# Economic Relations of Japan with Iran and Saudi Arabia -A Comparative Study

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## Abstract

This study aims at comparing the economic relations of Japan with Iran and with Saudi Arabia. The comparison of these two relations is important as Iran and Saudi Arabia are leading exporters and Japan is a large importer of crude oil in the world. After a brief overview of the history of these two relations, the criteria of trade complementarity, i.e. Trade Potential Naive Assessment, Cosine Measure and Drysdale's Index are taken into account. Further, FDI in Iran and Saudi Arabia are studied based on the indicators of FDI value, FDI contribution to GDP, and the International FDI Performance Index. These indices indicate that in spite of the long aged Japan-Iran economic relations, these relations have been reduced in recent years both in trade and in foreign investment. Since, Japan needs to maintain dynamic and sustainable relations with its two main energy-providing countries; it has recently made direct investments in oil and gas extraction in Saudi Arabia in return for purchasing oil from this country. Comparatively, considering the high trading capacity between Iran and Japan, it would be time for the two countries to negotiate on the export of crude oil to Japan in return for expanding economic ties in joint ventures such as co-participating in the construction of extraction platforms and refineries in Iran, as well as gas stations in Japan and selling petroleum products on the Japanese (and East Asia) market.

**Keywords:** drysdale measure, export and import potentials, FDI Performance Index, Japan-Iran trade relations, Japan- Saudi Arabia relations, trade complementarity.

**JEL:** F13, F21, G24, N75, R11

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## Introduction

The study of Japan's economic relations with Iran and Saudi Arabia is of great importance as, according to U.S. Energy Information Administration (EIA, 2016), Saudi Arabia and Iran are among the largest producers (1st and 4th, respectively) and Japan is among the largest consumers (4th) of petroleum and other liquids in the world. This makes Saudi Arabia a serious rival to Iran for exporting crude oil to Japan.

The comparisons through usual trade indices between the export of crude oil to Japan from Iran and Saudi Arabia and also Iran's and Saudi Arabia's import from Japan indicate a similar export and import pattern of the two sets of relations. For instance, according to the reports of the International Trade Center (ITC, 2017) in 2015, the main export from both Iran and Saudi Arabia to Japan has been crude oil and the major import to both countries from Japan has been machinery. Crude oil comprises 69% of Iran's and 76% of Saudi Arabia's total exports, of which 6% and 33% respectively, have been to Japan.

There are different indices for understanding the changes in trade relations; these indices are extracted and analyzed in the current study. However, it is clear that considering countries' trade relations alone, without taking into account other forms of their economic relations, such as foreign investment, would provide an incomplete and misleading picture of the reality.

Developing countries require direct foreign investment based on export promotion in order to transfer technology and supply the needed exchange reserves for the expansion of infrastructures. Foreign investment, besides providing finance for economic projects and plans, has the potential to attain such objectives as expanding export markets by promoting the quality of domestic workforce and enhancing the standards of domestic products. Therefore, in this study alongside examining the trade relations of these two countries with Japan, their related investments' plans are also investigated.

In the recent years, Iran has not achieved much in attracting direct foreign investment. In fact, according to the UNCTAD[1] yearly statistic reports, between 2003 and 2015, Japan did not directly invest in Iran. This is while Saudi Arabia has been taking advantage of this state of affairs and absorbed Japan's direct investment by legislating facilitating laws. This study aims at comparing the situations of Iran and Saudi Arabia in attracting foreign investment, especially from Japan.

## An overview of the History of Japan's relations with Iran and Saudi Arabia

### 1. Japan's relations with Iran

Japan's trade relations with Iran started in 1929 with the establishment of the Japanese Legation in Tehran and the Iranian Legation in Tokyo. These relations resumed in 1953 after a 10-year break due to the onset of the World War II. In 1958, an economic and technological cooperation agreement was signed between the two countries.

Japan's trade relations with Iran soared in the 1960s, which was for the most part due to an improvement in the quality of Japanese industry and an increase in the Iranian standard of living. However, there was a disparity in the trade relations between the two countries; in certain years, the import of Iran from Japan was 25 times as much as its export to that country. This mismatch made the Iranian authorities to negotiate and work towards several agreements in order to bridge this inequality. Most of these agreements proved to be practically ineffective.

The historical account of Japan- Iran trade relations indicates that the majority of Iran's export to Japan has always been a type of raw material. Along with crude oil, Iran exported cotton

1. United Nations Conference on Trade and Development

as an important export commodity to Japan, especially in the 1960s. At that time, import restrictions were imposed by the Iranian government on imports from Japan to fill the gap in the two countries' trade balance. This led to a random wild fluctuation in Iran's cotton price market, caused by Iranian merchants who intended to obtain export certification so that they could import goods from Japan. Therefore, Iranian Council of Ministers issued an act, which stated that the foreign exchange earnings from cotton exports be sold to authorized Iranian banks. Consequently, the merchants had to export other commodities than cotton in order to be able to import Japanese goods (Razavi, 1351 [1972 A.D]). After the 1960s, Japan- Iran relations were limited to crude oil due to Japan's rapid economic growth and its enormous industrial requirements.

China dishes (by Noritake), glass (by Nippon Sheet Glass), lamps (by Toshiba), bicycles and Motorcycles (by Yamaha), cloths (by Kanematsu Gosho), and assortments of tires and tubes (by Inoue Rubber Co.) were among the investments of Japan in Iran during the 1960s (Razavi, 1351 [1972 A.D]: 71). The two countries' relations underwent marked changes due to oil sanctions against Iran; however, in 2016, signing a bilateral investment agreement, Japanese authorities showed interest in increasing cooperation in developing oil fields and export of automobiles and also investing in cars, railway and infrastructures in Iran (MOFA, 2016).

Figure 1 indicates the structure of Japan's export to Iran in the years between 1995 and 2015. As illustrated in this figure, capital and intermediate goods constitute the biggest percentage of Iran's imports from Japan. This feature has been because of the fact that Japanese consumption goods are more expensive compared to similar Chinese items. Additionally, due to the sanctions in this period, Iran's import from Japan has undergone a significant decrease since 2011 (Thirarath, 2016).

