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The Analysis of the Effect of Tax Tariffs and Trade Flows on Income Gap in Gravity Model for Member Countries in OPEC

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Abstract

Income convergence or income similarity is defined as crack of income per capita between two trade companies in a way that fewer cracks carries more income similarity or convergence and more crack carries income divergence. Income convergence plays important role in developing trade relationship with this explanation that whatever countries are match in terms of income, they will have closer demand and more same economic policies and they will have enough economic justification in developing trade and forming trade blocks. In this study, the existence of interaction of income convergence and developing trade flows and study of tax tariffs in countries member in OPEC group with using of gravity model has been studied. To do this, a gravity trade model is used. The results indicate that trade flow of country i to country j in time t has had negative effect on income crack. GDP of country i in time t has had positive effect on income crack. GDP of country j in time t has had negative effect on income crack. The population of exporter country in time t has had negative effect on income crack. The population of importer country in time t has had positive effect on income crack. Opening degree of the economy of importer country (the way of calculating this index from the ratio of total export and import to GDP) has had negative effect on income crack. The variable of tax tariffs has had positive effect on income crack. Physical distance of country i from country j based on Kilometer has not had significant effect on income crack. The variable of trade policy has not had significant effect on income crack. The index of same line and language has not had significant effect on income crack.

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Keywords: Tax tariffs, trade flows, income crack, gravity model, countries of OPEC.

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Introduction

The income caused by tax tariffs considers as the financial source for government. One of the main reasons of governments to getting tariffs is economic development and creating systematic of internal tax regulations in developing countries. Developing tax bases and moving toward economic without oil is emphasized by oil countries and performing rule of tax on value added particularly in our country is very important as the most important tax base of providing income of government. In recent decade, trade barriers resolution is increased during which industrial and developing economies reduce trade barriers between themselves and they have put their domestic markets in international competition. In this purpose, most of the trade limitations are eliminated and also tariffs in the form of negotiations in the World Trade Organization (WTO) are decreased and also trade agreements are happened in trade liberalization based on World Bank Study (Finger, Ingco and Reincke; 1996). On average, the mean reduction in trade tariffs from the amount of zero (for Chile, Senegal and Tunisia) has reached to 15 percent (for countries Iceland, India, and Sri Lanka). It seems that trade liberalization is justifiable in theory view. In fact, economic theories request open small economy with zero tariffs and increasing income through tax on consumption (Dixit, 1985; Diamond and Mirless, 1971). Since tax policies have effect on location decisions of multinational companies especially in area markets, this issue can be posed as a risk for governments in the competition for tax cuts. Currently, this competition is started in some areas especially in Asia and the concern in this regard is that the bidding war is created between states and also governments to win this tender with reducing tax on direct income and excessive reliance on consumption taxes and indirect employment taxes causes to reduce welfare of their people.

Beyond bidding war, tax incentives likely lead to reduce tax revenues and create repetitions opportunities for irregular behavior by companies and tax managers. These issues are more vital for developing countries those face to budget limitations.

Without the doubt tax incentives have been expensive and the most costs are related to the possibility of losing income host state. In Tunisia where has been successful in attracting external direct investment, tax costs related to incentive regimes contain almost 20% of total private investment in year 2001 (Moran, 2003).

Tax incentives also have other costs those are less obvious. These incentives affect the decisions about private companies' investments, in a way that these companies can divert resources allocation and can act exclusively for short time interest (especially in countries in which basic principles such as political and macroeconomic stability are not rated yet) with attracting investors (Asghari, 2012).

Another problem for these incentive regimes is related to cost and the problem of controlling them effectively. Incentive regimes impose a huge burden administrative to host state generally which creates another problem to manage these administrations. This regime in the condition of investors' uncertainty can increase investment costs and also it leads to considerable corruption (Ernest & Young, 2003). In many cases, a country gives permission to import raw material without imposition of customs duties or with very low tariffs and these raw materials are used usually in producing import substitutes.

