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The impact of trade and financial liberalization on export agricultural sector in Iran

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Abstract

The increase the export of agricultural products plays a significant role in increasing the production capacity of this sector and the development of agriculture sector and rural areas. So that by increasing the income of the villagers, it prevents them from migrating to the city and creates the basis for investment in production. Therefore, in this study, the role of financial liberalization and trade liberalization as the most important policies of structural changes on the export of Iran's agricultural sector was investigated. The estimation of the Autoregressive Distributed Lag (ARDL) related to the data of 1995 to 2020 showed that among the variables, arable land per worker, Domestic credit to private sector by banks and stocks traded turnover ratio of domestic shares respectively with coefficients of 5.94, 4.51 and 3.25 have the greatest effect on the export. The total effect of each of the policies of financial and trade liberalization is 2.81 and -1.5, respectively. In other words, the simultaneous implementation of structural change policies will increase the export of the agricultural sector, so it is recommended to measure their effects on different sectors of the economy before implementing structural change policies and then implement them.

Keywords: Agriculture Growth, Financial Liberalization, Structural Change, Trade Liberalization

Introduction

The importance of economic growth and development has led to the implementation of various policies to achieve high economic growth in different countries. In the meantime, international institutions such as the World Bank and the International Monetary Fund, since the 1980s, apply conditions under the title of adjustment or restructuring policies to the borrowing countries for loan payments, so that according to this Two institutions are reduced from the government's entrepreneurship and become agile and achieve high economic growth (Shir Ali, 2019). Structural change or adjustment in

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the economy usually refers to a situation where the way of regulating the market and the activity of economic units has fundamentally changed. The policies of the structural change program include reducing the price of common currency, managing the balance of payments, reducing government services through reducing public expenditures or budget deficits, reducing income taxes, reducing inflation, privatization, low import tariffs, The expansion of free trade was the reduction of social expenses and the removal of trade restrictions. In addition to these cases, governments should emphasize on reducing their role in the economy by privatizing government sectors and opening the doors of their economy to foreign competition (Knutsson, 2009). The conditions presented under the title of structural change policies indicate that the problem of economic growth is caused by the internal structure of underdeveloped countries (Lopes, 1994) and for countries to reach growth as the goal of this program, the government's role in production and reduce economic activities and move towards free market and liberalization.

The implementation of restructuring policies in Iran began during the first term of Hashemi Rafsanjani's presidency (1990) based on the conditions set by the International Monetary Fund and the World Bank. By taking a close look at the components of this policy, it can be seen that among the economic policies implemented for a country, adjustment or restructuring policies are of great importance in the changes of economic growth and economic sectors. Among the important types of structural reforms that have been studied and implemented in the last four decades are Trade Liberalization, Privatization and Financial Liberalization. These policies have pushed the economy of a country from the government's focus to the market and can have many effects on the state of economic growth and people's well-being. Because it seems that the supply and demand mechanism in competitive market conditions will lead to more and better use of production factors and as a result increase the production of goods and services, increase the efficiency of factors and decrease prices (Shir Ali, 2019).

Among the different sectors of a country's economy, the agricultural sector is very important due to factors such as ensuring food security, producing inputs of other sectors, economic growth, attracting labor and being the most important source of income in the rural economy. (Nabi-ian et al 2016, Kaykhosravi 2018, Kkhosravi 2022). Various studies have been conducted in the field of investigating the effect of structural change policies on the agricultural sector, one can refer to the study of Abbasi et al. (2021). In this study, the effect of trade liberalization on the growth and export of the agricultural sector during the period 1987 to 2018 has been investigated. The results of this research showed that trade liberalization through the reduction of the import tariff in the short term increases the export by 1.56 percent and in the long term, the amount of import decreases by 7.56 percent. Also, the results of estimating the growth pattern showed that the liberalization index has a positive and significant effect on agricultural growth.

Ravand et al. (2017) investigated the effects of trade liberalization on the status of rice

production, consumption and trade in Iran. The results of partial equilibrium simulation showed that with trade liberalization (reduction of rice import tariff), the area under rice cultivation in the producing provinces will decrease. On the other hand, the import and export of medium and long grain rice increases. It should be noted that the welfare resulting from this policy has been underestimated.

Azizi et al. (2014) investigated the effect of trade liberalization on the trade balance of the agricultural sector during the period from 1982 to 2012 using the information of the agricultural sector of Iran. The results of the estimation of autoregression model with extended intervals (ARDL) showed that the value added variables of the agricultural sector, exchange rate and price index have a positive effect and the variables of trade liberalization of the agricultural sector, oil revenues and export price index have a negative effect on the trade balance of the agricultural sector.

