

Interaction Between Income Convergence and The Expansion of Trade Flows Between Iran and The Selected Blocks

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Abstract: Interdependence among countries is an inevitable international reality in the present era and it is a growing phenomenon. The countries' trade activities affect on economic and non-economic affairs of neighbors and even distant countries. So for the peaceful coexistence, international sustainable development and tackling some international challenges, governments are compelled to adopt required decisions and reactions to develop trade flows. As stated in the study, the thematic realm of the research refers to the investigation of economic integration and income convergence. Constant development of international economic organizations, regional-economic unions, monetary unions, freedom in exchanging merchandises and transporting capitals and so on are all some showings of economic globalization. This fact has provoked countries to acquire a comprehensive knowledge about economic globalization and make appropriate decisions to exploit its advantages and decrease its disadvantages. Iran's economy can also examine the advantages and disadvantages of joining different preferred trade contracts. The statistical analysis and model investigation showed that population rate, economy size and manufacturing capacity of countries have positive effects on trade flows. Also the economic capacity and power of studied countries has a negative effect on decreasing the income gap among those countries that are trade partners, while population rate has a positive impact on the rate of income convergence (the decrease of income gap) between a pair of partners.

Key words: Income convergence, Economic integration, Gravity model, Selected blocks, Preferential trade arrangements, Economic unions.

INTRODUCTION

Interdependence among countries is an inevitable international reality in the present era. And it is a growing phenomenon. The countries' commercial enterprises affect economic and non-economic affairs of neighbors and even distant countries. So for the peaceful coexistence, international sustainable development and tackling some international challenges, governments are compelled to adopt some decisions and reactions to develop trade flows.

For years and years, countries have tried to eradicate preventing barriers of international transactions which have negative effects on their national economy. Such attempts have been emerged as negotiations, general agreements on tariffs and trades called GATT and following it global trade organization (WTO). Simultaneously, a growing tendency to establish economic-commercial arrangements and different trade zonings has been emerged among countries. The presence of developing countries in different economic contracts can be assumed as a reassuring Hatch to enter less experienced economies of international competition atmosphere into global market so as to be adjusted with economy globalization. Since different economy unifications, as proper tools, can identify available opportunities and clarify entering problems and challenges in economy globalization process. It must be pointed out that, in new system of global economy, lots of limitations, supporting policies and governmental interference in global economy have been removed or are removing. Following such removing, the phenomena like economy globalization, growing rate of trade contracts and the identification of economy border and area have transformed countries very much. So it can be bravely said that developing countries won't be successful in using the advantages of economy globalization to acquire their own goals of economy development if they aren't aware of the national, regional and universal conditions and structures of economy globalization. Regarding such significant issue as economy globalization and the basis role of preferable commercial arrangements and economic zonings in acquiring its goals and strengthening national economies for identifying available opportunities and challenges, this study tries to examine the effects of effective variables on developing trade relations and income convergence, regarding Iran membership in available blocks or new grouping of its trade partners, by making use of models and econometric procedures. Finally, this study aims at introducing the best trade arrangements for Iran economy based on examining different economic and non economic indexes.

In order to clarify the issue and goals of the study, this part is allocated to presenting its related general concepts. After clarifying and expressing research problem, a summary about the importance and necessity of

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research is presented. Then the objectives of the study and application of research results and also research methodology are described. Finally the key words used during the research are defined.

1-1 Problem Statement:

Globalization is a convergence process of opportunities at international level and not merely an economic phenomenon but a social, political, cultural, economic and technological phenomenon. But the most significant zone in globalization is economy and undoubtedly communication and information revolutions have been effective in such significance. Economy globalization is not solely limited to the increase of trade and income volumes and it requires price and opportunity convergence among countries and individuals that need deliberation and preparation of basic foundation and facilities by national and international organizations. The increasing proliferation of international economic organizations and associations and regional economic integration, financial markets, monetary union, free exchange of goods and capital transfers are manifestations of economic globalization. But the point that must be noted is that globalization neither can solve the problems nor is the origin of the problems by itself. It is not the prophet of freedom and equivalence by itself. It is not also the cause of cruelty and lag by itself. In other words we can say that globalization has its own winners and losers and it has two faces. One face is very soft and calm that implies freedom and equivalence in exchanging goods and services and transporting information. But the other face is very serious, that is, the countries and individuals that cannot adjust themselves with international revolutions will be removed surely because they are assumed as development barriers. In addition to creating a global market, globalization has created a very competitive environment where only the strong and efficient economic units can remain. In this regard, the equipment of different countries, especially developing countries to use the opportunities that are obtained, seems necessary. Therefore, investigating the facilities and available advantages in different countries' economies and knowing their problems and challenges can offer the proper movement and present the opportunities and challenges. Different economic integrations and convergences, as efficient tools, can reveal the advantages and disadvantages of entering global economy. Additionally, economic integrations have plenty of impacts like the increase of trade exchanges and the improvement of economic welfare that can clarify the countries' capabilities to join global scopes of economies and increase economic potentialities. The bases of different economic integrations and convergences are indexes like economy size, economy similarity, country size, geographical position, and combination of them. In this study, such indexes are investigated in different trade unions in which Iran is an active or potential member. Accordingly, in addition to acceptance of income convergence as one of the effective factors on developing trade flows which is the result of trade integration, it is also stated that income convergence develops when it causes decrease in income gap among members of a regional block.

The extent of influence of income convergence on developing trade flows of Member States and also the effects of temporary development of trade flows on creating income convergence are investigated in the following study. Therefore in this study first the effective factors on creating economic convergence, economic integration and accordingly development of identified trade flows are identified and then with emphasis on theoretical bases, specially the theory of trade attraction, some equations for two internal variables called trade flows of integrated blocks (which Iran is introduced as one their members) and economic convergence are clarified. Following that, the interactive relationship between economic convergence and development of trade flows among Iran and its trade partners are studied.

1-2 Research Purposes:

- The identification of influencing factors on development of trade flows and income convergence among Iran and each member of the selected blocks.
- The investigation of the how of affecting Iran membership in selected unions on trade flows.
- The investigation of the effects of union membership on income convergence.

1-3 Applications of Research Results:

Economic integration is one of matters which have been extensively noticed in trade in recent years and simultaneous with the entrance of countries into global economy environment it has acquired a special position among economy issues. Structural revolution in global economy and its developing rate and the uncertainty related to future technological revolutions have provoked the countries to join unions to be able to control sudden impacts of future global changes.

Since, in addition to benefits of trade flows, membership in each union can result in some losses which are related to trade deviations, kinds of negotiations, their process and also selection of countries to establish a particular union are so important. Inasmuch as, decision and policy makings can lead to highest benefits and opportunities. Joining various unions can provide an environment in which countries are able to know their available capabilities and facilities and investigate the challenges so that threats can be changed into opportunities.

The competitive privilege of different markets is strengthened by integrations. The increase of trade volume increases the economic welfare. This study examines the influences of various unions on trade performance of Iran economy to achieve the highest mutual trade potentialities and then introduce the best economy integrations. Additionally, it can help Iran economy in decision makings to continue its cooperation with unions by which it is cooperating now and choose unions with which it is going to have cooperation by investigating the effects of Iran membership on income convergence. So Iran, as an influential country, can play an important role in creating available or hypothetical integrations.

