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The Effect of Agricultural Production Subsidies Reduction in the Economic Variables of Agricultural Sector of Iran: Multifunctional Assessment in CGE Model

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Abstract

The production of public goods like amenity value of the landscape, food security, preservation of rural communities and rural lifestyle, by agricultural sector is a subject that has been widely accepted by experts. However, in many policies and political analyses carried out, solely the production of private goods by the agricultural sector is paid attention and the important function of public goods production is ignored. Given the importance of multifunctional debate of agriculture in policies analysis, this study examined the effect of agricultural multifunctionality in the simulation of the agricultural production subsidies reduction effects using Computable General Equilibrium (CGE) model. Simulation results of the effects of agricultural production subsidies reduction in terms of the multifunctionality showed that current practices to support the agricultural sector is non-optimal according to agricultural production and welfare reduction and the optimal level of supports with and without multifunctional agriculture is different. The simulation results showed that the welfare effects of economic reforms in Iran in the agricultural sector in terms of the multifunctionality will be positive. This is on condition that the welfare effects of agricultural reform in terms of the multifunctionality of agriculture are negative.

Keywords:
Multifunctionality of agriculture, The Computable General Equilibrium (CGE), Agricultural reform, Subsidies, Iran

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INTRODUCTION

Agriculture is related with the activity of other sectors of economy including the government though policymaking, nature, environment and community. Now, the expectation from agricultural sector is not only secure food production, but also beyond that is natural resource development and in general the production of public goods. In fact, nowadays, other than the function of private goods production, the production of public goods is considered as another important task of the agricultural sector. Thus, the discussion of the multifunctionality of agricultural sector is one of the significant and considerable issues for economic analysts and policy makers (Brunstad *et al*., 1995). Paying attention to the multifunctionality of agriculture from the two aspects of economic reforms and analysis of domestic supportive policies and issues related to globalization and accession to the (WTO) is very significant. Given the importance of considering multifunctionality of agriculture in the analysis of policies, this research was done with the aim of considering the effects of multifunctionality of agricultural sector in the analysis of policies, assessing the liberalization welfare effects and economic reforms in the agricultural sector, and examining the quantity of the multifunctional subject in the framework of Computable General Equilibrium (CGE) models. Different domestic studies have investigated the subjects of policies analysis and evaluation of the implementation of economic reforms regardless of the multifunctionality. The studies of Salami (2000) which analyzed the economic effects of the accession of Iran to the WTO on agricultural sector within the CGE framework can be mentioned. The results of his model simulation indicated that if Iran does not join the WTO, the agricultural sector will benefit. In this regard, the results of the study of Noori and Yazdani (2000), conducted to evaluate the effects of trade liberalization on the agricultural sector, showed that globalization process has a positive effect on domestic products. Akbary Moghaddam and Piraee (2004), investigating the effect of subsidies reduction on agricultural sector production and the welfare of rural and urban households in CGE framework, concluded that these types of reforms in the agricultural sector will have negative impacts on both agricultural production and urban and rural household welfare. Asgari (2004) studied the effects of changes in tariffs in order to evaluate the effects of liberalization on the agricultural sector. Simulation results of his model showed that although the changes in tariffs have important effects on the economy, its reduction will increase employment. Barkhordari and Mehrara (2007) studied the effects of Iran's tariff reduction through Iran's accession to the WTO on value added and employment in different economic parts of Iran based on CGE model framework in the form of two scenarios. The results of their study showed that the natural resources-based industries have the highest increase in employment and value added in both scenarios. Tayebi and Mesrinejad (2007), reviewing the removal of non-tariff support in a CGE model, concluded that the imported tariffs equilibrium in line with the liberalization of the agricultural sector leads to the improvement of the households' welfare. Investigating the impact of trade liberalization on agricultural sector, Karbasi and Peirovi (2007) concluded that the effect of liberalization variable as a new variable along with other variables is significant on value added of the agricultural sector. Esmaeili and Rahmati (2008) studied the effects of globalization on the value added of the agricultural sector and showed that Iran's agricultural sector will benefit from globalization process. Zoghipour and Zibaei (2009) examined the effects of imported tariffs decline on key economic variables of the country using the CGE. The results related to his simulation model showed that the tariff reduction in all sectors leads to a reduction in total supply and investment and an increase in total exports, imports, income and household consumption. Reviewing the targeting subsidies on macroeconomic variables of the agricultural sector in the CGE framework. Hosseini-Yekani (2010) concluded that the income increase as a result of targeting subsidies will cause the increased demand for agricultural products, food products and services in both rural and urban households. The input level for

