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Study the Effect of Meat Market Liberalization on Rural Welfare in Iran

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ABSTRACT

This study aims to study the effect of elimination of government intervention and liberalization in meat market in rural area in Iran on consumer welfare with time series data for 1981-2007. An alternative partial equilibrium model was developed to examine the welfare effect of meat trade liberalization. Result show that on producer side, government budget (subsidy on production), foreign exchange and producer welfare are increase, on consumer side, government budget (subsidy expenditure) and foreign exchange are decrease; also the effect of trade liberalization on rural consumer welfare is positive and increase under open access(without considering consumer in urban area).

Keywords: Welfare; Trade liberalization; Partial equilibrium; Meat; Rural area; Iran.

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INTRODUCTION

In order to achieve and maintain national self-sufficiency in basic agriculture products, the post-revolutionary government of Iran in the 1980s adopted a variety of programs such as price support and input subsidies, as well as some food programs and border controls. Since 1990, within a national strategy of economic liberalization and the development of a more competitive and market-oriented farming sector, policy has been redirected toward abolishing subsidies. However, there are still markets-such as those in wheat, cotton, meat and rice in which government intervenes, apparently to protect both producers and consumers. Moreover, the government is still the largest economic agent in the country, controlling directly or indirectly nearly three-quarters of all economic activities, including international trade (Bakhshoodeh & Thompson, 2006).

The Iranian government intervenes in the meat market by controlling the import to support consumers and prevent the increasing of price. According to available information, the consumer price of meat is higher than producer’s price and the world price (evaluated with the exchange rate in the black market) is higher than domestic price at 1981 to2000;but at the rest of period(2001- 2007) consumer’s price is higher than world price.

After revolution in 1979, the government had total control over the meat market. Self-sufficiency was the goal and government intervention was justified on the basic of economic factors such as foreign exchange saving, increasing in production, and political reasons such as heavy dependence on imports which could create problems at home in case of external shocks such as a large increase in prices, etc.

On the consumption side, government intervention started in the 1980s with a consumption subsidy and quota system to avoid the effects of increases in world prices. It means that temporary to reduce domestic price inflation and maintain nutritional status of low-income groups during the war (1980-1988). This policy lasted until 2000, expanding consumption faster than production, and preventing Iran from reaching self-sufficiency. This conflict between self-sufficiency and subsidizing started to change during 1990s, due to escalating budget cost caused by these policies, which forced the government to cut expenditures by gradually reducing the consumer subsidy and quotation.

Such policy reforms create both costs and benefits to different segment of society and certainly producers’ and consumers’ welfare would be affected by change in production, consumption, trade flows and prices (Monterio da silva & Grennes, 1999).

The development of an analytical framework for meat trade policy analysis in the presence of complex is important. Furthermore, the recently introduced general equilibrium model for analyzing trade liberalization is developed (Nielsen, 2009; Hannesson, 2000). The development of an analytical framework for trade liberalization in products originated from producers with regulated open access and regulated restricted access is important, since such management exists in several and probably most worldwide producers. The partial equilibrium approach of the present paper links together basic results from trade theory with long runs comparative static of both producers and consumers economics (Nielsen, 2009).

We aim to develop a framework for meat trade policy analysis under trade liberalization, and by considering the theoretical basis for empirical welfare analysis of meat trade. A partial equilibrium approach is developed and circumstances under which trade liberalization cause welfare gains and losses are identified theoretically. Not only is trade liberalization modeled as removal of a tariff, but also applies to analysis of reductions in other trade measures that open up or increase trade between countries (Nielsen, 2009).

Four plans are under consideration by WTO in order to liberalize global agricultural trade. These plans were submitted to the WTO ministerial meeting in Hong Kong, in 2005 but the members refuse to accept them. All the formulas include a reduction in border tariff, domestic farm support and export subsidy (Chang, 2007).

The purpose of this paper is to evaluate the possible consumers’ welfare affected by meat trade liberalization in rural area in Iran. In addition, it was assumed that society of rural area

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can gain from abolition of the government trade control. Such an assessment should be useful for policymakers in Iran who intend to move toward a market oriented agricultural sector.