68 countries of Iran's main trade partners, which cover %90 of Iran trade flows, have been chosen in this study. It is possible to generalize the results of the models to extensive framework of global environment. Results can be useful in Iran's negotiations with selected unions and trade partners by planning the bases of the negotiations. The decision and policy making organizations and establishments like management and planning organization, specialized commissions related to foreign trade in law-making body of the country, asset and economy ministry, trade ministry, the ministry of foreign affairs and all other governmental and private organizations and establishments which are involved in foreign trade and trade segment can use the results of such studies.

1-4 Research Methodology:

In this study, firstly, attributive and content analysis methodologies are used to clarify and explain subjects like economy globalization, integrations, and convergences and so on. Then by choosing gravity model as economy-evaluating model, quantitative relations are analyzed. Regarding the merits of this model, it can be used as a proper tool in foreign trade and mutual trade among different trade partners to calculate the trade potentials of Iran economy to join different economy unions. To achieve the best results and calculations, 68 countries (among all trade partners of Iran in world) have been considered. Such great number reveals the extensive volume of Iran trade flows in the world. The applied statistics and information are derived from national and international sources. The study span covers 2000 to 2010. The analysis and calculation related to regression and economy-evaluating models, in discussing international trade, are carried out by panel data methodology and other economy-evaluating techniques along with related software (EXCEL for processing data, Eviews5 for estimating some models and TSP4.3 for panel data).

1-5 Definition of Operational Terms:

1-5-1 Economy integration

Basically, it refers to the theory of creating a bigger economy unit from totality of smaller national economies. So the trade barriers and limitations are removed and cooperation and coordination in trade, monetary, financial, economic affairs among Member States are expanded (Gerber, 2000).

1-5-2 Convergence:

It refers to a kind of tendency toward the similarities among two or more economic structures in terms of per capita incomes, actual rate of development, inflation rate, interest rate, and the strategies of economic and social organizations (Plock, 2002).

1-5-3 Income Convergence:

Income convergence or income similarity is defined as per capita income gap between two trade partners. Fewer gaps lead to more income convergence or similarity. It seems that the similarity between trade partners is the trade stimulus.

1-5-4 Preferential Trade Arrangements:

It is the simplest kind of economy integration and it refers to a situation in which the Member States use less trade limitations in their mutual trade flows (Salvatore, 1990).

1-5-5 Economy Unions:

They are agreements and contracts among two or more countries based on common economic policies (Farhang, 1990). Such common policies not only include common foreign tariffs and trade policies to remove limitations but also include an integration of coordinate industrial, social, monetary policies to create common monetary unit and other achievements like same transportation rules for the Member States. The studied unions in this study are groups of available and hypothetical unions in which Iran is either an active or a potential member.

The available blocks are as follows:

-OIC: Organization of Islamic Conference

-D8: It refers to agreement among developing countries: Indonesia, Iran, Bangladesh, Pakistan, Turkey, Malaysia, Egypt and Nigeria

ECO: Economic Cooperation Organization

GCC: Golf Cooperation Council

OECD: The Organization for Economic Cooperation and Development

APEC: Asian Pacific Economic Cooperation

EU: Economic Union

ASEAN+3: It refers to the unification of south-eastern nations of Asia including China, Korea and Japan.

1-5-6 Gravity Model:

It has been called Gravity model because its basic structure is very similar to Newton Gravity rule. This model is extensively used in science branches. Regarding economy, it is used to explain mutual flows and integration among lots of countries. It makes it possible to have a simultaneous calculation of mutual trade potentials from the viewpoints of both exporting and importing countries (Armani, 1997).

1-5-7 Panel Data:

It is one of effective and indicative models for evaluating economies whose use is increasingly expanded in international trade. This model is based on the concept of combining observations resulted from temporary data during such time span. In this model the non-convergence among individual units is considered as originating from a certain and particular source (Hilo, 1986).

2. Review of Literature:

2-1 The Growth of Asian Regional Trade and Income Convergence: A case of ASEAN+3 based on developed hypotheses of Help man, Frogman and variable modeling.

The writer (Hoe, 2003), in this research, has focused on the development of mutual trade of ASEAN+3 during time span of 1968 to 2000. He chooses a new research methodology and uses the developed model of Help man - Frogman. He invents suitable simultaneous equations from trade reasoning in a flexible subordinating form. Then he gets help from national accounts of global tables of global bank in 2002, secret time data on international trade from CHELEM in France and recent improved calculation methodologies for providing experimental evidence to examine income convergence of mutual trade in ASEAN+3. Basic concepts of trade development and its view points for ASEAN and three eastern countries of Asia (China, Korea and Japan an) have been discussed in short. And also possible applications for other free trade agreements and economy integration have been suggested. Then, after introducing a simple model along with implied subordinations, two simultaneous equations which include foundations of gravity theory and expand trade and development relations between two exchanging countries is presenting the following generalized model:

$$T\% = P_1 + P_2 Y_A \% + P_3 Y_T \% + P_4 FT\% + P_5 MT\% + P_6 PT\% + P_7 ERT + P_8 IT + P_9 POT + P_{10} ST + V_2$$

In this model, it is supposed that the trade of ASEAN is influenced by GDP, Member States of ASEAN(YA), their trade partners(YT), other economic affairs, and related policies to trade and internal(ST) and external shocks. Such activities, policies and shocks including financial policy(FT), monetary policy(MT), inflation(PT), trade policy and rates of foreign monetary units(ERT), industry structure(IT), population(POT) which is considered as an index for country size and national or international crises(ST). These crises which are referred to as virtual variables of this.

Model is as follows: oil crises (1975), the fall of market shares (1987), Persian Gulf War (1991) and Asian financial crises (1997). The writer processes each of trade-development models of ASEAN and Japan, ASEAN and Korea and ASEAN and China separately and achieves the following results:

- All calculated models lack any correlations and all of them are statistically significant.
- Trade of ASEAN is significantly influenced by GDP and Member States of ASEAN. But GDP, trade partners of ASEAN, generally don't feel any significance in their relations with ASEAN.
- Income convergence has an acceptable effect on ASEAN trade.
- One of the main variables of traditional gravity model, called the size of trading countries, wasn't statistically significant all models.
- The so - called four-fold crises have a mixed effect on ASEAN trade with three Asian eastern partners.

In the last part Van Hoe investigates trade development and convergence in ASEAN+3 according to political concepts. Answering the question "Can convergence in ASEAN+3 be the cause of its trade?" he points to an uncertainty and says: "generally, convergence is not a main reason for increasing trade of ASEAN+3 in analysis, preparation and administration of trade policies."

Then the researcher offers another question and, based on the obtained results, answers as follows:

- Does development influence on ASEAN trade with its trade partners?

The results show that trade and development has mutual influence on each other and the development of ASEAN member's influences on their trade flows. But this trade influence is not the case for developments of

trade partners. This result persuades the governments of 10 countries of ASEAN to establish and promote a free trade agreement as ASEAN+3.

Do crises affect on trade development of ASEAN?

As trade openness is used as an index for trade among ASEAN and three Asian eastern countries, crises affect on trade. And also different crises have different effects on ASEAN trade. Finally, the results show that income convergence or similarity among ASEAN and trade partners of eastern Asia helps increase mutual trade though such influence, regarding size and statistical inference, is trivial.

One of privilege of this research can be the selection of a wide time span, 1968-1999, that makes obtained results more reliable.

2-2 Kriol and Li (2002) in a research titled “*Trade Blocks and Gravity Model*” studied the effects of union of Andin and Mercator on interregional trade during the years 1980 to 1997 by using gravity model and panel data.