the agricultural sector, the export and import of agricultural products and agricultural production will also increase. Foreign studies conducted in the field of multifunctional agriculture are very widespread. Most studies in the field of multifunctional agriculture are in the framework of the CGE in which the optimal quantity of agricultural sector support is estimated according to the agricultural sector multifunctional purposes. Cretegny (2001) studied the effect of Swiss agricultural reform (agricultural price support reduction in order to increase organic agricultural products) on consumer welfare. The results of his model simulation showed that the welfare of consumers increases. Cretegny (2002a) studied the effect of agricultural reform of Switzerland (separation of direct payment from agricultural production and the allocation of this type of payment to the nature -friendly agriculture) in the framework of the CGE model. The simulation results showed that the welfare of farmers reduced while the welfare of the society will increase due to trade liberalization. Cretegny (2002b) investigated how the multifunctionality of agriculture can be simulated in the framework of the CGE model. He considered the pure public good as one of the products dependent on agricultural private good that the production of this type of public goods is provided with governmental direct payments to the farmers. The results showed the importance of the multifunctionality of the agriculture. So that absence of this function will show the negative impact of agricultural reforms on household welfare. Rødseth (2008) showed how natural landscapes could be used as one of the functions of agriculture in the CGE model. He used supply and willingness to pay function for natural landscape in Norway in order to provide public goods modeling framework. His model simulation results showed that the supply of natural landscapes can be achieved with very little support. Kristkova *et al*. (2011) entered demand and supply of public goods of the agricultural sector in the CGE. Public good demand was entered in the form of willingness to pay of households for landscape resulted from the production of meat in Czechoslovakia.

MATERIALS AND METHODS

Study of economics is possible though three views of microeconomics, macroeconomics and public equilibrium. The present relations in the general equilibrium are related to the efforts of Walrus in the 1870s. Generally, changes in the whole system in a general equilibrium models are investigated with the occurrence of an exogenous change and as a result of change in one of the economic sectors. The CGE model is a powerful tool to study the complex relationships between variables (Tayebi and Mesrinejad, 2007). In the analysis of CGE models, the prices, the quantity of production and consumption in the market, production factors, and the product market are considered indigenous. In the solution of these models and in the equilibrium, the quantity of the total demand and supply in each of the markets is considered equal, the equilibrium profit of the agents is considered zero according to the payment to the production factors, the expenditures and the incomes of the households are considered equal, and incomes and expenses of the government including subsidies payments are considered equal. A standard model of CGE explains all the accounts available in Social Accounting Matrix (SAM). SAM is a good starting point for introducing basic equations of the CGE model. Modeling subsidies reduction scenarios of agricultural production, consumption and tariffs considering the multifunctionality of agriculture within the CGE model:The purpose of this part is presenting a static model with four parts including agriculture, food industry, mining and industry, and services through which the effects of subsidies reduction of agricultural production can be studied with respect to the multifunctionality of agriculture on the variables of the agricultural sector. The import prices are the prices that domestic consumers pay for imported goods according to the domestic currency (Eq. 1).

$$PM_c=(1+tm_c).EXR.pwm_c, c\in CM \quad (1)$$

where, c is the index of goods, CM is the index of imported goods, PM_c is the price of import (IRR), tm_c is the import tariff rate (plus sales tax), EXR is the exchange rate (IRR), and pwm_c is the the global price of imports (ex-

change). Export price is the price that is gained by domestic producers in the export market in the time of sale. As shown in equation (2), export prices are calculated based on exchange rates in terms of domestic currency in export prices multiplied by world export prices. The world price of imports and exports are regarded as exogenous in this study. Assuming the world import price constant is derived from the "small country" assumption.

$$PE_c = pwe_c . EXR \qquad c \in CE \tag{2}$$

where, CE is the index of export goods, PE_c is the price of export (IRR), and pwec is the prices of world export (currency).