Heydarabadipour et al. (2013) simultaneously analyzed the effects of trade liberalization (trade intensity) and financial development (share of private sector savings from GDP) on the growth of the agricultural sector during the period from 1973 to 2012 using data. Checked the boards. The results of the research show that the coefficient of the labor force, capital, degree of commercial openness and financial development variables are positive and significant on the growth of the agricultural sector.

Khalilzadeh et al. (2013) investigated the effect of trade liberalization on the inflation of the agricultural sector in Iran. The results of applying the Johanson Jusilius method showed that there is a long-term relationship between inflation in the agricultural sector, paid credits, price index and trade liberalization, and trade liberalization will increase inflation in the agriculture sector.

Salem (2012) compared the production and trade trends of the agricultural sector of Iran and some selected countries during the period from 1990 to 2005 in order to evaluate the role of trade liberalization on the state of the agricultural sector. The results of this study showed that as a result of trade liberalization, the lowest growth in the import value index belongs to Iran and the highest growth belongs to Vietnam. In terms of agricultural exports, trade liberalization has had a positive effect on Iran's agricultural sector. Also, the relative advantage of food and agricultural products trade has increased by 0.52 points in this period.

Nunjad and Majlisi (2013) in a study investigated the effect of trade liberalization policy on the added value of the agricultural and industrial sectors of MENA countries. The results of this research showed that the trade intensity variable (trade to GDP) has a positive effect on the added value of agricultural and industrial sectors.

Using a computable general equilibrium model, Zoghipour and Zibaee (2010) investigated the effects of reducing import tariffs as a symbol of trade liberalization on the important variables of Iran's agricultural sector. The results of the simulation using the 2001 dataset showed that trade liberalization in the agricultural sector will reduce employment, capital stock, production and exports in this sector.

However, reducing the tariff in non-agricultural sectors and all sectors, although it will reduce production in the agricultural sector, it will increase employment and exports in this sector.

Mansouri et al (2013) investigated the effect of financial repression on the growth of the agricultural sector during the period 1962 to 2007 using the dynamic ordinary least squares (DOLS) method. The results of the estimation of the growth pattern of the agricultural sector showed that the control of the bank's legal reserve ratio as an indicator of financial repression has a negative effect on the economic growth of the agricultural sector. Also, the variable of political stability and the number of people with secondary education have a positive effect on the growth of the agricultural sector.

The review of the studies conducted in Iran's agricultural sector shows that the aforementioned studies paid attention to a part of structural change policies (especially trade liberalization) and did not evaluate the effects of different structural change policies on the agricultural sector at the same time. Therefore, in this research, an attempt is made to measure the impact of structural change policies (financial liberalization and trade liberalization) on the export of the agricultural sector.

Methods and Methodology

In this study, in order to investigate the role of structural change policies on theIn this study, in order to investigate the role of structural change policies on the export situation of the agricultural sector, the growth model of the agricultural sector of Iran has also been used. Due to the influence of export on the amount of production in the agricultural sector, it can be said that whatever causes changes in the production and growth of the agricultural sector has an effect on the export of agricultural products. In the following, some variables affecting the agricultural sector are introduced and their effects are explained:

Capital and labor force: In all theories of economic growth, labor force and capital are the most important sources of economic growth and an integral part of growth models. So that changes in the amount and nature of each of them will cause changes in production and economic growth. Therefore, it can cause a change in the export of the agricultural sector. The results of the studies of Abbasi et al. (2021), Heydarabadipour et al. (2013) and Mansouri et al. Trade liberalization: Trade liberalization is a process in which a country moves towards free trade by reducing tariffs and other trade barriers. Liberalization increases the volume and type of exchange of goods and services, increases the flow of foreign and international direct investment, and accelerates the transfer of technology and globalization of production (Mahdavi et al., 2016).

According to the theory of endogenous growth, if growth is followed by research and development activities, trade provides the possibility of a country's access to the technological knowledge of its trading partners. Also, trade allows producers to gain access to larger markets and will lead to the development of research and development activities by increasing innovations (Jafari Samimi et al., 2018). In other words, trade liberalization leads to

access to technical advances of trading partners, trade in the form of technical spillover and international transfer of knowledge, access to larger foreign markets, benefits of economies of scale, import of intermediate goods and capital. He pointed out the increase in the competitiveness of domestic companies in global markets (Gorji and Alipourian, 2015).

