Investigation of the Supply Chain Management Effects on the Foreign Trade Development of Iran in the Context of Other Countries of Southwest Asia

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Abstract—Foreign trade can present productivity increase in production and economy growth by using scale gain, developed technology, optimum allocation of source and supply chain management. Also, economic freedom influences many variables which one of the most important ones is foreign trade or level of exports and imports. In other word, influence of economic freedom and supply chain management on foreign trade process is very important. Therefore, it is necessary to survey relationship between foreign trade, supply chain and economic freedom variables on countries of the region of Southwest Asia based on collected information in the period of 2001-2018. Model estimation results show Economic Freedom and economic growth has positive and statistically significant effect on foreign trade in Iran and selected countries. Also, the effect of Inflation rate on foreign trade is negative but not statistically significant. Finally, it was concluded that by supply chain management especially in logistics and transportation system of the foreign trade, the efficiency increased significantly.

Keywords—Foreign trade, Supply chain management, economic freedom, Logistics and transportation, Panel data

1. Introduction

The supply chain involves a network of organizations that are linked by upstream and downstream communications. This chain includes a set of activities and processes to create value in a product or service initially as long as it reaches customers. Information is essential in order to achieve the coordination and coherence of all relevant organizations in the supply chain. Economic growth is a basic goal for any country. From many years ago, economy programmers were intentioned this goal. Then, we needed to understand factors which affect this goal if we want to realize this better. One of the factors which have a great effect on economy growth of most of the developing countries is emphasis on foreign trade [7,8]. In these countries, Because of great dependence to export income, and necessary imports for industrial building block, foreign trade has a basic and undeniable role in economic growth. On the other hand, economists believe that trade is the engine of the growth and development in current societies. Foreign trade can present productivity increase in production and economy growth by using scale gain, developed technology, optimum allocation of source and increase competition in production. In developing countries, emphasis on foreign trade is one of the factors which have a great effect on economic growth. Because of great dependence of these countries to export income, and necessity of imports for industrial building block, foreign trade has a basic and undeniable role in economic growth. Results from research shows that 1% increase in growth of export of goods and services causes 19% increase in gross domestic product (GDP) rate. Also 1% of increase in import of goods and services causes 0.1% increase in GDP.

Also, economic freedom influences many variables which one of the most important ones is foreign trade or level of exports and imports. In other word, influence of economic freedom on foreign trade process is very important. Economic freedom includes series of emprises in order to eliminate governmental control from financial, good and service markets, jobs, foreign sector and leaving it to market mechanism. Economic freedom is the most important factor for increasing competence, investments, entrepreneurship, manager responsiveness and decrease of financial corruption and informal party. Economic freedom index includes 10 factors: trade policies, fiscal burden of government, government role in economy, monetary policies, capital flows and foreign investment, banking and financial affairs, wages and prices, property rights, rules and regulations and black market.

The main aim of the research, within the context of other states of Southwest Asia, is the investigation of Iran’s economic liberalization and foreign trade development, due to which more efficient provisions of economic policy strategy and development of events for carrying them out. Therefore, this research surveys relationship...
between foreign trade and economic freedom variables on countries of the region of Southwest Asia based on collected information in the period of 2001-2018.

2. Theoretical basis

2.1. Economic freedom

Economic freedom includes Freedom of occupation, Freedom of competition, internal and external trade freedom, Banking freedom, Freedom of redundancy rate and etc. Economic freedom as an absolute and continual program is resistance against any governmental hand which its necessity is not proved, especially resistance against governmental aid and protects policy especially.

Economic freedom includes complex actions in order to eliminate governmental control from financial, good and service markets, work and foreign party and leave it to market mechanism. Main aspects of these factors includes: eliminating control from financial market, Freedom under price control, leaving price leveling to market forces, eliminating subsidies and adjusting of subsidies prices, tendency to independent or controlled floating currency system, formal value changing of money, freedom of foreign trade, eliminating of all trade tariffs and quantity limitations, using of investors partnership, foreign loan, and deposits rates freedom [12].

