International Journal of Agricultural Management & Development (IJAMAD)
Available online on: www.ijamad.com

Pursuing International Competitiveness in Iranian Wheat Policy

S.S.Hosseini and M. Torshizi

Received: 27 April 2011,
Revised: 26 June 2011,
Accepted: 29 July 2011.

Abstract

After the war with Iraq which ended in 1988, Iran implemented several agricultural support policies based on Five-Year National Development Plans. The main objective of these plans in the agriculture sector was to make the agricultural economy more market-oriented and to encourage sustainable agriculture. This paper investigates the extent to which Iran's government has been able to achieve this objective in the case of wheat. For this purpose, Producer Support Estimate (PSE) and Consumer Support Estimate (CSE) indicators for Iranian wheat are calculated and discussed. Generally, producers' and consumers' support is achieved chiefly by distorting market prices. As will be shown, from 1989 to 2006, the PSE increased about 20 times (in real prices), while the level of production increased 1.69 times. However, the PSE had no significant causal relationship with either wheat yield or its area under cultivation. With respect to consumers' support, this was found to be positive for Iranian wheat, a result that is uncommon for most developed and developing countries. Recent agricultural policies in Iran do not appear to encourage international competitiveness for wheat and are making the wheat economy more dependent on support prices. We suggest that policy makers reconsider the method of subsidization and the pricing system, at least in the case of wheat. JEL:Q18

Keywords:
Producer Support Estimate (PSE), Budgetary Payments, Consumer Support Estimate, Causality relationship, Competitiveness, Wheat, Iran.

Professor, Agricultural Economics Department, University of Tehran.
Ph.D. student, Department of Bioresource Policy, Business & Economics, University of Saskatchewan, Canada.
** Corresponding author's email: hosseini_safdar@yahoo.com.*

INTRODUCTION

Support policies are the most important economic policies in agriculture of developing and developed countries (Hosseini and Spriggs, 1998). Without supporting agriculture, most low-income farmers are faced with serious problems, especially when governments try to lower food prices by importing or interfering in market prices to support consumers.

Generally, supporting agricultural production and consumers' income stabilization are two vital roles of support policies in countries whose agriculture is a primary sector. Different countries use different policy instruments to fulfill these requirements. For example, the member countries of the Organization for Economic Co-operation and Development (OECD) in 2004 allocated US$279,527 million to support agriculture production using different policies such as market price supports, payments based on output, payments based on input use, payments based on overall farming income, etc. (OECD, 2005).

In Iran, agricultural support policies have been implemented on the basis of Five-Year National Development Plans (FYNDPs). These policies were initiated in 1961 and approved as the Law of Guaranteed Purchase of Main Crops in 1989. The first, second and third FYNDPs emphasized the subsidization of seed and fertilizer while the fourth FYNDP focused on food security through encouraging domestic production to achieve self-sufficiency of staple food, increasing incomes of farmers and rural people through price supports, and creating a fund for farmers' income stabilization (Agricultural Planning and Economic Institute, 2005b).

Generally, Iranian wheat policy can be divided into two parts: before the introduction of FYNDPs and after. Until the introduction of the first FYNDP, Iranian wheat policy was based on low consumer prices and guaranteed purchase prices below import parity. This policy sought to encourage industrial development at the expense of the agriculture sector. However, with the introduction of the first FYNDP

the government's attitude shifted in the direction of economic liberalization in 1989 (Hosseini and Spriggs, 1998).

The major goal of these new plans was to make the agricultural economy more market-oriented or competitive in international markets (Hosseini and Spriggs, 1998). The question is: to what extent has the goal of greater market-orientation been achieved by the various FYNDPs which have involved considerable government intervention in pursuit of production self-sufficiency (Amid, 2007) and consumer subsidy (Amid, 2007; Hosseini and Spriggs, 1998). That is the purpose of this paper.

In addressing this purpose, the paper employs an economic welfare framework similar to that used in previous research, such as Hosseini and Spriggs (1998), Gardner (1988), Alston and Hurd (1990), Alston *et al.,* (1999), and Longworth and Knopke (1982). While the economic welfare framework is limited to a short period of time, we propose to analyze the supports in an eighteen-year period of FYNDPs.

In this paper, the amount and type of support in Iran's wheat production and consumption were analyzed and compared with those of OECD member countries. The criteria include amounts, trends, and diversity of supports in Iranian agriculture, and the ability of support policies to make Iranian wheat production more internationally competitive through greater market-orientation and less dependent on distorted prices. In other words, less dependency on support policies, especially of input and output prices, is assumed to be an index of competitiveness. In addition, to examine the government's success in effective encouragement of wheat production, we examined the causal relationship of the Producer Support Estimate (PSE) with wheat yield and its area under cultivation.