Reducing trade barriers in endogenous growth patterns is considered one of the main factors of promoting growth. So that by imposing trade barriers, countries distance themselves from free trade, and this will lead to hindering the entry of capital goods from abroad and the advancement of technology will be delayed. But on the other hand, trade liberalization improves productivity through the use of unused resources, more distinctive products with higher quality and lower prices are offered, the production of consumer welfare surplus increases, and finally the amount of trade also increases. Increase (Falvey 1981, Melitz 2003). The results of the studies by Mahdavi et al. (2016), Jafari Samimi et al. (2009), Menyah et al (2014), Mounir (2012), Shahbaz (2012), Daumal & Özyurt (2011), Das & Paul (2011). Chang et al (2009) and Wacziarg & Welch (2008) confirm the positive effects of trade liberalization on economic growth. In contrast to the research results of Eris & Ulasan (2013), Nikumram et al. (2012), Mehrara and Rezaei (2009), Gries et al. (2009) and Jin (2006) show that trade liberalization will not lead to economic growth.

Financial liberalization: The concept of financial liberalization refers to the increase and expansion of global connections of countries through international financial and capital flows (Prasad et al 2003). According to this concept, we can say things like international capital flows, the expansion of regional and international financial relations, and the formation of financial areas at the regional and international level, liberalization and convergence in interest rates. Regional and international interest, exchange rate liberalization and the formation of monetary unions, the performance of financial institutions and the reduction of controls can lead to the development of financial liberalization (same source).

In the context of the effect of financial liberalization on economic growth, Mackinnon (1973) and Shaw (1973) state that financial liberalization reduces financial repression and has a positive effect on savings and economic growth. They raised the issue of financial market liberalization by criticizing financial market regulations such as interest rate ceiling, legal reserve rate, credit ceiling and credit funds usage in various cases. They believed that interest rate liberalization will increase investment and economic growth rate in the long term. In this regard, Romer (1993), and Baro et al. (1995) also showed that financial liberalization will increase investment. Using the life cycle model, Fry (1987) showed that increasing the interest rate of household deposits towards the equilibrium value increases the private sector's access to domestic credits and increases investment.

At the global level, based on the framework of the theory of the neoclassical model, capital freedom causes the transfer of capital from economies with high capital to economies with low capital. These capital flows will increase the level of domestic savings and lead to an increase in investment. Became. Capital flow can improve and develop technology. The results of Romer's study (1993) show that with financial liberalization and increased capital inflow into the country, investment and production increase.

In addition to the flow of capital through financial liberalization, this policy will also cause economic growth through investment in the portfolio. So that with financial liberalization, domestic and foreign investors have a greater desire to invest in the portfolio, and as a result, the cost of providing capital decreases (Stultz 1999 and Romer 1993).

Despite the positive effects of financial liberalization, some researchers believe that financial liberalization will not always lead to economic growth and development. Dornbush & Reynoso (1989), Van Wijnbergen (1983) and Taylor (1983) showed in the form of models that financial liberalization will hinder economic growth. The empirical evidence of the 80s and 90s also showed that countries that liberalized their financial markets faced severe financial crises followed by economic instability (increase in inflation and unemployment and decrease in economic growth). The results of the Eichengreen & Leblanc (2003) and Edwards (2001) studies show that financial liberalization in industrialized countries leads to economic growth, but developing countries suffer economic growth with the implementation of financial liberalization. In these studies, it is argued that the stability of the economy is necessary for the implementation of financial liberalization. The results of Sefipour's study (2013) also show that financial liberalization depends on the income level of countries, so that in countries with low income, the effect of financial liberalization on economic growth is negative.

According to the mentioned materials, model 1 was chosen in order to estimate the growth and export pattern of Iran's agricultural sector. Each of the symbols Export, Land, Labor, Capital, LibFinance and LibTrade in these two equations respectively represent the export of agricultural products, land, labor, capital, financial liberalization policy and trade liberalization policy.

$$Export = f(Land, Labor, Capital, LibFinance, LibTrade) \quad (1)$$

Several variables have been used in order to evaluate the effect of each of the policies of financial liberalization and trade liberalization. The variables Real Exchange Effective Rate, stocks traded turnover ratio of domestic shares, FDI Inflows, International Reserves Assets Bank, Domestic credit to private sector by banks indicate financial liberalization and Trade of GDP variable as an indicator of trade liberalization. It should be noted that the information related to other variables indicating structural change policies, such as the average rate of tariffs, was not fully available to be used in this research. The information related to the agricultural

situation and the variables constituting the financial and commercial liberalization policies have been collected from the World Bank and the World Food Organization (FAO) website for the period from 1995 to 2020.