Our paper extends the analysis through 2007, provides econometrics estimation of supply and demand parameters, and uses an alternative method for calculating the real exchange rate. The second section the methods and data in the analysis are presented. The results are discussed in the third section, and some conclusions are drawn in the last section.

MATERIALS AND METHODS

This section describes the partial equilibrium analysis approach in agricultural trade liberalization as well as its constraints. Based on the partial equilibrium model outline in a close economy, the welfare effects of international trade liberalization in a meat market can be analyzed. Standard partial equilibrium and comparative static analysis is used Marshallian concept of economics surplus (Currie *et al*., 1971). The concepts of economic surplus are derived from Fig.2. In this study, the welfare effects of directing meat toward a market-oriented system are evaluated by applying a partial equilibrium analysis to the 1981-2007 data.

The synthetic part of the model consists of two equations for each product: (i) supply and (ii) demand.Net trade clears the disequilibrium between domestic supplies and demands (Peters, 2005). As The supply function is:

$$\ln Q_t^s = \alpha_1 lnP_{it} + \alpha_2 P_{it-1} + \sum \alpha_3 \, lnP_{jt} + \alpha_4 lnQ_{t-1}^s + \alpha_5 lnZ_\alpha + e_t$$

Where,Q_t^s is the production of product i,P_i is the corresponding price and P_j the prices of other products (substitutes and complements), and $Z_\alpha$are other deterministic variables (Stoforos, 2003). Own price, cross price and income are the main explanatory variables in demand equation. The general form of the demand equations is follows:

$$\ln Q_t^d = \beta_0 + \beta_1 lnP_{it} + \beta_2 lnP_{it-1} + \sum \beta_3 \, lnP_{jt} + \sum \beta_4 \ln P_{jt-1} + \beta_3 lnI_{it-1} + e_t$$

Where,Q_t^d is the demand of product i, P_i is the own price and P_j the prices of other products (substitutes and complements),I income (Stoforos, 2003).

$$\Delta M_i = Q_t^d - Q_t^s + \Delta X_i$$

$$\sum_{n=1}^{N} (\Delta X_i - \Delta M_i) = 0$$

To compute the total welfare change, in the general case, it is formally necessary to calculate the integral under supply curve (producer surplus change or change in production welfare) and demand curve (consumer surplus change or change in consumption welfare) and the change in government budget(Lagares Tavora, 2008).

Demand is from demanders, which include live in rural areas while supply is constituted by all producers.

$$\Delta CS = \int_{P_c}^{P_w} Q_i^d dp \text{ Or } \Delta CS = \int_{P_w}^{P_c} Q_i^d dp \quad \Delta PS = \int_{P_p}^{P_w} Q_i^s dp$$

Where:
ΔCS: Consumer surplus change
ΔPS: Producer surplus change

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Q_i^d: Demand in zone i
Q_i^s: Supply in zone i
P_p: Producer prices
P_c: Consumer prices
P_w: World prices

A border price represents the cost to the economy of producing a good and enables the analyst to determine if the country is an efficient producer of that commodity. According to the logic of the border paradigm, it is a waste of country's resources to produce a good for which it has little or no cost advantage (Tsakok, 1990). Algebraically, the border price is defined as $P_w = eP$ where e represents the exchange rate. The exchange rate reflects the opportunity cost of a unit of foreign currency to the domestic economy. The exchange rate is important especially where the official exchange rate is overvalued. The exchange rate employed to calculate the border price, should reflect the real economic cost of the domestic currency (Krueger *et al*., 1988).

As indicate above, we can calculate producer and consumer welfare, change in government budget by applying partial equilibrium analysis, also, Monterio da silva and Grennes (1999) indicate that social cost, foreign exchange, domestic support expenditure(subsidy expenditure to support domestic price)on both side of the market, can be calculate.