One of the most famous indices of economic freedom is the Heritage Foundation index. The idea of inventing index of economic freedom as a tool for policymakers and investors initially design by Heritage Foundation in 1980, while the goal of this index was creating empirical and systematic scale for economic freedom. For this reason, a set of scientific economic criterions was selected and based on these criteria research and ranking of some countries in case of distributing of economic freedom index was conducted from 1994 and for most of the countries (161 countries) from 1995. This index includes a vast field of initial factors which appoint economy freedom. This initial factor includes [9-11]: Financial corruption, corruption in judicial system, corruption in public service, efficiency and Independency of judicial system, governmental bureaucracy, obstacles and limitations in trade, stock issuance and license of business, financial burden of government includes income Taxes, Taxes on companies and allocating a part of gross domestic product (GDP) to governmental expenses, rule of government, rules and regulation forces on jobs, health and safety and environmental rules, bank limitations in matter of financial services like selling bonds and insurance, market regulations including working hours and detachments of mandatory payments, black market actions includes financial corruption, illicit, idea plagiarism, property rights, labor underground activity and other services [13].

Based on Heritage Foundation index in order to measure economic freedom in different countries, set of research in the field of organization and institute of economy issues study 50 different economic variables. Then these variables are summarized into 10 main factors in matter of economy freedom. Furthermore, any of these factors allocated a score between one (the best situation in the matter of freedom) to five (the worst situation in the matter of freedom), as a result the average of these factors is a score between 0 – 100. These 10 economic freedom factors of Heritage Foundation and Wall Street Journal index are [15,18].

Business freedom; Trade freedom; Fiscal freedom; Government spending; Monetary freedom; Freedom of Investment; Financial freedom; Property rights; Freedom from corruption; Labor freedom.

In case of economic freedom index, each of the ten above factors have equal importance and weight in respect to economic freedom level of any of the countries. In other word, each of the ten factors above has equal importance coefficient to appoint a score of any country

2.2. Economic Liberalization

Adoption of trade liberalization is one of the paths for many countries to widespread foreign trade. In the recent decade liberalization of the trade sector appeared in the center of attention of economists, programmers, policy developers in many countries of the world. Therefore, in the foreign trade sector for the purpose of adopting corresponding policy, it is necessary to learn more clearly the export and import sectors and accordingly trade liberalization and the factors affecting on it.

When systematic big developments, around which simultaneously occur the liberalization of economy and fusion with the international economic system, liberalization is considered one of the basic steps that is, setting new rules of the game for the free market economy and create legal and organizational framework in purpose of plan completion. It may in the near future or in the long time period affect efficiently, on the condition, that other political circumstances do not affect, absence of work skills and with other factors.

Therefore, due to the trade liberalization steps business obstacles reduce for countries as a result of which the volume of their foreign trade increases. In other words, widening of foreign trade means increase in imports and exports of countries, which in the economy development process secures great profits for the countries.

The globalization phenomenon, which is the fusion of national economies and the international economy, in the last decades has become subject of discussion by many policy and plan developers.
Trade liberalization also as a route towards free business, by reducing tariffs and other commercial obstacles, is considered the most important driving force in globalization. Liberalization and globalization lead to the increase of limited exchange volumes of goods and services (widening of international trade), increase in foreign and international flow of direct investments, as well as acceleration of technology transfer and globalization of industry. By this, this topic is highly important.

In the developing countries, economic liberalization is about the liberalization of country’s economy within the circles of competition and more openness in purpose of involving foreign capitals and investments [17].

In purpose of liberalization, changes which countries are characterized are the following: reduction of import tariffs, freeing from the market rules, tax reduction and more volumes of foreign investments. In the meantime, it is necessary to take into account, after eliminating international obstacles of trade, economic liberalization may lead to the abolishment of local enterprises, which will face competition with foreign enterprises. As well as there exist “brain escape” and danger of environmental destruction, which may rise due to elimination of regulations [16].