Results

One of the most important issues related to estimating equations using time series data is their Stationary. So that if the used series are not stable, the estimated regression will be false. Therefore, first the Stationary of the variables was evaluated using the Augmented Dickey-Fuller test. It should be noted that the studied variables are logarithmic. The results of Table 1 show that except for the variables stocks traded turnover ratio of domestic shares, domestic credit to private sector by banks of GDP, inter assets bank and real exchange effective, the rest of the variables are stable with one difference.

Table 1. Stationary of the studied variables

variable	Level		1st Difference		
	t-stat	prob	t-stat	prob	Critical values (1%)
arable land per worker	-0.78	0.81	-5.66	0.00	-3.74
domestic credit to private sector by banks of GDP	-2.63	0.10	-4.32	0.00	-3.74
export value Agri	-1.64	0.45	-7.04	0.00	-3.74
FDI inflows	-1.70	0.72	-3.51	0.06	4.42
inter assets bank	-2.58	0.11	-7.02	0.00	-3.74
net capital stocks	-0.06	0.94	-3.51	0.02	-3.74
Real exchange effective	-2.62	0.10	-3.17	0.03	-3.74
stocks traded turnover ratio of domestic shares	-2.54	0.12	-6.25	0.00	-3.74
trade of GDP	-1.87	0.34	-4.21	0.00	-3.74

source: research finding

In addition to the Stationary issue, another important issue in model estimation with time series data is to pay attention to cointegration. Due to the difference in the degree of stationary of the studied variables, it is necessary to cointegration them should be tested by using methods such as Engle-Granger (1987), Juselius & Johansen (1990), Phillips & Hansen (1990), Phillips & Loretan (1991).), Autoregressive Distributed Lag (Pesaran & Shin 1999 and Pesaran & Shin 2001) (Nkoro & Uko, 2016). Among the mentioned methods, Autoregressive Distributed Lag (ARDL) has advantages such as insensitivity to the sample size, no requirement to use stable variables of the same degree, simultaneous estimation of short and long-term relationships together without the need for systematic estimation and It is possible to

use different intervals in different stages of estimation, which is not available in other methods (Thao and Hua, 2016). Therefore, this method has been used to investigate the role of variables affecting the export of the agricultural sector.

The results of the agricultural sector export in Table 2 show that the absolute value of Bound Testing is greater than both of the presented bounds for the time series with 1 and 0 stationary levels, and the null hypothesis of this test shows the absence of long-term relationship between the model variables. (Pesran et al., 2001), rejects the values of the F statistic for this test are equal to 5.91, which are higher than the critical values at the 1% error level.

Table 2. Model estimation ARDL (1, 0, 0, 1, 0, 1, 0, 1, 1)

Variable	Coeff	Std. Error	t-Statistic	Prob
LEXPORTVALUEAGRI (-1)	-0.51	0.23	-2.25	0.05
LNET CAPITALSTOCKS	1.18	0.31	3.82	0.00
LARABLELAND2	5.94	1.77	3.35	0.01
LTRADEOFGDP	-0.45	0.68	-0.66	0.52
LTRADEOFGDP (-1)	-1.05	0.76	-1.38	0.19
LREAL_EXCHANGE_EFFECTIVE	0.17	0.26	0.66	0.52
LINTERASSETSBANK	0.04	0.05	0.68	0.51
LINTERASSETSBANK (-1)	0.30	0.09	3.20	0.01
LFDIINFLOW	0.09	0.09	0.98	0.35
LSTOCKSTRADEDTURNOVERRATIOFDOMESTICSHARES	-0.25	0.18	-1.35	0.20
LSTOCKSTRADEDTURNOVERRATIOOFDOMESTICSHARES (-1)	-0.78	0.24	-3.21	0.01
LDOMCREDITTOPRIVATESECTORBYBANKSOFGDP	4.51	1.29	3.48	0.01
LDOMCREDITTOPRIVATESECTORBYBANKSOFGDP (-1)	-1.26	0.97	-1.30	0.22
c	-44.07	17.24	-2.56	0.03
R-squared	0.95	Akaike info criterion		0.12
Adjusted R-squared	0.90	Schwarz criterion		0.81
F-statistic	16.79	Hannan-Quinn criterion.		0.31
Prob(F-statistic)	0.00	F-Bounds Test		5.91

source: research finding

The state of stability of the estimated model structure has been evaluated using Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals test (CUSUMsq). As shown in Figure 1, the graphs of cumulative residual and squared cumulative residual are located between two lines with a 95% confidence interval. Therefore, it can be said that the null hypothesis that there is no structural failure in the estimated model is accepted.