However, a country usually does this in order to encourage and increase production and employment inside the country. For instance, a country might announce importing rice freely without duty but due to increasing production and encouraging domestic textile industry, it applies tariff on importing textile. In such case, the supportive effective tariff rate should be more than nominal tariff rate. Nominal tariff is very important for consumers because, the imposition of this tariff on goods, the final price of goods is increased while effective tariff rate is more important from producers' opinion, because, it shows the amount of supporting government of internal production against rival imported goods.

In Iran, due to its position in the region and world in terms of politic and economy, the issue of tariffs and determining effective tariff rate are very important in national production. Based on the results of domestic scientific researches on this topic, the relationship between tariffs with prices level, real national GDP and real external balance of trade is negative and with unemployment rate is positive.

On the other words, if inflation rate and real national GDP and real balance of trade are increased, the amount of support will be reduced and if unemployment rate increases, the amount of support will increase and this relationship is bilateral. This issue shows that when inflation is high in society, consumers request fewer support due to reducing welfare caused by inflation. In one side, when balance of trade improves which means export is more than import, exporters will request fewer support in order to absorb retaliatory trade policies. The increase and growing production also causes to reduce support; because, domestic production will be increased and the support policies should be reduced to export additional products to facilitate exports. In addition, if unemployment rate increase in society, the owners of industries request more support from government to increase their production.

Therefore, according to the points in above, the impacts of tariff on national production level, employment level and the situation of balance of trade of country can be easily found. Nevertheless, still our policy makers could not be successful in determining tariff rates on imported goods and support national production with determining optimum tariff rate on imported goods.

Accordingly, the view of trade liberalization has led to an increase in economic output and global economic growth and reduce income gap (Escolano, 1995; Ebrill et al, 1999). However, countries are not willing to do further liberalization of tariffs. Considering and emphasizing more trade liberalization has been emphasized more in Doha negotiation. Kane and Lygtart (2005, 2002) expressed that developing countries might have more willing to perform tariffs reduction and its reason is reducing potential income caused by

performing this policy. This perspective is corresponded by the analyzed has done by Mvrmvras (1991) which shows that optimum tariff level in model is positive about developing countries that collecting and managing tax costs is difficult due to weak capacity of these countries.

This research has been dealt with the effect of two variables of trade capacity and tax tariffs on income gap in countries member in OPEC due to the importance of increasing trade liberalization and decreasing tariffs in economic growth and income gap reduction. One of the issues which measures developmental degree of the country is reducing income gap in that country. According to the importance of this issue, this research has the aspect of innovation. Therefore, after expressing introduction, it has been dealt with to mention the theoretical framework and research background. According to the studies have done in this field, it deals with to extract and stipulate a pattern suited to the issue of article. In continue it is allocated to estimate the pattern and finally concluding and presenting suggestions.

Theoretical and experimental background

Theoretical framework

Tax tariff reform is a type of reforms which has been concentrated by developing countries. In macroeconomic environment, a sharp decline in tax revenues due to the deep recession and prolonged leads to large public debts in industrialized countries. Therefore, financial stability is one of the political priorities in these countries. Therefore, it is very unlikely that industrialized countries reduce their tariffs without increasing some types of tax.

Trade reform in open small economy shows that revenue-neutral tax reform tariff where the consumption tax is increased to compensate lost revenues leads to increase public welfare generally. Kreickemeier and Moller (2008) found in the same research that sudden decrease in tariffs leads to have less reduction of welfare to compare with gradual reduction. The result is that such reforms are aimed at improving the welfare of a small open economy in a dynamic environment. Naito (2006) with the use of an endogenous growth model in a open small economy has been dealt with the effect of tariffs reduction on general welfare. In this form, the results show that reforms in tariffs lead to increase public welfare. Ligthart and Van der Meijden (2011) have been dealt with this issue with the use of dynamic model and open small economy with offering labor supply of endogenous. They also accessed to the same results. Export development strategy considers very active role for foreign trade. The most important characteristics of this strategy are comparative advantage in the production of goods for export sector, pricing policies through suited method and reflect world prices which show the lack of domestic production factors. First priority in allocating currency caused by export is to provide needs of industries producer of exportable goods with the potential advantage or created advantage. Export sectors are axes and main oriented of other domestic sectors. The executor countries of this strategy with the use of import policy of conditional liberalization set the competitive currency rate I a way that they are match with potential or created opportunities of relative advantages (Motovaseli, 2009).

