VISUALIZING THE FUTURE OF IRAN'S MARKET OF AGRICULTURAL PRODUCTS WITH AN EMPHASIS ON MEMBERSHIP IN WTO

(THE CASE STUDY OF RICE)

Yrd. Doç. Dr. Ş. Mustafa ERSUNGUR
Atatürk Üniversitesi İktisadi ve İdari Bilimler Fakültesi İktisat Bölümü
ersungur@atauni.edu.tr

Doç. Dr. Abdullah TAKIM
Atatürk Üniversitesi İktisadi ve İdari Bilimler Fakültesi Uluslararası Ticaret ve Lojistik Bölümü
abdullahtakim@atauni.edu.tr

Shahryar FATHİ MOLLAEE
Department of Economics, Islamic Azad University, Malekan Branch, Malekan, Iran
fathimollaee@gmail.com

Dr. Samad KARRARI
Islamic Azad University, Faculty of Economics, Maku Branch, Maku, Iran
Skarrari2010@gmail.com

Abstract

The agriculture sector has always been considered an important element in providing the needs of human life. It has a special significance in Iran because of certain features such as varied continental conditions, fertile soil, adequate labor force and variety of plants. Membership of Iran in World Trade Organization "WTO" brings out the question "what effects will the membership of Iran in WTO have on Iran's agriculture, especially production of rice?" The World Trade Organization(WTO) is an international organization that regulates the world's trade and resolves the disagreements of the members. The members of the WTO are the countries that have signed the agreements of this organization (nearly 30 agreements); and Iran is currently a member of this international organization. In this research firstly the method of calculation of tariff equivalent rate is studied, then the rate has been calculated for all of the years of implementing the agricultural agreements; and finally using the econometric method of Ordinary Least Squares (OLS) the function of production of rice is estimated; then using this function, the actual production of rice in Iran before and after conducting these agreements have been calculated.

Keywords: Agriculture, Agricultural agreement, Tariff equivalent rate, The world trade organization, Rice

1. Introduction

International economics deals with economic relations between countries and the interdependence of these relationships is important for the economic welfare of most countries. The World Trade Organization (WTO) is an international organization that regulates the world's trade and resolves the disagreements of the members. The members of the WTO are the countries that have signed the agreements of this organization (nearly 30 agreements). The Headquarters of the WTO is in Geneva, Switzerland. The number of the members of the WTO is 150 (as of November 2006) and Vietnam is the newest member of this organization.

2. The principles of the WTO

The WTO establishes principles for the members in order to achieve specified goals; so a member not committed to these principles will suffer penalties:

1. Non-discrimination and Most Favored Nation (MFN). The MFN rule requires that a WTO member must apply the same conditions on all trade with other WTO members, i.e. a WTO member has to grant the most favorable conditions under which it allows trade in a certain product type to all other WTO members. "Grant someone a special favor and you have to do the same for all other WTO members."

2. The use of non-tariff barriers (such as rationing and import licensing) is prohibited; and the governments can support domestic industries only by imposing customs tariff.

3. After eliminating non-tariff barriers in trade, the countries should stabilize their customs tariff, and then reduce it gradually; nevertheless there is an exception in case of agricultural products for the countries that have difficulties in payments.

4. In order to help competition in developing countries, establishment of a preferential tariffs system (with the goal of granting trade privileges to some of domestic products) is allowed.

5. The countries are not allowed to take any action of a dumping nature.

6. The countries should act equally toward the domestic products and imported goods.

7. Consultation on commercial policies with the members and resolving the disagreements in trade relations by negotiation.(Esfandiari, 2005)

3. Iran and the WTO

The WTO is the only international organization that its duties are related to regulating the international trade. The main objective of WTO is to ensure a mild, free and scheduled procedure of the global trade. So the consumers and the producers will know that:

.   they have a variety of options in manufactured goods, components, raw materials and services that they want to use;

.   foreign markets will be open to them;

.   they can benefit secure services;

.   And consequently, a world with a prosperous and liable economy will emerge.

On this basis the WTO has become a place that world nations including developed, developing and undeveloped countries, regulate their free trade according to its rules and standards and criteria; and try to improve their economies.

