Effectiveness of Government Protective Policies on Rice Production in Iran

B. Najafi

M. Bakhshoodeh
Email: bakhshoodeh@hotmail.com

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B. Najafi and M. Bakhshoodeh

Professor and Assistant Professor, respectively, Department of Agricultural Economics, College of Agriculture, University of Shiraz, Shiraz, Iran

Corresponding author:

M. Bakhshoodeh

Department of Agricultural Economics,

College of Agriculture, University of Shiraz,

Shiraz, Iran

Email: bakhshoodeh@hotmail.com

Tel & Fax: +98 712 265 3387

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Abstract

To evaluate the government intervention effects on growth of rice production in Iran, the nominal protective rate was calculated and a Nerlove supply model was applied to a time series of 1983-1998. The results showed that in the majority of these years, producers has not been supported and therefore, redirecting the rice market is recommended. In order to get more efficient approach than the government intervention, diminishing the share of the government in the market and strengthening the private sector may be listed on the top of a list that could be regarded as a plan for making rice production profitable.

Key words: nominal protection rate, rice, Iran

Introduction

A variety of programs, such as price support, input subsidies and so on was adopted by the post-revolution government in the 1980s in an effort to achieve and maintain national self-sufficiency in basic agriculture products. Since 1990, policy has been directed toward abolishing subsidies within a strategy of achieving economic liberalization and a more competitive and market-oriented sector. However, the government appears to be the largest economic agent by controlling nearly three forth of economic activities and there are still markets such as wheat, cotton and rice in which the government intervene in order to support either producers or consumers.

Farmers traditionally produce rice particularly in the northern areas and so they most likely cannot easily adapt a new crop pattern in which rice is excluded. Moreover, some type of domestic rice, e.g. *Taromi*, is highly acceptable by the consumers and so they can compete with imported rice. However, producing rice is believed to be unfair due to the lack of water causing from successive drought in recent years and because of the lack of comparative advantage (e.g. Haj-Rahimi, 1997).

Rice is a main food in Iran particularly in the northern areas where the majority of the product is produced. According to the FAO database, the per capita consumption of rice was 18.6 kg in 1961 and reached to around 34 kg in 1999 indicating an average growth of 1.6% per annum. As shown in Figure (1), while the gap between domestic production and consumption of rice fluctuates between 1961 and 1999, and although the production of rice has been increased during the last years, a sustainable share of consumption, e.g. a little over 20% in 1995, is imported into Iran each year.

Figure 1. Production and domestic supply of rice, Iran, 1961-99
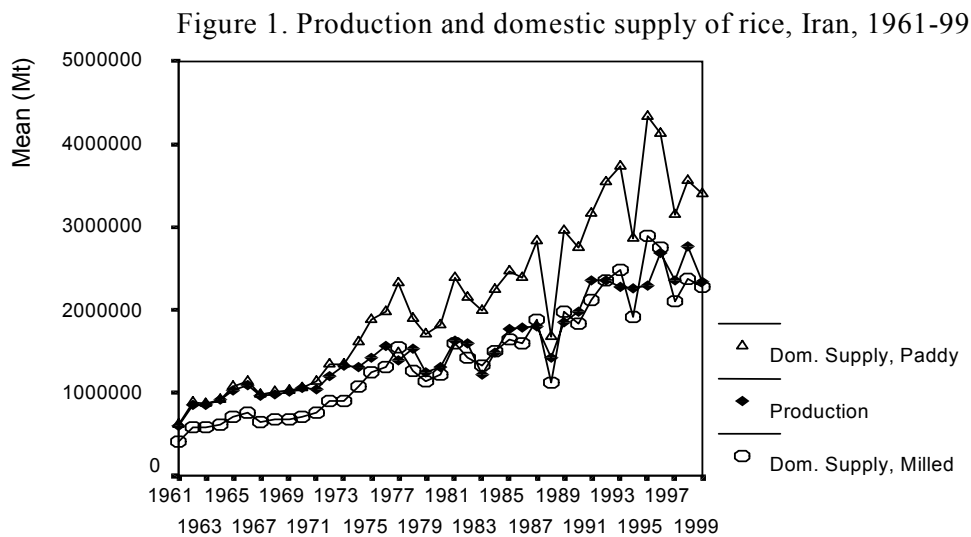
The Iranian government intervene the rice market by controlling its import to support consumers and to prevent rising the price of rice in the country. Among the factors affecting the increasing gap between production and consumption of rice, direct and indirect policies of the government is highlighted. These policies include input subsidies, credit programs, guaranteed price, distribution of coupon and importing rice using foreign exchange evaluated with an special cheap rate allocated for food. Najafi (1999), discussed that most of these programs have been inefficient and caused widening the gap. As results, a shortage of the product exist each year and thus, the government imports rice spending the official exchange money (e.g. $1 = 3000 Rials in 1998), by which the imported rice is apparently cheaper than the domestic rice. However, the imported rice is more expensive than the domestic rice when the prices are evaluated with real exchange rate in the gray market (e.g. $1 = 8000 Rials in 1998).