Domestic consumers use domestic and foreign goods (composite commodity); the absorption represents the total domestic price regarding the price of demand. Equation (3) shows the composite commodity price that is a weighted composition of the price of the domestic goods sold and the price of imported goods.

$$PQ_c = \frac{(PD_c . QD_c + PM_c . QM_c + vqt_c)}{QQ_c}(1 - sq_c) \qquad c \in C \tag{3}$$

where PQ_c is the price of composite commodity, QD_c is the quantity of sold products domestically, QM_c is the quantity of good c imports, vqt_c is the prices of transportation and warehousing, QQ_c is the quantity of goods supplied to the domestic market (supply of composite commodity of c), and sq_c is the rate of subsidies used on each unit of good c.

Domestic producers either sell their products within the country or export them, so for each domestically manufactured goods the market production value (producer price) according to equation (4) is the weighted average of the price of the domestically manufactured goods and the goods export price.

$$PX_c = \frac{(PD_c . QD_c + PE_c . QE_c)}{QX_c} \qquad c \in C \tag{4}$$

where PX_c is the average producer price for good c, PD_c is the domestic price of domestically produced goods, QE_c is the export, and QX_c is the total production of good c.

Price of the activity reflects the gross income of each operating unit, in other words, the income is gained from selling the products of the activity. Equation (5) shows the price of activities as the weighted average from the price of domestically produced goods.

$$PA_a = \sum_{c \in C} \theta_{ac} . PX_c + Pgda \qquad a \in A,\ c \in C \tag{5}$$

where a is the index of activities, PA_a is the gross income per unit of activities of a (price of production activity), θ_{ac} is the performance of good c per unit of activity a, Pgda is the performance of public good for agricultural activities. The price of added value is, in fact, achieved from the fraction of the inputs price per unit from production price after tax extraction that is shown in equation (6).

$$PVA_a = PA_a . (1 - ta_a + sa_a) - \sum_{c \in C} ica_{ca} . PQ_c - vyg_a \qquad a \in A \tag{6}$$

where PVA_a is the Price of added value of activity (Factors income per unit of production), ta_a is the indirect tax rate of activity a, sa_a is the rate of production subsidies for activity a, ica_{ca} is the Consumption rate of good c as the mediator input by the activity a, and vyg_a is the other incomes of the government from each unit of production of activity a.

Domestically supplied goods include imported goods and domestically-produced goods that some of these goods are used in the production of other goods during the process of conversion and ultimately, part of them are exported and part of them are sold inside the country. Equation (7) shows Cobb-Douglas production function of each activity which is a function of factors of production, labor and capital.

$$QA_a = ad_a \prod_{f \in F} QF_{fa}^{\alpha_{fa}} \qquad a \in A \tag{7}$$

where f is the index of production factors (labor and capital), QA_a is the production level of activity a, ad_a is the efficiency parameter of the production function, QFf_a is the demand of activities for the production factor of f, and α_{fa} is the production factor elasticity in the production of activity a. Equation (8) shows the demand function of production factors that the final production value should be equal to the quantity received by the factors of production in the competitive condition.

$$QF_{fa} = \frac{\alpha_{fa} . PVA_a . QA_a}{W_f} \qquad f \in F, a \in A \tag{8}$$

where *Wf* is the wage for the production of f. Equation (9) represents the relationship between partial intermediate prices and the total price and the intermediate demand function like production factors demand is considered as fixed coefficients from output.

$$QINT_c = \sum_{a \in A} ica_{ca}.QA_a \qquad c \in C,\ a \in A \tag{9}$$

where $QINT_c$ is the demand for the good c as an intermediate input a activities.