In this article, the index of interregional trade intensity is used for measuring the intensity of regionalism and integration of Latin America (LAIA). This index is as follows:

$$R_{ij} = \frac{(X_{ij} / X_{iw})}{(M_{wi} - X_{ij}) / (M_{ww} - X_{ij})}$$

In this index, and respectively refer to exports of country I to region of j. w refers to the whole world. Mix and Maw, respectively, refer to global imports from the region I and other parts of the world. After using this index in this article, the results show that high mutual trade dependency among countries of LAIA, particularly with establishment of AC and Mercator unions, has led to less trade dependency to other global markets.

They estimated the following gravity model:

$$\log(M_{ij}) = \beta + \beta_1 \log(y_i) + \beta_2 \log(y_j) + \beta_3 \log(DIF_{ij}) + \beta_4 D_{ij} + \beta_5 AD_{ij} + \beta_6 PTAC + \beta_7 PTAM + \beta_8 DUM90 + \varepsilon_{ij}$$

In this model, Midi refers to the value of imports of I country from j country. The incomes are replacements for the economic volumes of trading countries. And the distance (Dig) includes costs of transportation. It is expected that the countries with higher GDP have more trade because they have more tendency for changes and also have more industrialized foundations and more open policies to facilitate trading. It is obvious that transportation costs decrease the trade volume more, so, as it is expected, distance has a negative influence on trade. In addition to these variables, other factors are added to the model which can decrease or increase trade flows. Included among such factors is complete difference of per capita income (DIF yak) which is used to examine Linder hypothesis. The basis of the hypothesis is that countries with similar level of per capita income have similar tendency, taste and products. But their products are different from convergent kinds and they prefer to trade with each other instead of other countries. The negative mark of this variable increases the effect. Also they used the virtual variable (Adjoin) to investigate trade relations of the countries have known geographical borders. Additionally, the virtual variables PTAC and PTAM are respectively used for estimating the influences of preferential trade agreements of Andin and Mercator. Finally, the virtual variable DUM90 was added to the model for covering the effects of second opening of international credit markets and regional administrated trade revisions after 1990.

After considering the effects of distance and size, they found that the preferential trade agreements of Andin union have had a significant effect on referent and distinguished convergent products, capital products in particular. On the other hand, the preferential trade agreements of Mercator union only have had a positive effect on a branch of referent products of the capital.

The research findings show that regional integration agreements, Andin and Mercator, have had an influence on interregional trade dynamism and have provided a sudden developing movement in inter-industrial trade. Moreover, their influences are on some particular classes not on all of them.

2-3 “Integration, Disintegration and Trade in Europe: Development of Trade Relations During 1990s”:

In this article, the writers (Harbor and Zhan Tidemark, 2000) investigated the collapses of some East Europe countries (Yugoslavia, Check and Slovakia and Russia) in 1990s. The researchers exploited the gravity model. Because of the collapses, the gravity model was used for limited data section and the total data. In the first section, the used data didn’t include new countries and in the second section the data related to new countries have been added and have increased the volume of data. The time span includes 1990 to 1998. The model calculations are based on the least ordinary squares. The applied gravity model is as follows:

$$M = \beta_1 + \beta_2 Y_m + \beta_3 Y_x + \beta_4 d + \sum \gamma_i D_i + \varepsilon$$

In this model M stands for mutual trade flows, y indicates GDP of exporting countries (y_x) and importing countries (y_m), d represents the distance between capital centers of the two countries, and refers to error term.

Di is also a virtual variable which, in this study, stands for the intensity of substandard trade relations between two countries or two particular groups of countries. The positive coefficient shows that the trade flow is more than the normal level. The negative coefficient shows that trade flow is lower than the normal level. The researchers have defined the normal trade level based on economic width and distance of countries. The virtual variable of the model has been used in three forms:

- The countries which have common border
- The virtual variables which refer to official preferential trade areas in Europe
- The virtual variables which refer to remained countries of previous unions in central and east Europe.

The results of this article confirm suitable explanatory power of gravity model in explaining trade patterns. The explanatory power of the model is above %80. These results show that the calculation coefficients of the main variables in gravity model have expected marks. The coefficients of virtual variables of common border and language also confirm this fact. Despite of lots of changes that have happened during the years 1990 to 1998, the calculation coefficients of the main and virtual variables are totally fixed and don't have any significant change. The virtual coefficients related to different integrations also show significant results. The establishment of free trade regions in west Europe has apparently had moderate positive effect on trade flows. The results related to the volume of trade relations among countries of west and east Europe show that such relations are influenced by lots of trade limitations of Cold War period as at the beginning of the 1990s they were very lower than normal level though they have increased at the end of 1990s. Generally, the obtained results show that separation in east Europe decreases trade relations although the growing volume of trade flows among mentioned countries is relatively constant. This issue is intensified by clear cultural, social, linguistic relations who exist among these countries. At last, their trade relations are fixed at 2 or three folds than the normal level. In this study, the lack of vivid difference between GDP coefficients of exporting and importing countries reveals the same impact of internal and external economies on mutual trade flows.

3. The Trade Determinative Factors:

The calculation of trade potentialities between two or more countries is carried out by making use of factors which can be determinative. Such factors are economic features of the two countries, barriers and suitable trails which are available for mutual trade between two or more countries and they are as follows:

3-1 Gross Domestic Product (GDP):

This variable is the key variable in different models of commercial flows. GDP can also observe economic capacity, economic size and economic capability of an economic system while it observes the actual value of calculated productions. Actually, by increasing GDP, the country's ability to attract and produce more products is increased. The supply and demand for trade between two countries are improving. In other words, GDP has a positive effect on bilateral trade flows.

3-2 Geographical Size and Population of the Country:

There are factors that reduce foreign trade stimulus by increasing the size of the domestic market and promoting the level of internal economic activities. For a while, this idea can explain the inverse relationship between bilateral trade flows and population size. Countries with higher population have more tendencies to promote internal economic activities, because they can exploit better from economic scale originated from their domestic markets (Frankel 1997). It is expected that physical territory, the same as population, decrease trade flows to the extent that less endowed countries are more dependent on trade to acquire those natural sources that they don't have.

3-3 The Distance Between the Two Countries:

The distance between two countries is a critical factor in geographical trade patterns. Distance increases the cost of international goods and services transactions. In addition to distance, the costs of the cross-border trade are also deterrent and obstacle to trade. Further distance between the two potential trade partner increases bilateral trade costs and reduces the benefits of trade (Kurgan, 1992).

3-4 Similarity or Dissimilarity of Economic Structure:

Based on Linder trade theory, similar countries tend to trade more with each other than dissimilar countries. This is due to similar infrastructure, complementary industries, production culture and even consumption production. The best indicative factor to determine the extent of similarity between the two countries is the difference between their per capita incomes. Less difference will lead to more bilateral trade (Anon et. al, 1996).

3-5 Degree of Economy Openness:

Degree of openness of the economy of a country is calculated by acquiring the ratio between its trade transactions (imports and exports in total) and its gross domestic products. Based on this index, if the ratio of

trade to a country's GDP is more, the country's economy is more open. Accordingly, in countries that have a more open economy, trade is more important. Because it implicitly suggests abolishing some restrictions and tariff barriers to trade

3-6 Human Development Index:

Human Development Index was firstly introduced and used to evaluate countries' developments in human development report of development program and United Nation Development Report. Since then, social-economic researchers, planners, politicians and governments have taken this index into account. In this index, human development is a process which expands the choice range for the people. At any level and phase of development, three necessary factors affect on the tension of such expansion which are as follows: achieving a long healthy life (life expectancy), the acquisition of knowledge (literacy index) and availability of needed resources and a good and decent standard of living (purchasing power standard). In the absence of these factors, the availability of many opportunities is impossible.