The interdependence of countries to each other is international unavoidable realities currently which are growing phenomena. Trade flows of countries affect economic and non-economic activities of neighbors and even distant countries. So, governments are force to make decisions and react toward trade flows for peaceful coexistence, international sustainable development, and deal with international challenges.

On the other sides, relationship can be made between free trade and economic growth with the use of convergence hypothesis theoretically which is one of the main predictions of Solo Suvan model (Lutz, 2001). In the form of convergence hypothesis, transferring capital from reach countries to poor countries is possible in international arena and with the existence of free trade. On the other words, although Solo Suvan model is presented for closed economy, however, convergence predictions in this model is justifiable when there is possibility of free trade and transferring capital among countries. In this form, three perspectives related to convergence hypothesis and free trade can be posed:

First perspective is related to foreign direct investment (FDI). Foreign direct investment has been the most important kind of transferring capital and it can cause Human Capital Spilliver among countries (Chi, 2004).

Based on international trade theories, if poor countries can mobilize foreign direct investment in import sector, terms of trade (tot) will be finished for their benefit and this causes economic growth and their self-sufficiency. On the other hands, if foreign investment guides toward export sectors, terms of trade will be destroyed.

Therefore, foreign direct investment of transferring capital from reach countries to poor countries causes income convergence when foreign direct investment guides toward import sectors of poor countries.

Second perspective is related to integration of micro and macroeconomic convergence. Integration of micro points to the issue that with the existence of free trade, the price of production factors of countries moves toward equality. Factor price equality theory in Heksher- Ohlin- Samoelson (HOS) provides theoretical base for its convergence. The main difference of convergence assumption based on growth model of Solo-Suvan with factor price equality theory is that in convergence assumption, transferring capital causes to convergence of capital accumulation and consequently, it causes the income per capita convergence between countries.

However, in the issue of (FEP), the difference in the primary enjoyment and non-stimulating international factors cause international trade and equality in their prices (Rassekh, 1998). Also, Rassekh has shown that integration of micro is neither necessary condition nor sufficient condition for an equal in per capita income between business partners. Other criticisms have been raised about the micro convergence. In this relationship, Stiglitz (1970) has found evidences against prediction of the case of equal price factor. He expressed in his prediction justification that because countries have different the rate of time preference, the free trade causes factor price divergence.

Matsu Yama with presenting a model has shown that free trade causes the expertise of poor countries to produce goods with low technology. In this condition, rich countries those access to produce goods with higher technology will access to higher growth.

Galor and Mountford (2003) consider international trade as the main factor of divergence among less developed and developed countries in the past 200 years. They believe that international trade in industrial countries leads to specialization in production of skill goods and technical progress of these countries. In non-industrialized countries, international trade leads to divergence of income. In addition, in some of endogenous growth models, due to great divergence of the countries with low and high income in using production factors and technical progress of international trade, income divergence is created. For example, Baldwin et al., (2001) developed endogenous growth model in which reducing costs of international trade of north countries were concentrated on industries with exogenous technological effects. South countries produced only traditional goods and any invention was a loss for them. These conditions led into divergence in per capita and distrust of undeveloped countries about trade with developed countries. Baldwin et al., (2001) model shows that if ideas propagation cost from north to south is reduced, south countries can be industrialized and converged. Eicher (1999) raised endogenous growth model in which trading leads to convergence. In an undeveloped economy, trading besides reduction of education cost and investment cost in human capital leads to liberalization of skillful labor force and this increases investment in human capital. In this model, stimulating factors and knowledge spillover do not exist and accumulation of human capital and technical progress are considered endogenous. The interaction between technical progress rate and human capital leads to convergence. Indeed, in this model trade causes dynamic benefits and high growth rate in undeveloped economies.

