for seven groups of countries and other countries which are member of organization for economic cooperation and development are 11 and 32 percent, respectively.

Since Iran is an oil-bearing country and is dependent on oil wealth and its main exports is oil, so it's better to consider exports figure without using oil exports amount. And it's also necessary to pay attention to non-oil exports. Thus in the fifth development plan, paragraphs A, B, C and Article 104 are allocated to exports especially non-oil exports and exports incentives and according to these paragraphs and Article it is stated that:

A- In order to promote the participation of institutions and to increase the share of organizations, networks, clusters, association, companies(consortiums), export management countries, and large export companies with diverse products the government has authority to grant aids, facilities, incentives, and its direct and indirect protections in the field of non-oil exports through these organizations.

B- The ban on tax and duties taking in the exports over the program is prohibited.

C- Non-oil exports: Exports of goods and services is exempt from any permission except for mandatory standards and usual certificates in international trade that is demanded by buyers.

D- Trade promotion organization and Export Guarantee fund Of Iran: The government is obliged to prepare and empower economical pillars of the country to join to the World Trade Organization in addition to creating harmony in laws and regulations of country's trade section with laws and regulations of regional and international unions such as World Trade Organization(Management and Planning Organization of Iran , 2010).

Table 2: Ratio of exports to gross domestic product Iran & OECD countries

	Canada	England	Italy	French	Germany	Japan	America	Ireland	Greece
1971-1980	22.3	16.8	15.6	13.6	14.8	6.2	5.2	25.8	9.6
1981-1990	25.0	18.9	18.1	16.3	19.1	8.2	6.2	39.6	14.2
1991-2000	37.8	24.2	24.6	22.9	26.1	9.3	9.8	71.6	18.5
2001-2010	42.7	27.8	25.5	28.7	37.3	11.4	10.4	98.9	21.7
1971-2010	**29.6**	**20.8**	**19.5**	**18.5**	**21.5**	**8.6**	**7.3**	**50.7**	**14.6**
1981-2010	32.1	21.6	21.4	20.2	23.8	8.9	8.2	60.4	16.5
1991-2010	36.7	23.6	23.0	23	27.2	9.2	9.4	74.5	18.2

	Finland	Denmark	Belgium	Austria	Australia	New Zealand	Switzerland	Sweden	Spain
1971-1980	19.0	21.9	50.3	23.5	10.9	19.2	24.7	20.5	10.0
1981-1990	21.7	29.7	58.7	30.3	12.9	24.0	31.8	25.2	14.8
1991-2000	32.1	38.9	74.3	37.6	19.6	32.4	37.8	35.7	22.6
2001-2010	42.8	48.9	86	50.4	20.7	35.7	45.8	46.9	30.1
1971-2010	**25.7**	**31.6**	**62.3**	**32.0**	**14.9**	**25.8**	**32.3**	**28.7**	**17.0**
1981-2010	28.4	35.3	67.0	35.3	16.4	28.4	35.3	31.9	19.7
1991-2010	32.7	39.0	72.7	38.6	18.7	31.2	37.4	36.4	22.9

	Norway	Portugal	Holland	Iran (non-oil)	OECD	Iran	Group 7	Non G7
1971-1980	10.3	42.9	42.9	1.5	10.9	43.2	8.8	23
1981-1990	13.3	50.9	50.9	1.0	13.0	17.2	10.7	28
1991-2000	18.0	65.9	65.9	4.6	17.7	25.3	14.2	38
2001-2010	20.4	70.7	70.7	3.9	21.3	21.7	17.9	47
1971-2010	**14.3**	**53.6**	**53.6**	**2.7**	**14.8**	**27.1**	**11.0**	**32**
1981-2010	15.8	58.0	58.0	3.1	16.4	20.5	12.4	36
1991-2010	17.5	62.7	62.7	4.3	18.7	22.8	13.9	41

Sourse: WDI (2012), Griliches (1988), I.R.I. Central Bank, I.R.I. Custom.

This Article will be effective if it is directed from the correct way and aids, facilities, incentives and supports given to people and exporters who deserve and don't lead to bribery in society. Also, it's necessary to pay substantial attention to knowledge and research in order to empower economical pillars of the country to international competition.

Also, in Articles 69, 72, 75, 78 of the second chapter of fifth development plan of Islamic republic of Iran law(2001-2005) business environment improvement has been discussed. In these Articles and its paragraphs, encouraging policies have been examined to use trade names for goods and services in retail and wholesale through reserving spiritual rights of brand holder, to provide insurance services related to prices fluctuation and exchange rate fluctuations, to form public and private dialogue council in order to exchange government viewpoint and to form private and cooperative sectors and facilitating economical activities in these sections, identification of laws and regulation that are detrimental to production and investment in Iran and to examine and process problems and demands of productive and export organizations. Also, according to Article 78 the government is obliged to purchase its needed goods and services with the priority from domestic producers to support domestic products. Improving business environment is one of the most effective factors to attract investors in order to expanding production and then exports, and it's necessary to have the necessary legal production from investors and to maintain investment security and its property (Management and Planning Organization, 2010).

According to table(2), the ratio of non-oil exports to gross domestic product of Iran's economy is 2/7 percent during the studied period which is not considerable amount and this shows that non-oil export in Iran's economy is located at low position.