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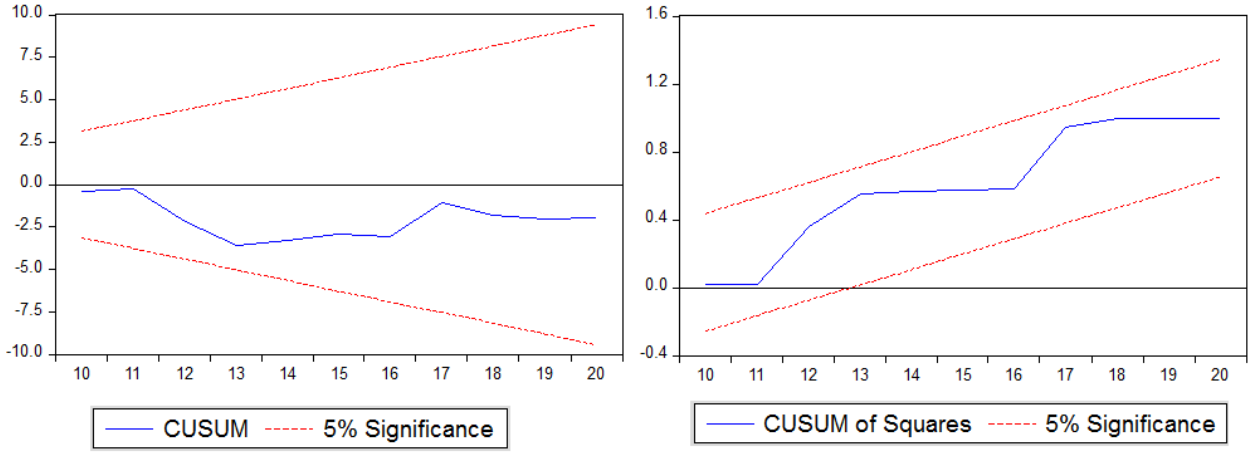

Figure 1. Cumulative residual test results and cumulative residual squared

After confirming the existence of a long-term relationship among the variables of each model, long-term relationships and the corresponding error correction model are estimated. Table 3 reports the coefficients of each of the long-term and short-term patterns. As can be seen from the figures in Table 3, only the real exchange effective rate and FDI Inflows variables are not significant. In the short term, the variables stocks traded turnover ratio of domestic shares and domestic credit to private sector by banks have a significant effect on exports, and the rest of the variables affecting exports do not have a significant effect. Also, the significant comparison of the coefficients of various variables in the short term indicates that the trade liberalization policy has a negative effect on the export of the agricultural sector in the short and long term. While the total variables of financial liberalization have a positive effect on agricultural exports. Among the variables of financial liberalization, all variables except the variable stocks traded turnover ratio of domestic shares have a positive effect on exports. The three variables of foreign investment entry, effective exchange rate and foreign assets of the central bank have the least effect among the variables of financial liberalization. The sign of the foreign investment entry variable and the effective exchange rate are in line with the results of the study by Vahidi Iry Sofla (2021). In terms of the effect of the variable amount of irrigated land per capita, it has the most effect on agricultural exports, so that with the increase of each meter of land covered by irrigation, the amount of export increases by 5.94 units. Also, with an increase in the amount of net capital in the agricultural sector, the amount of export increases by 1.18 units. Trade liberalization variables (trade intensity) have a negative effect on the export of Iran's agricultural sector. These results are consistent with the study of Azizi et al. (2014). Meanwhile, the results of the studies of Abbasi et al. (2021), Heydarabadipour et al. (2014), Salem (2012), Nunjad and Majlesi (2011), Zoghipour and Zibaee (2010) showed that

trade liberalization in general The economy will increase exports.