2.3. Mutual link of Economic freedom and Economic development Levels

Main combination of economic freedom includes individual decisions, freedom of exchange, freedom of competition and to property protection. People are economically free for obtaining, using and exchanging properties and chattels through legal activities. Governments have to do some actions in order to reach high scores in economic freedom. Governments must create both valid and powerful currency and reliable legal structure to protect property rights and enforce contracts. Also, governments must keep tax rates down and coordinate private businesses through market to choose economic goods. Furthermore, governments must avoid price control, custom tariff, shares, issuance of business licenses and other rules and regulations that restrict any individual trade and competition [1,2].

Through recent years, economic scholars used economic freedom index immensely in order to analyze economic freedom effects. In order to further study in the field of economic freedom effects refer to Gwartney James. and Robert Lawson (1999, 2001, 2004), Berggren Niclas (2000), De Hann Jakob and Jan Sturm (2000) and Cole Julio H. (2003), The most important effects of economic freedom can be summarized as below:

1. Economic freedom facilitates economic growth flow.
2. More foreign investment absorption
3. High investment productivity and efficiency:
4. Poverty decrease:
5. Equality of income distribution:
6. Life expectancy increase:
7. Children life standard increase:
8. Improvement of human development index
9. Less corruption:
10. Strengthening of democracy

3. Major Processes for Supply Chain Management in Trade

Considering the supply chain framework, one can analyze the distribution of personal activities in a business to create value added for customers. If in each section of the business value added is generated for productive products and services, institutions and companies will be able to reduce their costs to a large extent and thereby increase their margins. Generally, in the supply chain, organizational activities are classified into two main activities and support activities.

Based on this model, organizational activities are categorized into two categories of core activities and support, which are essential for increasing value for customers, analyzing these activities in order to increase the efficiency and effectiveness of the supply chain process.

Supply chain management has three major processes:

1) Logistics Management; 2) Relations Management; 3) Information Management;

Logistics management: In the analysis of manufacturing systems such as automotive industry, it covers logistics of the physical supply chain segment. This sector, which includes all physical activities from the raw material supply to the final product, including transportation activities, warehousing, production schedules, etc., provides a fairly large part of the supply chain activity.

In fact, the scope of logistics is not just the flow of materials and goods, but the axis of supply chain activities, whose relationships and information, its supporting tools to improve in activities.

Relationship Management: Our Guideline Forward to the Future. The most important part of the supply chain management is its construction and form, management of relations in the supply chain.

Relationship management has a significant impact on all areas of the supply chain as well as its
performance level. In many cases, the information and technology systems needed for supply chain management activities are readily available and can be completed and implemented within a relatively short period of time, but many of the initial failures in the supply chain are due to the weak transfer of expectations and Expectations and outcome of behaviors that occur between the parties involved in the chain link. In addition, the most important factor for successful supply chain management is the trustworthiness of partners. It is in the chain, in a way that relied on each other’s capabilities and operations.

Data management: Today, the role, importance and position of information has become obvious to everyone and is one of the main concerns of organizations in supply chain management.

Because the lack of proper circulation and the correct transmission of information, causing the lack of Confidence and coordination between supply chain segments and consequently, the lack of efficiency and effectiveness of the processes and their management becomes more difficult.

The subject of coordination in activities is very important. This is the point in the management discussion Information in the chain, management of information systems and information transmission also applies. Coordinated and appropriate information management between partners will increase the impact there are speed, accuracy, quality and other aspects.

4. Literature Review

Chafuen and Guzman used economic freedom indices of Heritage Foundation and corruption indices related to Transparency International (TI) institute [5,6]. In contrast with these indices, in this research, economic freedom index of Heritage foundation vary between 1-100 as 1 stands as the minimum score of freedom and 100 shows maximum score of economic freedom. Also, range of corruption index is 0 - 100 and zero shows that minimum corruption and 100 shows maximum corruption. In order to investigate relationship between corruption and economic Freedom the model below is exhibited:

\[ CPI_{98} = \alpha + \beta EFI_{99} + \ell \]

CI: is corruption index
EFI: is economic freedom index
\( \gamma \): is error term

Result of regression analysis is as below:

\[ CPI_{98} = 118.12 -1.169244 EFI_{99} \]

Gradient of above equation is -1.169244 with the confidence interval of 99% or 1% error term. Hence, negative sign of gradient shows negative relationship between two variables. It means that increase in freedom index come along with decrease in corruption index. Secondly, it means that when economic freedom increases 1%, corruption decreases 1.16%.