Table (3) shows comparison of gross domestic product of the countries which are member of organization for economic cooperation and development and Iran. During the studied period (1971-2010) the average share of group seven and other members of out of group seven in gross domestic product of organization for economic cooperation and development have been respectively 13 and 87. It should be noted that, More than one –third of gross domestic product in countries with the organization for economic cooperation and development belongs to American economy and New Zealand has the least share of gross domestic product in countries with the organization for economic cooperation and development among the examined countries. Meanwhile gross domestic product of Iran to Canada (that is economically the smallest country in group of seven) is about 16percent of gross domestic product. Also, gross domestic product of Iran to New Zealand (that is economically the smallest organization for economic cooperation and development member country) is almost double. However it should be noted that, major part of gross domestic products of Iran's economy is from direct and indirect effects of petroleum that if we deduct the direct and indirect effect of oil from gross domestic product, the gap between Iran's economy and also the gap between the actual capacity of Iran's economy with the potential and actual capacity of global economy will be evident. Also, gross domestic product is not alone an enough standard to judge but we can use per capita production index.

Table 3: Gross domestic product share in every Country with OECD

	Canada	England	Italy	French	Germany	Japan	America	Ireland	Greece
1971-1980	2.88	6.75	5.12	6.09	9.02	19.23	37.16	0.23	0.60
1981-1990	2.93	6.16	5.13	5.94	8.31	20.87	37.71	0.25	0.53
1991-2000	2.82	5.92	4.76	5.59	8.23	21.07	38.95	0.31	0.47
2001-2010	3.05	6.12	4.44	5.52	7.65	18.95	41.08	0.46	0.53
1971-2010	**2.94**	**6.27**	**4.92**	**5.83**	**8.38**	**20.15**	**38.4**	**0.30**	**0.54**
1981-2010	2.92	6.1	4.82	5.73	8.12	20.55	38.9	0.32	0.52
1991-2010	2.92	6.0	4.66	5.58	8.04	20.35	39.68	0.37	0.50

	Finland	Denmark	Belgium	Austria	Australia	New Zealand	Switzerland	Sweden	Spain
1971-1980	0.53	0.82	1.11	0.87	1.51	1.40	1.22	2.45	0.61
1981-1990	0.55	0.72	1.03	0.82	1.52	1.21	1.11	2.31	0.65
1991-2000	0.48	0.67	0.98	0.81	1.60	1.08	1.00	2.34	0.68
2001-2010	0.50	0.66	0.97	0.81	1.76	1.01	1.0٢	2.53	0.71
1971-2010	**0.51**	**0.73**	**1.04**	**0.84**	**1.58**	**1.20**	**1.10**	**2.39**	**0.66**
1981-2010	0.50	0.70	1.00	0.82	1.61	1.13	1.06	2.37	0.68
1991-2010	0.48	0.67	0.97	0.82	1.66	1.06	1.01	2.39	0.69

	Norway	Portugal	Holland	Iran (non-oil)	OECD	Iran	Group 7	Non G7
1971-1980	0.42	1.72	0.27	100.00	86	14	7.76	194
1981-1990	0.43	1.57	0.24	100.00	87	13	18.14	167
1991-2000	0.46	1.57	0.22	100.00	87	13	13.62	191
2001-2010	0.45	1.56	0.24	100.00	87	13	14.73	200
1971-2010	**0.44**	**1.61**	**0.24**	**100.00**	**87**	**13**	**16.06**	**184**
1981-2010	0.44	1.58	0.24	100.00	87	13	13.92	181
1991-2010	0.46	1.58	0.23	100.00	87	13	15.65	191

Source: WDI (2012), Griliches (1988), I.R.I. Central Bank, I.R.I. Custom.

According to table (4), the average of per capita gross domestic product of the countries which are member of organization for economic cooperation and development was 22165 dollars during the studied period. Of course, the highest per capita gross domestic product belongs to Switzerland,

America and Japan and Greece has the least per capita gross domestic products among the studied countries. The average of per capita gross domestic product of seven group countries and other countries, which are member of organization for economic cooperation and development, was 23544 and 15704 dollars during this period. However, per capita gross domestic products were 1874, 1346 and 1478, respectively in Iran during 70th, 80th and 90th and it was 1800 in the first decade of the recent century.

Table 4: Capita gross domestic product of OECD countries and Iran

	Canada	England	Italy	French	Germany	Japan	America	Ireland	Greece
1971-1980	15073	14583	11260	14055	13980	20949	20794	8684	7910
1981-1990	17989	17478	14590	17258	17083	27862	25404	11251	8607
1991-2000	20255	21477	17687	20404	21320	35428	30788	18338	9432
2001-2010	24224	25902	19497	23119	23510	37558	35638	28267	11892
1971-2010	**18695**	**18998**	**15224**	**18081**	**18325**	**29435**	**27088**	**14974**	**9114**
1981-2010	20143	20762	16811	19689	20062	32827	29603	17490	9595
1991-2010	21578	22953	18290	21309	22051	36138	32405	21647	10253