Walz (1998) presented endogenous growth model of three countries in which a country is undeveloped from technological aspects but it is integrated with two other countries and a shared market is created. This model refers to liberal trade agreement in which a country is undeveloped from technological aspects. In this model, trade integration and liberalization leads to re-allocation of resources in two advanced countries and this leads to convergence of income of these countries and increase of growth rate in general state, although the third country takes benefit of trade integration, its growth rate is not increased as two other countries.

Nakajima (2003) presents the model of three other countries in which the countries interact via liberal trading. In this model, there are two opposite forces. On one hand, imitation is easier than invention, poor countries can be improved. On the other hand, international labor division and learning at work increases the gap between poor and rich countries. He indicates that although trade leads to convergence in long-term, dynamics of transition in short-term are not uniform and countries experience divergence before convergence.

Review of Literature

Most studies evaluate the effect of trade volume and income gap or are regarding the effect of tax tariffs on trade volume. No study has been conducted on concurrent effect of tax tariffs and trade volume on income gap.

Tayebi and Gogerdchian (2011) in a study "the effect of economic convergence on trade relations of World Trade Organization (WTO) and selected unions presented a theoretical and descriptive analysis of the relationship between economic convergence and international trade. Also, by the data of 126 countries in the world during 1995-2004, a trade econometric model is estimated to investigate the effect of trade flows of economic convergence in the WTO member states and selected unions. The results of study emphasize on convergence in trade development among the member states.

Rasekhi and Ranjbar (2009) in a study "the effect of openness of trade on convergence speed of per capita income" evidence of D-8 Group by using growth convergence model and panel technique, evaluates the openness degree of trade on convergence income speed of D-8 Member states during 1975-2004. The results of study showed the positive and significant effect of openness of trade on convergence speed among D-8 countries. According to the results of this study, D-8 countries can reduce the income gap among themselves by development of trade. Also, based on the results of this study, physical and human capitals have positive and significant effect on economic growth of studied countries.

Akbari Dehbaghi (2006) in the study "interaction between income convergence and development of trade flows in Iran and selected blocks" considers trade relations of Iran with most of countries and panel data during 1993-2003 is used. With this method, gravity model is used to identify the main and explanatory variables as theoretical basis. In investigation of income convergence, the main trade variables (population, GDP, etc.) and trade flows development with various integrations are constituent factors of income gap reduction among Iran and partners. Tayebi and Taheri Hassanabadi (2003) in a study "effects of economic convergence among Iran and economic blocks" investigated the preferred trade agreements as bringing a type of coordination in tariff for member states and it is a step to economic integration. By panel data method, it was shown that sum of GDP of exporting and importing countries, exporting population, distance and Linder (as a substitute of difference of economic structure), are explanatory variables of Iran trade flow and its trade partners. Also, openness of economy plays positive role in trade flow.

Giovanni and Tervala (2012) in a study "tariff-tax reforms in big economies" investigated tax reforms in a New Keynesian model composed of a developing and an advanced region. In this baseline calibration, a revenue-neutral reform that lowers tariffs in developing countries can reduce domestic welfare. The reason is that the increase in developing countries welfare due to higher output is dominated by the welfare losses stemming from the deterioration of the terms of trade. On the other hand, the reform increases output and welfare in the advanced countries and in the world as a whole. The effects that we highlight have not been studied in previous contributions to the literature, which typically looks at tariff-tax reforms using a small open economy framework. Nominal rigidities have important implications for adjustment dynamics in this model.

For example, price stickiness implies that the international dynamics of output is reversed compared to a revenue neutral reform.

