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Impacts of Import Tariff Cuts on the Iranian Labor Market Structure: a Computable General Equilibrium Model Approach

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Abstract
Most debates about the role of tariff cuts on the level of employment and rate of wages in labor market have come out of well-known Hecscher – Ohlin and Stopler – Samuelson (HOS) theorems. Considering the fact that we have divided the workforce into skilled and unskilled labors; the present paper assesses the impacts of tariff cuts on labor market indicators in Iran. To address these issues, a computable general equilibrium (CGE) modeling approach and social accounting matrix (SAM) of 2002 have been applied. Results show that general import tariff cuts along with the decreasing wage inequality increase the level of total employment, while tariff cuts in unskilled labor-intensive commodities such as those of agricultural commodities decrease the level of total employment, and consequently lead to an increase in wage inequality. However, under the effect of the tariff cuts in skilled labor-intensive commodities like food, apparel and textile, level of total employment increases and wage inequality decreases, respectively.

Keywords: Tariff Cuts, Employment, Labor, Wage Inequality, Computable General Equilibrium

JEL Classification: F16; J21; J31

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1. Introduction

Actual discussion is concentrated on profits and risks arising from trade openness, mostly on trade reforms and labor markets. However, despite the importance of this subject, the results related to the experimental studies especially about the impact of trade openness on employment and wages do not present similar results. The previous studies conducted by Robbins (1996), Goldberg and Pavcnik (2004) about trade openness and its impact on income distribution in the form of wages have indicated that trade reform in some of the Latin American countries during the last decades led to inequality of wages along with the enhancement in the wages of skilled labors. However, the results of this study do not confirm the findings of Kruger (1981). According to Kruger, the developing countries use skilled labors intensively in the import–competing sectors although unskilled labors are largely used in export sectors there. Thus, according to him, with due attention to Heksher-Ohlin and Stapler-Samuelson theorems, trade openness leads to a reduction in the wage of skilled and an increase in the wages of unskilled labors (decline in wage inequality) in the developing countries. In the case of the absence of decline in wage inequality in some of the developing Latin America countries enjoying relatively abundance of workforce, it challenges the anticipation of Heckscher-Ohlin and Stapler-Samuelson theorems. Describing the wage inequality in Latin American countries, Wood (1995) in his study about the effect of trade on the wages of unskilled labor introduced the unequal growth of wages on the basis of Heckscher-Ohlin and Stapler-Samuelson theorems. According to him, under the impact of trade openness of 1980s and 1990s in the exporting countries with low income like China, India, Bangladesh, Indonesia, Pakistan, relative prices of export with intensively use unskilled labor declined and this issue led to the growth of unequal wages in the countries with medium income such as Latin American countries that had already taken steps towards trade liberalization. Feenstra and Hanson (1996) also linked the unequal wage growth with the effect of trade openness to the international capital flow from the northern to the southern countries. They believe that international capital flow leads to transition in production from some northern to southern countries in which they intensively use skilled labors. Therefore, the international capital flow to these countries increased the demand for skilled labor; hence, further led to the growth of wages of skilled labor in the southern countries. Moreover, Trefler and Zhu (2005) indicated that production transition of some goods from northern to southern nations became a reason for the unequal wage level in those countries due to the accessibility of superior technology to south. In other words, changes in the technology based on skill under the effect of trade openness in the developing countries led to the growing demand of skilled labors and as an increase in their wages. Acemoglu (2003) also studied the impact of capital goods import to follow trade openness and their effects on the growth of the demand of skilled labors in developing countries. With due attention to the fact that application of import capital goods needed skilled workforces, the study of Acemoglu indicated an increase in the wages of skilled labors in developing countries to follow trade openness and rising import capital goods.

Since trade openness influences the level of employment, some part of studies is about the impact of trade openness on employment. In this area, results of studies conducted by Papageorgiou et al. (1990) at the World Bank indicated that in eight out of nine countries manufacturing employment was higher during and one year after the liberalization period than before. Only in Chile did manufacturing employment decrease significantly during and after trade liberalization. Although the study by Papageorgiou et al shows positive effects of trade openness on the level of employment; however, other researchers challenged its findings. Greenway (1993) and Collier (1993) criticized the accuracy of the study methodology of Papageorgiou et al. Agenor and Aizenman (1996) also believed that the study conducted by the World Bank shows few and limited evidences especially about changes in the level of employment activities of non-Industrial manufacturing production or changes in the aggregate unemployment rate. Compared to the previous study (Papageorgiou et al), recent studies by Dollar and Collier (2001), which also conducted at the World Bank, assess little about the impacts of trade openness on employment. While reiterating the benefits of trade liberalization for both employment and wages over the long run, their study recognizes that there are significant transitional problems that need to be faced. Some

other researches have also been conducted using Computable General Equilibrium model to study the trade openness impact on labor markets. Carneiro and Arbache (2003) used CGE model to investigate the effects of the trade openness on the Brazilian labor market. Their results indicated that trade liberalization contributes to higher skilled labor demand in most trade-oriented sectors.