	Finland	Denmark	Belgium	Austria	Australia	New Zealand	Switzerland	Sweden	Spain
1971-1980	13565	19552	13827	14027	13176	26545	18047	8332	8162
1981-1990	17963	22620	16812	17469	15395	29959	21375	9690	10559
1991-2000	19849	26887	20406	21657	18595	32354	23974	12524	14259
2001-2010	24573	30578	23275	24758	22259	34328	28602	15166	16979
1971-2010	**18190**	**24099**	**17910**	**18724**	**16657**	**30294**	**22195**	**10895**	**11849**
1981-2010	20040	25919	19543	20606	18048	31796	23860	11915	13327
1991-2010	21426	28118	21363	22695	19816	33011	25515	13405	15165

	Portugal	Holland	Iran (non-oil)	OECD	Iran	Group 7	Non G7
1971-1980	12835	15267	10737	16691	1874	17015	12502
1981-1990	16733	17322	11620	20779	1346	21590	14665
1991-2000	22079	21478	12500	25566	1478	26788	17876
2001-2010	25290	24408	14784	29091	1802	31008	20892
1971-2010	**18369**	**18932**	**12071**	**22165**	**1598**	**23544**	**15704**
1981-2010	20583	20405	12604	24355	14.44	25958	17041
1991-2010	23148	22456	13261	26742	15.02	28526	18738

Source: WDI(2012), Griliches, 1988, I.R.I. Central Bank, - I.R.I. Custom.

In other words, the average of per capita gross domestic product in Iran has been 1598 during this period that is one-sixth of per capita gross domestic product of Greece which is the smallest economical number of the organization for economic cooperation and development. High level of per capita income in the organization for economic cooperation and development compared to Iran results from economic dynamics and attention to new production factors (research and development, technology, information and communication technology, scientific management and etc.) in other words, organization for economic cooperation and development, succeeded to increase per capita income with correct economic policy to create relative acquisitioned merit and to decrease the role of relative natural merit. However, a remarkable portion of per capita of Iran's economy is earned from petroleum selling that is natural wealth and natural relative advantage and has not been derived from endogenous factors.

Thus, according to the paragraph B of Article 145 of fifth development plan, from the beginning of the program Ministry of Commerce and other real and legal persons including governmental and nongovernmental, are obliged to obtain the needed permission from Ministry of Agriculture before importing agricultural goods or products including raw or processed goods or food requirements needed for food industries. The government is obliged to impose effective tariff to import all of the agricultural goods and products in order to support domestic products so that the exchange rate

should be always in favor of domestic producers. This paragraph can be effective, if it does not lead to increase competitiveness gap between agricultural activities from the outside world. In other words, the support should have program and structure reform orientation to move towards knowledge-based economy (Management and planning organization, 2010).

Also, in Article 150 it has been stated that: the Ministry of Industries and Mines is obliged to act to fulfill the goals of twenty years perspective of Islamic Republic of Iran in the form of codifying industrial and mineral development strategy in coordination with deputy under the selected parts of industry and mine, so that to increase the growth rate of added value in industry and mine selection.

A- Promoting industry competition with an emphasis on developing technology capabilities and transferring dependency point of relative merits of raw material to technology capabilities and creating competitive advantages

B- Diversifying the industrial exports base and increasing the share of products with high processing in exports

C- Developing appropriate linkage between small, medium, and large industries and forming industrial clusters and brand and preparing merger and large competitive firms.

Also, in the fourth development plan there is attention to increase competitiveness power and engagement with the global economy and the essential program which turns Iran's economy to the knowledge-based economy (Management and planning organization, 2010).

Based on the new theories of international trade, increasing the competitiveness power and exports development of each country depends on technical and industrial progress and this is done in the light of internal research and development activities and international research and development overflow through goods imports and attracting direct investment (Coe and Et al, 2008). Ledesma (2000-2002), Dipietro and Anoruo (2005), Yan Aw, Roberts and Yixu (2009), Faustino, Lima and Matos (2012), San du, Cio canel (2014) suggest a positive impact of accumulation of domestic research and development expenditure on the exports in the long term. Industrial countries undergo large position of research and development costs and countries with the organization for economic cooperation and development undergo more than 90 percent of these costs in industrial world. Surely, high concentration of research and development in this countries leads to technology progress, improvement of new production process and also improvement of products quality (Ledesma, 2002).

According to table(5), approximately 0.93 of domestic research and development capital of countries with the organization for economic cooperation and development belongs to seven groups of countries and the remaining 0.07 belongs to members other than group seven during the studied period. It should be mentioned that, nearly half of domestic research and development capital of countries with the organization for economic cooperation and development belongs to America and Greece which has the least capital accumulation of domestic research and development among studied countries. However, during 1971-2010 the ratio of capital accumulation of domestic research and development of Iran to Greece is four fold. It should be noted that, this trend has completely decreasing trend during the studied period. Also, the ratio of capital accumulation of domestic research and Development of Iran to Canada was about 2.52 percent. It should be stated that, the major part of domestic research and capital accumulation development is governmental in Iran's economy. But the bulk of research and development activities in countries which are member of organization of economic cooperation and development belong to the private sector due to healthy economic structure and correct signaling of Price factors to Entrepreneurs. Then, with the present structure we cannot be hopeful to capital accumulation in domestic research and development in Iran's economy to technical change and development of knowledge-based economy

activities. Another interesting point is that, in Iran's economy 0/1 to 0/5 percent of gross domestic product are spent to research and development costs; however this amount is 2 to 3 percent at the developed countries with the organization for economic cooperation and development. Thus, is it possible to be successful by allocating small percentage of gross domestic product to research and development to fill deep gap of technology and increase competitiveness power of Iran's economy in order to develop non-oil exports and society welfare? And also, is it possible to respond to the wide demand of Iran's economy (resulting from information and expectation explosion, population explosion and etc.) with respect to the existent condition?