Coefficient of correlation between two variables above is 51% which is significant. That shows economic freedom changes explain 51% changes in corruption. Hence, 1% increase in freedom can decrease corruption more than 1%. Correlation between economic freedom and corruption is shown in chart below.

Gwartney and Lawson (2004) investigate the effects of economic which investigate relationship between corruption and economic freedom using information of 123 countries. Also, they used Heritage foundation and Transparency International (TI) Institute indices. The score of corruption index is as before. Score of freedom scoring is 0 - 10 which divided countries in to five categories based on scores. Score zero shows no economic freedom or complete government control and score 10 shows high degree of freedom. As shown in chart (2.4), results of this research show that countries with high economic freedom index have high corruption index. In other word, with increase of freedom index, corruption tendency will decrease. Hence, there is negative relationship between economic freedom and corruption.

Bengoa Calvo investigate the interactions of economic freedom, direct foreign investment and economic growth based on data panel analysis in a sample contains of 18 Latin American countries in the time period 1970 – 1999 [4]. Researcher used economic freedom index of Fraser Institute. Results of this research showed that economic freedom in Latin American countries has a positive effect on direct foreign investment factor.

High the degree of economic freedom for any country indicates higher the attractiveness of the country for potential investors. Also, results of this paper show that there is positive relationship between direct foreign investment and economic growth in Latin American countries. Also, this research points out that countries need certain level of human resources, economic stability and open economic market in order to absorb long-term capital flows.

Azarmand investigate the relationship between economic freedom and main indices of macro-economy. Researcher used economic freedom index of Heritage foundation and macroeconomic indices of World Bank during the period 1995 - 2003 [3]. Results of statistical analysis and economical assay models estimation showed a
positive and significant relationship between economic freedom and economic performance in these countries. In other word, degree of economic freedom results in increase of total product, economic growth and investment rate and decrease of unemployment and inflation rate. Also, results of analysis of index indicates that some factors like black market, tax burden of governments, monetary policies, property rights, rules and regulations and government hand in economy have significant relationship with economic growth.

Hoseinie(2006) investigate the relationship between corruption and economic freedom indices in Middle East and North Africa. For this reason, researcher used economic freedom index of Heritage foundation and corruption index of Transparency International (TI) Institute. Range of the score of economic freedom index is between 1 and 5. Score 1 indicates maximum freedom and score 5 shows minimum degree of freedom. Range of score of corruption index is between 0 – 10. Score 0 shows maximum degree of corruption and score 10 shows minimum degree of corruption. In this research, first the trends of freedom and corruption indices were analyzed and then statistical analyses, techniques of econometrics and regression models were used to investigate the relationship between economic freedom and corruption. Results of the research show a downturn of economic freedom index in Middle East and North Africa. In other word, freedom degree in this area improved.

For corruption index, results of research show that this index is improved in this area. It means corruption degree decreased in this area. Also, based on the results of this research there is negative and significant relationship between corruption and economic freedom in the confidence interval of 95%. In respect to the research results, relationship between corruption and economic freedom indices is negative as well. The result of significant test shows Irrelevance of government restrictions in economy in 95% confidence interval.

Samety, Samety and Shahnazi investigate economic freedom effects on per capita income based on Lactou methodology framework and using Skipton model, to investigate economic freedom effects on economic growth and with implementation of two other models that are obtained from composing Carlleson, Landastroom model and Vinheld dynamic compiled model. This research was performed in 87 countries as a whole and is done separately in poor countries as well, moderate income countries (including Iran) and high income countries during 1980 – 2003. Results of this paper show a positive effect of economic freedom on per capita income and economic growth. Also from the indices of economic freedom: judicial independency, security of property rights, rules and regulations related to job market, reliance and business have most effects on economic growth [19-21].