Iran, after years of study and evaluation of the positive and negative effects of joining the WTO, finally decided to join the WTO, and was accepted as an observer in May 2005.

The Islamic Republic of Iran should join the WTO to prevent an international consensus against itself, eliminate discriminations for selling its products in global markets, use the WTO mechanisms for resolving economical disagreements, create a positive atmosphere for foreign investors, adapt the domestic rules to those of the WTO, develop

banking facilities and attract funds, increase competition in economic sectors and improve the quality of domestic products, and finally promote the economic prestige of the Islamic Republic of Iran in the world.

Before joining the WTO, Iran should prepare some preliminaries. In order to join the WTO, Iran should change the domestic rules to competitive ones for the manufacturers by the gradual elimination of customs barriers and subsidies so as to prevent economic recessions and bankruptcy of manufacturing businesses.(http://www.irantradelaw.com/?page_id=219)

3-1. The effects of membership of Iran in WTO

Joining the WTO with preservation of current conditions is binding the country's profits with those of the other countries which will not act only toward the economic and trade benefits but also will affect culture, policies and economics. From an economic point view, the industries that depend on domestic monopolized market will face bankruptcy; from a commercial point view, the import (mostly consumables and semi-capital) will be increased and Iran's trade balance will be reduced or may become negative (even with oil exports), unemployment will be raised, running cost will overtake construction costs other social and economic outcomes will emerge. However there is no other choice but to connect to other countries and participate in global decision making. Authority will be deprived gradually, unless wise and scientific measures are taken relying on country's capabilities, privileges and physical and spiritual funds.

Natural resources of Oil and Gas and related petrochemical industries, agriculture, services, tourism, the strategic position of Iran in Middle East, young technical and engineering forces with a bright future and citizens' trust in government are some of potential capabilities that require a macro scale and comprehensive attitude from authorities to be deployed and directed appropriately.(omid bakhsh،2000)

3-2. The place of developing countries in WTO

As mentioned, the main objective of the WTO is to establish a global multilateral trading system considering all the aspects such as the specific status of developing countries and undeveloped countries. So in the agreements and other legal documents regulating the activities of the WTO, there is a preferred approach toward the undeveloped and developing countries. The WTO is the evolved form of the General Agreement on Tariffs and Trade (GATT); so all of the members of GATT automatically have joined the WTO, and some other countries have requested to join the WTO afterwards, and some have been accepted. Although the public perceptions and some propaganda consider GATT and WTO a club for rich and industrial countries; the procedure of the countries of the world does not reflect such mentality at least by most of less developed countries. For example, in the list of nation committed to GATT 1947 and the WTO, the names of many undeveloped countries and even countries with Socialist governments can be spotted (Cuba joined GATT in January 1948, and joined WTO in 1995 when it was established). Some other nations that are members of GATT and WTO and are categorized as undeveloped are: Bangladesh, Cameroon, Chile, Congo, El Salvador, Gambia, Ghana, Argentina, Brazil, Colombia, Egypt, Turkey, Bahrain, Uruguay, Tanzania and other countries like UAE, Kyrgyzstan, Angola, Jordan and Georgia have joined the WTO when it was established.

Currently, 115 of the members of the WTO are from undeveloped countries; and about 30 other undeveloped countries have requested to join WTO. These countries play an active role in decision makings in the WTO; for instance organizing the ministerial conferences of WTO which was held in December 1999 in Seattle, US, was the result of months of efforts of members among which, the developing countries had a considerable share. In another instance, South Korea proposed an offer on agricultural liberalization in the meeting on May 20th 1999. One other group of developing countries leaded by India, Pakistan and Egypt has objected some of the proposals of the United States and regarded it as violation of the agenda. Hong Kong, with the goal of reducing the industrial tariffs more than it was reduced in Uruguay meetings and in 3 years after the negotiations, declared its full support for industrial tariffs in the next round of negotiations. The overall procedure of participation of developing countries in decision makings of the WTO is a positive one; and the role of these countries in operations of the WTO has become so eye catching that even directors-general of the WTO are chosen from these countries. On June 22nd 1999 the WTO took a rather interesting action; Mike Moore from New Zealand was assigned the director general for a period of 3 years who was succeeded by Supachai Panitchpakdi (previous commerce minister of Thailand).