Table 5: domestic research and development capital of Iran & OECD

	Canada	England	Italy	French	Germany	Japan	America	Ireland	Greece
1971-1980	0.92	10.85	1.60	6.12	8.43	13.13	51.90	0.04	0.01
1981-1990	1.05	8.27	1.77	5.57	9.32	18.08	49.09	0.06	0.02
1991-2000	1.58	5.97	2.00	5.24	8.85	23.21	45.32	0.10	0.07
2001-2010	1.98	5.26	2.03	5.14	8.37	23.96	44.68	0.16	0.11
1971-2010	**1.3**	**7.93**	**1.82**	**5.58**	**8.88**	**18.96**	**48.19**	**0.08**	**0.04**
1981-2010	1.45	6.74	1.92	5.37	8.96	21.31	46.7	0.09	0.05
1991-2010	1.72	5.74	2.02	5.23	8.71	23.45	45.11	0.13	0.09

	Finland	Denmark	Belgium	Austria	Australia	New Zealand	Switzerland	Sweden	Spain
1971-1980	0.15	0.29	0.74	0.25	0.17	2.15	0.81	0.19	0.21
1981-1990	0.22	0.30	0.76	0.33	0.26	1.61	1.05	0.31	0.29
1991-2000	0.41	0.43	0.78	0.48	0.65	1.32	1.34	0.61	0.28
2001-2010	0.53	0.54	0.81	0.58	0.90	1.22	1.51	0.80	0.25
1971-2010	**0.30**	**0.37**	**0.77**	**0.38**	**0.44**	**1.63**	**1.14**	**0.47**	**0.25**
1981-2010	0.36	0.41	0.77	0.45	0.54	1.42	1.26	0.54	0.29
1991-2010	0.46	0.45	0.81	0.52	0.74	1.29	1.41	0.68	0.29

period	Portugal	Holland	Norway	OECD	Group 7	Non G7	Iran to Canada	Iran to Greece
1971-1980	0.03	1.97	0.04	100	93	7	1.96	1116
1981-1990	0.03	1.58	0.04	100	93	7	6.07	269
1991-2000	0.16	1.11	0.10	100	92	8	3.86	64
2001-2010	0.22	0.91	0.14	100	91	9	2.50	47
1971-2010	**0.11**	**1.46**	**0.08**	**100**	**93**	**7**	**2.52**	۴۳۲
1981-2010	0.13	1.25	0.09	100	96	4	3.44	146
1991-2010	0.20	1.06	0.12	100	92	8	3.86	58

Source: WDI (2012), Griliches (1988), I.R.I. Central Bank, I.R.I. Custom.

Article 17 of fifth development plan points to technology development and diffusion and support knowledge-based companies by which the government can take following actions in order to develop and diffuse technology and support knowledge-based companies.

  A- Financial support from demand-based researches with universities and institutions of higher education, research and seminaries in the field of solving the country problems provided that at least 50 percent of its costs are committed to private employer.
  B- Financial support and facilitating formation and development of small and medium private and cooperative companies which act in trading science and technology especially producing goods based on advanced technologies and exporting technical services and also supporting growth center startup and parts of science and technology by private sector.
  C- The needed legal supports in order to encourage foreign parties of international relations and foreign investment to transfer technical knowledge and part of research and development activities related to the country and doing it in coordination with local countries.

D- Financial support of creating and developing idea exchange and technology market in order to use scientific capacity to meet the needs of industry, agriculture and service's needs. (Mmanagement and planning organization, 2010).

This is one of the main components of production and exports and negligence of this component can cause problems in the development of competitiveness capability of the country. It is worth mentioning that, according to the facts and figures about this component and other components there is considerable gap between Iran and developed countries and if we pay attention to filling these gaps we will see decrease of gap between competitiveness powers of Iran's economy with the developed economies.

On the other side, given the deviation of relative prices resulted from poor economic policies is it possible to increase the ratio of research and development to the production by active members of private sectors as other developed countries?

Or, how can we see demand increase of highly educated labor force by the active members of private sector in this structure? In other words, it seems that political orientation of macroeconomic is not appropriate in order to transform capital-based and resource-based economy to knowledge-based economy and it should be taken into consideration in the future planning, otherwise we cannot observe the fulfillment of perspective document and fifth and final development plan. Because over the many years that have been passed from the perspective document there is not serious change in this field. Although tremendous efforts have been carried by the government in the supply of human capital and research and development activities but due to the inconsistency between macroeconomic policies and educational policies we cannot observe optimal use of investments in educational fields.

According to the recent theories of international economics, with the existence of international trade among countries, exports of each country depend on foreign research and development capital stock as domestic research and development capital accumulation.

Interests of foreign research and development capital accumulation can be direct and indirect. Therefore, international trade increases exports growth and the increased access to intermediate and capital goods. In other words, trade sector is one of the main components of economic systems that take more importance in the world due to technology development and increase in goods production diversity. In addition to the existence of theoretical evidences to suggest the positive effect of trade (exports and imports) on economic growth, the experience of most of the world countries show that the presence in international markets and exploiting foreign trade advantages paved the way to the economic growth for most of the developing countries in recent decades (Mody and Yilmaz, 2005). Because it's possible to transfer trade partners' research and capital accumulation development to the country through objective goods imports and with knowledge and technology absorption orientation and this fact can cause an increase in competitiveness power and growth of country's export performance, the implicit assumption is that foreign research and development capital stock occurs in country through importing intermediate and capital goods (Wang et al, 2013).