Mohammadnia investigate the significance of exports and imports (separately as capital, intermediary and consumption goods) in economic growth of Iran during 1980 – 2010 and modeling is done via Eviews V.3 software. Results of this research showed that 1% increase in export of goods and services result in 19% increase in GDP and through 1% increase in import of goods and services result in 1% increase in GDP. Hence, importance of export coefficient is higher than import coefficient [14].

Imports is categorized into three sub-categories (separately as capital, intermediary and consumption goods), results of estimation showed that 1% increase in import of capital and intermediary goods, result in 0.3% and 0.4% increase in GDP respectively. Although the share of intermediary goods is more than capital goods, but effects of capital goods is slightly higher and this shows the important of capital goods for economic growth. Finally estimation shows that consumption goods have negative effects on GDP growth.

5. Model estimation results

In this research, Model used for investigation of effects of economic Freedom on foreign trade is as below :

\[
FT_{ij} = \delta_0 + \delta_1 EG_{ij} + \delta_2 \dot{P}_{ij} + \delta_3 EFI_{ij} + e_{ij}
\]

\(FT_{ij}\): Foreign Trade (degree of openness of economy, foreign direct investment, total foreign exchange reserves, and trade balance)

\(\dot{P}_{ij}\): Inflation rate

\(EG_{ij}\): Economic Growth

\(EFI_{ij}\): Economic freedom Index

\(e_{ij}\): Error term of model

Indices of foreign trade are economic globalization, foreign direct investment, total foreign exchange reserves and trade balance which the degree of openness for these indices is calculated as below:

\[
OPN_{ij} = \frac{EX_{ij} + IM_{ij}}{GDP_{ij}}
\]

Which:

\(EX_{ij}\): Amount of exports of country “i” in the year “t” (current dollar price)
\( IM_{it} \): Amount of imports of country “i” in the year “t” (current dollar price)

\( GDP_{it} \): Gross domestic production of country “i” in year t (current dollar price)

\( OPN_{it} \): The degree of economic globalization of the country “i” in the year “t” as the first index of foreign trade of in the countries (as percentage)

\( FDI_{it} \): Foreign direct investment of country “i” in the year “t” as the second index of foreign trade (in current million dollars)

\( TB_{it} \): The trade balance of country “i” in the year “t” as the third index of foreign trade (in current million dollars)

\( FER_{it} \): The total amount of foreign currency reserves of country “i” in the year “t” as the fourth index of foreign trade (in current million dollars)

Hence, in order to investigate the effect of economic freedom on foreign trade of countries of the region of Southwest Asia during the period 2001–2018, model (1) is used.

Table 1. Results of estimation of the effects of economic freedom on foreign trade (Economic Globalization, FDI, exchange trade balance) based on fixed effects method

<table>
<thead>
<tr>
<th>Variables</th>
<th>Economic Freedom</th>
<th>FDI</th>
<th>Exchange reserves</th>
<th>Trade balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>T Statistic</td>
<td>Coefficient</td>
<td>T Statistic</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.45</td>
<td>3.1</td>
<td>386</td>
<td>2.9</td>
</tr>
<tr>
<td>Production Growth</td>
<td>.12</td>
<td>4.6</td>
<td>4.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>-0.17</td>
<td>-1.5</td>
<td>-2.7</td>
<td>-0.46</td>
</tr>
<tr>
<td>Economic Freedom</td>
<td>0.006</td>
<td>4.2</td>
<td>36.3</td>
<td>3.9</td>
</tr>
<tr>
<td>R2</td>
<td>0.79</td>
<td>0.88</td>
<td>0.65</td>
<td>0.68</td>
</tr>
<tr>
<td>F statistic</td>
<td>81.7</td>
<td>33.7</td>
<td>10.7</td>
<td>9.6</td>
</tr>
<tr>
<td>Chi-square statistic</td>
<td>23.7</td>
<td>19.3</td>
<td>18.5</td>
<td>21.2</td>
</tr>
</tbody>
</table>