4- The Concept and Application of the Theory of Gravity:

Gravity model, after being firstly used by Tinbergen (1962) and Payphone (1963) for analysis of international trade flows, has become a general tool in the field of international studies and it is widely used in various types of movements, such as immigration, direct foreign investments particularly trade flows. Based on the original gravity model which is introduced by these two, the trade flow from country I to j (Tin) have been explained through economy sizes of exporting and importing countries (i.e. Dip and Gap) and the geographical distance between them (Dig). The general form of the model will be as follows:

$$T_{ij} = f(GDP_i, GDP_j, D_{ij})$$

And it has been assumed that the amount of trade between two countries has a direct positive relationship with the increase of economy size (Gross Domestic Production) and an inverse relationship with cost of transportation, that is, the increase of geographical distance between economic centers of countries

$$T_{ij} = C \frac{GDP_i \cdot GDP_j}{D_{ij}}$$

Now it can be found that why the name of this model is gravity model. It is, to a great extent, similar to Newton gravity model in which the gravity power is a direct subordinate of the powers the two substances and it is also an inverse subordinate of the distance between them ($\frac{F_i \cdot F_j}{r^2_{ij}}$). The main advantage

of the gravity model is its simplicity that makes it easy to be calculated by limited number of variables. The Development of trade gravity model in recent years has improved the performance of this model in the international trade literature. A displayed form of trade gravity model is that the trade flow between the countries I and j is a subordinate of their income variables (yes, in), population (Ni, No), distance (Dig), virtual variables (Aim) to explain the proximity, trade arrangements and cultural –economic cooperation contracts. Its formula is as follows:

$$x_{ij} = \beta \cdot y_i^{\beta_1} \cdot y_j^{\beta_2} \cdot N_i^{\beta_3} \cdot N_j^{\beta_4} \cdot D_{ij}^{\beta_5} \cdot A_{ij}^{\beta_6} \cdot V_{ij}$$

Where Vim is the indicative of interfering component (Zeros and Lehman, 2000)

4-1 The Final Clarification of Gravity Model to Investigate Trade Flows and Income Convergence Between Iran and Trade Partners:

The first manner gravity model clarification for Iran and trade partners, without considering the effect of economic blocks on developing trade relations and income convergence, is as follows:

$$LX_{jt} = A_j + \beta_1 LGDP_{it} + \beta_2 LGDP_{jt} + \beta_3 LPOP_{it} + \beta_4 LPOP_{jt} + \beta_5 LTP_{jt}(-1) + \beta_6 LOPEN_{jt} + \beta_7 Linder + U_{jt} \tag{Number 1}$$

$$IG_{jt} = a_{ij} + \gamma_1 LGDP_{it} + \gamma_2 LGDP_{jt} + \gamma_3 POP_{it} + \gamma_4 POP_{jt} + \gamma_5 LTP_{jt} + \gamma_6 LX_{jt} + \gamma_7 LOPEN_{jt} + V_{jt} \tag{Number 2}$$

In which ((L)) is the indicator of Logarithm in the Natural Base, It refers to trade flows between j and I countries during the time span t. More exactly in indicates the export volume from the country I to the country j. In the equation number 1 all selected countries are exporters because trade relations are mutual (only trade relations with Iran are concerned not with other countries of the world). The country I is exporter and the country j is importer. Aim is the symbol of Intercept which is definite for each pair of trade partners and it is generally called individual effect. That is, $a_{ij} \neq a_{ji}$. Dip and Gap, respectively, refer to gross domestic products

of the countries m and j . $Pope$ and Pop refer to populations of the countries m and j . According to previous studies, it is expected that it is also positive because the higher level of income in exporting country increases the production, export and service capabilities of that country. The higher level of income in importing country seems to have positive effect on trade flows because such higher level of income leads to more requests for imports. The population coefficients in different studies have different marks, that is, its effect is indefinite. Such differences have their own particular interpretations. The variable $Tint$ in the equations number 1 and 2 refers to trade policy and shows the trade balance which enters the pattern after a time break and it is so effective on developing trade flows between two trade partners and it is calculated as follows:

$$TP_{ij} = \frac{|X_{ij} - M_{ij}|}{X_{ij} + M_{ij}} \tag{Number 3}$$

In which I refers to exports from country I to country j , and $Midi$ refers to imports of country I from country j . The size of this index is between 1 and 0: $0 \leq TP \leq 1$

The number 1 appears when trade is unilateral, either exports or imports. But the number 0 refers to equal exports and imports. It is expected that the mark of this variable is negative. That is, as exports and imports of the two trade partners are closer, the numerator will be smaller. In such case it will strengthen the mutual trade relations between the two partners in future. The Logarithmic form of this variable is calculated as follows:

$$LTP = \log (TP / (1-TP)) \tag{Number 4}$$

The numerical rate of the variable of trade balance is smaller than 1. So it must be adjusted according to above equation. The variable $Open$ refers to the degree of national economic openness and is expected to have positive effect on increasing trade flows. Because if the economy of a country is more open, trade will be more important

The Linder variable shows the similarity between importing and exporting countries and it is, in fact, the indicator of trade theory. Based on this theory, similar countries are more willing to have trade relations with each other than dissimilar countries. This means that as the gap between economic structures of countries and their economic index increases, their trade flows will decrease. The most suitable variable to show economic similarity between each pair of countries is per capita income which is estimated as follows:

$$linder = \ln \left(\left(\frac{GDP_i}{PoP_i} \right) - \left(\frac{GDP_j}{PoP_j} \right) \right)^2 \tag{Number5}$$

Dip , Gap , $Pope$ and Pop respectively refer to gross domestic product of I country, gross domestic product of j country, population of I country and population of j . It is expected that the coefficient of convergence variable be negative. In other words, if income structures of two economies are more similar, meaning that the available gap between per capita incomes is smaller, the mutual trade relations will develop. That is, there is an inverse relationship between the reduction of income gap and development of trade flows. The positive mark of the coefficient related to convergence variable reveals the effects of other influential factors on creating requests and formation of trade flows because the increase of income gap between two partners leads to the increase of mutual trade flows. Such assumption is quite contrary to Linder theory which claims that similar economy systems are more willing to have trade relations with each other than dissimilar economic systems. Unit also refers to the statement of interference in the model which has the average of zero and a certain variance in each time span.

In the equation number 2 “ L ” refers to Logarithm in Natural Base and $Digit$ is the indicator of income convergence. As it was stated in definitions, income convergence points to the available gap between per capita incomes of the two trade partners. Therefore, Linder index has been used to explain this fact. The variable of $Digit$, in this study, is equal to Linder variable ($IG = Linder$) and it is representative of a set of similarities between the two trade partners. TP , as it was described in previous equation, is the indicator of trade balance which is an effective and important factor in income convergence. Since mutual trade affairs, convergence and unilateral trade relation result in lack of convergence. So it is expected that the coefficient of this variable have positive mark. That is, if TP decreases, IG (income gap) will also decrease which is equal to more convergence. On the other hand, if TP increases, IG will also increase which is equal to lack of convergence. It introduces trade flows (in this study; export flows). In the most international trade studies it is assumed that integration and development of trade flows are done based on economic similarities. And similar economic structure is one of the main factors in creating trade flows. But in this study the inverse direction of this relation is considered. The question is stated as: “Can development of trade flows be an introduction for income convergence or decrease of available income gap among economies? So the effect of developing trade

flows (It) enters the equation number 2 and it is calculated. It is expected that the mark of concerned variable be negative. That is, the increase of trade flows, causes decrease in available income gap between two trade partners and leads to income convergence. This coefficient may be positive. It means that the increase of trade flows between two countries not only doesn't lead to income convergence but also it leads to lack of convergence. Then the reciprocal effects of convergence and development of trade relations can be investigated by entering this variable.