Ledesma (2000), Karlsson and Johanson (2006), Yan Aw, Roberts and Yixu (2009), Faustino, Lima and Matos (2012) and Wang et al (2013) suggest a positive impact of foreign research and development expenditure accumulation on the exports in the long term.

Statistics of table (6) indicates goods imports level from organization for economic cooperation and development to Iran's economy. During the studied period (1970-2010) the average share of goods imports of Iran's economy from countries with the organization for economic cooperation and development and group seven have been respectively 65 and 50 percent. The highest goods imports share in Iran's economy belongs to Germany (Germany is Iran's most important trading partner) and

among countries with the organization for economic cooperation and development Portugal has the least share in supplying goods imports in Iran's economy.

Table 6: Share of Iran imports from OECD

	Canada	England	Italy	French	Germany	Japan	America	Ireland	Greece
1971-1980	0.8	10.3	5.6	6.0	20.9	18.7	18.4	0.1	0.3
1981-1990	2.2	8.8	8.0	2.8	26.2	17.2	1.1	0.4	0.3
1991-2000	4.7	6.0	11.0	6.8	25.0	12.3	2.7	0.3	0.1
2001-2010	2.2	6.9	12.4	15.2	24.3	7.5	0.6	0.5	0.1
1971-2010	**2.6**	**8.2**	**8.8**	**6.5**	**24.1**	**14.7**	**6.4**	**0.3**	**0.2**
1981-2010	3.3	7.3	10.1	6.8	25.4	13.3	1.7	0.4	0.2
1991-2010	3.7	6.3	11.4	9.6	24.7	10.7	2.0	0.4	0.1

	Finland	Denmark	Belgium	Austria	Australia	New Zealand	Switzerland	Sweden
1971-1980	1.3	0.9	2.9	1.6	1.8	3.3	1.8	1.4
1981-1990	0.8	1.4	4.9	2.8	5.7	4.5	3.4	2.8
1991-2000	1.0	1.0	7.0	3.2	4.0	5.0	2.3	3.1
2001-2010	1.1	0.9	4.0	2.8	2.6	8.3	4.5	2.8
1971-2010	**1.1**	**1.1**	**4.9**	**2.6**	**3.8**	**4.8**	**2.8**	**2.5**
1981-2010	1.0	1.16	5.6	2.9	4.4	5.5	3.3	2.9
1991-2010	1.0	1.0	6.1	3.1	3.5	6.2	3.0	3.0

	Portugal	Spain	Holland	Norway	OECD	Imports from 21 countries to overall imports	Imports from group7
1971-1980	0.0	0.2	3.2	0.5	100	0.76	0.62
1981-1990	0.1	0.2	4.1	2.2	100	0.68	0.44
1991-2000	0.2	0.1	3.5	0.6	100	0.62	0.41
2001-2010	0.2	0.2	3.2	0.2	100	0.49	0.33
1971-2010	**0.1**	**0.2**	**3.6**	**1.0**	**100**	**0.65**	**0.50**
1981-2010	0.1	0.2	3.7	1.2	100	0.62	0.46
1991-2010	0.2	0.1	3.4	0.5	100	0.56	0.40

Source: WDI (2012), Griliches (1988), I.R.I. Central Bank, I.R.I. Custom.

Statistics show that during the studied period more than half of Iran imports is from countries with the organization for economic cooperation and development that more than 0.90 of research and development costs in the world and large portion of world income belongs to these countries. Thus, although the share of these countries has been decreased in goods imports (due to deal with economic sanctions and etc) after the Islamic Revolution but again the major part of Iran's economy is done from organization for economic cooperation and development countries. On the other words, the composition of Iran trade partners has slightly changed after Islamic Revolution to cope with the possible sanctions. However, large portion of Iran's imports is from countries with the organization for economic cooperation and development that have high research and development capital stock. But due to the lack of a principled approach to imports in order to attract technology and knowledge we have not been able to use this opportunity to increase competitiveness power and create interdependency. However, there was appropriate platform to fill the deep technology gap through attracting and implementing technology embodied in them by targeted importing of capital and intermediate goods and adopting coordinated and proper economic policies (monetary, fiscal, exchange and trade). Experience shows that overflow of embodied technology, is one of the appropriate channels to fill deep technology gap in importing capital and intermediate goods (Montobbio and Rampa, 2005).

thus with respect to little attention of developing countries such as Iran to research and development activities on one side and due to the injection of exchange dollars obtained from the sale of the oil wealth and allocation of the main value of these dollars to the capital and intermediate goods import from the developed countries especially organization for economic cooperation and development on

the other side, it was expected to fill the remarkable portion of country's technology gap with the developed economies by transferring technology in this way and to observe the active role and position of non-oil export in Iran's economy and international context. However, statistical facts don't show this but they lead to the dependency of major part of country's economic activity to capital and intermediate goods imports. Perhaps, this is due to non-targeted imports and adopting incorrect economic policies(monetary, fiscal, exchange and trade) that resulted in incorrect price signals to economic active members and then we observed decision adoption by economic active members that has not been to increase economic structure reformation in order to increase dynamism and competitiveness power In Iran's Economy.