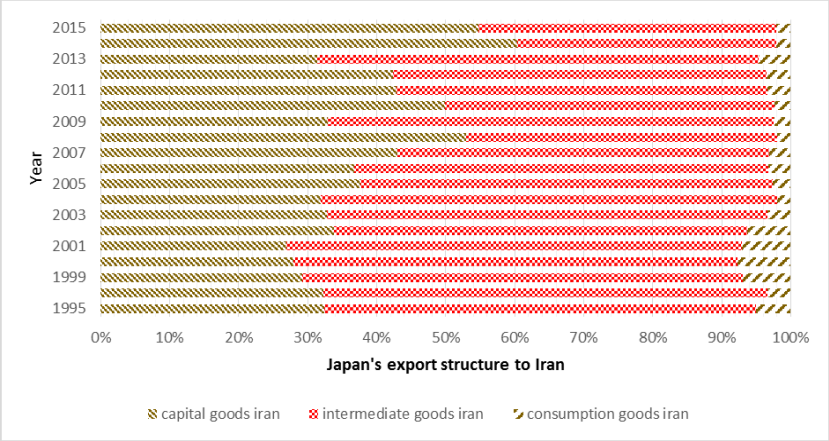


**Figure 1. Japan's export structure to Iran (Comtrade, 2017)**

## 2. Japan's relations with Saudi Arabia

The relation between Japan and Saudi Arabia dates back to the 1930s, when the first Saudi King arrived in Japan, along with his delegates, to inaugurate a mosque in Tokyo. During the Second World War, the relation between Japan and Saudi Arabia was weak. In 1945, Saudi Arabia even declared war against Japan although it never actually broke out. In 1955, too, after the war ended, Japanese government sent out a request to cultivate diplomatic relations and it was accepted by Saudi Arabia in June of the same year. Saudi Embassy started work in Tokyo in 1958 but Japanese Embassy was established in Jeddah in 1960 and then transferred to Riyadh in 1984.

Trade between Japan and Saudi Arabia (mostly the export of crude oil and petrochemical products to Japan and importing technology) and several bilateral agreements including Comprehensive Partnership toward the Twenty-First Century (1975) and Japan-Saudi Cooperation Agenda (1998) created a strong bilateral economic relation between the two countries from mid-20th century onwards. Hashimoto, Japan's prime minister in 1971, asked for a comprehensive political and

economic relations with Saudi Arabia regarding human resource development, environment, health, science and technology, culture and sport, and investment (MOFA, 2017).

In 2012, following the sanctions and embargoes against Iran, which had started in 2006, there was a drastic decrease in the export of oil from Iran to Japan (from 12%, in 2006-2012, to only 5% of Japan's energy import, in 2015). In the meantime, taking advantage of Iran's situation, Saudi Arabia augmented its shares in the oil import of Japan up to over 30%. On September 1, 2016, and in line with Saudi Vision 2030 (and absorbing foreign investment of the developed industrial countries), Saudi King met with Japanese President in order to cement their relations and also facilitate negotiations on cooperation for nuclear energy so that Japanese producers could export nuclear reactors to Saudi Arabia.

**Table 1. Japanese or Japanese-Saudi companies and their actions**

| Companies | Actions and Achievements | Reference |
|---|---|---|
| Toray Membrane Middle East LLC (TMME) Industrial Company | Cooperating with Abunayyan Holding in seawater desalination in Dammam (Abunayyan has a 50% stake in the company) | JV to Manufacture Membranes in Saudi Arabia (2010) |
| Sumitomo Chemical Co., Ltd. | Cooperation with Aramco in the fields of petrochemical plants and refineries installations and production of olefin and gasoline | Marubeni-led Ggroup Aawarded Saudi Cogen, Desal Project (2005) |
| Toyobo and Itochu Co. | Cooperation with ACWA Holding (water and power development company in Rabigh, Saudi Arabia) to produce and sell reverse osmosis membrane elements. The Saudi | Toyobo Company (2010) |

| Companies | Actions and Achievements | Reference |
|---|---|---|
| | company, Toyobo, and Itochu owns 49%, 36.1%, and 14.9% of the shares, respectively. | |
| Japan Cooperation Center, Petroleum (JCCP) | Strengthening the hydrocracking installations unit at Aramco | Japan to Review Hydrocracking Catalysts with Saudi Aramco (2007) |
| Saudi-Japanese Automobile High Institute | Education and training job skills to build (especially Japanese) cars supported by the Japanese government. Objectives: to increase the technical level in the field of automotive, and to diversify Saudi industry | Toyota Company (n.d.) |

Historically, Japan-Saudi Arabia economic relations inclined towards energy. However, considering the regional situation in the past few years, these two countries had meetings on military cooperation and maritime security. The two countries surged their industrial cooperation with the establishment of Japan-Saudi Arabia Industrial Cooperation Task Force in 2007 within the Saudi Arabian national industrial cluster program, which was launched at the start of the year. Moreover, memoranda of understanding have been signed by both parties on different small and medium-sized industries. With the development of services in Saudi Arabia, information and communications technology (ICT) and entertainment have been added to the above.

Figure 2 indicates the structure of Japan's export to Saudi Arabia in the years between 1995 and 2015. As indicated, capital and intermediate goods constitute the biggest percentage of Saudi Arabia's imports from Japan. This feature has been

because of the fact that Japanese consumption goods are more expensive compared to similar Chinese ones. Even though the structures of Iran and Saudi Arabia's import were similar in this period, the volume of Saudi Arabia's import was $66b standing at four times as much as that of Iran.

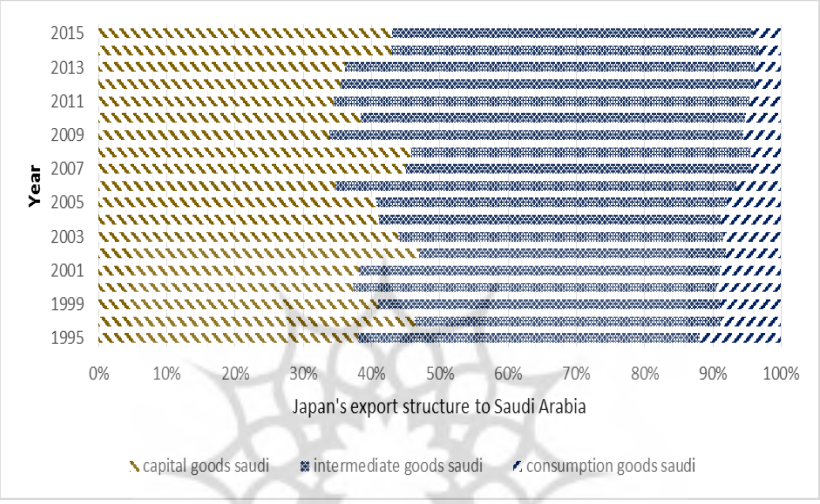


**Figure 2. Japan's export structure to Saudi Arabia (Comtrade, 2017)**

## 3. Measures for evaluating the situation of Japan's relations with Iran and Saudi Arabia

Numerous studies have been conducted to examine, measure, and compare the relations between countries and various indicators and indices have been defined consequently. Likewise, specific indices and indicators have been used in this study in order to discretely scrutinize the trade patterns of Japan's relations with Iran and Saudi Arabia on the one hand, and to put them side by side on the other.