Panitchpakdi once mentioned the growing role of developing countries in WTO and stated that his being chosen as the director general-to-be points out the significance of undeveloped and developing countries; and added that GATT was traditionally rich countries club, but that attitude has been changed basically about WTO; which was proved by nomination of him and Morocco's ambassador for the post of director general. The number of received suggestions for holding the Seattle round was about 157, half of which was from developing countries, showing their eagerness for participation in WTO operations.

From its establishment in 1947, the main attitude of GATT was to gather non industrial and undeveloped countries and the industrial and developed ones together to participate in this international treaty; and numerous modifications have been made to secure the benefits of developing countries, main core of which was assistance to developing countries in the framework of economic development plans.

Generally speaking, the globalization process contains opportunities and threats specially for developing communities. These opportunities and threats should detected and taken into consideration in the process of integration of developing countries in global economy. Globalization of these undeveloped or developing countries can provide potential grounds for growth and development of free trade for them.

Apart from this, with completion of the globalization process, capitalism in developing countries can use the supports and assistances from developed countries in order to confront the domestic crisis's that threaten capitalism (such as environmental and population crisis's).

On the other hand, many results of the globalization are among the potential and actual threats to them. Yet, the important thing in this topic is to minimize the threats and expand the opportunities in the process.(ttps://www.gov.uk/the-world-trade-organisatio)

4. Agriculture in Iran and in the world

As the statistics show, the developing countries are agricultural nations because 96.2 percent of the agriculturist population of the world live in these countries; so agriculture in developing countries is more than just an economic section; it has an importance of social aspects and living patterns. In fact, in developing countries agriculture is a lifestyle unlike the developed countries, where according to little agriculturist population, agriculture is considered an economic section which does not have the importance of a lifestyle on its own. On the other hand, a comparison of agricultural exports of countries shows that the agricultural export has a larger share of the total export in countries that are not developed in industries; which implies an emphasis on export of the raw material and primary products. However, there is the possibility of the secondary product having greater share of the total export by valuing industrial development.

On this ground, the value added of agriculture and its share in the GDP is considerable. The value added of agriculture and its share in GDP in developed countries is reported to be 2%; while this number is 16.1% in developing countries.

Iran is a unique country that can have a fair share of the global markets and provide various international customers with its productions. Iran is located in a temperate zone and has adequate water resources and suitable climate, so it is one of the best agricultural areas in the Middle East and has a special global place in export of agricultural products.(resatat,2006)

5. Rice

In recent decades especially after the Fifties, consumption of rice has risen considerably and as the second foodstuff after wheat, it is now referred as one of the staples. Rice is one of the main food products of Iranian people, but expansion of cultivation areas of has been limited due to certain climatic conditions needed for its cultivation.(ying and colleagues,1998)

5-1. Cultivation Area of unhusked rice in Iran

The area of unhusked rice in crop year of 2008-2009 is estimated to be about 536 thousand hectares; of which Mazandaran Province has got 41.35% and Gilan Province has got 33.91%. These two provinces have got 75.26% of the total cultivated area of various kinds of unhusked rice in the country. Golestan, Khuzestan and Fars provinces have got next ranks by 9.45%, 4.42% and 4.2% respectively. These 5 provinces have got 93.34% of the cultivated area and the remaining 6.66% is the share of other provinces.(isfahani,1998)

5-2. Production amount

The amount of production of various types of rice in Iran is estimated to be about 2.25 million tons; of which 46.09% have been produced in Mazandaran and 29.35% in Gilan. These coastal provinces have produced 75.44% of the unhusked rice of the country. Golestan, Fars and Khuzestan rank 3rd to 5th with 9.2%, 4.66% and 3.86% of the production. These 5 provinces produce 93.15% of the total unhusked rice; and the least amount of production is that of Kordestan; which is 9 tons.(Amam and colleagues,1994)

5-3. Performance in hectare

The average performance of various types of unhusked rice is 4205.6 kilograms in each hectare. Provinces of West Azerbaijan and Kermanshah have had the most and the least efficiency with 5254.55 and 1390.05 kilograms in each hectare respectively.