According to table (7), the share of group seven in foreign research and development capital accumulation is 96 percent during the studied period (1971-2010). It should be mentioned that, nearly one-third of the country's foreign research and development capital accumulation has been carried out from America which has the highest research and development capital accumulation. In general, the share of America was 60 percent in Iran's foreign research and development capital accumulation before Islamic Revolution but this amount has been decreased due to economic sanctions of goods imported from America, and has been reached to 40 percent during 2001-2010. Although Iran's foreign research and development could be improved during the studied period and it could play decisive role in real variables particularly non-oil exports of Iran's economy, it should be noted that the world organization for economic cooperation and development research and development capital accumulation has been increasing during the studied period. However, foreign research and development capital accumulation of the country has not been increasing after Islamic Revolution due to economic sanctions and fluctuation in real goods imports. But the important point is that the success secret of dealing with economic sanctions and fulfillment of objectives of resistance economy is internalization of innovation and technology activities in Iran's economy.

Table7: Share of OECD member from foreign research and development capital of Iran

	Canada	England	Italy	French	Germany	Japan	America	Ireland	Greece
1971-1980	0.05	7.38	0.67	2.54	12.60	17.26	58.39	0.00	0.00
1981-1990	0.36	9.51	1.99	2.06	33.10	42.75	6.95	0.00	0.00
1991-2000	1.19	4.87	3.07	5.05	29.51	38.03	14.76	0.00	0.00
2001-2010	0.77	6.28	4.34	13.20	36.15	29.61	4.35	0.01	0.00
1971-2010	**0.56**	**7.13**	**2.20**	**4.38**	**26.35**	**32.33**	**24.08**	**0.00**	**0.00**
1981-2010	0.77	7.03	2.82	5.15	32.12	38.59	9.77	0.00	0.00
1991-2010	1.06	5.27	3.42	7.38	31.42	35.63	11.77	0.01	0.00

	Finland	Denmark	Belgium	Austria	Australia	New Zealand	Switzerland	Sweden
1971-1980	0.02	0.02	0.15	0.02	0.02	0.00	0.42	0.09
1981-1990	0.03	0.06	0.48	0.12	0.20	0.01	0.95	0.48
1991-2000	0.06	0.06	0.76	0.20	0.39	0.01	0.91	0.35
2001-2010	0.09	0.08	0.61	0.27	0.54	0.01	1.63	1.04
1971-2010	**0.04**	**0.05**	**0.48**	**0.13**	**0.23**	**0.01**	**0.85**	**0.39**
1981-2010	0.05	0.06	0.62	0.18	0.33	0.01	1.05	0.52
1991-2010	0.07	0.06	0.72	0.22	0.42	0.01	1.10	0.54

	Norway	Spain	Portugal	Holland	OECD	Group 7	Non G7
1971-1980	0.00	0.02	0.00	0.36	100.00	99	1
1981-1990	0.01	0.11	0.00	0.85	100.00	97	3
1991-2000	0.00	0.26	0.00	0.52	100.00	96	4
2001-2010	0.01	0.43	0.01	0.51	100.00	93	7
1971-2010	**0.01**	**0.16**	**0.00**	**0.57**	**100.00**	**96**	**4**
1981-2010	0.01	0.22	0.00	0.66	100.00	95	5
1991-2010	0.01	0.30	0.00	0.52	100.00	95	5

Source: WDI (2012), Griliches (1988), I.R.I. Central Bank, I.R.I. Custom.

Since through correct and targeted management, foreign research and development of capital accumulation can play supplementary role for the domestic research and development of capital accumulation and non-oil exports development and creating interdependency, thus its necessary to provide the least amount of research and development capital accumulation, human capital and other real components in Iran's economy while the investments on research and development activities in countries were poor and also the ratio of research and development to gross domestic product is between 1 to 6 percent during 1971-2010 and meanwhile, nearly 90 percent of research and development activities in Iran's economy was governmental that is determined based on the order that is not emerged from market mechanism and it should be noted that more than half of the research and development costs has been spent on building constructions, thus with these conditions how can we expect exchange in competitiveness space of Iran's economy.

In paragraph (e) of Article 16, the second chapter of law of fifth development plan by Islamic Republication of Iran (2011-2015) has been clarified that in order to increase research and development share from gross domestic product, there should be a plan to 5 percent annual increase in research share from gross domestic product and its 3 percent increase up to the end of the plan. In this direction, research resources specify the issue of this statement in annual budget in the form of specified programs and also at the end of year, country's research performance report provide the issue to the Islamic Assembly Committee on education and research. Since this component is not demand-driven in the structure of Iran's economy and it is supply-driven, thus by continuing the existent status we cannot observe interdependency creation and reduction of Iran's competitiveness power gap with the developed countries (Management and Planning organization, 2010).