As regards the significant part of this study in assessment of the impact of the tariff cuts on the level of employment of unskilled, skilled labor and income distribution in the form of relative wages, the main contribution of this article is the use of segregated labor market (skilled and unskilled labor) in a CGE model. As a whole, the present article has been classified into four parts. Section 1 deals with the structure of labor market in Iran with respect to employment level, unemployment rate and rate of wages. Section 2 through introducing an economic model assesses the effects of trade openness on the employment level and rate of wages taking into the account the theoretical basis. Section 3 introduces computable general equilibrium and the results acquired from the simulated model based on different scenarios of the tariff cuts, and the final section is based on discussion and conclusion.

2. Labor Market Structure in Iran

Like other markets, labor market is formed by two-way process of demand and supply. From supply side, working age and the rate of labor participation determine the volume of active population where the working age is under the effect of population growth of previous year, and in reality it is merely one of population variables. The rate of labor participation, i.e. the percentage of working age population, inclined to work are under the impact of economic and social variables. On demand side of labor forces, there are real expenditure variables such as the use of labor, capital, production, technology, law and regulation. Therefore, the level of employment, the rate of unemployment and the rate of wages are determined through the balance between the demand and supply of labor market.

2.1. Labor Market and Economic Structure

Based on the economic structure of population in the economic literature, 10 years old and above population and their share from total population is indicator of the number of people that potentially falls into the category of employment seeking groups. As much as the share of this group becomes more than the total population, it is the indicator of the decline in the rate of population growth on one side and on other side it is indicator of the active population volume of a country. Statistics in Iran show that the share of this group in total population between 1957 and 1987 was fluctuating and enjoyed partial changes. However, during 1987-1997 and 1997-2007, this ratio grew significantly and reached from 66.48 in 1987 to 75.6 in 1997, then to 84.43 in 2007. Number of 10 years old and above population during 1987-1997 reached from 32.9 million people to 45.4 million people that the growth rate was 3.28% annually on average. With the increase of 10 year old and above population from 45.4 million people to 59.5 million people during 1997-2007, it enjoyed an average annual growth rate of 2.75%.

According to Table 1, the highest ratio of active population of 10 year old and above was in 1957 this gradually declined in later years and in 1997 reached to the lowest during the five decades of proposed study. However, the share of 10 year old and above population increased during the same period. So, a decline of the ratio of the active population of 10 years old and above population indicates the growth of people that are considered to be the part of active population and presently have not taken active part in this group. These people can be students because they fall into the working age and are considered the part of this active population due to absence of job demand.

According to the results from Table1, the rate of unemployment has reached from 2.63% in 1957 to 9.57% in 1967 when it can indicate at this point that the growth rate of new work creation during 1957-67 was much lower than the growth rate of the active population. During 1967-77, the rate of employment growth and the active population still experienced wider difference; however, this difference was much lower compared to previous decades. Consequently, the rate of unemployment grew with less velocity in a way that this rate reached from 9.57% in 1967 to 10.18% in 1977.

Table 1: Active Population, Employment and Rate of Unemployment in Iran

Variables	Years					
	1957	1967	1977	1987	1997	2007
10 years (old) and above population (thousand person)	12784	16536	23003	32870	45401	59523
Share of 10 year (old) and above population from total population	67.45	65.94	68.24	66.48	75.60	84.43
Active population (thousand person)	6067	7584	9796	12820	16027	23469
Share of active population of 10 year (old) and above population	47.45	45.86	42.59	39.00	35.30	39.43
Annual Average Rate of growth of active population (%)	-	2.26	2.59	2.73	2.26	3.89
Occupation population	5908	6858	8799	11002	14572	20476
Annual Average Rate of growth of occupation population (%)	-	1.50	2.52	2.26	2.85	3.46
Rate of unemployment (%)	2.63	9.57	10.18	14.19	9.09	12.75
Rate of employment (%)	97.37	90.43	89.85	85.81	90.91	87.25

Source: Iran's Statistics Center

During 1977-87, differences grew once again between the rate of active population and the growth of new work creation that followed the increase in the rate of unemployment. As such unemployment reached from 10.18% in 1977 to 14.19% in 1987. However, during 1987-97, the annual average rate of growth of active population and new job were 2.26% and 2.85% respectively and in reality during the period under study; for the first time the annual average rate of growth of new jobs was more than the annual average rate of active population and as a result unemployment went down and reached to 9.09% in 1997, whereas, in 1997-2007, the rate of unemployment increased from 9.09% in 1997 to 12.75% in 2007. As a matter of fact, the rate of active population growth is more than the rate of new work creation during this period.