5-4. Estimation of rice production function

In this research, firstly we try to determine how to calculate the tariff equivalent rate for rice, then this rate is calculated for all years of implementing the agricultural agreement and the data is inscribed in separate tables. In this section the variables used in production function are introduced and finally the function id estimated using the Ordinary Least Squares (OLS).

5-5. Research period

The research period is the years from 1999 to 2009.

The variables in function estimation

5-5-1. Wholesale price of grains:

Wholesale price of grains is considered confidential by the Central Bank; so with great effort, the wholesale price of the goods in 1999 was extracted, and based on that, the wholesale price in other years was estimated using wholesale price index (see appendix).

5-5-2. Import prices:

for each product there is a report in which the import prices are used to calculate equivalent tariff rate.

5-5-3. Exchange rate:

the free market and official rates of exchange in research period in fifth and sixth columns of the table respectively.

5-5-4. Import prices in terms of Rial:

since the import price in third column is in terms of US Dollar, it can be expressed in terms of Iranian Rial regarding the exchange rate. So the second column if multiplied by the exchange rate gives the import price in terms of Rial. There are two rates for exchange, so there will be two rates for import price.

5-5-5. Price gap:

the difference of wholesale price and import price

5-5-6. Tariff equivalent:

Tariff equivalent in terms of both official and free market exchange

$$TEI = \frac{Pdi - pwi}{pwi} \times 100$$

TEI: Tariff equivalent per year

Pdi: domestic wholesale price per year

pwi: import price per year

In calculation of the tariff equivalent two factors, exchange rates and domestic prices, play a determining role in the tariff equivalent to be positive or negative.

Take a look at columns 10 and 11 and note that the tariff equivalent in free exchange rate is negative in most of the years; which means the domestic price of the product is less than the import price (as the agricultural agreements emphasize that they should be). This fact implies some kind of hidden tax on the product. However, the tariff equivalent in official rate is positive most of the time, showing that the domestic price of the product is more than the import price; which implies supportive policies for that product.

In case of rice, the government has a slight role in market, so the guaranteed price and the wholesale (market) price of rice are different; and the guaranteed price is much less than the market price, and because the guaranteed price is not the base of decision making for the producers, it is not used in estimation.

6. The function Rice

After estimating the production function we seek to examine these hypotheses:

H_0: Pattern of rice production will not increase by implementing the regulations of market access;

H_1: Pattern of rice production will increase by implementing the regulations of market access.

$$Ln\,(sr) = 651\,/\,81 + 0\,/\,45\,Lnpr\,(-1) + 0\,/\,68\,\ln\,(sr\,(-1)) \qquad (III)$$

$$T \qquad\qquad 9\,/\,40 \qquad\qquad 2\,/\,85 \qquad\qquad 4\,/\,26$$

$$R^2 = 0\,/\,63 \qquad\qquad DW = 2\,/\,03 \qquad\qquad F = 23\,/\,91 \qquad\qquad n = 29$$

Rice production in Iran is function of wholesale price index and actual production in previous period according to equation II. The t-statistic and Y-intercept and price index variable are meaningful with a confidence level of 5%.

The calculated "F" is greater than the "F" of the table, which indicates the validation of the whole regression.

The R^2 statistic in equation is 0.63 which shows the strength of justification of the regression.

The DW (Durbin-Watson) statistic of 2.03 denies any autocorrelation in the model.

6-1. Rice production before implementing market access rules

6-1-1. the actual production of rice in 2009: 2190 thousand tons

The important point about rice is that the quality of imported rice is not the same as domestic production, so there will be a difference in their prices. The price index used in

estimated function II is the price index of rice in general term; therefore it is necessary to estimate the relation of imported rice price and rice price in general term, so we can use the estimated price index in other equations.

$$Ln(\text{Pr}) = -229/93 - 56/33\,LnprI + 0/17\ln Sr^{(-1)} - 0/003\ln mr.(-1) \qquad (III)$$

$$T \qquad 2/511 \qquad 2/28 \qquad 5/06 \qquad 2/07$$

$$F = 9/74 \qquad R = 0/62 \qquad n = 29$$

According to equation III the wholesale price index is a function of the wholesale price of imported rice, the production amount in previous period Sr(-1) and import in previous period Mr(-1).