According to the table (8), the average of ratio of gross domestic product to domestic research and development capital accumulation of organization for economic cooperation and development has been 4.9. However, the same ratio is 53 for Iran that is about tenfold for organization for economic cooperation and development. This ratio is 5 for the group seven countries and it's 10 for the countries that are not member of group seven which are not also member of organization for economic cooperation and development. The above mentioned figures and numbers represent that domestic research and development capital accumulation in Iran is very low in relation to gross domestic product. On the other hand, the main weight of gross domestic product in Iran is crude oil. In other words, domestic research and development accumulation of the countries which are member of organization for economic cooperation and development is %20 of their gross domestic product. But domestic research and development research and development accumulation for Iran is nearly 2 percent of country's gross domestic product.

Research and development activities are the key factors in the world's technology progress and Iran's gross domestic product is negligible compared to organization for economic cooperation and development countries. So, how can we expect technology change in Iran's economy through continuing the existent status? In other words, if we take the oil-wealth from Iran's economy do we have the same amount of gross domestic product with these amounts of research and development activities?

Table8: GDP to domestic research and development capital of Iran and OECD

	Canada	England	Italy	French	Germany	Japan	America	Ireland	Greece
1971-1980	20.81	4.13	21.17	6.60	7.11	9.81	4.74	34.56	833.34
1981-1990	16.63	4.43	17.19	6.30	5.28	6.88	4.54	25.63	211.30
1991-2000	8.02	4.36	10.53	4.70	4.09	4.04	3.77	13.62	35.33
2001-2010	14.43	4.32	18.02	6.01	4.11	7.52	4.55	27.28	592.6
1971-2010	**13.78**	**4.30**	**15.10**	**5.57**	**5.18**	**6.35**	**4.20**	**22.62**	**310.2**
1981-2010	10.97	4.35	12.68	5.17	4.40	4.93	3.98	17.85	102.50
1991-2010	7.20	4.32	9.67	4.43	3.84	3.64	3.62	12.67	29.95

	Finland	Denmark	Belgium	Austria	Australia	New Zealand	Switzerland	Sweden
1971-1980	23.37	18.48	10.00	23.23	58.73	49.75	4.31	10.14
1981-1990	15.09	14.43	8.00	14.78	35.41	39.83	4.47	6.31
1991-2000	5.30	6.94	5.51	7.69	11.42	10.86	3.59	3.31
2001-2010	18.22	15.31	8.57	18.61	44.02	39.83	4.23	8.22
1971-2010	**12.89**	**12.00**	**7.30**	**13.75**	**31.15**	**29.52**	**3.94**	**6.00**
1981-2010	8.82	9.45	6.25	10.00	20.12	20.6	3.81	4.33
1991-2010	4.66	6.10	5.10	6.81	9.93	9.20	3.29	3.02

	Spain	Norway	Portugal	Holland	OECD	Iran	Group 7	Non G7
1971-1980	93.19	19.29	85.49	5.78	6.5	62	6.0	12.8
1981-1990	44.68	13.26	83.22	5.88	5.8	59	5.4	11
1991-2000	17.51	10.78	14.99	6.23	43	45	4.2	7
2001-2010	70.66	17.13	63.67	5.84	2.8	53	3.4	5.8
1971-2010	**46.04**	**13.85**	**53.45**	**6.00**	**4.9**	**52**	**4.9**	**10**
1981-2010	27.18	11.68	39.56	6.01	4.5	49	4.5	9
1991-2010	15.34	10.24	12.25	6.16	3.8	43	3.9	7

Source: WDI (2012), Griliches (1988), I.R.I. Central Bank, I.R.I. Custom.

5. RESULTS

5.1. Opportunities and Strength
- Abundance of rich underground resources and considerable petroleum income
- The ratio of employed specialists is growing compared to overall employers of Iran's economy
- The ratio of scientists and researchers is growing compared to overall employed people.
- Very high potential of human capital
- Geopolitical situation and the existence of regional markets to exports development

5.2. The Main Challenges and Weaknesses
- Change in the composition of the country's trade partners in the period after the Islamic Revolution from the developed countries towards the developing countries due to the existence of economic sanctions and unilateral dependency of Iran's economy to the world's economy.
- The deep technology gap of Iran's economy with the world's economy and then we see that the exports composition is traditional and the country does not have exports competitiveness power.
- Lack of elasticity of high proportion of Iran's non-oil exports supply(due to the fact that the high value of the exports of Iran's economy goods is traditional without technology).
- High dependency of the exports of industrial products on imports technology.
- Dependency of non-oil exports of Iran's economy on traditional production factors(labor and physical capital) and the exchange earned from oil wealth which leads to the reduction in competitiveness power of Iran's economy and cease of economic growth and non-oil exports.
- Dependency of exports of industrial products to various subsidies such as energy subside, subsidies resulting from the exchange rate differences, poor facilities, and etc.
- Low level ratio of research and development costs to added value of the country's economy during the four past decades(share of research and development costs from gross domestic product of Iran's economy has been lower even from the average of this share in developing countries such as African countries, Arab countries and Latin America)
- High dependency of government's activities and all of the economic activities to the wealth earned from oil exports
- On one hand, we observe a considerable gap between demand and supply of goods and services(demand excess) that is resulted from the population explosion, information explosion

and explosion of monetary and financial expectations and policies and on the other hand we see law reflexiblity of domestic production supply and exports of Iran's economy.