2.2. Rate of Wages

Wages including constant and inconstant receipt of money of the salary in the public, private and cooperative sectors impact the demand and supply of labors as well as the volume of employment. In the competitive market, the level of wages is determined by the labor demand and supply; however, in the condition of non-competitive labor market such as workers union, the level of wages, apart from the demand and supply of labors are influenced by the strength of labor unions. In addition, government often affects the level of wages through determining the minimum wages in a way that in the official section usually the wages must not be less than the minimum wages. Likewise, government, through determining the minimum wages in public sector, affects the level of the private sectors' wages. Because, the private sectors employers must pay the minimum wages equivalent to the wage level of governmental sector in order to preserve the existing labor force or employing new labors.

As a whole, the trend of nominal and real average wage index in Iran during 1969-2007 has been shown in Fig.1. As the Fig.1 indicates, the average of nominal wage index during this period enjoyed rising trends. Likewise, with due attention to Figure 1, the average of real wage index rose till 1987 and then from 1987 to 2000, it almost had constant trend and thereafter form 2000 onward it rose again.

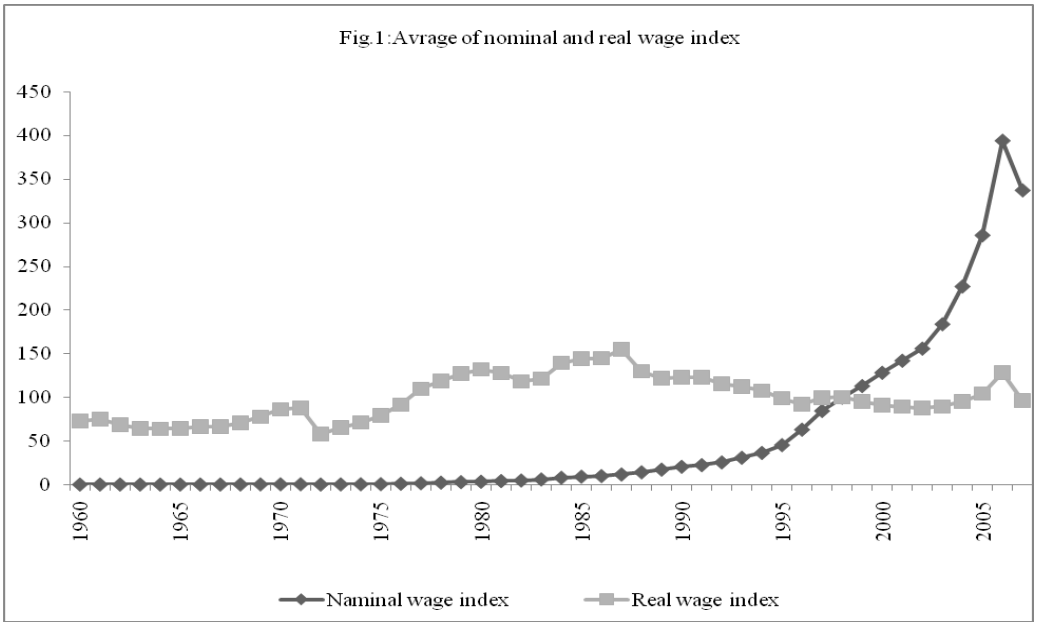

Figure 1: Nominal and Real Wage Indexes on Average

Source: Author

3. The Model

In order to study the effect of import tariff cuts on the rate of wages and the level of employment, we would discuss the computable general equilibrium (CGE) model. The main elements of this model consist of commodities, activities, domestic institutions (households, enterprises and government), net taxes, investment and the rest of the world that distinguish the income-expenditure flow between these elements in the social accounting matrix[1]. Since, the main aim of this model is to explain the effects of tariff cuts on the relative wages; therefore, it actually concentrates on labor market.

3.1. Structuring GCE Model (an Emphasis on Tariff Cuts)

In this study, labor forces have been segregated into two groups of skilled and unskilled labors. With reference to that segregation, the effect of trade openness on the employment and wages of skilled and unskilled labors and by this way the effect of income distribution has been distinguished. This segregation has been studied in the computable general equilibrium and determined as follows:

$$W_i^s = w_i^s W^s \qquad (1)$$
$$i = 1,2,\ldots,n \; W_i^u = w_i^u W^u$$

where W_i^s is skilled labor's wages; W_i^u is unskilled labor's wages w_i^s and w_i^u are wage distortion factor of skilled and unskilled labor's in activity i, respectively. W^s and W^u are average wages of skilled and unskilled labors, respectively.