According to Bakhshoodeh and Akbari (2001), the consumer price of rice is higher than the producers price as well as the world price evaluated with the exchange rate in the gray market. They also discussed that the multi rate system of foreign exchange not only causes misallocation of foreign stocks but can also lead to some ambiguous policies and mistaken evaluation of basic economic figures such as prices.

As shown in Figure 2, the price received by the farmers is less than that of imported price that explicitly refers to the fact that farmers are taxed.

Figure 2. Prices of rice, Iran, 1979-99
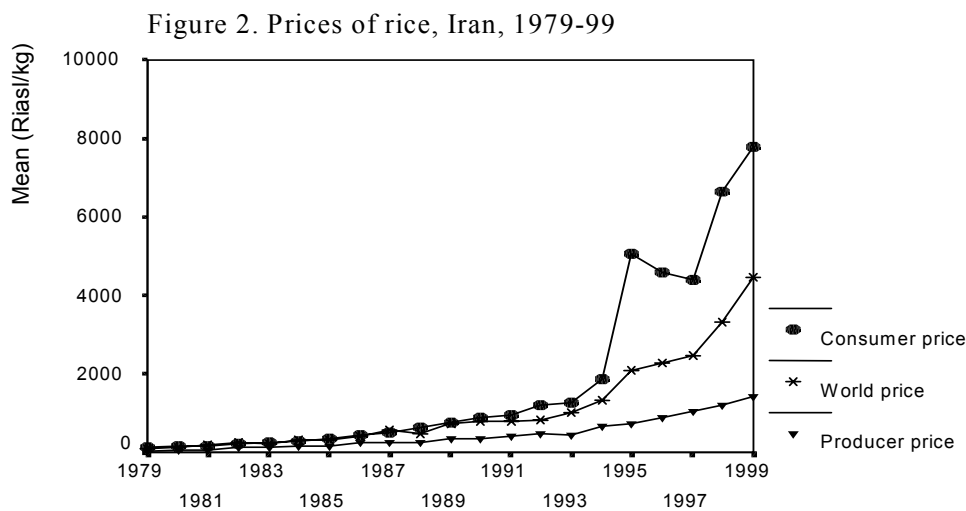
Despite the increasing price of rice, the per capita consumption of the product is almost high. As show in Figure 3, the average consumption of milled rice per person was 18.6 kg in 1961 and reached to nearly 34 kg in 1999. The figure even has reached to around 45 kg in 1977 and 1995. Comparing the world average annual growth of 0.08% for per capita consumption between 1961 and 1996, the figure has been increasing by more than 2.6% in Iran.

Figure 3. per capita consumption of rice, Iran
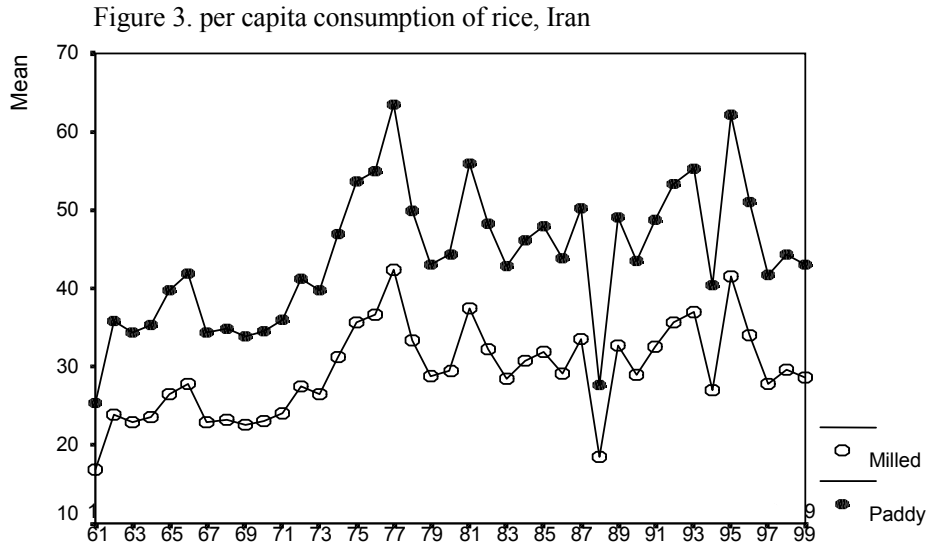
This paper focuses in evaluating the effects of government intervene in rice market in Iran. For this purpose, the rest of the paper is structured as follows: the methods and theoretical basis are given below followed by a short description of data and variables. Then, the findings are discussed and policy implementations are recommended at the end.