The function derived from produced goods and services within the country is according to the equation (10).

$$QX_c = \sum_{a \in A} \theta_{ac}.QA_a \qquad a \in A \tag{10}$$

According to equation (11), composite commodity is used by domestic clients. Imperfect substitution between imported goods and domestic goods that are used domestically is shown using the CES (constant elasticity of substitution) function. In this function, supplied goods in the domestic market are a composition of domestically produced goods and imported goods. In this function, imported and produced goods within the country are used as "inputs". Economically, it means that the clients' preferences among imported and domestic goods are expressed as a CES function which is called Armington function. Adverbial activities of $(-1 < \rho_c^q < \infty)$ supplies the convexity of the above function assumption to intercept. This feature is equivalent to substitution rate of technical descending.

$$QQ_c = aq_c.(\delta_c^q.QM_c^{-\rho_c^q} + (1-\delta_c^q).QD_c^{-\rho_c^q})^{\frac{-1}{-\rho_c^q}} \tag{11}$$

where aq_c is the transfer parameter of composite supply function (Armington), δ_c^q is the parameter of function contribution of composite supply a (Armington), ρ_c^q is the power $(-1 < \rho_c^q < \infty)$ of composite supply function (Armington). Domestically produced goods and services are sold within the country or exported abroad and that the allocation method is conducted by a function of type CET. The framework of this function is as follows.

$$QX_c = at_c.(\delta_c^t.QE_c^{\rho_c^t} + (1-\delta_c^t)QD_c^{\rho_c^t})^{\frac{1}{\rho_c^t}} c \in CE \tag{12}$$

where at_c is the parameter of function transfer of product conversion of product transmission (CET), δ_c^t is the elasticity of conversion function of product conversion (CET), and ρ_c^t is the power of $(1 < \rho_c^t < \infty)$ product conversion function (CET). Equation (13) shows the optimal composite among the goods produced domestically and imported. The scope of this equation is limited to imported goods. The first rank condition shows minimization of conditional cost on Armington function and a constant value of the composite good.

$$\frac{QM_c}{QD_c} = (\frac{PD_c}{PM_c}.\frac{\delta_c^q}{1-\delta_c^q})^{\frac{1}{1-\rho_c^q}} c \in CM \tag{13}$$

The above equation is replaced by Armington function for the goods that are not imported. The equation provides the equality between composite commodity and domestically produced goods inside which is used within the country (equation 14).

$$QQ_c = QD_c \quad c \in CNM \tag{14}$$

where, the CNM is the index of non-imported goods. The amount of exportable goods supply is derived from optimization of objective function of domestic producers to allocate part of domestically produced goods to exports and domestic sales (Equation 15).

$$\frac{QE_c}{QD_c} = \left(\frac{PE_c}{PD_c}.\frac{1-\delta_c^t}{\delta_c^t}\right)^{\frac{1}{\rho_c^t-1}} c \in CE \tag{15}$$

The goods that are not exported, instead of CET function, a condition as equality between domestic products sold domestically and domestic production is applied which is shown in the equation (16).

$$QX_c = QD_c \quad c \in CNE \tag{16}$$

where, CNE is the index of non-imported goods. Equation (17) shows the income of production factor that is derived from multiplying the wages of production factor to the amount of demand for production factors various activities in addition to the income of production factors from outside world.

$$YF_f = \sum_{a \in A} W_f \cdot QF_{fa} + tr_{f,row}.EXR \tag{17}$$

where YF_f is the income of production factor f

and $tr_{f.row}$ is the transfer from production factor f to the outside world. According to equation (18), the income of institute i_{th} from production factor f is derived from transferred income to the outside world from production factor in terms of domestic currency multiplied by domestic institute share of i_{th} from income of production factor f.

$$YIF_{if}=shry_{if}.YFf \quad (18)$$

where YIF_{if} is the income of domestic institute i from production factor f, $shry_{if}$ is the share of institute i from the income obtained from production factor f. According to Equation (19), household income is obtained by sum of production factor, transfer payments of government to households, household payments transfer to households, transfer income from outside world to households and contribution in the production of public goods.

$$YH_h = \sum_{f\in F} YIF_{hf} + tr_{h,row}\cdot EXR + tr_{h,gov} + tr_{h,h'} + Vpg \quad (19)$$

where YH_h is the income of household h, $tr_{h,\,row}$ if transfer from households to the outside world, $tr_{h,\,gov}$ is transfer from households to the government, $tr_{h,\,h'}$ is transfer from household to household, and Vpg is willingness to pay of households for public goods.