The variables like distance, cultural factors, political-social factors and the like factors are fixed during time passage and can't be directly entered to the model of fixed effects. Such variables are particular for each pair of countries and are implied in Intercept (individual effects). Therefore, the estimated Intercept from the equation 1 or 2 can be used to examine such variables. So we have:

$$FX_{ij} = a_0 + a_1LDis_{ij} + a_2HDI + a_3INC + a_4P + \alpha Lawr + \mu_i \quad \text{(Number 6)}$$

In which Fix introduces the individual effects resulted from model calculation and Diesis refers to the distance between the capitals of countries I and j. It is possible that the geographical distance between the two partners make their mutual trade relations unjustifiable. So it is expected that the coefficient of the distance variable have negative mark because it is counted as a replacement for transportation costs of trade. The next variable is the index of human development which is applied as follows: Countries whose development index is higher than 0.8 are introduced as countries whose development indexes are high .The countries whose development index is lower than 0.8 are introduced as countries which lack high development index. The calculation basis for this study has only been the year 2000 because the numerical range of this variable for the selected countries hasn't changed significantly during the study. Iran development index is lower than 0.8. So Iran is in the second group. For the countries that are similar to Iran (lower than 0.8) the number 1 and for the countries that are in the first group (higher than 0.8) the number 0 is allocated the variable P is the representative of different levels of political relations. The political relations of Iran have different levels. The first level is at ambassador level and includes extensive political, economic and cultural relations. An example of such level is China political relationship. The second level of political relations is also at ambassador level but it is not as extensive as the first level as Australia. Finally the third level of political relations is at commissioner level in which relations are limited as Thailand. This variable is entered the pattern as a virtual variable whose value is 0 or 1. That is, the number 1 is allotted to partners with first and second levels of political relations and the number 0 is allotted to the rest of the partners. It is expected that the coefficient a 4 be positive and have more intensity in developing trade flows. The variable Lawry refers to common language and writing which, according to the opinion of Bart (2004), decreases bargaining costs in trade follows. This variable has also been entered as a virtual variable. The countries which have one of the current languages in Iran including Farsi, Turkish and Arabic have been considered as countries with common language and are allotted the number 1 and the rest of the countries are allotted the number 0. This variable is expected to have positive effect on mutual trade flows. The variable of INC refers to previous cultural exchanges and it is based on the assumption that mutual trade is greatly affected by previous cultural exchanges. During such exchanges a country can be familiar with various market tastes and consumption habits of countries. This familiarity itself is an important factor in entering foreign consumption market. So this variable is expected to have a positive on trade flows. Despite all rational expectations, which were stated above, in various studies different coefficients, even contrary to theory, have been acquired which can be resulted from all unpredictable international factors.

For model calculations, 68 countries of Iran's trade partners during the research span of 2000 to 2010 have been considered. Based on the variables of the model, all data in these countries has been used. In this part, there are 136(68×2) trade relations because only the relations between Iran and its partners are considered. The research duration is 11 years. The total number of observations for each panel is 1496 since the formed panels are balanced.

4-2 The Impact of Joining Different Blocks on Trade Flows and Income Convergence Between Iran and Its Partners:

The second manner of gravity model clarification for Iran and its trade partners focuses on effects of integration resulted from joining trade blocks. It is as follows:

$$LX_{ijt} = a_{ij} + \beta_1 LGDP_{it} + \beta_2 LGDP_{jt} + \beta_3 LPOP_{it} + \beta_4 LPOP_{jt} + \beta_5 LTP_{ijt} (-1) + \beta_6 Linder_{ijt} + \beta_7 LOPEN_{jt} + \beta_8 PTA + U_{ijt} \quad \text{(Number 7)}$$

$$IG_{ijt} = a_{ij} + \gamma_1 LGDP_{it} + \gamma_2 LGDP_{jt} + \gamma_3 LPOP_{it} + \gamma_4 LPOP_{jt} + \gamma_5 LX_{ij} + \gamma_6 X_{ij} Block + V_{ijt} \quad \text{Number 8)}$$

The variables PTA and $X_{ij}Block$ are used to show the effect of economic integration of Iran and its trade partners that have membership in each union on trade development and income convergence. Membership in a block is stated as follows: When both importing and exporting countries are members of a union the number 1 is allocated, otherwise, the number 0 is allocated. For example, (ECO = 1 or 0). Since the supposition of this study is that members of each union are unchanged during research time span, the effects of blocks can't be directly entered the fixed effect model. So, in this manner, for the equation number 7 the effect of the variable indicating preferential trade agreements on slope of gravity equation, that is, the variable of income convergence (income gap) which shows similarity of economic structures, is investigating. So PTA will be equal to: $PTA = Block \times Linder$

8 blocks are studied in this study and the assumption is that Iran has actual or imaginary membership in these blocks.

The available blocks are GCC, EU, OIC, ASEAN, OECD, APEC, ECO and D8. In this study it is supposed that Iran is one of members of all these blocks. The basis of such assumption is that best trade arrangement must be defined for Iran based on available economic data and statistics, geographical position and etc.

The gravity variables (GDP, population, width, distance and cultural similarities) explain the normal trade level among countries. And virtual variables like block effects are factors that indicate the effect of preferential trade agreements on trade. They are related to blocks and explain trade levels which are higher than ordinary trade levels among Member States (in this study) or Member or non-member states (other studies).

The variable I Block which has been entered the model (Number 8) is calculated as follows:

$$M_{id}block = Li_i \times block$$

$$X_{ij}OIC = LX_{ijt} \times OIC$$

$$X_{ebec} = LX_{ijt} \times ECO$$

$$X_{ij}Gcc = LX_{ijt} \times Gcc$$

The effect of joining a preferential trade agreement on the variable of income convergence is also determined by I Block. If the mark of the calculated coefficient of this variable is negative, it will mean that convergence is created as the result of membership in studied union. If the calculated coefficient of the variable I Block is positive, it will verify lack of convergence as the result of joining in the union. It is expected that variety of results be obtained as the result of Iran membership in different unions, since joining each union doesn't end in income convergence or trade creation. In this patterns, the panel data are calculated in a balanced manner (based on 1496 (11*136)). The individual effects resulted from fixed effect calculations, as equation number 6, on fixed variables during time passage are calculated.

5. The Analysis of Calculation Results:

The previous part was allotted to the clarification of different models for achieving the research goals and hypotheses. In this part, after calculating the patterns, data analysis is done. As it was mentioned before, the mutual trade relations between Iran and its trade partners and the impact of integration, which is created in the form of custom unions, on their mutual trade relations can be investigated and predicted by gravity model.