Methodology

In order to evaluate the government policies in agricultural production, supply function has been widely used (e.g. Lin, 1977; Krueger, Schiff and Valdes, 1988; Gunawardana and Oczkowski, 1992, Zibaii and Najafi, 1993 and Zare, 1996).

In this study, nominal protection rate (NPR) is first used to evaluate the effects of the government intervention in rice market. With no intervention, the domestic price of rice (P_d) is expected to be around that in border level (P_b). Thus, NPR is defined as:

$$NPR = (P_b/P_d) - 1 \qquad\qquad (1)$$

A protective price requires the NPR to be positive.

Then, a partial adjustment model introduced by Nerlove (1956) is used to evaluate the effects of government intervention in rice market in Iran. Following Houck and Ryan (1972) and Lin (1977), NPR was included into the model as indicated in equation 2:

$$Y_t = \alpha_{0i} + \alpha_1 P_{t-1} + \alpha_2 NPR + \alpha_3 T + \alpha_4 Y_{t-1} + \varepsilon_t \tag{2}$$

Where Y_t and Y_{t-1} are the production of rice at periods *t* and *t-1*; P_{t-1} is the lagged price of the product at period *t-1* and T exhibits the trend variable. αs are the coefficients to be estimated and ε_t is the usual error term.

The data used in this study are time series of farm-level price and production of rice in the period of 1983 to 1998 that are published by the Plan and Budget Organization (PBO) of Iran. In order to achieve the real prices, the nominal prices were adjusted using the consumer price indices (CPI) provided by different issues of records in Statistical Center of Iran. Because the large share of rice is imported from Thailand, the price of rice from this country is considered as world price (P_w). These prices are collected from annual database of FAO that is converted to the real border equivalent price (P_b) using the exchange rate in the gray market (e.g. 1\$ = 234.25 Rials in 1980 and 1\$ = 8657 Rials in 1999). To calculate these rates, which are important in calculating the NPR, the equity of purchasing power parity and was used as:

$$E_t = (CPI_t / P^*_t) E_o \tag{3}$$

Where E_t is the real exchange rate, CPI_t and P^*_t are domestic and foreign (Thailand) consumer price indices respectively, and E_o is the exchange rate at 1990 as the base year.

Then, P_b was calculated as:

$$P_b = (P_w + T_w) + T_d - C_d \tag{4}$$

In which, T_w is freight cost and $(P_w + T_w)$ indicates the CIF price diverted to the local currency, Rials, using the exchange rate in gray market. T_d and C_d are costs of local transporting from border to domestic market and from farm to domestic market, respectively.

Auto-correlation Function (ACF) plot that is a useful identification and diagnostic aid and the unit root test were used to test the stationary of the time series data and regarding LB-test results and cointegration test, variables T and NPR were excluded from the model.

Results

In this section, the calculated NPR for the period of 1983 to 1995 are discussed followed by the description of the supply coefficients. As indicated in Table 1 and Figure 4, NPR is negative for most years. Therefore, there have not been enough incentives for rice exports.