According to equation (20) household consumption expenditure is derived from household expenditures in relation to other households, government (banks), the outside world and the willingness of households to pay for public goods.

$$EH_h=(1-mps_h-ty_h).YH_h-tr_{h',h}-tr_{gov,h}-tr_{row,h}.EXR-Vpg \quad (20)$$

where EH_h is the household consumption expenditure, mpsh is the income share of household h for savings after household tax, ty_h is the direct tax rate for household h, tr_{gov}, h is transfer from government to households, and $_{\text{trrow, h}}$ is transfer from outside world to the household.

Household consumption demand is obtained according to equation (21).

$$QH_{ch} = \frac{\beta_{ch}.[EH_h]}{PQ_c} \qquad c\in C, h\in H \quad (21)$$

where h is the index of household, QH_{ch} is the consumption demand of household h from good c, and B_{ch} is the share of household h from consumption of good c.

Investment demand for good c is achieved by multiplying the base year investment to equilibrium factor.

$$QINV_c = \overline{qinv}.IADJ \qquad c\in C \quad (22)$$

where $QINV_c$ is the investment demand for c, $\overline{qinv}$ is the investment demand in the base year, and IADJ is the investment equilibrium factor. Government income, in accordance with equation (23), is obtained from sum of households income tax, transfer from other parts of the world, sales tax and import tariff plus other incomes from various activities, production factors (capital production factor), households, and also the government itself without the total payments as both production and consumption subsidies.

$$YG = \sum_{h\in H} ty_h.YH_h + tr_{gov,row}.EXR + \sum_{c\in CM} tm_c.EXR.pwm_c.QM_c + \sum_{a\in A} ta_a.PA_a.QA_a + \sum_{h\in H} tr_{gov,h} + tr_{gov,gov} - \sum_{c\in C} sq_c.(PD_c.QD_c + PM_c.QM_c + vqt_c) - \sum_{a\in A} sa_a.PA_a.QA_a + \sum_{a\in A} vyg_a + \sum_{f\in F} tr_{gov,f} \quad (23)$$

where $tr_{gov,\,row}$ is transfer from government to the outside world, ta_a is indirect tax rate for a activities, PA_a is gross income of each unit of activity a (price of production activity), $tr_{gov,\,f}$ is transfer from government to factors of production, $tr_{gov,\,gov}$ is transfer from government to government and YG is the government income. According to equation (24), government consumption expenditure includes government payments to different institutions and government income supports transitional from farmers.

$$EG = \sum_{c\in C} PQ_c.qg_c + tr_{row,gov}.EXR + \sum_{h\in H} tr_{h,gov} + tr_{gov,gov} + Pgd \quad (24)$$

where qg_c is government expenditure, Pgd is public goods, and EG is government expenditure. Equation (25) shows the equilibrium condition in the market of production factors. It is necessary for the supply and demand to be equal in the factors market. In this study, the price of production factors is considered constant; according to this assumption, the equilibrium can take place in a level lower than full employment.

$$\sum_{a\in A} QF_{fa} + tr_{f,row} = QFS_f \qquad f\in F \quad (25)$$

where $tr_{f, row}$ is transfer from production factor f to the outside world, QFS_f is the supply of production factors. Adverbial equation (26) is the equality of total supply with overall demand for composite commodity including intermediate demand, household demand, governmental consumption demand and investors demand.

$$QQ_c = \sum_{ca \in A} QINT_{ca} + \sum_{h \in H} QH_{ch} + Qg_c + QINV_c \quad (26)$$