Since, in general equilibrium model, producers are intended to maximize their profit based on Walrasian competing model; thus, with due attention to the rate of wages of skilled and unskilled labors and on the basis of maximizing principle through minimizing unit cost function, production equilibrium condition is acquired as:

$$P_i = C_i^*(W_i^s, W_i^u, R_i, P_i^E) + \sum_{j=1}^{n} P_i^c a_{ji} + P_i^M b_i \qquad (2)$$
$$J = 1,2,\ldots,k \;,\; i = 1,2,\ldots,n$$

In a way that C_i^* is the net unit cost that is dependent on the prices of production as W_i^s, W_i^u capital price R_i and P_i^E, the price of energy applied in goods production of section i. However, it is worth mentioning that P_i^E enters into the model in the form of prices of compound commodities. Likewise, refer to Equation 2, P_i^c denote prices of compound commodities in the

1 In order to study the Social Accounting Matrix in the present study, see Appendix 1

sector i, P_i^M denote prices of complementary intermediate imports in the sector i, a_{ji} shows the quantity of compound commodity j per production unit in sector i and, b_i is quantity of imported goods per production unit in sector i. On the other side, R_i is as:

$$R_i = P_k(\delta_i + R) \tag{3}$$

In Equation (3), δ_i is a depreciation rate of capital in sector i, R is the real interest and P_k is the price of capital goods. The price of capital goods is also calculated as:

$$P_k = \sum_{\theta=1}^{\varphi} P_k^C a_{\theta k} \tag{4}$$

where P_k^c is the price of compound goods in the production of capital goods (k) and constant $a_{\theta k}$ the quantity of intermediate compound goods θ for each production unit of capital goods k. Based on the constant return to scale technology, since the production of each economic sector is determined through demand; therefore, access to demands is necessary to determine production of each unit. Such demands include intermediate goods, household consumption, and the demand for investment and also the demand for exports that would be explained subsequently.

According to the Shepherd' Lemma, the demands of intermediate goods are as follows:

$$Q_{ij} = \begin{Bmatrix} \dfrac{\partial C_i^*(W_i^s, W_i^u, R_i, P_i^E)}{\partial P_i^E} Q_j \\ a_{ij} Q_j \end{Bmatrix} \tag{5}$$

$$i = 1,2,\ldots,n,\ j = 1,2,\ldots,k$$

Here, Q_{ij} is the quantity of demand from compound commodities i in the sector j and Q_j are the gross products of sector j.

Household consumption for commodity i is as follows:

$$D_i^h = D_i^h(P_i^E, P_i^D, e) \tag{6}$$
$$i = 1,2,\ldots,n$$

where e is the total expenditure of the household that is acquired on the basis of maximizing consumer utility function, with due attention to budget limitation.

On the other hand, the quantity of commodity imports i as a part of that supply commodity is presented as follows based on Shepherd' Lemma:

$$M_i = \frac{\partial \Phi_i(P_i, P_i^W)}{\partial P_i^W}\left(\sum_{j=1}^{k} Q_{ij} + D_i^h\right) \tag{7}$$
$$i = 1,2,\ldots,n$$

In a way, $\Phi_i(P_i, P_i^W)$ is the unit cost function for compound commodity i that is dependent on the prices of domestic production (P_i) and global prices (P_i^w). With the similar assumption, the demand function of export for internal production commodity is as follows:

$$X_i = X_i(P_i, P_i^w) \tag{8}$$
$$i = 1,2,\ldots,n$$

Now, on the basis of the demand and supply function, the market balance of internal commodity is acquired as follows:

$$Q_i + \frac{\partial \Phi_i(P_i, P_i^W)}{\partial P_i^W}\left(\sum_{j=1}^{k} Q_{ij} + D_i^h\right) = Q_{ij} + D_i^h(P_i^E, P_i^D, e) + I_i + X_i(P_i, P_i^w) \tag{9}$$

$$i = 1,2,\ldots,n$$

In Equation (9), I_i is the total net investment that exogenous has taken into consideration. Market equilibrium conditions are also in the following ways:

$$K = \sum_{i=0}^{n} \frac{\partial C_i^*(W_i^s, W_i^u, R_i, P_i^E)}{\partial R_i} Q_i \tag{10}$$

$$L^s = \sum_{i=0}^{n} \frac{\partial C_i^*(W_i^s, W_i^u, R_i, P_i^E)}{\partial W_i^s} Q_i$$

$$L^u = \sum_{i=0}^{n} \frac{\partial C_i^*(W_i^s, W_i^u, R_i, P_i^E)}{\partial W_i^u} Q_i$$

In this study, the production relations that arising from production activities, have been presented in Figure 2.