The calculations related to the patterns of trade gravity show that the temporary and compound calculations of gravity model are creating an oblique volume of mutual trade. The reason is that the traditional and standard method of OLS don't consider the dissimilation between each pair of countries as individual units, while the political, cultural and other kinds of relations affect on mutual trade flows and are dependant to gravity variables of the pattern (that is, GDP, population and). The results of F test for all cases of gravity model show that the null hypothesis, meaning equality of individual effects, can't be accepted. So it is not possible to combine temporary and timely-secret data. The intergroup calculations also exploit the diversity among individual units while they ignore any internal data of individual units. So one of the two methods of fixed effects or random effects is selected as an efficient method for calculating the model for this reason the Housman Test has been used.

The results of four different calculating methods, that is, pooling, intergroup, intra-group (the fixed effects) and random effects, aren't covered in this model because there is a huge volume of statistical calculations.

The model calculation will be done in two following scenarios. The first step refers to the calculations of equations related to mutual trade relations and income convergence between Iran and its trade partners. In other words, the general trade appearance of Iran, ignoring the trade of oil and its products, is presented. The second step refers to the calculation of the impact of economic integration, in the form of trade blocks, on trade flow and income convergence between Iran and its partners.

5-1 The Model Calculation for Investigating Trade Flows and Income Convergence Between Iran and its Trade Partners:

The first manner of calculating gravity models for Iran and its trade partners was carried out without considering the effect of economic blocks on developing trade relations and income convergence. Based on statistical calculation, the results are as follows:

(Calculation results of the model 1)

$$Lit = 0.19 LGDP_{it} + 0.3 LGDP_{jt} + 0.9 Lopp_{ed} + 1.1 LPOP_{jt} - 0.052 LTP_{ijt(-1)} +$$

(2.31) (3.1) (3.71) (3.82) (-2.92)

$$0.14 LOPEN_{jt} + 0.08 Linder$$

(0.98) (3.14)

$$\bar{R}^2 = 0.85 \quad F = 40.45 \quad H = 38.15(000)$$

Regarding Housman Test in the model 1 which is equal to H= 38.15 and in model 2 which is equal to H=127.22, the null hypothesis (the adjutancy of fixed coefficients) can't be accepted. So the method of fixed effects is more efficient than the method of random effects.

The results show that GDPs of exporting and importing countries have positive marks and statistically are at a significantly high level of %95. That is, %1 increase in Dip and Gap respectively increases the volume of trade flows at %0.19 and %0.3.

The higher level of income in exporting country increases its capability for producing and exporting goods and services. Also higher level of income, obtained as the result of more import demands from importing countries, has a positive effect on trade flows. The population coefficients of exporting and importing countries are also positive and significant enough. The quantities of these coefficients reveal the fact that %1 increase in populations of exporting and importing countries will respectively cause %0.9 and %1.1 increases in trade flows between two partners. It can be inferred that in these countries production is more activity-based than capital-based because as population of exporting country increases, its production becomes more beneficent and its exporting capacity also increases. On the other hand, in importing country the demands for goods increases and such increase will lead to more trade flows and accordingly has a positive effect on developing trade flows. The variable coefficient of trade balance (TP) is equal to -0.052. That is, approaching the amounts of mutual exporting and importing between trade partners rationalize the expectation of future trade development. In other words, the similar volumes of export and import of two trade partners cause more motivation to continue and develop future trade cooperation. Of course it must be stated that this coefficient plays a slight role in strengthening Iran's trade flows with its partners.

The variable Open refers to degree of economy openness of the importing country. Despite its positive effect (0.14) on increasing trade flows, it isn't significant enough. The coefficient of the Linder variable, which refers to economic similarity of trade partners, is statistically at a high level of %95 and it is significant but it lacks necessary mark. While the decrease of the gap among partners' economic structures, which has been resulted from approaching per capita income, must lead to develop their available mutual trade flows, the increase of the gap among their per capita incomes has intensified the trade relations. Such matter can be resulted from the effects of other influential non-covered factors (in this study) on demands like relative prices which are probably determinative on trade relations of the studied countries. %1 increase of the gap of per capita incomes increases trade flows at %0.08. The explanatory power of this model equals to 0.85. That is, in this mode 0/85% of changes of the variable I have been explained by so-called independent variables.

There is not calculation possibility for variables as geographical distance, political factors, cultural factors and other unchanged variables during time passage in fixed effects method. So the effects of such variables are indirectly estimated by calculating individual effects resulted from calculating fixed effects (ajar) on men tined variables. The calculation of this model is as follows: (The calculation of the model number 6)

$$FX_{ij} = -18 - 1.55 LDis_{ij} - 0.6 HDI - 0.5 INC + 0.7 P - 0.21 Lawr$$

$$T: (-6.41) (-4.9) (-1.7) (-.93) (1.65) (-0.4)$$

$$\bar{R}^2 = 0.58 \quad D.W = 1.9 \quad F = 8.1 \quad N = 136$$

the results show that the confidence level of distance variable is higher than %95 and it is significant. The negative mark of its calculation coefficient (-1.55) shows the negative effect of this variable on the volume of trade relations between Iran and other Member partners of the union. It means that, although the effect of distance in modern life has reduced very much, it is still an important factor in Iran's trade system. HDI variable stands for human development indexes of exporting and importing countries and is at a significant level of %90. The negative mark of this variable implies that having trade relations with countries whose HDIs are similar to Iran's HDI (lower than 0.8) has an inverse influence on trade relations. Since Iran's HDI is lower than 0.8, this question comes to the mind that how this variable is significant. Answering this question, it can be claimed that in oil-field countries like Iran whose exporting incomes greatly refer to oil export offset countries of import and

target countries of oil export are often the same. Since Iran and such countries have reciprocal dependency and they are industrialized countries with high HDIs, part of the HDI influence in the pattern has been because of such countries' high HDIs.

The variable P has also entered the model as a virtual variable with values of 0 and 1. That is, the partners with first and second grade political relations are marked by the number 1 and the rest of the partners are marked by the number 0. As expected, its coefficient is positive and it increases trade flows. The other variables aren't significant enough. That is, cultural exchanges and common language and writing don't have effective impacts on establishing trade relations. It is probably because of the fact that the majority of trade flows are with countries that, regarding cultural factors, have less similarities with Iran.

It must be stated that these variables only explain 0.58 percent of changes of individual effects and they indicate that there are some unknown factors that haven't been included in this pattern but they can affect the formation of trade relations. (The calculation of the model number 2)

$$IG_{ijt} = 0.52LGDP_{it} + 0.49LGDP_{jt} - 0.71LPOP_{it} - 0.74LPOP_{jt} - 0.01LTP_{ijt} + 0.15LX_{ijt} - 0.26LOPEN_{jt}$$