The following constant elasticity supply and demand functions of meat were estimated in this study:

$$\ln Q_t^s = \alpha_0 + \alpha_1 lnP_{m-1} + \alpha_2 lnP_{ch-1} + \alpha_3 lnQ_{t-1}^s + \alpha_4 lnIm_{t-1} + \alpha_5 lnIm_{t-2} + \alpha_6 lnSt_{t-1} + e_t$$

Domestic production was expressed as a function, which of producers' price for meat, producers' price of chicken as substitute commodities, lagged production, import and stock of meat are the variables in this function.

$$\ln Q_t^d = \beta_0 + \beta_1 lnP_{cm} + \beta_2 lnP_{cm-1} + \beta_3 lnP_{cch} + \beta_4 d\ln P_t + \beta_5 lnI_t + \beta_6 Q_{t-1}^d + \beta_7 lnQ_t^s + \beta_8 lnIm_t + e_t$$

Consumption of rural areas was modeled as a function of consumers' price in this area, the chicken price as substitute commodity, rural income, population growth of rural area, production (because people in rural area have consumption of their own production) and import of meat variables. A lagged consumption and production variable was also used in the demand and supply equation to achieve any permanent change which could have occurred at the meat market.

The welfare effects of the meat trade regime can now analyzed. Without state trading and at the black market exchange rate, the market would equilibrate at the world priceP_w, with domestic production atQ'_s, consumptionQ'_d and imports of$Q'_m = Q'_d - Q'_s$. With the regime, the domestic market price is higher thanP_s, with domestic production atQ_s, consumptionQ_d, and state imports of $Q_m = Q_d - Q_s$.

Thus, trade regime caused achieve producers' gain, with a value given by the area P_wADP_s.

On the demand side, trade regime in period 1981-2000, that consumer price was lower than world price P_w, consumers as a group lose economic welfare equivalent to area P_wBH. However, in the period 2001-2007, that domestic price was higher than world price, consumers acceded gain equal to area P_wCH.

The area ABQ'_sQ_srepresented the amount that the Iranian government gains by decrease of import (because of increased in production) on producer side.

On the demand side in period 1981-2000, Iranian government achieved benefit of trade regime, equal to area BFC$Q_dQ'_d$. In contrast, in period 2001-2007, governments lose (area

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FC$Q_d Q'_d$) because of decreased consumer price of trade regime (without considering consumer in urban area).

Therefore, revenue of tariff on consumption side in period 2001-2007 equal to area BFDG.

So, they may be summarized as follow:

As figure 1 show the producer price of meat below the world price and consumer price, although, consumer price until 2000 upper than producer price and below the world price, after this time, consumer price increase than world price. So, evaluate these production and consumption policies, the following measures can be derived from Fig 2 and 3.

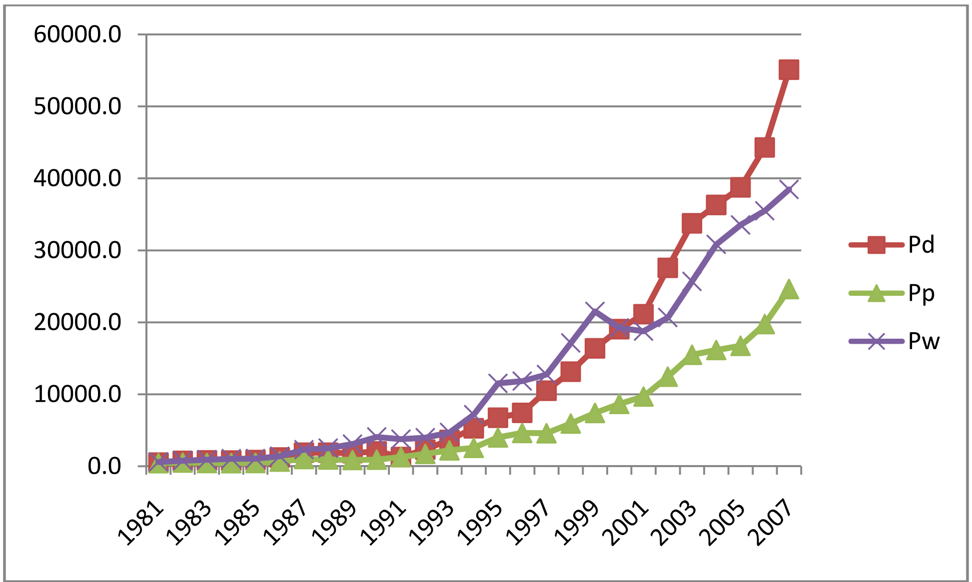

Fig.1:Price of meat, Iran 1981-2007

Source:P_d and P_p of statistics center and Agricultural Ministry of Iran, P_w evaluated with the exchange rate in the black market