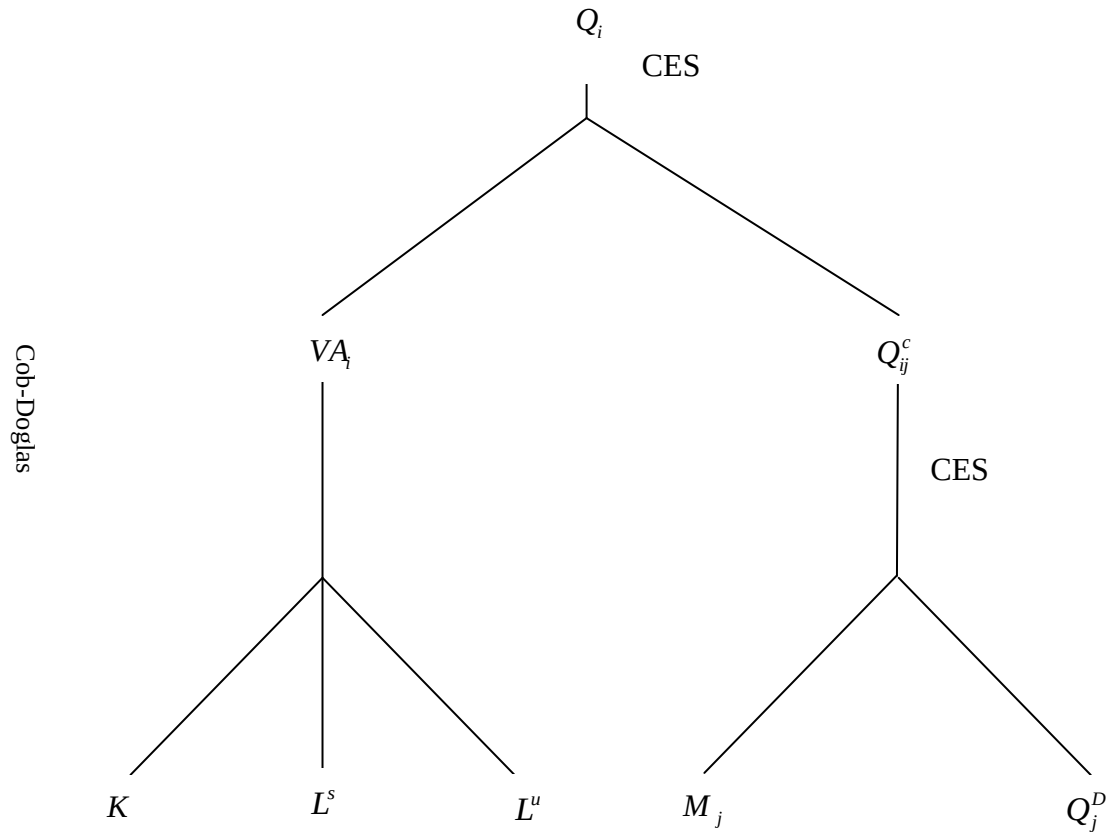

Figure 2: Technology Structure

Source: Author

As the above figure shows, value added of the sector i (VA_i) with reference to the production factors (skilled labors, unskilled labors, capital) and efficient parameter of production function of activities i is as follows:

$$VA_i = a_i \prod_f F_{if}^{\alpha_{if}} \qquad (11)$$

Utmost, the production function of sector i on the basis of Leontief production function is equal to:

$$Q_i = Min[VA_i(L_i^s, L_i^u, K_i), \frac{Q_j^D}{a_{ji}}, \frac{M_j}{m_{ji}}] \qquad (12)$$

where a_{ji} and m_{ji} respectively are the amount of commodity necessary from internal production Q_j^D and import commodity M_j towards the production of one unit from compound commodity Q_{ij}^c. By this way, produced commodities Q_i in all activities are presented as D_i in order to supply to the internal markets and as X_i in the forging markets. However, it should be noted that the produced commodities for internal markets along with the produced commodities of the same sector for forging markets are considered as two distinct commodities with imperfect substitution property.

Therefore, with regard to the general equilibrium model introduced throughout the present study, import prices is distinguished on the basis of import tariff cuts t_i, exchange rate EXR and global prices PW_i^M, which are as follows:

$$p_i^M = PW_i^M * EXR(1+t_i) \qquad (13)$$

Due to Equation (13), a change in tariff cuts causes changes in the prices of imported commodities and by this way on the basis of Equation (13) import demand is being affected. Since imports and domestic products are considered as two imperfect substitutions on the basis of Armington' assumption; therefore, by a change in demand for imports, the quantity of compound commodity production as intermediate commodity, and as a result of the production level

of activities are being affected. Changes in the level of production also lead the change in the demand of product factor as well as affecting the demand of skilled and unskilled labors. Relying on the fact that this study is based on a computable general equilibrium model, adjustment and relations of institutions and different economic sectors in various markets like commodity and services markets, production factor markets and the rest of world in suitable linear and non-linear forms are designed. Therefore, performance of an economic policy (such as tariff cuts) is assessable and comparable on rate of wages and level of employments.

3.2. Simulation Results

In this section, we use the multi-sectoral CGE model developed with GAMS using data for Iran from the SAM 2002 and apply it to analyzing five different simulations regarding the effects of trade liberalization measures on labor market outcomes. The empirical implementation of the model follows different stages. In the first stage, the model is solved for the base year without the imposition of any changes in the parameters or exogenous variables. Thus, the optimal solution of the model must replicate the original values of the variables for the base year. At the end of this stage, the base year values are saved for comparison with the results of the simulations witch are implemented in the second stage. In the second and final stage, a set of exogenous variables and parameters is modified to mimic a given policy, in our case general tariff cuts policy and tariff cuts policy for food, apparel, textile and agricultural commodities. The model is then solved to find the solution compatible with the modification in the base model.