Table 3. Short-term and long-term coefficients of model ARDL (1, 0, 0, 1, 0, 1, 0, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-44.07	17.24	-2.56	0.03
LEXPORTVALUEAGRI (-1)	-1.51	0.23	-6.68	0.00
LNET CAPITALSTOCKS	1.18	0.31	3.82	0.00
LARABLELAND	5.94	1.77	3.35	0.01
LTRADEOFGDP (-1)	-1.50	0.70	-2.13	0.06
LREAL_EXCHANGE_EFFECTIVE	0.17	0.26	0.66	0.52
LINTERASSETSBANK (-1)	0.34	0.11	3.03	0.01
LFDIINFLOW	0.09	0.09	0.98	0.35
LSTOCKSTRADEDTURNOVERRATIOOFDOMESTICSHARES (-1)	-1.03	0.31	-3.27	0.01
LDOMCREDITTOPRIVATESECTORBYBANKSOFGDP (-1)	3.25	0.67	4.86	0.00
D (LTRADEOFGDP)	-0.45	0.68	-0.66	0.52
D (LINTERASSETSBANK)	0.04	0.05	0.68	0.51
D (LSTOCKSTRADEDTURNOVERRATIOOFDOMESTICSHARES)	-0.25	0.18	-1.35	0.20
D (LDOMCREDITTOPRIVATESECTORBYBANKSOFGDP)	4.51	1.29	3.48	0.01
CoinEq (-1)	-1.51	0.16	-9.58	0.00

source: research finding

Discussion and conclusion

The extensive changes caused by the implementation of structural change policies in different countries led to the study of the effects of financial liberalization and trade liberalization policies on Iran's agricultural sector. The required information was extracted from the website of World Bank and World Food Organization and two Autoregressive Distributed Lag (ARDL) were estimated. The results of this research showed that except for the real exchange rate and FDI inflows, the rest of the variables have a significant effect on agricultural exports, and among the variables, the amount of land covered by irrigation per capita, and domestic credit to private sector by banks, and stocks traded turnover ratio of domestic shares, respectively. With the coefficients of 5.94, 4.51 and 3.25, they have the greatest effect on the export of the agricultural sector.

Examining the short-term growth coefficients of the agricultural sector shows that trade liberalization has no significant effect on the growth of this sector, while the total effects of financial liberalization

variables show the positive effect of this policy on economic growth. In other words, with the increase in the financial flows of the country, the export amount of the agricultural sector will be 4.21 units. These results are consistent with the study of Haiderabadipour et al. (2013). Among the variables indicating financial liberalization, Stocks traded of GDP has a negative effect on the export of the agricultural sector in the short term.

Trade liberalization in the short-term and long-term causes a decrease in the export of the agricultural sector and has a negative effect on it. One of these reasons can be attributed to replacing the import of agricultural products with their domestic production. Because with the increase in trade interactions due to the implementation of this policy, the import restrictions will be reduced and the import of agricultural products will increase compared to its export, and as a result, the production and growth of the agricultural sector will decrease and the export will decrease. This result was also confirmed in the study of Azizi et al. (2014).

Examining the long-term coefficients shows that the total effect of each of the policies of financial liberalization and trade liberalization is 2.81 and 1.5, respectively. In other words, with the implementation of these policies, in the long term, the export of the agricultural sector will change by 2.81 and -1.5 units, respectively. In other words, the simultaneous implementation of structural change policies will increase the export of the agricultural sector and it is necessary to simulate and then implement the possible results before implementing these policies.

In addition to the mentioned cases, the most important source of changes in the growth of the agricultural sector in this study is the land under irrigation per capita, which has an effect of almost 6 units on the export of the agricultural sector. Therefore, it is possible to increase agricultural exports by increasing the level of access of farmers to water and increasing the efficiency of crops per fixed water level. Also, further examination of the per capita land variable shows that with the increase in the number of labor force, the export of the agricultural sector decreases. One of the reasons for the negative effect of the labor force on the agricultural sector can be attributed to the increase in the number of elderly workers and the unwillingness of the young generation to work in this sector. In such a way that the average share of agricultural operators with a life of more than 45 years increased from 57.48% to 66.58% during the years 2003 to 2014 and in contrast to the share of operators with a life of less than 30 years. During this period, it has decreased from 9.96% to 5.51% (results of agricultural census 2012 and 2013). The increasing age of agricultural operators is one of the signs of the unwillingness of young people to do agricultural activities, and this will have a negative effect on the productive capacity of this sector. Therefore, it is recommended to provide the necessary conditions for the employment of young people in this sector, such as providing cheap and long-term facilities for establishing agricultural businesses in rural

areas and providing consulting services in the field of selling products.

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