In period 1981-2000 (Figure 2), government intervention in the meat market in rural area of Iran to support consumer and producer, so, set consumer and producer price lower than world price, in this condition, the functional representation of the conducted welfare analysis is:

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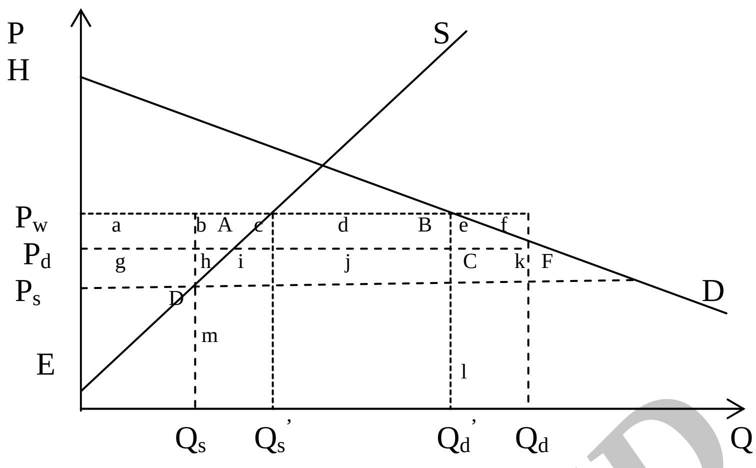

Fig.2:The welfare effects of meat liberalization in rural area in Iran, 1981-2000

Producer welfare (P_wADP_s) $=\int_{P_s}^{P_w} f(P_s, P_{ch}, Q_{t-1}, Im_t, St_t)\mathrm{d}P_s = \frac{Q_s}{1+\varepsilon}\left[\left(\frac{P_w}{P_c}\right)^{\varepsilon} P_w - P_d\right]$

Consumer welfare

$(-P_wBH) = \int_{P_d}^{P_w} f(P_d, P_{ch}, Inc_t, P_t, Pr_t, Im_t, Q_{d-1})\mathrm{d}P_d = -\frac{Q_d}{1+\epsilon}\left[\left(\frac{P_w}{P_c}\right)^{\epsilon} P_w - P_d\right]$

Social cost effect on production$=(P_w - P_p)Q_s' - \frac{Q_s}{1+\varepsilon}\left[\left(\frac{P_w}{P_c}\right)^{\varepsilon} P_w - P_d\right]$

Social cost effect on consumption$= -(P_w - P_c)Q_d - -\frac{Q_d}{1+\epsilon}\left[\left(\frac{P_w}{P_c}\right)^{\epsilon} P_w - P_d\right]$

Foreign exchange effect on production$=P_w(Q_s' - Q_s)$, and on consumption$=P_w(Q_d - Q_d')$

Change in quantity produced$=Q_s' - Q_s$, and in quantity consumed$=Q_d - Q_d'$

Net trade after market liberalization$=Q_d' - Q_s'$

In period 2001-2007 (Figure 3), government support (subsidy expenditure) of consumer meat market was abolished, so, set consumer price higher than world price and however, because of support in producer side by government, likewise before, set producer price lower than world price, in this condition, the functional representation of the conducted welfare analysis is:

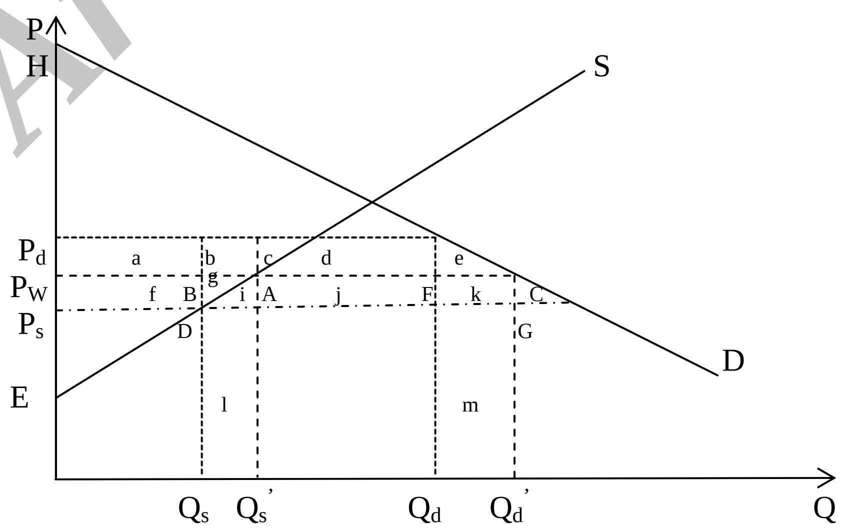

Fig.3: The welfare effects of meat liberalization in rural area in Iran, 2001-2007

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Producer welfare (P_wADP_s) =$\int_{P_s}^{P_w} f(P_s, P_{sch}, Q_{t-1}, Im_t, St_t)\mathrm{d}P_s$=$\frac{Q_s}{1+\varepsilon}[\left(\frac{P_w}{P_c}\right)^{\varepsilon} P_w - P_d]$

Consumer welfare

$(P_wCH) = \int_{P_w}^{P_d} f(P_d, P_{dch}, Inc_t, P_t, Pr_t, Im_t, Q_{d-1})\mathrm{d}P_d = \frac{Q'_d}{1+\epsilon}[\left(\frac{P_d}{P_w}\right)^{\epsilon} P_w - P_d]$

Social cost effect on production=$(P_w - P_p)Q'_s$-$\frac{Q_s}{1+\varepsilon}[\left(\frac{P_w}{P_c}\right)^{\varepsilon} P_w - P_d]$

Social cost effect on consumption=$(P_c - P_w)Q'_d$-$\frac{Q'_d}{1+\epsilon}[\left(\frac{P_d}{P_w}\right)^{\epsilon} P_w - P_d]$

Foreign exchange effect on production=$P_w(Q'_s - Q_s)$, and on consumption=$P_w(Q'_d - Q_d)$

Change in quantity produced=$Q'_s - Q_s$, and in quantity consumed=$Q'_d - Q_d$

Net trade after market liberalization=$Q'_d - Q'_s$

Revenue effect on tariff= $(P_w - P_c)(Q_d - Q_s)$

The data used in this study were gathered from Statistic Center of Iran, (2009), Agricultural Ministry of Iran, (2009) and Central Bank of Iran, (2009). These include: consumption and consumer price, income and population of rural areas; production, domestic supply, import and producer price; GNP (Gross National Production).

The world prices of meat are calculated based on the dollar rate in black market. The time-series of exchange rates of dollar against Rials (the Iranian Local Currency in the black market) were obtained from the central bank of Iran (CBI).

RESULTS AND DISSCUSSION

The Augmented Dickey-Fuller (ADF) command in E-views 6.0 was applied to the data to test the stationary of the time series in this study. All variables are not stationary in same levels (Table1).

Table 1:Unit root test statistics for meat market model variables, Iran, 1981-2007

Variable	ADF test	Variable	ADF test
Q_t^d	-4.606059**	Q_t^m	-3.810541*
P_d	-3.050316	P_s	-4.587798**
P_{dch}	-2.443528	P_{sch}	-2.109716
I_t	-4.326092**	St_t	-4.098208**
P_t	-2.765360	Q_t^s	-1.961451

The null hypothesis has a unit root at 1% (**) and 5% (*).
Source: Calculated by the author

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As Engle- Granger (1987) and Sargan and Bhargava (1983)indicate, we can be use variables that they are not in the same level of stationary, if the residuals are stationary and the variables have long run relationship(Noferesti, 1995). So, we analysis Engel-granger and co-integration regression Durbin-Watson tests on the residuals of the models that regress, results gave in Table 2. As results show residuals are stationary so, we can use them just as they are.

Table 2: Engle-Granger and CRDW test

Function	Engle-Granger	CRDW
Supply	-6.237819**	1.6358**
Demand	-5.099018**	2.339**

The null hypothesis has a unit root at 1% (**) and 5% (*).
Source: Calculated by the author

All coefficients presented, have the expected signs. Autocorrelation was detected in two of the equations estimated. As Gujarati (1995) indicates equations with lagged-dependent variable, autocorrelation was tested using the Durbin-h statistic. So, results of test shows no problems were detected (Table 3,4). In the supply equations, the coefficient for supply elasticity is significant when lagged price of meat are used. The coefficient of lagged production and producer price of chicken are positive and significant. The coefficient of lagged

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import is positive as expected and significant. Also coefficient of lagged meat stock is negative, however not expressive.