Actually, equation (27) is indicative of the equity of exports value as well as transfer income from other parts of the world to various institutions and foreign saving with total imports and transfer incomes from domestic institutions to the outside world.

$$\sum_{c \in C} pwm_c . QM_c + \sum_{z \in Z} tr_{row,z} = \sum_{c \in C} pwe_c . QE_c + \sum_{z \in Z} tr_{z,row} + FSAV . EXR \quad (27)$$

where FSAV is the foreign saving, $tr_{z, row}$ is transfer from institution and production factor z to the outside world, $tr_{row, z}$ is transfer from institution to the outside world and production factor z. According to equation (28), government budget saving is the balancing quantity of the government budget.

$$Gsav = YG - EG \quad (28)$$

where, Gsav is the budget balance of the government. On the left side of the equation (29), total household savings, government savings and foreign savings are equal to the sum of capital formation.

$$\sum_{h \in H} mps_h . YH_h + gsav + fsav . EXR = \sum_{c \in C} PQ_c . qinv_c \quad (29)$$

The consumer price index is obtained from the consumed price multiplied by the share of each good product in household expenditure.

$$cpi = \sum_{c \in C} cwts_c . PQ_c \quad (30)$$

where cpi is the consumer price index and cwtsc the is goods share in consumer price index.

Model parameters were estimated using a calibration method based on matrix data of social accounting in 2001 and with the help of GAMS software and the MCP technique.

RESULTS AND DISCUSSION

In order to study the multifunctionality of agricultural sector in the analysis of policies regarding the fact that removing the supports is one of the necessities of globalization and one of the requirements to join the WTO, the effects of production subsidies liberalization in terms of considering multifunctionality of the agricultural sector are investigated in the present study. In order to provide a better image of the effects of multifunctionality of agriculture on the elimination of subsidies on agricultural production, these effects are compared in a full range of conditions from before decrease to the total elimination of the supports in the agricultural sector on important macroeconomic variables of the agricultural sector in the three sectors of absence of the public good production, production of public goods to the value of 7.5% of GDP (sub scenario of considering multifunctionality) and the production of public goods to the value of 15% of GDP (main scenario) in terms of multifunctionality. The government receives the equivalent of households' willingness to pay for public goods in the form of indirect taxes and gives them to agricultural producers through direct payments. Producers, as well, spend the received funds from government to produce public goods. The families who are the owners of the factors of production in the economy generate income for themselves by participating in the production of public goods, too. It should be noted that the main scenario is considered to observe the multifunctionality based on consumers' willingness to pay for public goods in the developed countries. The quantity of willingness to pay in Sweden is considered about 15 percent of GDP of this country (2002).

Study of the effects of the production subsidies reduction on macroeconomic variables in the agricultural sector:

The effects of the agricultural production subsidies reduction on rural and urban households' income in the main scenario and sub- scenario are certainly more than the scenario of absence of public good production because households generate income by participating in the production of public goods. Figures 1 and 2 show the agricultural production subsidies reduction on urban households' income in three scenarios of the