### 3.1. The Concept of Trade Complementarity

Since export promotion is crucial to the achievement of foreign exchange required for economic development, countries have to first identify their potentials for encountering trade partners, and then plan for the realization of those potentials. This is why the

identification, measurement and assessment of trade potential are of most importance. Miankhel et al. (2009), in their introduction to 'On Modeling and Measuring Potential Trade' suggest: "Trade potential is defined as the trade that could be achieved at an optimum trade frontier with open and frictionless trade possible given the current level of trade, transport and institutional technologies or it is the maximum level of trade given the current level of determinants of trade as well as the least level of restrictions within the economic system".

Of the various methods designed to determine and measure trade potentials between countries (Arnon et al., 1996), trade complementarity, proven to be an appropriate instrument, was used to study how the expansion of trade relation happens. The trade complementarity index is an empirical technique that can be used to assess the extent to which the export specialization and the import specialization of trade partners complement one another in relation to world trade.

In the following section, three criteria of trade complementarity, i.e. the Naive Assessment of the Potential for Trade, Cosine Measure, and Drysdale's Complementarity Index will be discussed. The first criterion is used to determine the size of potential trade between two countries, and the second and third criteria are used to determine the potential for expansion of trade between two countries.

### 3.1.1. Naive Assessment of the Potential for Trade

Naive Assessment of the Potential for Trade is an index applied to compute the potential trade size between two countries. As Finger and Kreinin (1979) and Arnon et al. (1996: 116) explain:

> The picture thus obtained, which is accurate only for a given situation, is static, disregarding dynamic processes which may lead to future comparative advantages arising from trade agreements, institutional arrangements, economic policies, etc. Nonetheless, the most informative basis for assessing the

short-term potential for trade is an analysis taking the existing situation as its point of departure.

Since an exporter country will not fill all importer country's needs in each category, and vice versa, only twenty to thirty percent of the potential trade will be considered, as suggested by Arnon et al. (1996: 119).

### 3.1.2. Cosine Measure

Cosine Measure (COS) is a measure or index designed to estimate the complementarity of trade between pairs of countries, applicable to predict the possibility of their trade potential expansion. COS was first introduced by Roy Allen (1956), to be later developed and enhanced by Linnemann (1966). The index is the cosine of the angle between the vector of the exports of one country with the imports of another country or vice versa. Linnemann and Beers (1986) emphasized that the focus of this measurement is testing the Linder hypothesis. In other words, it gives an idea of the extent to which the commodity composition of exports of country *i* matches that of imports of country *j*. If they hold similar patterns, they are predicted to have trade potentials.[1] The formula of the index is as follows:

$$\cos_{ij} = \frac{e_i m_j}{[e_i][m_j]} \Rightarrow \cos_{ij} = \frac{\sum E_{ik} M_{jk}}{\sqrt{\sum E^2_{ik} \sum M^2_{jk}}}$$

$E_{ik}$ is exports of country *i* in commodity *k* to the world, $M_{jk}$ is imports of country *j* in commodity *k* from the world, *i* importer country, *j* exporter country, and *k* the commodity group.

The value of the measure lies between extremes of zero and one, in the absence of any complementarity and in the presence

1. Many researchers have thus far used Cosine measurement to analyze countries' trade relations, e.g., Arnon et al. (1996), Sharma (2006), Rahmani and Abedin (1387 [2008 A.D], Hoseini and Permeh, (1388 [2009 A.D]), Otsubo and Umemura (1998).

of perfect complementarity, respectively. The movement from zero to one is an indication of increasing trade complementarity between the two countries. The Cosine measure could also be considered as an indicator of the extent of complementarity between two countries. "Lower value of the Cosine measure would indicate that the two countries have potential competitiveness rather than potential complementarity" (Sharma, 2006: 222).

### 3.1.3. Drysdale's Complementarity Index

As confirmed by Armstrong (2007: 4), the trade complementarity index defined by Drysdale (1967) is an appropriate measure to incorporate in the gravity equation to capture the trade structure of countries as it compares the trade structure of both countries in relation to world trade (Drysdale & Garnaut, 1982).

The trade complementarity index outlined by Drysdale (1967) is defined as:

$$c_{ij} = \sum \left[ \frac{X_{iw}^{k}}{X_{iw}^{t}} \cdot \frac{M_{ww}^{t} - M_{iw}^{t}}{M_{ww}^{k} - M_{iw}^{k}} \cdot \frac{M_{jw}^{k}}{M_{jw}^{t}} \right]$$

$X_{iw}^{k}$ is the value of exports of commodity k from country i to the world, $X_{iw}^{t}$ is the value of the total exports of country i to the world, $M_{iw}^{k}$ and $M_{jw}^{k}$ are the value of imports of commodity *k* of countries *i* and *j* from the world, $M_{iw}^{t}$ and $M_{jw}^{t}$ are the value of total imports of countries *i* and *j* from the world, $M_{ww}^{t}$ and $M_{ww}^{k}$ is the value of total imports from the world and the value of world import of commodity *k*.

Drysdale's index always takes values bigger than zero and when larger than one, it indicates a similarity of pattern between country *i*'s exports and country *j*'s imports and consequently a trade potential for the two countries.

### 3.2. The Trend of Japan's Trade Relations with Iran and Saudi Arabia

#### 3.2.1. Iran and Saudi Arabia's Export Potentials to Japan

Table 2 indicates the export potentials of Iran and Saudi Arabia to Japan in 2001, 2005, 2010, and 2015. In the third column of the table, the maximum export potentials of Iran and Saudi Arabia to Japan are tabulated in those years. The values of the Iran's section are the sum of the minimum for each goods code among Iran's export to the world or Japan's import from the world. According to this column, the maximum export potential of Iran to Japan occurred in 2010 at $72.6 billion. The same year also marked Saudi Arabia's maximum export potential at $150.2 billion. Hence, compared to Iran, Saudi Arabia has had larger export potential to Japan during this period.

**Table 2. Export potential of Iran and Saudi Arabia to Japan from 2001 to 2015**

| Country | Year | Japan's Maximum Import Potential (Billion Dollars) | Japan's Normal Import Potential (Billion Dollars) | | Japan's Import $b | Percentage of Japan's Import Potentials Utilized | |
|---|---|---|---|---|---|---|---|
| | | | 20% | 30% | | 20% | 30% |
| Iran | 2001 | 24.4 | 4.9 | 7.3 | 5.4 | 110.2 | 74.0 |
| | 2005 | 57.4 | 11.5 | 17.2 | 10.3 | 89.6 | 59.9 |
| | 2010 | 72.6 | 14.5 | 21.8 | 11.2 | 77.2 | 51.4 |
| | 2015 | 31.8 | 6.4 | 9.5 | 3.2 | 50.0 | 33.7 |
| Saudi Arabia | 2001 | 54.5 | 10.9 | 16.3 | 12.3 | 112.8 | 75.5 |
| | 2005 | 109.3 | 21.9 | 32.8 | 28.7 | 131.1 | 87.5 |
| | 2010 | 150.2 | 30.05 | 45.1 | 36 | 119.8 | 79.8 |
| | 2015 | 84.4 | 16.9 | 25.3 | 2.07 | 12.2 | 8.2 |

Source: Calculations by Authors, based on (WITS, 2017) data

Columns 4 and 5 indicate, respectively, 20% and 30% of the maximum normal export potential of both Iran and Saudi Arabia to Japan, and column 6 displays the actual importation of Japan from Iran and Saudi Arabia within the years under study.