The demand equation shows that the coefficient for meat price (demand elasticity) is significant and negative. Also, the coefficients of lagged price of meat and people growth are significant and positive. The coefficient of chicken price and income are positive but not significant. As mentioned before, people in rural area have consumption of their own production, so, the coefficient of this variable is positive but not significant. The coefficient of import is positive but not expressive.

In order to get elasticity's of demand and supply for meat in Iran, during the period of analysis, different specifications for an aggregate domestic supply and a derived demand were estimated. Knowing that the relationship between quantities of demand, supply and the respective prices are bidirectional and simultaneous, but Hausman (1976)test showed that the system is not simultaneous(Seddighi *et al.*, 2000). So, each equation estimates separately in non-linear form. The equations were estimated in logarithm form. Results obtained are presented in Table 3, 4.

Table 3: Estimated coefficient of meat demand function, rural area of Iran, 1981-2007

Regressor	Coefficient	Standard error	t-Ratio
P_{cm}	-0.66708	0.15441	-4.3202
P_{cm-1}	0.29983	0.40793E-01	7.3502
P_{cch}	0.12408	0.23349	0.53142
I_t	0.95011E-01	0.68714E-01	1.3827
dP_t	1.7358	0.36991	4.6924
Q_{t-1}^d	0.46357	0.16695	2.7767
Q_t^s	0.43884	0.29358	1.4948
Im_t^m	0.10214E-01	0.78874E-01	0.12949
Constant	1.4721	2.1841	0.67401
Durbin-Watson	2.2339	Durbin H Statistic	-1.2216

Source: Calculated by the author

Table 4: Estimated coefficient of meat supply function, rural area of Iran, 1981-2007

Regressor	Coefficient	Standard error	t-Ratio
P_{sm-1}	0.26455E-01	0.15527E-01	1.7038
P_{sch-1}	0.44931E-01	0.19001E-01	2.3646
Q_{t-1}^s	0.53017	0.10269	5.1629
Q_{t-1}^m	0.16213E-01	0.33378E-02	4.8574
Q_{t-2}^m	-0. 13761E-02	0.74558E-02	-0.18457
St_{m-1}	-0.33756E-06	0.23623E-06	-1.4289
Constant	2.5300	0.53983	4.6867
Durbin-Watson	1.6358	Durbin H Statistic	1.1188

Source: Calculated by the author

The price elasticity of demand and supply to be used in calculating the welfare effects are -0.66708 for demand and 0.026455 for supply, coefficients imply that meat is an inelastic product on demand and supply side of the domestic market; however, producers are expected to respond to any change in the meat price more than consumers do. The small elasticity of supply obtained, indicated that, any policy on production and consequently on welfare has small effect. The greater the elasticity of demand has high effects of policies on consumption and so on consumer's welfare.

Based on these estimated coefficients, various aspects of meat market liberalization in rural area of Iran are now discussed. The annual estimated quantities of supply and demand (Q_s and Q_d) at current market prices and those estimated after abolition of government intervention (Q_s'andQ_d') are shown in Figure2 and 3.

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Applying the algebra in previous section, the estimated changes in supply quantities arising in period 1981-2007, but demand quantities in period 1981-2000 decreased and increased in time 2001-2007 (because of decline of domestic price to world price)from meat market liberalization in rural area of Iran. So, prices were used to estimate the welfare effects on three periods for consumer: before accepted liberalization law (1981-1988), period that consumer prices is lower than world price (1989-2000) and period that consumer prices of meat are higher than world price (2001-2007), on producer side, welfare effects estimated in period (1981-2007), that producer prices are lower than world price. Tables5, 6 and 7 Shows the effects of Iranian meat policy on consumers in rural area and producer welfare, social cost, subsidy expenditure and foreign exchange saving.