3.2.1. General Import Tariff Cuts

As it has been observed in Table2, the percentage changes of skilled labors wages have fallen with the higher tariff cuts. Since the growth rate of unskilled labors wages is constant, the ratio of skilled and unskilled labors wages have declined under the effects of different scenarios of tariff cuts i.e. 10, 15, 20, 25 and 50 percent, with 2.05%, 0.96%, 0.46%, 0.36% and 0.27% respectively. In other words, although higher import tariff cuts or wider trade openness has positive effect on the ratio of wages of skilled and unskilled labors, the gap between the ratio of wages of skilled and unskilled labor enjoys decreasing trends, so wages inequality increases with decreasing trend.

On the other side, based on the results of Table2, following general import tariff cuts, the percentage changes of total level of employment and the level of employment of unskilled labors enjoy positive and increasing trend in a way that with 10, 15, 20, 25 and 50 percent tariff cuts, the percentage changes of total level of employment increased to 0.02%, 0.03%, 0.04%, 0.04%, 0.09% respectively. Likewise, the percentage changes in the employment level of unskilled labors following different scenarios of tariff cuts during the present research are 0.16, 0.24, 0.32, 0.40, 0.83 percent, respectively.

Table2: Effect of General Import Tariff Cuts on Rate of Wage, Level of Employment, due to Different Scenarios of Tariff Cuts

Variable	Tariff cuts scenarios				
	10 %	15 %	20 %	25 %	50 %
Skilled labor wage	2.05	0.96	0.46	0.36	0.27
Unskilled labor wage	0.00	0.00	0.00	0.00	0.00
Wages ratio	2.05	0.96	0.46	0.36	0.27
Unskilled labor employment	0.16	0.24	0.32	0.40	0.83
Skilled labor employment	0.00	0.00	0.00	0.00	0.00
Total employment	0.02	0.03	0.04	0.04	0.09

Source: Author

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3.2.2. Tariff Cuts in Food, Apparel and Textile Commodities

Results reported by Table 3 indicate that the percentage growth of skilled labors wages are enjoyed with the increasing trend as much as there is a rise of tariff cuts related to food, apparel and textile commodities. Following the tariff cuts to the size of 10, 15, 20, 25 and 50 percent, the ratio of wages in skilled and unskilled labors increased to 0.04%, 0.06%, 0.08%, 0.10%, and 0.20% respectively. In other words, wages inequality increase with more tariff cuts related to food, apparel and textile commodities.

On the basis of Table 3, with the fact that tariff cuts to 10, 15, 20, 25 and 50 percent on the food, apparel and textile commodities, the percentage changes of total employment increases to 0%, 0.01%, 0.01%, 0.01%, 0.02% respectively; therefore, the percentage changes in the level of total employment in all scenarios except the scenario related to 10% tariff cuts on the above commodities, enjoys positive and increasing trends. Likewise, the percentage changes in the employment level of unskilled labors following 10, 15, 20, 25 and 50 percent tariff cuts also enjoys the increasing trends and as such it has increased to 0.03%, 0.05%, 0.07%, 0.08%, and 0.17%.

Table3: Effect of Tariff Cuts in Food, Apparel and Textile Commodities, on Rate of Wages and Level of Employment

Variable	Tariff cuts scenarios				
	10 %	15 %	20 %	25 %	50 %
Skilled labor wage	0.04	0.06	0.08	0.10	0.20
Unskilled labor wage	0.00	0.00	0.00	0.00	0.00
Wages ratio	0.04	0.06	0.08	0.10	0.20
Unskilled labor employment	0.03	0.05	0.07	0.08	0.17
Skilled labor employment	0.00	0.00	0.00	0.00	0.00
Total employment	0.00	0.01	0.01	0.01	0.02

Source: Author

3.2.3. Import Tariff Cuts of Agricultural Commodities

According to Table 4, the percentage changes of skilled labor wages are negative following tariff cuts related to agricultural commodities. Likewise, the percentage growth of skilled labor wages to unskilled ones have grown with the 10, 15, 20, 25 and 50 percent tariff cuts on agricultural commodities as -0.12%, -0.17%, -0.23%, -32.18% and -0.57% respectively. As indicated in Table 4, the maximum ratio of wages inequality decline that is equal to -32.18% is acquired in the scenario related to 25% the declines of tariff cuts in the agricultural commodities.

Also Table 4 shows that with the tariff cuts of agricultural commodities, the percentage changes of employment level as well as the level of unskilled labor are not only negative rather with more tariff cuts of above commodities, the percentage in the decline of total employment and the employment level of unskilled labors witnessed increasing trends. In a way that, under the impact of different tariff cut scenarios, the rate of tariff cuts in agricultural commodities are as i.e. 10, 15, 20, 25 and 50 percent, the percentage changes of total employment level are as -0.01%, -0.01%, -0.02%, -0.02%, and -0.04% respectively and the changes of employment level of unskilled labors are as -0.01%, -0.01%, -0.02%, -0.02%, and -0.04% respectively.