Source: According to the data of table 6 by using Eviews Econometrics Software

Based on Leamer F test and Hausman test, final model estimated by Panel data and fixed effect method. According to the table, the coefficient of determination (R2) is 79%, 88%, 65%, and 68%. In other words 79%, 88%, 65%, and 68% of the changes in economic globalization, FDI, exchange reserves, and trade balance (dependent variable) can be explained by the independent variables and the explanatory model. The results of F statistics model indicate significance of the regression in the confidence interval of 95%. According to the table, economic freedom had a positive and significant effect on economic globalization, FDI, exchange reserves, and trade balance in the region of Southwest Asia during 2001–2018 (T test). The gradient coefficient of this index shows, per a unit increase and improvement in index of economic freedom, economic globalization of the region increases 0.004 unit, the amount of FDI in regional countries increases 36.1 million dollars, exchange reserve increases 0.09 billion dollars and trade balance increases 0.27 million dollars. It is necessary to explain the information of the table indicates a significant and positive effect of economic growth on economic globalization, FDI, exchange reserves, and trade balance. But this relationship is the negative and insignificant for inflation and economic globalization in the confidence interval of 95% (T test).
6. Conclusions

In the recent decades liberalization of the trade sector appeared in the center of attention of economists, programmers, policy developers in many countries of the world. Therefore, in the foreign trade sector for the purpose of adopting corresponding policy, it is necessary to learn more clearly the export and import sectors and accordingly trade liberalization and the factors affecting on it. One of the key factors in the success of organizations and their products is the existence of efficient and efficient supply chain and its proper management. Supply chain management is considered one of the most powerful operational paradigms to improve the competitive advantage of manufacturing and service organizations. On the other hand, with the increasing globalization and international competition and the introduction of new technologies such as information technology, many of the past policies and experiences are no longer necessary.

Efficient supply chain in foreign trade can present productivity increase in production and economy growth by using scale gain, developed technology, optimum allocation of source and increase competition in production. Economic freedom includes series of emprises in order to eliminate governmental control from financial, good and service markets, jobs, foreign sector and leaving it to market mechanism. Economic freedom is the most important factor for increasing competence, investments, entrepreneurship, manager responsiveness and decrease of financial corruption and informal party. Economic freedom influences many variables which one of the most important ones is foreign trade or level of exports and imports. In other word, influence of economic freedom on foreign trade process is very important. Therefore, it is necessary to surveys relationship between foreign trade and economic freedom variables on countries of the region of Southwest Asia based on collected information in the period of 2001-2018.

Model estimation results show Economic Freedom and economic growth has positive and statistically significant effect on foreign trade in Iran and selected countries. Also, the effect of Inflation rate on foreign trade is negative but not statistically significant.

7. Recommendation

Results of the research show that if governments of countries decrease interruptions in economic acts and go toward transparent, competitive and free economy, they will be more successful in achieving their economic development goals. In case of the countries of the region of Southwest Asia we must name some of effective and fundamental governmental acts including equalization of currency rates for a country, correction of fiscal rules, decrease of custom tariff, elimination of some non-tariff imports, support and encouragement of foreign investment, giving justification to private banks, and allowance of operation of foreign banks in the domestic markets. It results in relative improvement in economic freedom index in these countries based on latest reports by Heritage Foundation in 2010. Some of the countries of the region reached their economic development goals through increase in efficiency, optimal allocation of resources, encouragement of domestic and foreign investments, but they need structural and foundational changes in order to implement economic freedom. Hence, it is recommended that the countries of the region of Southwest Asia try harder through effective and coordinated actions in case of monetary stability, correction of fiscal rules, black market control and property rights in order to reach higher levels of freedom and as result higher development of foreign trade.

References