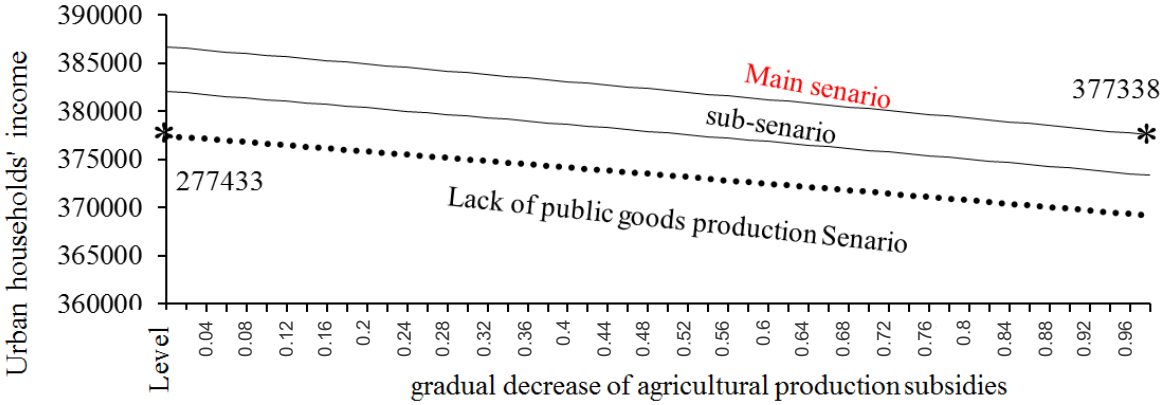

Figure 1: The effects of agricultural production subsidies reduction on urban households' income

main scenario, the sub scenario and the scenario of the absence of public good production. According to these figures, considering the multifunctionality of agriculture, households earn more welfare in both main and sub- scenarios compared to the scenario of the absence of the public goods production. So that by complete removal of subsidies for agricultural production, the income of rural and urban households reduced to 377,338 and 200, 307 billion IRR[1], respectively. However, without the elimination of production subsidies in the scenario of the absence of public goods production, the incomes of urban and rural households were 377,433 and 194,956 billion IRR, respectively.

According to these figures, considering the multifunctionality of agriculture, households gain more welfare in both main and sub- scenarios compared to the scenario of the absence of the public goods production. So that by complete removal of subsidies for agricultural production, the income of rural and urban households reduced to 377,338 and 200,307 billion IRR, respectively. However, without elimination of production subsidies in the scenario of the absence of public goods production, the incomes of urban and rural households were 377,433 and 194,956 billion IRR, respectively. Increase of agricultural production costs which happens as a result of reduced agricultural production subsidies will increase the prices of agricultural products. The price increase will be higher with considering the multifunctionality of agriculture. Price increase of agricultural products will be along with the consumers' demand decrease, well as. As a result, reaction of agricultural producers to reduction demand will be reduction of agricultural production. The production of public goods increases agricultural production compared to the absence of public good production. Figure 3 shows the effects of the removal of agricultural production subsidies on the amount of agricultural production in the main scenario, the sub-scenario and the scenario of the absence of public good.

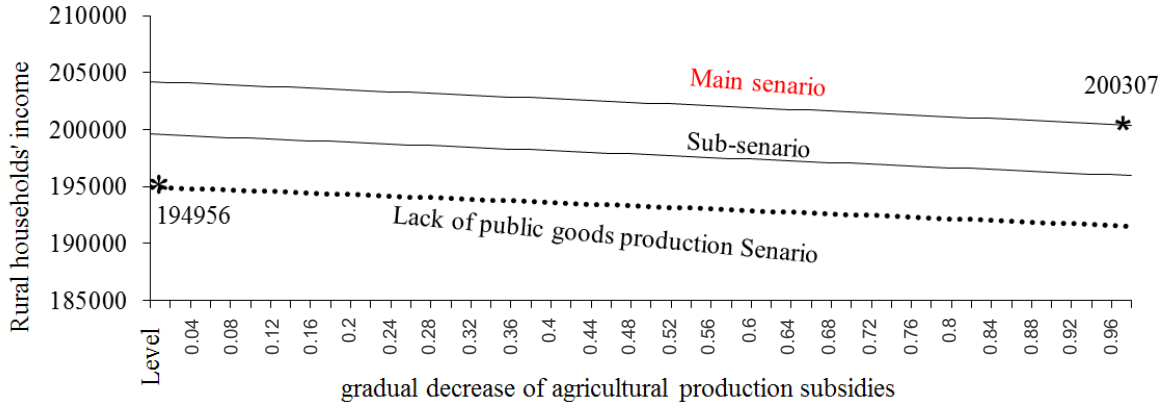

Figure 2: The effects of agricultural production subsidies reduction on rural households' income