According to the statistics presented in columns 7 and 8, which indicate the percentage of the realization of normal import potentials of Japan by Iran and Saudi Arabia, Iran's maximum potentials on the scales of 20 and 30 percent were both in 2001. The former stood at 110.2% over Japan's potential, and the latter 74.0% of its potential. In the case of Saudi Arabia, however, the maximum percentage of Japan's import potential fulfilled occurred in 2005. Based on 20 and 30 percent scales, the values were 112.8% and 75.5%, respectively, which exceeded Iran's achievements. This indicates that Saudi Arabia exploited Japan's import potentials more than Iran. This achievement is due to the introduction of Saudi's new foreign investment act in 2000, which paved the ground for Japanese companies to enter Saudi's oil market. This issue will be discussed in more details later in this article.

### 3.2.2. Japan's Export Potentials to Iran and Saudi Arabia

Table 3 presents Japan's export potential to Iran and Saudi Arabia in 2001, 2005, 2010, and 2015. In the third column, Japan's maximum export potential to Iran and Saudi Arabia has been tabulated in these years. These quantities were calculated using the sum of the minimum values of each goods code among Japan's export to the world and the other country's import from the world. As illustrated, Japan's maximum export potential to Iran in that period occurred in 2015 at $42.29 billion, and its maximum export to Saudi Arabia took place in 2015 at $91.9 billion. The comparison reveals that Japan and Saudi Arabia have had more export potentials than those of Iran and Japan.

In columns 4% and 5%, 20% and 30% of both Iran and Saudi Arabia's maximum export potentials are calculated. In column 6 Japan's actual export to Iran and Saudi Arabia are tabulated.

In columns 7 and 8, Japan's normal realized export potentials to Iran and Saudi Arabia are presented in percentage on the scales of 20% and 30%. The table illustrates that the maximum percent of realized Japan's export potential to Iran was in 2001 at 34.3% on 20%, and 22.9% on 30%. In the case of Japan and Saudi Arabia, the maximum percent of realized Japan's export potential was in 2001 with 85.7% and 58.1% based on 20% and 30% scales, respectively. The comparison of these two values indicates that during this period, Japan, as the exporter, carried out larger export potential when exporting to Saudi Arabia. However, it should be noted that for Saudi Arabia, the percentages of fulfilling this potential have been on the decrease. As for Iran, they had a decreasing trend from 2001 to 2005, a moderate increase in 2010, and again a drastic decrease in 2015.

**Table 3. Japan's export potentials to Iran and Saudi Arabia from 2001 to 2015 (%)**

| Country | Year | Japan's Maximum Export Potentials to Iran and Saudi Arabia (Billion Dollars) | Japan's Export Potentials to Iran and Saudi Arabia (Billion Dollars) | | Japan's Export to Iran and Saudi Arabia | Percentage of Export Potentials Utilized | |
|---|---|---|---|---|---|---|---|
| | | | 20% | 30% | | 20% | 30% |
| Iran | 2001 | 11.62 | 2.3 | 3.5 | 0.8 | 34.8 | 22.9 |
| | 2005 | 26.97 | 5.4 | 8.1 | 1.3 | 24.1 | 16.0 |
| | 2010 | 36.59 | 7.3 | 11 | 2.1 | 28.8 | 19.1 |
| | 2015 | 42.29 | 8.4 | 12.7 | 0.29 | 3.5 | 2.3 |
| Saudi Arabia | 2001 | 20.8 | 4.2 | 6.2 | 3.6 | 85.7 | 58.1 |
| | 2005 | 38.9 | 7.8 | 11.6 | 4.1 | 52.6 | 35.3 |
| | 2010 | 65.5 | 13.1 | 19.6 | 6.5 | 49.6 | 33.2 |
| | 2015 | 91.9 | 18.4 | 27.5 | 6.8 | 37.0 | 24.7 |

Source: Calculations by Authors, based on (WITS, 2017) data

### 3.2.3. Cosine Measure in Iran and Saudi Arabia's Export with Japan's Import

Table 4 illustrates the calculated Cosine measure for Iran and Saudi Arabia's export with Japan's import over 2001, 2005, and 2015. As indicated, the trend of both countries' measures increased over the first 5 years, reaching, respectively, from 0.83 and 0.84 in 2001 to 0.91 and 0.92 in 2005 for Iran and Saudi Arabia. This demonstrates Iran and Saudi Arabia's potentials for export to Japan. However, this index decreased to 0.89 in 2010 and to 0.61 in 2015 for Iran's export to Japan, and to 0.88 and 0.61 in 2010 and 2015 for Saudi Arabia. This explains that Iran and Saudi Arabia's export potentials to Japan decreased compared to the year 2005.

It should be noted that the Cosine measure only indicates the trade complementarity between countries; the closer to 1 in value, the higher the potentials of trade relations between them, and the more similar the structure of export and import of the two countries.

The comparison of the Cosine measures of Iran's export with Japan's import and that of Saudi Arabia and Japan indicates that Saudi Arabia's potential export to Japan was not higher than that of Iran, and that the difference disappeared in 2015. In other words, Saudi Arabia and Iran have a virtually equal trade complementarity with Japan.

**Table 4. Cosine measure of Iran and Saudi Arabia's export with Japan's import (2001-2015)**

| Year/ Country | 2001 | 2005 | 2010 | 2015 |
|---|---|---|---|---|
| Iran | 0.83 | 0.91 | 0.89 | 0.61 |
| Saudi Arabia | 0.84 | 0.92 | 0.88 | 0.61 |

Source: Calculations by Authors, based on (ITC, 2017) data

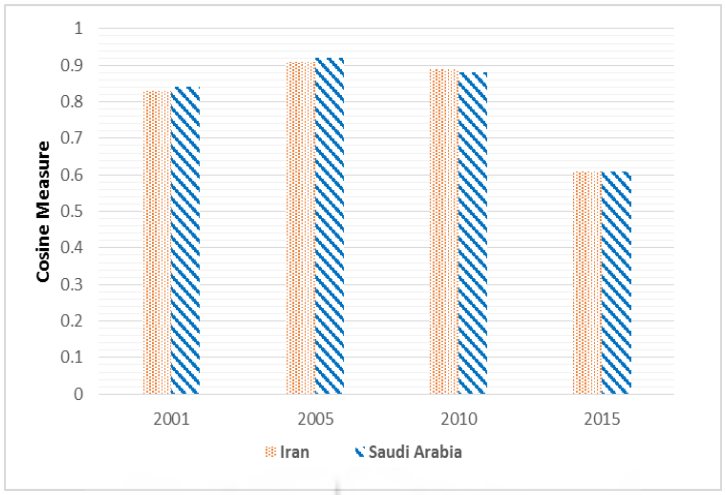


**Figure 3. Comparison between Cosine measures of Iran and Saudi Arabia's export with Japan's import (2000-2011)**

Source: Calculations by Authors, based on (ITC, 2017) data

### 3.2.4. Cosine Measure of Iran and Saudi Arabia's Import with Japan's Export

According to Table 5, there have been few ups and downs for cosine measures for both Iran and Saudi's import and Japan's export. However, the trend of the measures for both countries is decreasing in general.