- Adopting improper economic policies(monetary, financial, exchange and trade) which lead to the distortion of relative price in favor of using physical capital and imports technology and to the detriment of other production factors(human capital, research and development activities, and labor force) and this fact results in the lack of reluctance of the private sector to do research and development activities and development and use of human capital. In other words, unlike developed and newly industrialized countries that most of their research and development activities are done by the private sector and based on supply and demand mechanism, about 90 percent of research and development activities in Iran's economy is relevant to the country
- Lack of principled and targeted planning to attract foreign research and development accumulation from imports channel.
- Lack of success in FDI attraction in proportion to most of countries such as China, Malaysia and etc. in order to attract foreign research and development accumulation to fill deep technology gap.
- Expensiveness of production factors needed for knowledge-based economy and cheapness of production factors needed to resource and capital-based economy because of improper economic policies.

6. CONCLUSION

6.1. Outlook: While Continuing the Existent Status

Considering the economic sanctions on one hand and increase of population and labor supply, fluctuation in per capita oil income, fluctuation in per capita investment, spending most of the country's oil income to government's current costs, lack of structural reforms in the country's economy, lack of efficient resource allocation due to improper economic policies, lack of principled planning to reform economic structure in order to decrease relative price deviation and to create remarkable relative acquired advantage, reduction of the role of labor and abundant physical capital as a comparative advantage, information, population and expectations explosion, dependency of competitiveness power of the world economy on foreign and domestic research and development activities and human capital on the other hand, we can state economic outlook of the country with the current situation as follow:

- Fluctuation in non-oil growth rate of Iran's economy compared to other countries
- Lowness of non-oil exports role and share, particularly exportation with high technology in Iran's economy
- Increasing deep technology gap and strong dependency of Iran's economy activities to import technologies and raw material, intermediate and capital goods
- Lack of private sector tendency to do research and development activities and human capital
- Lack of competitiveness power due to lowness of exportable goods and services quality in Iran on one side and highness of costs of exportable goods and services compared to developed countries on the other hand due to adopting wrong economic policies that lead to the deviation of inputs relative price
- High dependency of economic structure, exports and budget of government to oil exports derived incomes
- Lowness of competitiveness power and challenge in accession to world trade organization
- Equality of domestic oil production and consumption and decrease of exchange income and its negative consequences on payments balance, particularly non-oil exports.

6.2. Outlook: Most Favorable Option

In order to achieve to the continuous and stable economic growth, increase in competitiveness power and increase in exports strength of the country in the way of fulfillment of goals of outlook document and Articles of fifth development plan and orientation of future development programs and dealing with any economic sanction, it is necessary to apply development strategies that lead to increase exports, development of communication and information technology to establish domestic communicative and informational networks, to decrease imports of consumer goods and to increase production power of capital and intermediate goods, to motivate economically active members in order to increase investment and research and development activities and to apply developed technology. Rapid technology developments and innovation in technology all over the world has led to provide ensure from creating competitive economy as a basic economical aims. Thus to provide a strong and dynamic economy in long term it's necessary to realize the following goals:

- Diversifying economic activities in proportion to relative existent merits.
- Creating relative merits based on global economic orientation and human capital capabilities in knowledge-based economy.
- Increasing exports share based on knowledge and research and development activities
- Technology transfer through persuading trade partners who have high research and development capital accumulation.
- Innovation development using deep and practical researches to fill deep technology gap and development of non-oil exports.
- Attracting foreign research and development accumulation through attracting foreign direct investment, imports of capital and intermediate goods and reverse brains' migration.
- Increasing the role of knowledge management, resource management, futuristic technology, and e-commerce in Iran
- What can we do to increase government's outsourcing and principled and serious support of the private sector investment in order to explain Article 44 of the constitution?

7. PRACTICAL SUGGESTIONS

Non-oil exports has remarkable role in the fulfillment of goals of economic development programs and twenty years' perspective document and Articles of fifth development plan and creating interdependency. On the other the role of acquired relative merits resulted from the components of knowledge-based economy (resulted from human capital and research and development activities and innovation) on the exports has increased. Thus in order to move towards knowledge-based economy and to increase competitiveness power and seriousness to deal with any kind of economic sanctions and in order to diversify non-oil exports and to increase exports with high knowledge and technology and appropriate use of the opportunities to participate in the world trade organization the following actions have been recommended:

- Overall emphasis on research and development activities to enhance the role of technology progress, innovation, invention and creativity in non-oil exports
- The correct selection of trades partners and improving the country's ability to attract and localize foreign research and development capital accumulation and its institutionalization in production processes to improve product quality.
- Transferring more resource and oil incomes on human capital and research and development activities on one side and adopting reasonable policies in order to stimulate economic active members to employ new production elements to expand components of knowledge-based economy.

- Moving towards relative price reformation for optimal resource allocation and profitability of research and educational activities.
- Reforming economic structures(such as creating macroeconomic stability, creating competitive space in Iran's economy, focusing on IT and ICT, improving capital system) based on knowledge.
- Protecting foreign direct investments with the intention of attracting new knowledge, new management, new technology and financing.
- Improving the business environment of investors through implementing Articles 69, 72, 75, 76 and 78 of the second chapter of fifth development plan of Islamic Republic of Iran (2011-2015).

ACKNOWLEDGMENTS

None.

ETHICAL CONSIDERATION

Authenticity of the texts, honesty and fidelity has been observed.

AUTHOR CONTRIBUTIONS

Planning and writing of the manuscript was done by the authors.

CONFLICT OF INTEREST

Author/s confirmed no conflict of interest.

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