(5.75) (5.3) (-2.03) (-2.12) (-0.46) (4.62) (-1.73) \bar{R}^2

=0.91 F= 28.78 H= 127.22 (000) N=1496

Now the model number 2 is investigated. In this model Di_{git} refers to income convergence. Income convergence points to the decrease of available gap between per capita incomes of the two trade partners. Based on F test of Lamer and H test of Housman, the method of fixed effects has been selected as the best method of calculation. In this model GDPs of exporting and importing countries have positive impact on income gap. It means that GDP increase of each partner increases the existing income gap between the two trade partners. Such GDP increase not only doesn't lead to income convergence but also will result in lack of convergence. The amount of influence of these two variables on Di_{git} are respectively 0.52 and 0.49 percent increase in income gap per each %1 increase for each of mentioned variables. They are at high level of 0.99 and they are significant. The variables Pop and Pope refer to populations of the two trade partners and they also have expected marks. The increase of both populations affect on decreasing available income gap between the two trade partners. %1 increase in population of exporting or importing country will, respectively, lead to 0.49 and 0.71 decrease in available income gap between the two trade partners. It refers to trade flows. The increase of trade flows can decrease the available income gap between the two trade partners and lead to income convergence. But in this model the coefficient of this variable is positive. That is, %1 increase in volume of trade flows between the two trade partners not only doesn't lead to income convergence but also it leads to 0.15 increase in income non-convergence. It can be because of very dissimilar economic structures of Iran's partners. The variable OPEN has the expected mark and it is significant enough. The calculation coefficient of this variable equals to 0.26 and its significance level is %90. That is, %1 increase in economic openness of importing country leads to 0.26 percent decrease in the existing gap of per capita income between trade partners because quantity limitations are eradicated and tariff barriers in trade of importing country are minimized. By comparing the coefficients of the two recently mentioned variables, that is, it and $Open_{it}$ can be found that non-convergence is the result of trading with partners whose economic structures are quite different and dissimilar. While if one of the international indexes of macro economy (e.g. economy openness) is considered, trading with more similar economies will lead to decrease of income gap. The next studied variable is trade balance (TP) which it has been proved to have positive influence on income convergence between Iran and majority of its trade partners. The explanatory power of this model equals to 0.91 percent which implies the existence of other unknown effective factors that can affect on income convergence or non-convergence.

5-2 The Pattern Calculation Related to the Investigation of the Impact of Joining Different Blocks on Trade Flows and Income Convergence Between Iran and its Partners:

Regarding the effects of the integration which is resulted from joining trade blocks, the results of second calculation of gravity model (number 7 and number 8) have been presented in tables (A) and (B). 8 blocks are studied in this research and the basic assumption of this research is that Iran has decisive and imaginary membership in these blocks.

The available blocks in this study are GCC, EU, OIC, ASEAN, OECD, APEC, ECO and D8. In this study it is assumed that Iran is one of the members of these blocks. As it has been stated in the tables and based on F test and Housman test in all calculations of table (A), the method of fixed effects has been more efficient than the method of random effects and other calculation methods, because it explains trade flows more precisely and considers dissimilarity effects totally.

Table A: Is related to the investigation of effective factors on developing trade relations (The model number 7).

Block The explanatory variable	D8	ECO	OECD	OIC	EU	AS3	GCC	APEC
<i>Lodi</i>	0.5(5.56)*	0.52(5.86)	0.73(9.56)	0.5(5.48)	0.5(5.53)	0.51(5.63)	0.52(5.74)	0.51(5.6)
<i>LGDP_j</i>	0.5(5.58)	0.56(6.24)	0.78(10.29)	0.51(5.67)	0.51(5.66)	0.51(5.67)	0.52(5.74)	0.52(5.68)
<i>Lope</i>	-0.82(-2.3)	-0.79(-2.3)	-1.002(-8.6)	-0.83(-2.36)	-0.78(-2.23)	-0.76(-2.18)	-0.72(-2.05)	-0.76(-2.19)
<i>Plop</i>	-0.84(-2.39)	-0.85(-2.46)	-1.08(-9.26)	-0.82(-2.34)	-0.78(-2.24)	-0.77(-2.19)	-0.79(-2.26)	-0.75(-2.135)
<i>Le_{sis}</i>	0.14(4.5)	-0.07(2.15)	0.09(3.05)	0.09(2.27)	-0.17(4.92)	0.15(4.58)	0.16(4.88)	0.18(5)
<i>Le_{sis}*Block</i>	0.02(1.8)	0.61(6.55)	0.14(8.13)	0.16(2.48)	-0.145(-1.7)	-0.05(-0.54)	-0.17(-1.75)	-0.145(-1.94)
\bar{R}^2	0.91	0.914	0.89	0.91	0.91	0.91	0.91	0.91
<i>F</i>	28.99	30	27.82	29.09	27.38	28.9	28.56	29
<i>H</i>	159.49	197.8	104.15	145.13	113.78	156.74	161.52	157.2

The numbers in parentheses refer to the t statistics. Their individual effects have been calculated separately.

Table B: Refers to the investigation of effective factors on income convergence (the model number 8).

Block The explanatory variable Of Li_i	D8**	ECO	OECD	OIC	EU	AS3**	GCC**	APEC
<i>Lodi</i>	0.18(2.3)	0.19(2.35)	0.186(2.3)	0.183(2.28)	0.18(2.24)	0.17(2.17)	0.3(3.15)	0.18(2.24)
<i>LGDP_j</i>	0.3(3.67)	0.3(3.72)	0.3(3.7)	0.3(3.7)	0.29(3.6)	0.28(3.59)	0.42(4.3)	0.29(3.6)
<i>Lope</i>	0.85(2.97)	0.87(3.01)	0.89(3.03)	0.9(3.14)	0.89(3.1)	1.04(3.5)	0.75(2.55)	0.94(3.23)
<i>Plop</i>	1.06(3.68)	1.07(3.7)	1.1(3.74)	1.11(3.86)	1.09(3.84)	1.25(4.02)	0.95(3.26)	1.15(3.94)
<i>Lap_{is}(-1)</i>	-0.051(-2.9)	-0.052(-2.95)	-0.51(-2.92)	-0.05(-2.9)	-0.051(-2.92)	-0.052(-2.96)	-0.053(-3.04)	-0.05(-2.87)
<i>LOPEN_j</i>	0.14(0.93)	0.14(0.97)	0.14(0.99)	0.15(0.01)	0.143(0.99)	0.13(0.89)	0.165(1.14)	0.14(0.96)
<i>Linder</i>	0.075(3.07)	0.07(2.32)	0.08(2.94)	0.09(2.83)	0.075(3.08)	0.06(2.33)	0.07(3.02)	0.065(2.46)
<i>Linder*Block</i>	0.14(1.71)	0.02(0.38)	-0.005(-0.022)	-0.03(-0.64)	0.11(0.55)	0.15(1.9)	-0.53(-2.19)	0.06(0.97)
\bar{R}^2	0.85	0.85	0.85	0.85	0.85	0.85	0.851	0.85
<i>F</i>	40.46	37.8	40.03	39.42	40.05	40.07	39.68	40.44
<i>H</i>	37.37	37.32	39.82	35.99	39.57	43.52	40.72	38.18