In comparison with Saudi Arabia, Iran has a lower position in terms of trade complementarity. This signifies that, compared with Iran, Saudi Arabia has higher trade potential in importing goods from Japan due to a stronger similarity of its importing patterns to that of Japan's export.

**Table 5. Cosine measure between Japan's export and Iran and Saudi Arabia's import from 2001 to 2015**

| Year/Country | 2001 | 2005 | 2010 | 2015 |
|---|---|---|---|---|
| Iran | 0.43 | 0.45 | 0.34 | 0.12 |
| Saudi Arabia | 0.87 | 0.64 | 0.57 | 0.53 |

Source: Calculations by Authors, based on (ITC, 2017) data

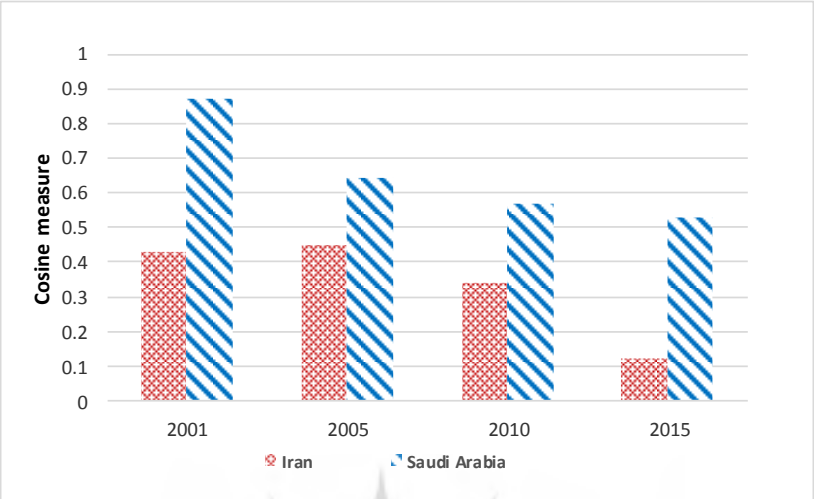


**Figure 4. Comparison between Cosine measures of Japan's export and Iran and Saudi Arabia's import (2001 to 2015)**

Source: Calculations by Authors, based on (ITC, 2017) data

### 3.2.5. Drysdale Index between Iran and Saudi Arabia's Export Compared to Japan's Import

As depicted in the Table 6, Drysdale Index steadily shows a number larger than one, which is indicative of the fact that the export pattern of Iran and Saudi Arabia is similar to the import pattern of Japan in the years investigated. This index illustrates a higher amount for Iran than Saudi Arabia in the year 2001, which indicates that Iran's export had a more similarity to Japan's import compared to Saudi Arabia in this year. However, starting in 2005, there has been a closer similarity between the trade pattern of Saudi Arabia and Japan compared to that of Iran. This index decreased significantly for both Iran and Saudi Arabia in 2015, in a way that it reached 1.09 and 1.28 in 2015 from 1.51 and 1.72 in 2010, respectively.

**Table 6. Drysdale index between Iran and Saudi Arabia's export compared to Japan's import**

| | 2001 | 2005 | 2010 | 2015 |
|---|---|---|---|---|
| Iran | 1.83 | 1.85 | 1.51 | 1.09 |
| Saudi Arabia | 1.69 | 1.95 | 1.72 | 1.28 |

Source: Calculations by Authors based on ITC (2017) data

### 3.2.6. Drysdale Index between Iran and Saudi Arabia's Import Compared to Japan's Export

In Table 7, as indicated for 2001, unlike for Iran, Drysdale value was less than 1 for Saudi Arabia, which indicates a lack of similarity between trade patterns of Saudi Arabia and Japan. After this year, the index stood more than 1, while they are still lower than Iran's values except for 2015. This indicates the fact that trade pattern between Saudi Arabia and Japan was less similar compared to that of Iran and Japan except for the year 2015.

**Table 7. Drysdale index between Iran and Saudi Arabia's import compared to Japan's export**

| | 2001 | 2005 | 2010 | 2015 |
|---|---|---|---|---|
| Iran | 1.03 | 1.24 | 1.12 | 1.06 |
| Saudi Arabia | 0.91 | 1.04 | 1.1 | 2.73 |

Source: Calculations by Authors based on (ITC, 2017) data

## 4. A Review of Foreign Direct Investment (FDI) Situation in Iran and Saudi Arabia

Foreign Direct Investment in Iran and Saudi Arabia, which are both countries with abundant energy resources, can be considered as window into achieving natural resources for an investor like Japan (UNCTAD, 2017). In this section, we will first discuss the definition and the importance of FDI. Secondly, in order to understand the status of Foreign Direct Investment in Iran and Saudi Arabia, while the indicators related to Foreign Direct Investment are introduced, these indicators will be examined for these two countries.

**4.1. Definition and the Importance of FDI**

FDI is defined as the transfer of state or private capital from one country to another for a direct exploitation in economic purposes in a way that the foreign party plays a great role in managing economic activities. "Direct investment usually takes the form of a firm starting a subsidiary or taking control of another firm" (Salvatore, 2013: 368). According to the Balance of Payments Manual: Fifth Edition (BPM5) (IMF, 2004), FDI refers to an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor. Further, in cases of FDI, the investor´s purpose is to gain an effective voice in the management of the enterprise.

Different motives for FDI from both investors and recipient countries' points of view are mentioned in the related literature. Certain advantages of FDI for investors are as follow (Salvatore, 2013):

- Protecting unique production knowledge or managerial skills
- Gaining control of some needed raw materials, and thus ensuring an uninterrupted supply at the lowest possible cost,
- Recognizing the market and going forward into the ownership of sales or distribution networks abroad,
- Avoiding tariffs and other restrictions that nations impose on imports or to take advantage of various government subsidies to encourage direct foreign investments.

Increasing host countries' importance in international economic activities, transferring technology and managerial know-how from multinational companies (this can be either in the form of job training or technology spillover from a foreign

affiliate to domestic firms), improving infrastructures, FDI can provide a way for developing countries to gain access to modern technologies and the efficiency achieved using those technologies (Urata, 2003).