Table4: Effect of Agricultural Commodities on Rate of Wages and Level of Employment

Variable	Tariff cuts scenarios				
	10%	15%	20%	25%	50%
Skilled labor wage	-0.13	-0.17	-0.23	-32.18	-0.57
Unskilled labor wage	0.00	0.00	0.00	0.00	0.00
Wages ratio	-0.13	-0.17	-0.23	-32.18	-0.57
Unskilled labor employment	-0.08	-0.12	-0.16	-0.20	-0.40
Skilled labor employment	0.00	0.00	0.00	0.00	0.00
Total employment	-0.01	-0.01	-0.02	-0.02	-0.04

Source: Author

4. Conclusion

Trade openness, due to its impact on comparative advantage and the pattern of international trade between countries, influences the labor market as one of the important markets in economics. Thus, according to HOS theorems, countries with the abundance of labors specialized in the production of labor intensive commodities take steps to export those commodities and the countries with the abundance of capital, enjoy comparative advantage in the production of capital intensive commodities and export these commodities. Thus, due to above theorems, in the countries with the abundance of unskilled labors, tariff cuts on imports lead to increase in the demand for unskilled labors that goes along with the increase of wages of unskilled labors. Whereas, in the countries with the abundance of capital, following trade openness through import tariff cuts, the demand of unskilled labors decreases and as a result it leads to lower down the wages of unskilled labor compare to the skilled ones.

In this article, by using the computable general equilibrium model and social accounting matrix of 2002, the effect of trade openness through the import tariff cuts on the level of employment and the rate of wages based on different scenarios related to general tariff cuts policy and tariff cuts policy for food, apparel, textile and agricultural commodities agricultural, food, apparel and textile commodities through GAMS software have been simulated.

Results show that with the general import tariff cuts, the percentage changes of total employment level as well as the employment level of unskilled labor is increased. Likewise, with the decreasing percentage of skilled labor wages to follow more tariff cuts, wages inequality is improved. Other results show more tariff cuts on food, apparel and textile commodities increase the percentage changes of total level employment and those of unskilled labors. Since, the percentage changes of skilled labor wages increased compared to the unskilled labors with the increasing tariff cuts. Thus, it can be concluded that wider trade openness in the food, apparel and textile commodities leads to an increase of wages inequality. However, under the effect of the tariff cuts of agricultural commodities, the percentage changes of total employment level as well as the employment of unskilled labors decline and with the decline of percentage changes of skilled labor wages, there is decline in the inequality of wages between skilled and unskilled labors.

Appendix 1

Table 5: Social Accounting Matrix (SAM) of 2002 for Iran

Table5 Social Accounting Matrix (SAM) of 2002 for Iran (Billion Rials)														
		Commodities	Activities	Factors of production			Institutions				Taxes		Saving-Investment	Rest of the world (ROW)	Total
				Skilled labor	Unskilled labor	Capital	Urban households	Rural households	Firms	Government	Net tariffs	Other taxes			
Commodities			417435				280573	116804		104733			206214	157720	1283480
Activities		1149118													1149118
Factors of production	Skilled labor		220888											752	221640
	Unskilled labor		22822											251	23073
	Capital		479007												479007
Institutions	Urban households			155699	11431	144526			33466	3914				11	349046
	Rural households			65942	11642	50093			3770	5277				4	136728
	Firms					209431								1020	210451
	Government					74957			16876		9386	46005			147224
Taxes	Net tariffs	9386													9386
	Other taxes		8965				27353	96875							46005
Saving-Investment							41120	10238	156339	33300					240997
Rest of the world (ROW)		124976											34783		159759
Total		1283480	1149118	221640	23073	479007	349046	136728	210451	147224	9386	46005	240997	159759	

Source: Management and Planning Organization of Iran and Author's Calculation.