Table 5 shows the Iranian meat policy on producer welfare, subsidy expenditure, social costs and foreign exchange. Producer were subsidized from 1989-2007. The gains in producer welfare from 1989-2007 correspond to 17%of the total cost (aggregate of change in welfare and social cost). The foreign exchange was positive during the period 1989-2007.

Table 5: Effect of the Iranian meat production policy (Thousand tons and Million Dollars)

Exchange rate	Subsidy expenditure	Change in Welfare	Social cost	Foreign exchange effect	Change in production
1981-1988	6931.3 (4021.7)	4850.6 (1913.6)	2080.7 (2153.1)	-180.4 (83.1)	8.6 (3.4)
1989-1994	24564.1 (7530.2)	9971.1 (1440.4)	14593.1 (6349.8)	-417.8 (98.1)	15.5 (3.0)
1995-1999	72312.2 (19763.4)	12245.4 (692.5)	60066.8 (19436.3)	-498.9 (35.7)	18.7 (1.6)
2000-2004	63732.1 (28180.9)	9593.1 (2113.3)	54139.1 (26078.0)	-334.5 (80.2)	12.1 (2.4)
2005-2007	124589.1 (20713.4)	13841.9 (1185.3)	110747.3 (19528.3)	-473.2 (64.3)	12.2 (2.2)

Parenthesis indicate standard deviation
The period 1989 until 2007 mentioned development programs.
Source: Calculated by the author

Table 6: Effect of the Iranian meat consumption policy (Thousand tons and Million Dollars)

Exchange rate	Subsidy expenditure	Change in Welfare	Social cost	Foreign exchange effect	Change in consumption
1981-1988	-1037.1 (423.6)	-1190.1 (603.3)	152.9 (371.5)	-676.0 (326.4)	-33.5 (18.9)
1989-1994	-2762.5 (2282.7)	-7158.4 (6485.0)	4395.8 (4219.6)	-3073.9 (3875.2)	-115.5 (146.3)
1995-1999	-1318.3 (671.0)	-6623.3 (3198.6)	5304.9 (2541.8)	-915.3 (657.6)	-33.7 (22.9)
2000-2004	1211.9 (899.6)	12301.4 (9208.0)	-11089.5 (8325.3)	664.7 (468.9)	22.8 (16.1)
2005-2007	2475.9 (1397.7)	32950.6 (20032.8)	-30474.7 (18635.2)	1305.6 (617.6)	32.9 (14.0)

Parenthesis indicate standard deviation
The period 1989 until 2007 mentioned development programs
Source: Calculated by the author

The consumer welfare effects of the consumption policy are shown in Table 6. Consumers were subsidized until 2000. The loss in consumers' welfare from 2001until 2007 was due to a reduction in consumption subsidies. Prices to consumers which were lower than import prices until 2000 become higher than import prices. Because of inelastic demand, social cost of the consumption policy was much smaller than those of production policy. However, the foreign exchange was large and negative for 1989-1999 periods, declining consumer prices during this period increased consumption and imports, and had a negative effect on foreign exchange.

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On average over period of the study, meat market liberalization causes increase domestic meat production by 13.1 thousand tons per annum, foreign exchange caused falling effect on production about 353.2 million dollars per annum, while the foreign exchange caused falling effect on consumption side about 1422 million dollars per annum ,in period 1981-2000 that consumer price was lower than world price, however, in period 2001-2007 that domestic price was higher than world price, the foreign exchange effect increase by 1036.2 million dollars per annum. Totally, the foreign exchange effects on consumption decrease 784.7 million dollars per annum (without considering urban consumption).

Demand quantity decreased 56.5 thousand tons, because of domestic price increased in period 1981-2000, however, in 2001-2007; quantity of demand increased 30.5 thousand tons per annum, because of consumer price decreased. Totally, demand quantity declined 33.9 thousand tons per annum.

Thus, change on trade after liberalization in period 1981-2000, because of decreasing in rural consumption and increasing in production, changed an average of 70.1 thousand tons, However, in 2001-2007, because of decreasing consumer price, consumption increased in rural area, but, in producer side, production increased (as mentioned above) net trade after liberalization an average 18.9 thousand tons (without considering urban consumption).