Table 1. NPR for rice in Iran, 1983-96

1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
-0.14	-0.26	-0.21	-0.08	0.13	0.12	-0.40	-0.21	-0.01	0.03	-0.02	-0.15	-0.37	-0.58	-0.44	-0.48

Figure 4. NPR for rice, Iran
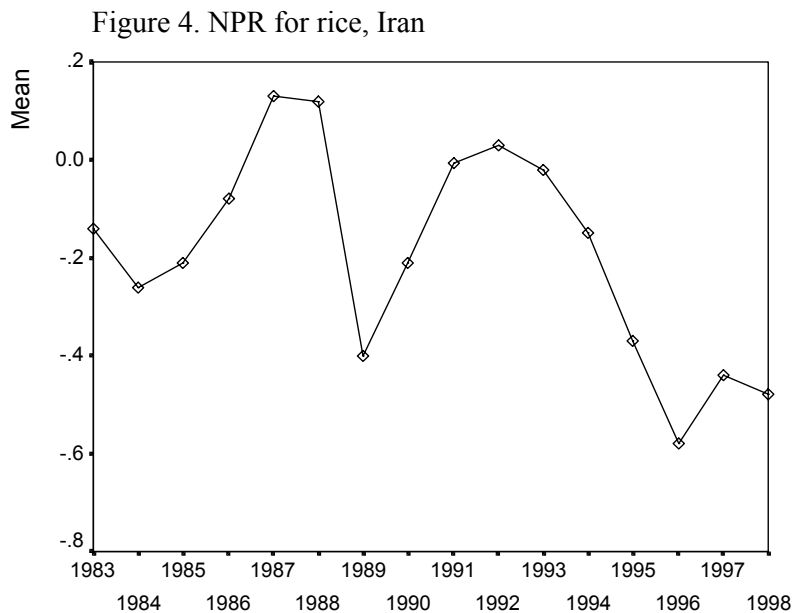
The stationary test showed that some variables are not stationary and therefore performing a cointegration test revealed that the lagged nominal price of rice P_{t-1} and that of production level

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should be included into the model. The estimated coefficients and the related statistics are summarized in Table 2.

Table 2. Supply function parameters of rice, Iran

	Coefficient	SE
Constant	801.895	260.010
P_{t-1}	2.995	1.211
Y_{t-1}	0.102	0.296
R^2	0.689	
F	16.653	

The NPR and the real price of rice were excluded because of not being cointegrated with the dependent variable. However, a Nerlove model including these two variables exhibited an unexpected negative sign for both of them. To double-check the signs, covariance analysis and correlation test were performed by which the signs were confirmed. Thus, it may be said that rice producers consider factors beyond the price of rice and NPR in production. These factors may be listed as the relative profitability of the product, the rotation possibilities at least in some areas, high relative price of rice, weather conditions in favour of producing rice rather than the other potential competitive products.

Rice market liberalization can be regarded as an alternative in order to improve society welfare. Based on the study of Bakhshoodeh and Akbari (2001), the major effect of rice market liberalization in Iran is to appear in decreasing the governmental revenue as well as domestic suppliers' welfare, but it increases the consumers' gain. As it is expected, the rice imports goes up because of the simultaneous decrease in domestic supply and increase in demand. It may be said that the rice producer may find trading more economical than rice producing.

Conclusions

Based on the results, it may be said that the governmental policy against rice market to achieve a stable price has not been successful. The negative NPR for the majority of the studied years indicates that rice producers have not been really supported by the government. Therefore, the

increased level of production is due to other factors such as its relative profitability. Despite that rice production has been increased, the consumption has gone up such that the shortages have been imported using a subsidized foreign exchange rate. In general, the implemented policies for supporting rice producers in order to achieve a stable price and income, has end up with an unwanted outcomes mainly against the general objective of self-sufficiency in agricultural products.

With regard to improving the situation, the followings may be recommended:

- The government should buy 10 to 20 per cent of produced rice at harvesting season with an agreed price in order to supply them in out-seasons to capture the shortages.

- Considering the lack of water due to recent droughts, the consumption of rice should be redirected in such a way that the per capita consumption decreases toward the world price. For this purpose, abolishing distribution of coupon can be considered as a policy by which the consumption can be controlled.

- The devoted subsidized foreign exchange to rice imports is considered as a policy against the domestic producers and therefore, the subsidized foreign exchange for importing rice should be abolished.

- Considering the low efficiency level of government activities, the role of the government in rice market should be diminished. A possibility is to promote the private sector and to liberalize the rice market. For getting better results, the third suggestion might be implemented before privatization.

- Despite the fact that domestic rice is not considered an export commodity, some varieties may be potentially considered for the purpose of exports. In this regard, removing exporting barriers is highly recommended.

It is believed that implementing above recommendations could increase the market efficiency of rice in Iran and this caused the scare resources especially water to be allocated optimally.

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