Ohno (2010) in a study "empirical analysis of international tax treaties and direct foreign investment" evaluated how tax treaties of Japan affect direct foreign investment of this country (e.g. 13 Asian countries during 1981-2003). Thus, econometric method of ARDL is used and the results show that among tax treaties in the 20 years in Japan, these treaties in long-term have positive effect on foreign investment level. Revised tax treaties in similar duration have considerable effects on foreign direct investment and results show that Japan tax treaties show no significant effect in short-term in other investigated countries.

Lopez (2008) tests regional convergence of 15 EU countries during 1982-1999. This study applies regression of panel data with fixed effects. The results show negative relationship between income level and growth rates and show convergence. The convergence results for regions with mobile stationary condition are not supported.

Becker, Fuest and Hemmelgarn (2006) in a study "Corporate Tax Reform and Foreign Direct Investment in Germany – Evidence from Firm-Level Data" by econometric method of ordinary least squares and data period 1980-2004 show Does the reduction of the effective tax burden on corporations trigger foreign direct investment? They take the German tax reform of 2000 as a natural experiment in order to isolate the impact of corporate taxation on the investment of foreign-held affiliates in Germany. They do so by exploiting the very rich MiDi data base. Although they choose an approach which is likely to underestimate the tax effects on investment they find significant evidence that the tax reduction had the intended effect of - ceteris paribus - fostering inward direct investment. They find an elasticity of inward foreign direct investment with respect to the effective tax rate of 0.7. They repeat the analysis for different subgroups and find high degrees of heterogeneity. The results do not allow deciding whether the model of discrete investment choices or the model of marginal adjustment of the capital stock performs better in explaining the investment data.

Guetat & Serranito (2005) in a study "Income convergence within the MENA countries" investigate the absolute and conditional convergence hypothesis for two periods 1960-2000 and 1960-1990 in MENA region and a panel unit root approach is used. Also, the authors in this study grouped country groups as shaped by tag to geographical region and nature of the economy and convergence was investigated separately for each group. In this study, the authors applied the studies of Evans & Karras (1996) and considered a sample of N economies and stated that convergence hypothesis refers to the fact that any deviation of state variables from long-term values is transient and the initial values of state variables have no effect on long-term values.

Carmignani (2005) in a study "interpretation of income convergence effects on regional integration agreements" investigated the per capita income convergence in regional integration initiatives. Panel unit root testing is performed on 28 regional groupings. The results show that trade integration in EU systematically leads to convergence. This average regional level doesn't catch up with the income level of industrial countries. We can not consider a unified category for all blocks as different

conditions as geographical, cultural, social and political conditions of countries are effective on economic structures and the path is changed differently.

Bohara, Kishore Gawande, Sanguinetti (2004) in a study "Trade deviation and declining Tariffs: Evidence from MERCOSUR" investigate the relationship between trade deviation and tariffs reduction. By panel data for MERCOSUR during 1991-2001, the effect of trade deviation in tariff in MERCOSUR and findings of study show that integration due to determination of tariff reduces trade deviation.

Hoa (2003) in the study entitled "Growth of Asian Regional Trade and Income Convergence" focused on Evidence from ASEAN+3 during 1968-2000. He applies a new study method and Extended Helpman-Krugman Hypothesis is used and invent suitable concurrent equations of trade causality in flexible modeling approach. Finally, convergence or income similarity between ASEAN and trade partners of East Asian help the bilateral trading increase.

Abounoori and McCloughan (2003) in the study "A simple way to calculate the *Gini* Coefficient for grouped as well as ungrouped data" and state that various methods are presented to calculate Gini coefficient and statistical methods are used to measure income inequality. Molanovich presents a simple, exact and attractive method. This method is not restricted to ungrouped data. This study is based on Milanovich method (1994) and is used to grouped data investigation. Both grouped and ungrouped data present useful tool to measure inequality.

Ben David (1993, 2000) investigates the relationship between trade liberalization and openness of trade with convergence of per capita income. Ben David (1993) in the study shows that a trade agreement is not adequate alone for income convergence and convergence is occurred only when trade liberalization among commercial countries is occurred. He found that there is a positive relationship between trade liberalization and per capita income convergence. Ben David (2000) in the study find that trade extension is effective on per capita income dispersion as internal trade increases convergence speed among member states. The increase of trade improves income convergence and trade flow namely export from poor partners to wealthy partners is increased.