### 4.2. Measures and Indices Related to FDI

#### 4.2.1. FDI Performance Index

In order to understand the direct foreign investment capacity of both Iran and Saudi Arabia, the extent and trend of FDI flows to these two countries are examined over the past five decades. As displayed in Figure 5, this capacity has stabilized during the period under study in Iran and averaged $ 965.7 million per year. This is while the index has fluctuated in Saudi Arabia over the past five decades, and has reached approximately $11,000 million and $40,000 million in 1982 and 2008, respectively, at $ 5225.5 million per year and a relatively high upsurge.

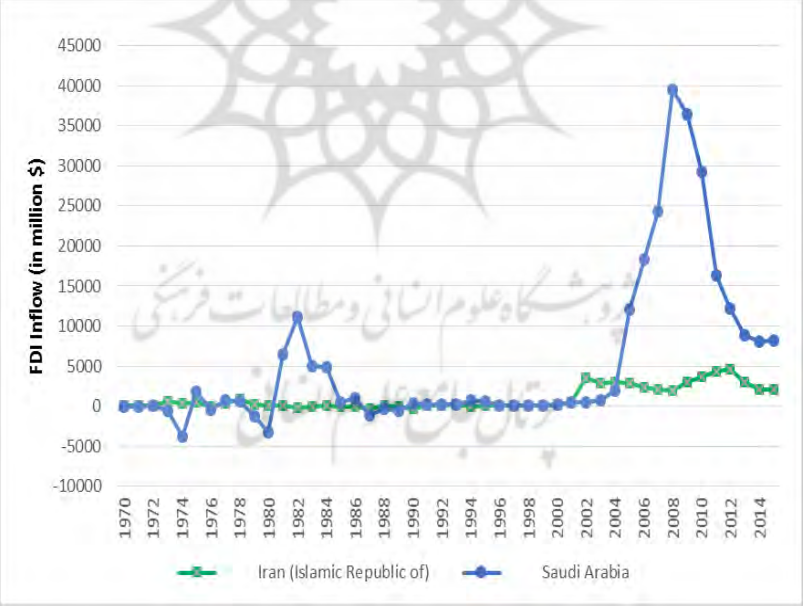


**Figure 5. Comparing the trend of FDI –inflow in Iran and Saudi Arabia (in million $)**

Source: (UNCTAD, 2017)

Due to the financial crisis in 2008 on the one hand, and regional unrest on the other, foreign investments in Saudi Arabia decreased as of 2008 and reached $8141 million in 2015 (from $39455 million in 2008). However, in the case of Iran, it even increased from $1979 million in 2008 to $2050 million in 2015.

The importance of FDI in the country's economy is measured by the index of FDI to GDP ratio. The values of this index for Iran and Saudi Arabia, shown in Figure 6, indicate a relatively less important role for Iran compared to Saudi Arabia. In order to have a better grasp of Iran and Saudi Arabia's FDI status in the region, the comparison of the average ratio of FDI to GDP in these two countries with Western Asian countries is presented in Table 8.

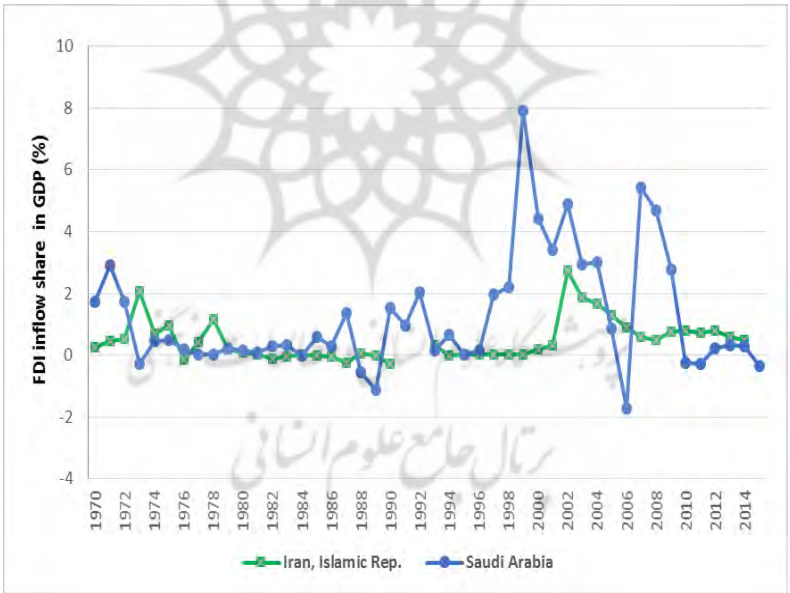


**Figure 6. FDI Inflow share in Iran's and Saudi Arabia's GDP (%)**

Source: (UNCTAD, 2017)

**Table 8. FDI Inflow share in GDP**

| Average | 1970s | 1980s | 1990s | 2000s | 2010 | 2011-2015 |
|---|---|---|---|---|---|---|
| West Asia | -0.13 | 0.78 | 0.48 | 2.83 | 2.94 | 1.74 |
| Iran | 0.66 | -0.05 | -0.006 | 1.05 | 0.78 | 0.63 |
| Saudi | -0.95 | 1.59 | 0.18 | 3.22 | 5.55 | 1.52 |

Source: (UNCTAD, 2017)

As displayed in Table 8, the above index has a relative stability in Iran and, except for the 1970s, the average of this indicator has always been lower than the average in the West Asia region. This is while the average ratio of FDI to GDP in Saudi Arabia has fluctuated in the last five decades. The index rose sharply in Saudi Arabia over the period from 2000 to 2010, so much so that in 2010 it was about twice the regional average. However, in the first half of the 2010s, this indicator dropped dramatically.

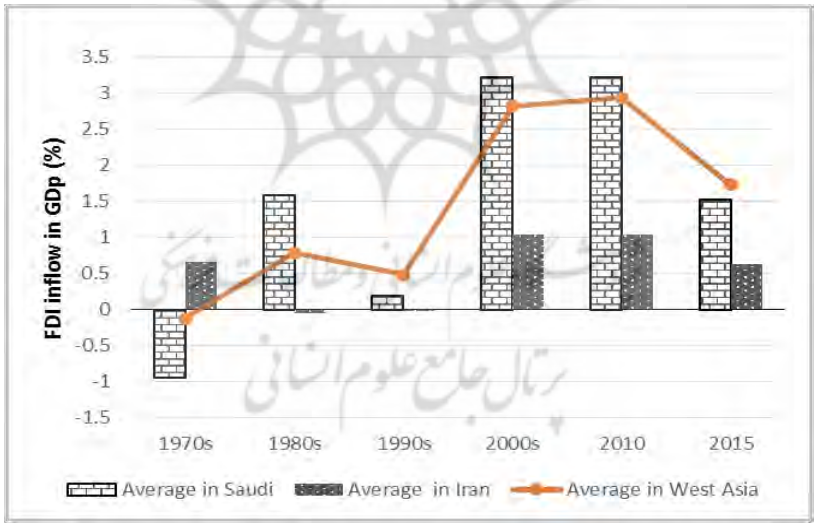


**Figure 7. Comparing the average FDI Inflow share in GDP of Iran and Saudi Arabia with West Asia (%)**

Source: (UNCTAD, 2017)