The numbers in parentheses refer to t statistics

Based on table (A), the variables Dip and Gap, as the most suitable variables to determine the economy sizes of the countries, have been significant in all calculations. That is, all of them have positive coefficients meaning direct relationship between trade flows and the increase of economy power of trade partners. But the vital matter is the influence degree of these two variables on developing trade flows. As it can be inferred from the results, the GDP of importing countries has more influential effect on trade relations. Pope and Pop are at high level of %95 and they are significant. Their positive marks imply the direct relation of this variable with strengthening the trade flows among partners. This fact is in contrary to a usual expectation based on which a country with high population often focuses on internal market than foreign trade. It can be stated that production in exporting countries is more activity-based so it becomes more economized by population increase and finally it increases trade power. On the other hand, in importing countries the effective demands for import goods have increased. The variable coefficient of trade balance Tip (-1) has the expected mark. It means that the approaching of mutual amounts of exporting and importing between trade partners – i.e. the decrease of numerical amount in numerator of the trade balance variable – rationalizes the expectation for future trade development, since the similar amounts of export and import for both trade partners cause stimuli to develop and strengthen future trade co operations. In all equations they are %95 significant. The variable Open stands for economy openness of the importing country. This variable has the expected mark in all blocks but it doesn't have the required significance. The calculation coefficient of the variable Linder is at the level of %95 and it is significant enough but it doesn't have the required mark. Based on Linder theory, the

similar per capita incomes of the two trade partners promotes their trade relations because they have common base of demand. While, based on the results appeared in tables and despite of Linder theory, the increase of income gap between the two trade partners has increased trade volumes. Such result can be originated from the effects of other influential factors (like relative prices) on demands. The most important variable in this part is PTA whose result reveals Iran's trade success or failure after joining the union. The coefficient of this variable isn't significant for OIC, OECD, ECO, EU and APEC blocks. The smallness of t statistics means that the null hypothesis (H0), which is based on the equation = 0, isn't rejected and its related variable doesn't have any effects in the model. So Iran's membership in mentioned unions is not justifiable regarding its effect on developing trade relations. But the variable coefficient of PTA for GCC block is %95 significant and for ASEAN+3 and D8 blocks is %90 significant. D8 is the block which Iran is one its members. The results show that the available income gap among members has positive effects on the formation of trade among them, comparing with more similar per capita incomes. Joining the ASEAM+3 blocks leads to similar result. The existence of income gap among Member partners of integration strengthens the trade. The only block that has the expected mark and it is significant enough is GCC. The negative mark shows that %1 decrease in income gap among block members increases the mutual trade relations as 0.53 percent which also verifies Linder theory. The applied method for calculating the three mentioned blocks is the fixed effects method whose basic assumption is that the difference between each pair of countries can be shown as the difference in intercept. Therefore is an unknown parameter which must be calculated. Its calculation results on variables like geographical, cultural and political factors have been acquired in OLS form which has been mentioned in table (C).

Table C: Blocks' Individual effects.

Explanatory variable =Fix Block	Intercept	Lisa	HDI	INC	P	\bar{R}^2	F	DW
GCC	-15.75 (-4/1)	-1.9(-4/2)	-1.28(-2/24)	-2.31 (2/83)	....	0.63	22.53	2.1
D8	-18.04 (1/69)	-0.7 (-3/55)	....	....	0.7 -(10/54)	0.21	8.93	1.9
ASEAN+3	-16.6 (-5/97)	-2.22 (-6/93)	-0.75 (-1/82)	-1.18 (-2/23)	....	0.38	18.93	1.83

The negative mark of coefficient related to geographical distance shows that it is still so important in Iran's trade flows with its partners, while the role of this variable has been lessened in trade relations of majority of countries in the world. That is, in Iran, as distance increases, transportation costs also increase and economically make trade unjustifiable. HDI variable has entered the pattern as a virtual variable with values of 0 and 1. Its negative mark means that having trade relations with countries whose HDIs are similar to Iran (lower than 0.8 percent) has negative effect on Iran's total trade relations. One of the cultural common things that have affected Iran's trade relations is common language and writing. Since Member States of Persian Gulf cooperation council are Arabic-speaking countries and Arabic language is counted as a common language in this study, its positive effect is not far-reaching. It must be noted that the variables like levels of political and cultural exchanges have been removed because they haven't been significant enough. The adjusted R2, which equals to 0.63 percent, shows the explanatory power of the model according to so-called variables in one hand, and proves the existence of other unknown effective variables on Iran's trade relations on the other hand.

General Results:

As it has been stated during this study, the thematic scope of this study refers to the investigation of economic integration and income convergence. These matters are of the most important current topics in recent literature of macro-economy. The most vital aspect of globalization process is economic aspect, so the most complex issues of globalization process is also related to this aspect. The increasingly expansion of international economic organizations, economic-regional unions, financial mergers of markets, monetary unions, mergers of big banks of the world, goods liberalizations and exchanges, capital transportations, mergers of big manufacturing companies and so on are manifests of the economy globalization. Economy globalization has persuaded countries to get familiar with it seriously because they want to make suitable decisions for exploiting the profits and avoiding its harms. Iran's economy, in order to join world co operations, is also required to join different preferential trade agreements and to examine their benefits and harms. Because this study tries to investigate income convergence and development of trade relations by different economic integrations, gravity model has been use. Based on calculated patterns, the following results are inferred: The calculations of all patterns show that the creation of trade potentials for Iran's co operations with its trade partners helps making economic capacities (Particularly achieving potential level of production) and strengthening different economic aspects like economic, financial, monetary liberalization and acquiring high technological levels. The calculated coefficient of GDP variable in exporting or importing country, in all equations of income convergence(IG), show the negative effect of this variable on decreasing income gap between the two trade partners.

The coefficient of the population variable, in most equations, shows the positive effect of this variable on increasing trade flows and decreasing income gap between partners. It is inferred that in exporting country population increase affects positively on developing trade follows because this development is more activity-based. In importing countries, the increase of population increases effective demands. So the increase of population increases trade willingness.

The variable I has been appeared with different but significant marks in equations of income convergence. Its negative mark refers to income convergence resulted from strengthening trade relations with countries whose economic structures are more similar to each other. The trade among such countries is more focused on goods with low range of difference. The positive mark of this variable shows that trade with countries whose economic structures are less similar to each other leads to income non-convergence.

The calculated coefficient of PTA variable, which stands for the impact of Iran's membership in available integrations on the volume of trade flows, shows that only joining three blocks of D8, ASEAN+3 and GCC has confidence level of %95 and is significant and joining other blocks isn't significant enough. The result of joining GCC block shows that the similarities among economic structures promote the trade volume among partners, while in other two blocks the differences among economic structures are the reasons of strengthening and developing trade relations among partners.

As it is presented in table (C), the variable coefficient of Lexis Block, for all blocks other than ASEAN+3, is significant. The results show that the development of trade relations with ASEAN+3 members doesn't have any effect on decreasing or increasing income gap between Iran and all of its partners. But in other blocks, that is, the development of trade relations with members of EU, GCC, and APEC blocks income convergence is persuaded. The major trade partners of Iran have membership in these blocks, therefore such membership is an important factor in approaching their income structures. But the promotion of the volume of trade flows with the members of OIC, OECD, ECO and D8 blocks increases the available gap among all partners.

As mentioned above, the calculation method of gravity patterns (based on F statistics and Housman test) is one of the two methods of fixed effects or random effects. Since there is no possibility to calculate the variables as distance, common language and writing, political relations, cultural relations and other unchanged variables during time passage in this method (fixed effects), the effects of such variables are indirectly investigated by calculating individual effects resulted from fixed effects calculations on mentioned variables. The calculation results of this model show that the effect of geographical distance on the volume of trade flows is at a high confidence level of %95 and it is significant. Its negative mark shows the negative impact of this variable on the volume of trade flows among trade partners. The virtual variable of political relations also has a positive and significant effect on the volume of trade flows. The virtual variables of common language and writing and cultural exchanges don't have significant effect. But the HDI variable, which has entered the model as a virtual variable with two values of 1 and 0, has negative effect on the volume of trade flows. It means that the countries who are HDIs are similar to Iran' HDI haven't been able to develop the volume of their trade flows. On the other hand the countries who are HDIs are higher than Iran's HDI having been able to deepen mutual trade relations. Such effect is a reflection of Iran's oil-based structure because Iran's major trade partners are countries that are importing oil from Iran and they have high HDIs.

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