Methodology

Linder variable is shown to show income convergence and to achieve income convergence and its interaction with trade flow and tax tariffs, equation 2 by gravity model is used.

$$LG_{ijt} = \beta'_0 + \beta'_1 LGDP_{it} + \beta'_2 LGDP_{jt} + \beta'_3 LPOP_{it} + \beta'_4 LPOP_{jt} + \beta'_5 LOPEN_{it} + \\ + \beta'_6 DIS_{ij} + \beta'_7 LX_{ijt} + \beta'_8 LTP_{ij} + \beta'_9 lawr + \beta'_{10} LIN_{ijt} + U_{ijt}$$

(1)

Where,

G_{ijt} : Income gap

X_{ijt} : Trade flow of country I to country i during t

GDP_{it} Gross domestic production of country i during t

GDP_{jt} Gross domestic production of country j during t

POP_{it} : Population of exporting country during t

POP_{jt} : Population of importing country during t

$OPEN_{it}$: Openness of importing country (the calculation of this index is achieved by the sum of export and import to GDP).

LIN_{ijt} :Tax Tariff variable

DIS_{ijt}:Physical distance of capital of country i from country j in km

TP_{ijt}: Trade policy variable

$lawr$:Shared line and language

U_{ijt} : Disturbance term (with standard conditions)

L : Logarithm symbol (in natural base)

The economic similarity variable of Linder variable between trade partners is as a function of per capita GDP difference of each of exporting (i) and importing (j) countries and this variable is defined as:

$$LIN = \ln((\frac{GDP_i}{POP_i}) - (\frac{GDP_j}{POP_j}))^2 \quad (2)$$

By considering the relative per capita income of two countries as the agent of similarity of demand structure of two countries, after saturation of their local market, the countries only focus on the market of the countries with similar demand models. High similarity of two countries in demanded products show great commercial potential and the lower the difference of per capita income and gap in their economic structure, the higher the similarity of export-import among them. According to Linder trade theory, similar countries are more inclined to trade with each other compared to non-similar countries. Thus, it is expected that the coefficient of this variable is negative. The higher the similarity of income structures of two economies, the lower the gap between their per

capita income and bilateral trade flows are developed and this inverse relation leads to reduction of income gap and trade flow development. Thus, Linder variable refers to the gap between per capita income and it is convergence concept.

In most of international trade studies, it is assumed that integration and development of trade flows are based on economic similarities and economic structure similarity is based on the factors of trade flow. It is expected that this sign is negative as the increase of trade reduces income gap between two trade partners and income convergence is resulted. This variable also can be positive and as increasing trade flows between two countries not only doesn't lead to income convergence, its divergence is also considered. By entering this variable, we can investigate the effects of trade relations development on income convergence.

DIS_{ijt}: It is physical distance of capital of country i from country j in km.

Lawr variable is common writing and language and according to Batra (2004), shared writing and language reduces bargaining costs in trade. This variable entered the model virtually. The countries with one of the common languages in Iran as Persian, Turkish and Arabic, are considered as linguistic common aspects and enter with value 1 in the model and the rest of countries are zero. It is expected that this variable has positive effect on bilateral trade flow. Also, regarding integration variable, both exporting and importing countries are convergence members and this variable has value 1, otherwise it is zero. Regarding tax tariffs, by increasing tariffs, income gap is increased.

Findings

Inferential statistics

Before estimation of model, we evaluate the stationarity of study variables by Levin, Lin, Chow test. The results are shown in Table 1.