Absolute FDI and FDI share in GDP are practical measures for identifying country's level of international relations. However, these measures do not consider the impact of host countries' market size of national investment to that of the world. Considering this, UNCTAD introduced Inflow FDI Index in its 2001 World Investment Report for comparing the performance of various countries in attracting FDI. However, in its 2002 Report, the previous index was simplified and modified; a new index to the performance of FDI inflow was reintroduced in order to demonstrate the FDI performance in different countries and to justify the success of the governments in attracting FDI (Lv et al. 2010). This index is for measuring the relative position of a country in terms of FDI performance in the world, and is calculated as follows (OIC, 2014):

$$\frac{FDI_i / FDI_w}{GDP_i / GDP_w} = \text{FDI flow performance measure}$$

$FDI_i$ and $FDI_w$ are respectively the foreign investment inflow of country *i* and the world; $GDP_i$ and $GDP_w$ are respectively the gross domestic product of country *i* and the world.

**Table 9. FDI performance index for Iran and Saudi Arabia (2000-2014)**

| FDI Performance Index | 2000 | 2005 | 2010 | 2015 |
|---|---|---|---|---|
| Iran | 0.04 | 0.67 | 0.39 | 0.22 |
| Saudi Arabia | 0.02 | 1.88 | 2.74 | 0.52 |

Source: Calculations by Authors, based on (UNCTAD, 2017) data

As the results in the Table 9 shows, Iran had a better situation than Saudi Arabia in terms of FDI performance in 2000. However, this index has reached 1.88 in 2005 (from only 0.02 in 2000) for Saudi Arabia but 0.67 for Iran. This increasing trend remained for Saudi Arabia until 2010. However, it sharply

declined to 0.52 in 2015, although still twice as much as for Iran. The index for Saudi Arabia in 2005 and 2010 is larger than one showing that foreign investment in this country has been higher than the global average.

### 4.3. Comparing Japanese FDI in Iran with that of Saudi Arabia

In this section, Japan's share in foreign investments of Iran and Saudi Arabia is scrutinized. As indicated in Figure 8, Net Inward FDI in Saudi Arabia and Net Outward FDI in Japan increased from 2004 to 2008, and then declined at the same time in both 2009 and 2010. The simultaneous changes in these two indicators have been due to Japan's increased FDI share in Saudi Arabia in a way that in 2004 and 2005, about 20 percent of Saudi Arabia's FDI was made by Japan.

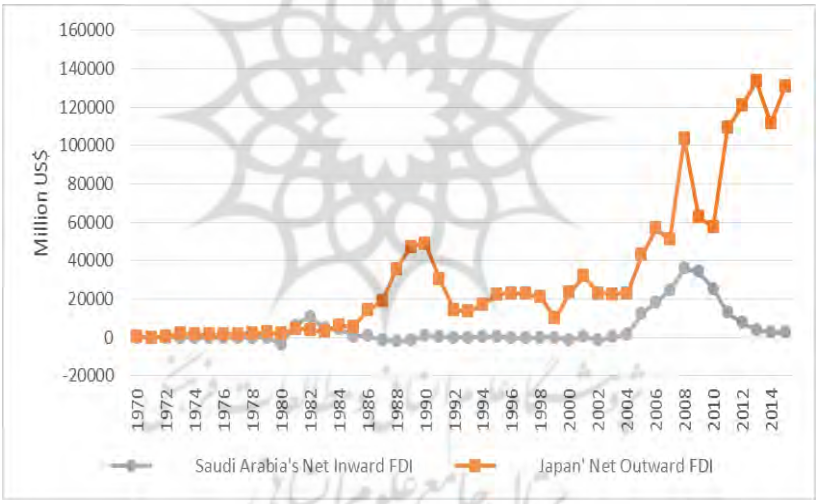


**Figure 8. Comparing Japan's Net Outward FDI to Saudi Arabia's Net Inward FDI**

Source: (UNCTAD, 2017)

Furthermore, according to Table 10, Japan made almost no investments in Iran between the years 2003 and 2013. Although FDI inflow of Saudi Arabia from Japan has had a decreasing trend since 2009, it seems, based on the reports, that Japan has a

long-run plan in increasing its investing role in Saudi Arabia's long-term development.

Figure 9 compares Japan's FDI trend in both Iran and Saudi Arabia with Japan's oil imports from these two countries. The right vertical axis represents the FDI values and the left axis depicts the oil export values. As displayed, unlike Iran, since 2004, Saudi Arabia has been able to attract Japanese investment for oil exports to Japan.

**Table 10. Iran and Saudi Arabia's FDI Inflow from Japan (million dollars)**

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|
| Iran | - | - | - | - | - | 0.4 | - | 0 |
| Saudi Arabia | 1 | 1 | 2540 | 3512 | 1068 | 3246 | 2570 | -54 |

Source: (UNCTAD, 2017)

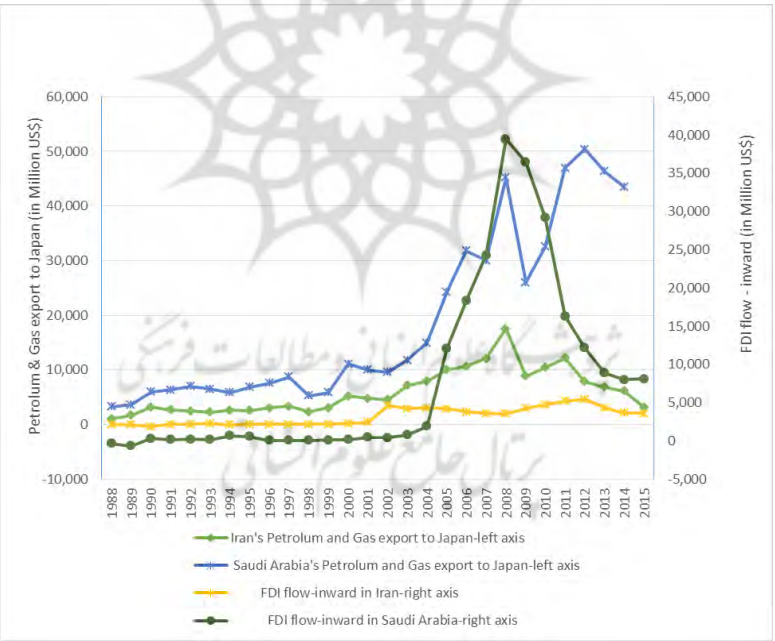


**Figure 9. Comparison of Japan's FDI in Iran & Saudi Arabia to its Oil Petroleum and Gas Imports from the two**

Source: FDI data (UNCTAD, 2017), Petroleum and Gas data (WITS, 2017)

This success is due to the accession of Saudi Arabia to the WTO in 2005, as well as the adoption of foreign investment attraction policies by Saudi Arabia, which are further highlighted below.