In order to estimate the wholesale price index of rice in general term, after the implementing market access rules we will use the actual production and import of rice in the last statistical year (2009).

$$Ln(sr) = 525/02 + 0/44\,Lnpr + 0/61\ln Sr(-1) + 0/25\ln mr.(-1) \qquad (III)$$

$$T \qquad 2 \qquad 0/68 \qquad 4/02 \qquad 2$$

$$R^2 = 0/67 \qquad DM = 2/05 \qquad F = 18/35 \qquad n = 29$$

6-1-2. production of rice in 2001 according to equation IV

$$Lnsr_{88} = -525/02 + 0/44\,Lnpr(-1) + 0/61\ln Sr(-1) + 0/25\ln mr.(-1)$$

$$sr87 = 2190 \qquad mr87 = 1201/36 \qquad Rr87 = 330$$

$$Lnsr = -525/02 + 0/44\,Ln(330) + 0/61\ln(2190) + 0/25\ln.(1201/36) = 534/02$$

$$sr = Ant\ln(534/02) =$$

Sr=8.3541

6-2. Rice production after implementing market access rules

6-2-1. Rice production based on free exchange rates(the new price index is inserted)

$$Lnsr_{88} = -525/02 + 0/44\,Lnpr(-1) + 0/61\ln Sr(-1) + 0/25\ln mr.(-1)$$

$$sr(-1) = 2190 \qquad mr87 = 1201/36 \qquad pr87 = 552$$

$$Lnsr_{88} = -525/02 + 0/44\,Ln(552) + 0/6\ln(2190) + 0/25(\ln(1201/36) = 533/20$$

$$\ln sr_{88} = 533/200$$

$$sr = Ant\ln(533/20) =$$

Sr= 3.6797

6-2-2. Rice production based on official exchange rates

$$Lnsr_{88} = -525/02 + 0/44\, pr(-1) + 0/61\ln Sr(-1) + 0/25\ln mr.(-1)$$

$$sr(-1) = 2190 \qquad mk(-1) = 1201/36 \qquad pr87 = 560$$

$$Lnsr_{88} = 525/02 + 0/44 Ln(560) + 0/61\ln(2190) + 0/25 mr\ln(1201/36)$$

$$sr = Ant\ln(534/26) =$$

Sr= 1.0621

7. Conclusion

7-1. Detailed results of the estimation with OLS method

The table of estimated parameters with OLS method shows that the most important statistic of this table is t-statistic. If you seek to test meaningfulness of a specific coefficient the t-statistic can be of great help. If the absolute value of t-statistic is greater than the "t" of the table (which is usually supposed to be 2) then that coefficient is meaningful and if it is smaller, the coefficient is not meaningful and cannot affect the dependent variable. So regarding to table 2 and t-statistic of each independent variable, the Y-intercept coefficient and the coefficients of "mr" and "sr" variables are meaningful but the coefficients of "pr" is not meaningful and cannot affect the dependent variables. Statistical quantities such as coefficient of determination (R^2) and SD wastes and other statistics are calculated in this table. The most important statistic of this table is the Durbin-Watson (DW) statistic which is used to determine the existence of autocorrelation of disturbing sentences. Regarding to DW in this table (2.05), it can be deduced that the disturbing sentences have nearly no autocorrelation.

The other important statistic in this table is the R^2 statistic which is the model's coefficient of determination. This statistic expresses that what percentage of the variability of the dependent variables can be explained by independent variables.

The R^2 in this table is 0.67.

7-2. The econometric model after estimation of coefficients and conclusion

The main study model after estimating coefficients and doing the tests will be:

$$Ln\,(sw) = 7834\ /5 + 15\ /87\ Lnpw\ (-1) + (MA\ = 0\ /72\ )$$

$$T \qquad 9\ /\ 40 \qquad 2\ /\ 85 \qquad 4\ /\ 26$$

$$R^2\ =\ 0\ /\ 62 \qquad DW\ =\ 1\ /\ 52 \qquad F\ =\ 21\ /\ 34 \qquad n\ =\ 29$$

It is clear that in this equation all the coefficients are positive. The results of this research indicate that implementing the regulations of market access, Iran's rice production will change from 835.41 thousand tons to 6779.7 thousand tons with free exchange rates; and to 1062.1 thousand tons with the official exchange rates. Therefore, the H_0 hypothesis can be proved.