Besides indicating the effects of liberalization on agricultural export and import, the four proposed WTO tariff reduction scenarios also assess the impacts on producer and consumer's welfare as well as on government tariff revenue. In most developing countries, the agricultural sector is one of the largest employers in the economy while many household also spend a disproportionate share their income on food. Iranian consumers' welfare in 1981-2000 lost 4287.5 million dollars and in 2001-2007 gained 22931.8 million dollars. On average from market liberalized and producers' welfare gained 9235.1 million dollars in 1981-2007 if trade regime had been accrued.

Table 7: Annual effects of meat market liberalization, rural area of Iran.1981-2007

Thousand Tons	**Mean**	**SD**	**Maximum**	**Minimum**
Increase in quantity supplied	13.1	4.5	20.5	3.2
Decrease in quantity demand (1981-2000)	-56.5	86.6	-0.5	-407.9
Increase in quantity demand (2001-2007)	30.5	11.4	48.3	17.0
Change on trade after liberalization (1981-2000)	-70.1	87.3	-13.3	-423.5
Change on trade after liberalization (2001-2007)	18.9	12.9	38.4	4.6
Million Dollars				
Increase in producers' welfare	9235.2	3536.9	14954.9	2273.8
Decrease in consumers' welfare (1981-2000)	-4287.5	4725.3	-163.2	-19924.6
Increase in consumers' welfare (2001-2007)	22931.8	15676.7	55258.6	5698.6
Foreign exchange effect on production	-353.2	145.5	-69.9	-585.9
Foreign exchange effect on consumption (1981-2000)	-1422.0	2313.0	-12.7	-10820.6
Foreign exchange effect on consumption (2001-2007)	1036.2	491.6	1984.9	403.9
Subsidy expenditure on production	46549.1	41378.3	143854.1	2450.8
Subsidy expenditure on consumption (1981-2000)	-1574.8	1497.2	-33.3	-7178.9
Revenue effect on tariff (2001-2007)	5629.6	3476.9	12656.0	1695.7

Parenthesis indicate standard deviation
Source: Calculated by the author

Also when trade liberalization regime had been accepted, government expenditure on production increased by 46549.1 million dollars, because difference between producer price and world price had been increased, while expenditure on consumption side during 1981-2000 decline by 1574.8 million dollars per annum.

Therefore, if meat market liberalized, rural consumer and producer welfare increased and decreased in foreign exchange in both side, also in this situation, government budget decreased.

Although, this study results proved that meat market liberalization increased welfare in both side, but we should notice all points of liberalization include unsupported low-income rural consumer by government.

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CONCLUSIONS

In this study, the recent changes in the Iranian meat policies were analyzed through measures of government intervention on nominal rates of production and on the welfare of producers and consumers. Elasticity of demand and supply of meat in rural area in Iran were estimated and used as a measure to examine the changes on producers and consumers' welfares.

The price elasticity of supply and demand which calculated, indicate that the Iranian producers are more sensitive to price changes than consumers. However, consumption is more respond to changes in production. Increase in production cause an increase in demand for meat product.

Annual data for the period 1981-2007 were used to calculate a simple supply/demand relationship. Given the big changes in meat policies in that period, which affected directly production and consumption, it is necessary to develop models which could calculate such shock, and improve the estimates of the elasticity.

The meat market liberalization in Iran result in diminishing of average domestic market price and generally increase rural area consumers' welfare; also, growth in producers' price cause an increase in producers' welfare. Foreign exchange cost on the production side would decline due to decreased of meat import. It shows that produce of meat is more economical than meat import. On consumers' side, foreign exchange cost have decreased from 1981 until 1999, because of increasing in consumers' price and decline in demand of meat. However, foreign exchange cost has increased from 2000 until 2007, because of decreasing in domestic price and increasing in demand of meat. If the market had been liberalized the government budget would have been increased on producer side. However, it would be increased from 1981-2000 on the consumer side and in the last period it would be decreased, but at the end it would be decreased 665.8million dollars per annum on the consumer side.

In order to improve the meat market situation in Iran, the following recommendation may be functional:

Considering the low level of government activities, the role of the government in the meat market should be reduced. In the meanwhile, the government should buy and import amount of meat as stock in order to supply them in time to decrease the market shortage.

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