References

1. Acemoglu, D. (2003), "Patterns of Skill Premia," *Review of Economic Studies*, 70, 199–230.
2. Agenor, P. and J. Aizenman (1996), "Trade Liberalization and Unemployment," *Journal of International Trade and Economic Development* 5(3), 265-286.
3. Bentivogli, C. and P. Pagano (1999), "Trade, Job Destruction and Job Creation in European Manufacturing," *Open Economies Review*, 10(2): 165-184.
4. Borges, A. M. and L. H. Goldr (1984), Decomposing the Impact of Higher Energy Prices on Long – Term Growth, in Hebert E. Scarf and John B. Shoven (eds), *Applied General Equilibrium Analysis*, Cambridge University Press.
5. Carneiro, F, G and S. J. Arbache (2003), The Impacts of Trade on the Brazilian Labor Market: A CGE Model Approach, *World Development*, 31(9), 1581-1595.
6. Chan, N., D. T. Kim, M. Ghosh and J. Whalley (2005), "Adjustment Costs in Labour Markets and the Distributional Effects of Trade Liberalization: Analytics and Calculations for Vietnam," *Journal of Policy Modeling*, 27, 1009–1024.
7. Collier, P. (1993), "Higgledy-piggledy Liberalization," *The World Economy*, 16(4), 503-512.
8. Currie, J. and A. Harrison (1997), "Trade Reform and Labor Market Adjustment in Morocco," *Journal of Labor Economics*, 15(3), S44-S72.
9. Dervis, K., J. de Melo and S. Robinson (1982), General Equilibrium Models for Development policy, Cambridge: Cambridge University press.
10. Dervis, K., J. de Melo and S. Robinson (1981), "A General Equilibrium Analysis of Foreign Exchange Shortage in a Developing Economy," *The Economic Journal*, 91, 891-906.
11. Dollar, D. and Collier, P. (2001), Globalization, Growth and Poverty: Building an Inclusive World, New York: Oxford University Press, for The World Bank.
12. Feenstra, A. D. and G. H. Hanson (2003), Global Production Sharing And Rising Inequality: a Survey of Trade and Wages, in E. Choi, and J. Harrigan (eds.), Handbook of international trade (146–185). Malden, MA: Blackwell.
13. Feenstra, R. C. and G. H. Hanson (1996), Foreign Investment, Outsourcing and Relative Wages, in: Feenstra, R.C., Grossman, G. M., Irwin, D.A. (eds.), Political Economy of Trade Policy: Essays in Honor of Jagdish Bhagwati. MIT Press, Cambridge, 89–127.
14. Fu, X. and V. N. Balasubramanyam (2005), "Exports, Foreign Direct Investment and Employment: The Case of China," *World Economy*, 28(4), 607-625.
15. Goldberg, P. and N. Pavcnik (2004), Trade, Inequality, and Poverty: What Do We Know?, Brookings Trade Forum, 223–269.
16. Greenaway, D. (1993), "Liberalizing Foreign Trade through Rose-Tinted Glasses," *Economic Journal*, 103, 208-223.
17. Hudson, E and D. Jorgenson (1974), "U.S Energy Policy and Economic Growth, 1975-2000," *Bell Journal of Economics and Management Science*, 5, 461-514.
18. Johansen, L. (1960), a Multi-sector Study of Economic Growth, North-Holland, Amsterdam.
19. Jorgenson, D. W. and B. M. Fraumeni (1981), Relative Prices and Technical Change In: Modeling and Measuring Natural Resource Substitution, E. Berndt and B. Field (eds), MIT Press. Cambridge, 17-47.
20. Kruger, A. O. (1986), General Issues in Economic Liberalization, in: Choksi, A.M., Papageorgiou, D. (Eds.), *Economic Liberalization in Developing Countries*, Basil Blackwell, 15-38.
21. Manne, A. S. (1977), ETA-Macro: A Model of Energy Economy Interactions, Electric Power Research Institute, Ea-592 Research Report 1014.
22. Marquez, G. and C. Pages (1997), Trade and Employment: Evidence from Latin America and Caribbean, Inter-American Development Bank, Washington, DC, unpublished manuscript.
23. Matusz S. J. and D. Tarr (1999), Adjusting to Trade Policy Reform, World Bank Working Paper 2142, Washington, DC: World Bank.
24. Milner, C. and P. Wright (1998), "Modeling Labor Market Adjustment to Trade Liberalization in an Industrializing Economy," *The Economic Journal*, 108(447), 509-528.
25. Papageorgiou, D., A. Choksi, and M. Michaely (1990), Liberalizing Foreign Trade in Developing Countries: The Lessons of Experience, Washington, DC: World Bank.
26. Rama, M. (1994), The Labor Market and Trade Reform in Manufacturing, in M. Connolly and J. de Melo (eds.): Effects of Protectionism on a Small Country: The Case of Uruguay, Washington, DC: World Bank.
27. Revenga, A. (1995), Employment and Wage Effects of Trade Liberalization: The Case of Mexican Manufacturing, Policy Research Working Paper 1524, Washington DC: World Bank.

28. Robbins, D. (1996), Evidence on Trade and Wages in the Developing World, OECD Technical Paper, No. 119
29. Shoven, J. and J. Whalley (1974), "A General Equilibrium Calculation of the Effects of Deferential taxation of Income from Capital in the U.S.," *Journal of Public Economics*, 1(3-4), 281-321.
30. Trefler, D. and S. C., Zhu (2005), "Trade and Inequality in Developing Countries: A General Equilibrium Analysis," *Journal of International Economics*, 65, 21–48.
31. Verhoogen, E. (2004), Trade, Quality Upgrading and Wage Inequality in the Mexican Manufacturing Sector: Theory and Evidence from an Exchange-Rate Shock, Unpublished paper, University of California, Berkeley.
32. Wood, A. (1995), "How Trade Hurt Unskilled Workers," *Journal of Economic Perspectives*, 9(3), 57–80.