[1] 10000 Iranian Rials (IRR)≈US $ 1

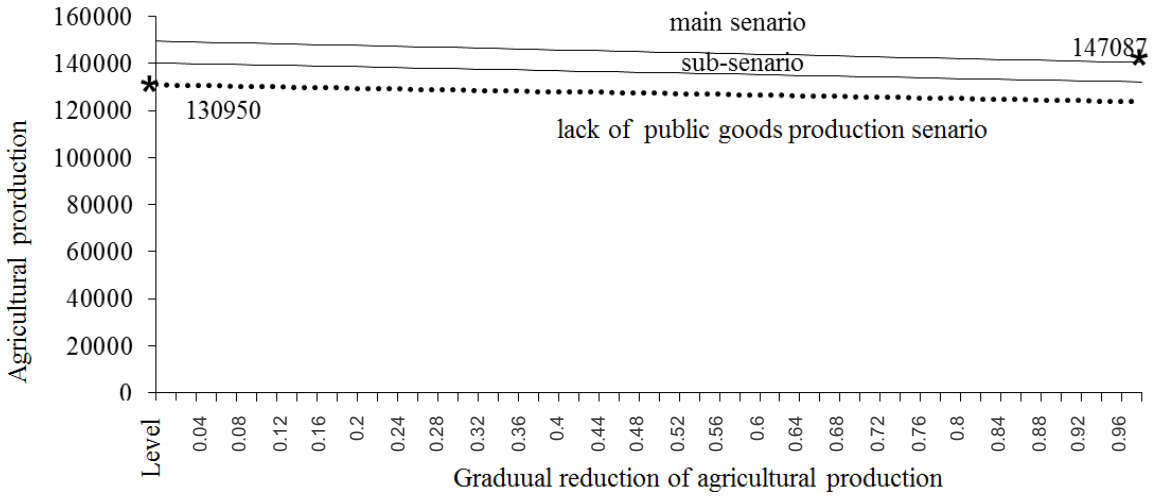

Figure 3: The effect of production subsidies reduction on agricultural production

According to this chart, with the complete elimination of agricultural subsidies, the amount of agricultural production in the main scenario will reach to 147,087 billion IRR. However, the quantity of agricultural production in the scenario of absence of public goods production and in current conditions (level) is 130,950 billion IRR.

By reducing subsidies for agricultural production, imports are decreased while by considering the multifunctionality of agriculture, they show less decrease. So as, 44 percent of the current support is needed to reach the level of 10570 billion IRR of imports in the main scenario and 24 percent is needed to reach the same level of imports in the scenario of the absence of public goods production. The simulation results on the exports of agricultural products showed that to reach the level of 6800 billion IRR levels of agricultural export in the main scenario, 46 percent of the current production subsidies is required. While in the scenario of the absence of public goods production to achieve the same level of exports, only 30% of the current support is needed. According to the results obtained, reducing export took place in the agricultural sector as a result of eliminating subsidies for agricultural production which will be transferred to increase exports in the industry and mining sector. With the gradual reduction of subsidies for agricultural production and considering the multifunctionality of agriculture, employment in the agricultural sector had more decrease compared to the scenario of the absence of public goods production. So that to reach the level of 4220 billion Rials employment in the agricultural sector in the main scenario, 64 percent of the current support and in the scenario of the absence of public goods production only 60 percent of the current support is required. If we conclude in the case of exports and employment in the agricultural sector that the decline in the value of exports and reduction of agricultural employment is not in favor of the entire economy, we should use other complementary policies in the form of direct payments to increase exports and employment in the agricultural sector.

CONCLUSION

According to the results, in the condition of considering the multifunctionality of agricultural sector, removal of agricultural production subsidies is entirely ineffective on general production. But the elimination of subsidies for agricultural production must be integrated with other supportive policies such as direct payments to farmers. While the effect of eliminating subsidies to support agricultural production on private goods market is positive (savings from non-payment of agricultural subsidies (increased government welfare) as a result of eliminating agricultural production support against reducing the welfare of producers and consumers); therefore, the hypothesis indicating the positive effects by eliminating agricultural production subsidies based on these conditions on the welfare cannot be denied.

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