Table 1 The results of stationarity test for OPEC member states

Variable	Levin, Lin, Chow test	Probability	Result
GDP_i	-10.6046	0.0000	I (0)
GDP_j	-10.6046	0.0000	I (0)
LIN_{ij}	-5.00682	0.0000	I (0)
$OPEN_i$	-2.88825	0.0019	I (0)
POP_i	-32.1346	0.0000	I (0)
POP_j	-31.2653	0.0000	I (0)
TP_{ij}	-14.4734	0.0000	I (0)
X_{ij}	-4.53119	0.0000	I (0)
G_{ij}	-3.44620	0.0003	I (0)

The present study aimed to evaluate the impact of tax tariffs and trade flows on income gap in OPEC member states. Based on the theoretical basics, a model composed of a series of independent variables is formulated. Before model fit, by Eviews software, F

Limer test is used to select among the pooled data or panel data with fixed effects and the results are shown in Table 2.

Table 2 The results of F-Limer test

Supported method	Error level	Statistics
Panel data method	0.000	35.841

As shown in Table 2, the results show H0 rejection and panel data is supported.

Table 3 The results of Hausman test

Probability	Degree of freedom	Chi-square statistics	Results of test
0.05	10	30.14	Fixed effects

Based on Hausman test, fixed effects method is used and the panel data with fixed effects is supported. The results of this test are shown in Table 3.

The results of equation 1 are shown in Table 4.

Table 4 The results of estimation of gravity model regression

Variable	Coefficient estimation	Z statistics	Probability
C	-0.29864	-25.67953	0.0000
GDP_i	0.27658	3.112228	0.0020
GDP_j	-0.446570	-1.985535	0.0992
POP_i	-0.50653	-3.006666	0.0028
POP_j	0.23864	19.61944	0.0000
DIS_{ij}	0.29754	0.748563	0.4545
$OPEN_i$	-0.443450	-6.992208	0.0000
X_{ij}	-0.57874	-6.220224	0.0000
TP_{ij}	0.573872	1.272255	0.2039
Lawr	-0.412548	-0.367327	0.7135
LIN_{ij}	0.34526	2.272255	0.0039

The coefficient of determination shows goof fit of model. The applied variables show the explanatory power of model as 68%. Durbin-Watson shows the non-autocorrelation and 1.8 is shown. F statistics in this fit rejects zero coefficients. The sign of coefficients are presented based on theoretical basics and theory and based on probability of coefficients, all main variables are affected and they are significant.

The results are as followings:

X_{ijt} : The trading flow of country i to country j during t has negative effect on income gap. This result shows that increasing trade leads to income convergence. In other words, increase of trade can be with technological convergence, knowledge and even consumption models as leading to convergence in production and consumption and income of two countries. This result is based on the results of economy and liberal trading.

GDP_{it} : Gross domestic production of country i during t has positive effect on income gap. This result shows that technological difference of countries is high and income and production of country i is higher than country j and increase of GDP of country i during t has positive and increasing effect on income gap.

GDP_{jt} : Gross domestic production of country j during t has negative effect on income gap. This result shows that technological difference of countries is high and income and production of country j is lower than Country i and increase of GDP of country j during t has negative and decreasing effect on income gap.

POP_{it} : The population of exporting country during t has negative effect on income gap. This result shows that increasing population of exporting country means the increase of labor force and increase of production and export. These results are consistent with the neoclassic of economic growth models of Solo-Sovan as the most important growth factor as population changes.

POP_{jt} : The population of exporting country during t has positive effect on income gap. This result shows that increasing population of importing country means the increase of labor force and increase of production and income and income gap is increased In other words, the increasing effect of population is considered in goods supply and increase of origin population leads to increase of supply and demand and export is increased. Thus, income gap in origin country is reduced. The population of the country is inversed and increases income gap.

$OPEN_{it}$: Openness of economy of importing country (calculation method of this index is achieved by sum of export and import to GDP). It has negative effect on income gap and income gap is created. This result shows that increasing trade and trade interactions can increase dependency of two countries and it reduces income gap. In other words, increase of trade volume can be with technological, knowledge and consumption models convergence and it leads to convergence in production and consumption and income of two countries. This result is consistent with the results of economy and liberal trade.