### 4.4. Accomplishments to Attract Foreign Investment in Saudi Arabia

Saudi Arabia announced its new legislation concerning foreign investments in 2000 and consequently at the same year introduced Saudi Arabian General Investment Authority (SAGIA) as the only official reference and authority for attracting, encouraging and validating investments in the country by native people or foreign participants (JETRO, 2015). The purpose of these regulations was stated to be investment liberalization. Subsequently, it seems that the establishment of this institute, and being a member of the World Trade Organization (WTO) from 2005 facilitated the effective legislations to attract foreign investments in Saudi Arabia.

In its 2015 Report, JETRO stated a number of reasons for investing in Saudi Arabia, including:

- Saudi Arabia is among the 25 largest economies of the world (the 19th, at the moment, according to www.sagia.gov.sa, entitled the Kingdom of Opportunities)
- One of the largest economies in Middle East and North Africa (MENA)
- One of the fastest growing economies so much so that the per capita income of Saudi Arabia is predicted to become $33500 for the year 2020,
- Large domestic market, with free customs duty to enter the markets of Gulf Cooperation Council (GCC) and MENA, and,

- Globally competitive cost advantage, regarding low domestic costs of energy and industrial land, in addition to incentives and large government subsidies.

Other facilities worth mentioning in this regard are as follows: giving permission for companies with 100% foreign capital investment to enter the markets of retailing and logistics, and applying the principle of equality between foreign and domestic investors.

## Summary of Findings

1. The import potential of Iran and Saudi Arabia from Japan have been calculated in two pessimistic (using 20% of potential) and somewhat more optimistic (using 30% of potential) scenarios. The value of this indicator indicates that Iran accounted for 3.5% and 2.3% of Japan's export potential in 2015. The Saudi indicator in pessimistic and optimistic terms were about 37.0% and 24.7%, respectively, which are both remarkably more than Iran. The trend of this index has been decreasing in both countries during the period under study.

2. According to the Cosine Measure between Iran and Saudi Arabia's export with Japan's import, exports of both Iran and Saudi Arabia to Japan have rather similar patterns and fluctuations. In spite of the sanctions imposed on Iran's exports, this finding indicates Japan's significant complementarity to import oil from Iran.

3. Cosine Measure between Iran and Saudi Arabia's import with Japan's export in the period under study indicates a difference in the degree of consonance between Iran and Saudi Arabia's imports and Japan's export. The significant fact here is the decreasing trend of Iran and Saudi Arabia's import with Japan's export. However, the difference

between the degrees of consonance is relatively considerable in 2015.

4. The structure of Iranian and Saudi imports from Japan is roughly the same. It can be said that in the last decade leading to the year 2015, imports of these two countries from Japan accounted for about 40% of capital goods, 50% of intermediate goods and about 10% of consumer goods. However, according to the cosine criterion, the degree of compliance of Saudi imports with Japan's exports had already been higher than Iran, while it has further increased under the influence of sanctions on Iran between 2010 and 2015.

5. The study of the export potential of Iran to Japan in both pessimistic (using 20% of its potential) and somewhat more optimistic (using 30% of its potential) indicates that Iran has used about 50% and 33.7% of its export potential in 2015, respectively. The Saudi indicator was 12.2% and 8.2% respectively in pessimistic and optimistic terms. The trend of this index has been decreasing in both countries during the period under study.

6. The value of the Drysdale's Index between the exports of both Iran and Saudi Arabia and Japan's imports from 2001 to 2015 has always been larger than one. This denotes the similarity of the exports patterns of the two countries with the Japan's import pattern. The Drysdale's Index of Iran and Saudi Arabia's import with Japan's exports in the above period also indicates the similarity of Japan's export pattern with the pattern of imports of both Iran and Saudi Arabia.

7. Foreign Direct Investment in Iran and Saudi Arabia was studied based on three indicators of FDI value in the five studied decades (1970-2015), FDI contribution to GDP over the five studied decades (1970-2015), and the International FDI Performance Index for the period (2000-2015).

8. The study of FDI trends in Saudi Arabia indicates that FDI in Saudi Arabia rocketed twice, once since 1980, and once since 2004, and then declined. The rise after 1980 was due to the involvement of Saudi Arabia's rivals in the regional events such as the Iran-Iraq war and the Soviet invasion of Afghanistan; the 2004 increase was the result of the country's efforts to increase foreign investment.

9. The study of the contribution of FDIs to GDP in the five studied decades (1970-2015) suggests that the index has a low fluctuation in Iran, with a peak in 2004. However, this index has been more vastly fluctuating for Saudi Arabia, with a sharp increase in 2000-2010, in a way that it became almost twice as much as in West Asia.

10. The calculation of the International FDI Performance Index for the period (2000-2015) reveals that foreign capital inflows in Saudi Arabia in 2005 and 2010 were higher than the global average. This growth occurred after two major legal-institutional modifications in Saudi Arabia: The establishment of SAGIA in 2000 and the accession to the WTO in 2005. However, this value has declined since 2010.

11. Japan's FDI figures in both Iran and Saudi Arabia indicate that Japan had rather insignificant investment in Iran in 2008. This is while foreign investment in Saudi Arabia has reached 20% in certain years. The comparison of Japan's FDI in both Iran and Saudi Arabia with these two countries export of oil and gas to Japan suggests that despite the significant exports of Iranian oil to Japan, since 2004, Saudi Arabia has managed to attract Japanese investment in exchange for the exportation of oil to Japan.

## Conclusion and Remarks

The history of Japan's relations with Iran and Saudi Arabia as well as the indices studied in the economic relations between them indicate that in spite of the old age and the importance of mutual economic relations between these three countries, in recent years, economic relations have been reduced both in trade and foreign investment. The focus of this research was Japan's economic relations with both Iran and Saudi Arabia; interfering interactions with other countries are therefore not considered in this study. However, specific statistics and information suggest that although both Iran and Saudi Arabia have a high commercial capacity with Japan, in recent years, they have built extensive trade relations with other countries, including China and the United States, respectively. That is why Japan needs to maintain dynamic and sustainable relations with its two main energy-providing countries in order to stabilize the provision of its required energy. Over the last decade, Japan has taken actions in this regard with Saudi Arabia, making direct investments in oil and gas extraction, in return for purchasing oil from this country. Considering the high trading capacity between Iran and Japan, the two countries could negotiate on the export of crude oil to Japan in return for expanding economic ties in joint ventures, such as co-participating in the construction of extraction platforms and refineries in Iran and gas stations in Japan, as well as selling petroleum products on the Japanese (and East Asia) market.

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