Appendix: Calculation of the tariff equivalent of non-tariff barriers imposed on imports of Rice according to import prices in Iran

Year	Whole Sale Price Index	Import Price (Dollar)	Exchange Rate	Import Prices (Rice)	The Price Gap	The Wholesale Price Index Released By The Rate Of Exchange	The Whole Sale Price Indices Based On The Official Exchange Rate	Import Prices On The Release Rate Of Exchange	Import Prices Based On The Official Exchange Rate
1999	5.176	30.0	8634	1755	33.2560	43.520	94.955-	96.1083	34.37-
2000	194	0.27	8131	1755	2221.71	479.59	458.26-	1283.9	20.63-
2001	210.3	0.27	7925	1755	2155.57	477.35	243.94-	1434.2	11.32-
2002	237	0.28	7991	7958	2227.62	2218.42	73.29-	64.09-	3.29-
2003	259.2	0.29	8323	8282	2399.79	2387.97	43.67-	31.84-	1.82-
2004	295.1	0.31	8747	8719	2681.35	2672.77	1.11	9.69	0.04
2005	328.1	0.31	9042	9023	2813.17	2807.26	169.25	175.17	6.02
2006	352.7	0.33	9226	9195	305758	3047.30	148.47	158.74	4.86
2007	400.4	0.40	9357	9285	3762.75	3733.80	123.11-	94.16-	3.27-
2008	410	0.57	9667	9574	5529.53	5476.33	1802.63-	1749.43	32.60-
2009	420.3	0.20	9677	9577	1920.27	1900.43	1900.25	1920.10	98.96

Eviews software for estimating the model output oF [III]

Dependent Variable: LNPR			
119.2646	S.D. dependent var	0.474916	Adjusted R-squared
11.87993	Akaike info criterion	86.42230	S.E. of regression
12.06676	Schwarz criterion	194189.1	Sum squared resid
9.743100	F-statistic	-174.1990	Log likelihood
0.000175	Prob(F-statistic)	0.469653	Durbin-Watson stat

The Data Model (III)

Obs	PR	PRI	SR	MR
1979	3.000000	0.300000	1271.000	450.0000
1980	4.000000	0.270000	1400.000	562.0000
1981	4.900000	0.270000	1624.000	943.0000
1982	5.700000	0.280000	1605.000	673.0000
1983	6.400000	0.290000	1215.000	1018.000
1984	7.200000	0.310000	1474.000	956.0000
1985	7.900000	0.310000	1776.000	723.0000
1986	10.60000	0.330000	1784.000	455.0000
1987	12.00000	0.400000	1803.000	611.0000
1988	13.70000	0.570000	1419.000	568.0000
1989	16.60000	0.200000	1854.000	1856.000
1990	17.70000	0.300000	1981.000	1240.000
1991	22.20000	0.270000	2357.000	965.0000
1992	27.80000	0.270000	2364.000	1047.000
1993	32.80000	0.280000	2281.000	1376.000
1994	44.90000	0.290000	2259.000	693.0000
1995	74.60000	0.310000	2301.000	1444.000
1996	86.70000	0.310000	2685.000	1881.000
1997	100.0000	0.330000	2350.000	1705.000
1998	126.4000	0.400000	2771.000	878.0000
1999	155.4000	0.570000	2348.000	1319.000
2000	177.0000	0.200000	1971.000	1389.970
2001	191.8000	0.300000	1990.000	1471.500
2002	217.4000	0.270000	2888.000	898.7700
2003	244.7000	0.270000	2931.000	784.9500
2004	275.8000	0.280000	2542.000	875.0000
2005	304.1000	0.290000	2737.000	908.7100
2006	342.2000	0.310000	2612.000	1188.620
2007	398.3000	0.310000	2664.200	1201.360
2008	NA	0.330000	2184.000	1201.360
2009	NA	0.400000	2190.000	1210.000

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