LIN_{ijt} : Variable of tax tariffs has positive effect on income gap.

This result shows that increase of tax tariffs can make problem in production and income increase for the benefit of a specific group as this issue in international field has positive effect on income gap.

DIS_{ijt}: Physical distance of capital of country i from country j in kilometer has no significant effect on income gap.

This result shows that in modern world, physical distance cannot be effective on macro-economic variables and income differences. In other words, income differences are not for physical distance but also for technological and manufacturing differences.

The result is based on the lack of effect of distance on income gap is inconsistent with the results of theories of gravity model and cost distance is not changed and it is not effective.

TP_{ijt}: Trade policy variable has not significant effect on income gap.

The result shows that income gap doesn't follow trade policies and dynamic trade flows and economic growth can control trade policies and governments can be effective with these trade policies on income gaps and these results are consistent with liberal trade theory.

$lawr$: Common writing and language has no significant effect on income gap.

This result shows that the effect of cultural similarities has no effect on income gap. In other words, effective factors on income and income gap are not dependent upon writing and language indices and any person with any writing or language with using human capital and technological knowledge can increase his income.

Conclusion and recommendations

The studies show that great economic integrations as increasing trade interactions and improvement of economic welfare can clarify the empowerment of countries to be present in global economy and actual power of economy is increased. The basis of various economic integrations is economy size, economic similarity, country size, geographical situation or combination of them. Income convergence or income similarity is referred to per capita income between two trade partners. Low gap leads to high income convergence and similarity and it seems that similarity among trade partners stimulates trading among them (Hoa, 2003). The difference of per capita income among countries leads to the difference in their welfare level. Based on global statistics, human development in advanced countries is not compared with deprived countries. The low gap leads to high convergence or similarity of income. It seems that a logical similarity among trade partners stimulates trading among them as per capita income of two countries can show similarity of economic structure of two countries and similar economic structures lead to establishing high economic relations and economic benefits of these relations lead to income gap reduction of two structures. This type of convergence is raised as approaching income distribution model in trading countries. The present study aimed to evaluate the income convergence and its integrations and relationship between these two variables. Gravity is used in this model. In other words, in this model, we can enter barriers and incentives as quantitative variables and evaluate its effect on bilateral income gap. The results of the study showed that trading flow of country i to country j had negative effect on income gap. GDP of country i during t had positive effect on income gap. GDP of country j during t had negative effect on income gap. The population of exporting country during t had negative effect on income gap. The population of importing country during t had positive effect on income gap. Tax tariffs had positive effect on income gap. Physical distance of capital of country i from country j in km has no significant effect on income gap. Commercial policy has no significant effect on income gap. Common language and writing had no significant effect on income gap. Generally, GDP of origin country increased income gap and GDP of target country reduced income gap. The increase of trading and increase of openness of trading reduced income gap and distance

increase increased income gap. The increase of trade policy increased income gap and similarity of writing and language reduced income gap and increase of tax tariffs increased income gap in OPEC countries and all results of this study are based on previous studies.

Based on the results, the role of GDP and trading of countries in reduction of income gap is supported. Thus, to improve and increase trading and increase economic growth, the manufacturing capacity of countries should be increased. One of the methods of increasing manufacturing capacities is using new innovations and technologies. The effect of technology in production process is ignored and can be the source of new productions in combination with other production factors.

As regional economic convergence leads to development of internal trade arrangements of countries and their preparation to enter global fields, it is recommended the regional countries consider mostly the development of trade and regional arrangements to achieve sustainable development to improve investment trend and job opportunities with having access to each other markets.

Also, by improving trade institutions in the region as "common market", internal group trade is increase and economic growth is developed. On the other hand, the increase of tax tariffs leads to income gap increase in the studied countries. This shows the lack of correct planning in taking tariffs in developing countries and it reduces trade and increases income gap in the country. On the other hand, due to tax escape, mostly the rich people are exempted from paying taxes and mostly the low class is under pressure and this increases the income gap in these countries.

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