PSE and Consumer Support Estimate (CSE) are widely-used indicators for evaluating the amount of support in the agricultural production and consumption sectors. For our purpose, these indicators were calculated for 1989-2006. Many studies have applied these indicators to analyze support policies in agriculture. In particular, the OECD, in its annual reports, monitors the agricultural policies of its member countries through the use of such indicators (OECD, 2005). Data on the PSE and CSE of individual crops in each

member country are provided annually along with data on related indicators of support such as General Services Support Estimate, Total Support Estimate, and some subordinate indicators such as % PSE and % CSE.

Some studies also have been carried out in non-OECD countries. For instance, the International Food Policy Research Institute (IFPRI) published a report which included indicators of support for some crops in China, India, Vietnam, and Indonesia (Orden, *et al.,* 2004). Cakmak (2003) used the PSE, CSE, General Services Support Estimate (GSSE), and Total Support Estimate (TSE) indicators to evaluate past and future agricultural policies in Turkey. He investigated whether these policies were capable of achieving sustainability.

In Iran, some studies with restrictive assumptions have also been carried out. For instance, Permeh and Seiedi (2003) calculated the level of support in Iran's agricultural sector using the Total Aggregate Measurement of Support (TAMS) indicator in 1989-2001. Hosseini, Darvishani, and Gharib Reza (2003) calculated the PSE, CSE, and GSSE for Iran's entire agricultural sector in 1975-2000. However, as in Permeh and Seiedi (2003), the study by Hosseini et al (2003) was unable to separate out the amounts of support given to different crops and hence did not calculate the supports for each crop separately.

The present study addresses the deficiency of previous studies in Iran. The methodology used is that developed by Portugal (2002) for OECD countries. Also, the methodology extended for non-OECD countries by Melyukhina (2002) was used for some adjustments.

Conceptual Framework

The analysis to be conducted in this paper is of two types. The first concerns an examination of trends in the measures of support for the Iranian wheat industry since the beginning of the First FYNDP in 1989. These trends will help to illuminate how successful the FYNDPs have been in reaching their objective of international competitiveness for one of the most important agricultural industries in Iran. The second type of analysis concerns a test of the relationship between the measures of support for wheat farmers and wheat production. A stated goal of the support measures for wheat production has been to encourage expanded production leading towards self-sufficiency. In Section 2.1 below is a discussion of the measures of support developed for both types of analysis discussed above. In Section 2.2 is a discussion of the tests developed for the second type of analysis discussed above.

Measures of Support for the Iranian Wheat Industry

The PSE is based on a small country assumption (price taker) and existing world prices. According to Mullen *et al.,* (2004), "A product-specific PSE can be expressed in monetary value per unit of output, as an aggregate monetary value for total national production of the given commodity, or on a percentage basis, usually reported as a percentage of the value of production plus budgetary support provided to that commodity".

The PSE can be categorized into eight subcategories. The first is Market Price Support (MPS), The seven other subcategories of support, called Budgetary Payments (BP), are various types of budgetary outlays and payments by which governments support farmers (Mullen *et al.,* 2004). Definitions and procedures of MPS, BP, and PSE measurement follow.

Market Price Support (MPS): According to Mullen *et al.,* (2004), assuming competitive markets, ex post price certainty, and a small country case, the domestic farm-gate price of a commodity, Pd, is compared to an adjusted reference price, Par. According to Melyukhina (2002), this may be obtained for an imported commodity as in equation (1):

$$P_{ar} = P_r + (C_p + T_{d1}) - (T_{d2} + M) - Q_{adj} \quad (1)$$

where, P_r is the reference price at the border, C_p is the port charges, T_{d1} is the transportation, handling, and marketing costs from port to internal wholesale market, T_{d2} is the transportation and handling costs from farm to wholesale market, M is the marketing and processing

costs from farm to wholesale market, and Q_{adj} is the quality adjustment factor. Pr is the world market c.i.f. price for an imported commodity, expressed in the domestic currency[1]. The adjustments in equation (1) make the reference price, P_r, comparable with the domestic farmgate price in a specific level of market that here is the wholesale market level. The researcher may adjust both P_r and Pd in any level of a market in which the international and domestic commodities can be made "like with like" by the quality adjustment factor, Q_{adj} (Portugal, 2002).

Budgetary Payments: Budgetary payments usually are supposed to be divided into seven subcategories: those based on 1) output; 2) area planted/animal numbers; 3) historical entitlements; 4) input use; 5) input constraints; 6) overall farming income; and 7) miscellaneous payments (OECD, 2003).

In Iran, the only items in use are payments based on input use and Crop Insurance Policy which is included in area planted/animal numbers. In Iran, we also have Subsidized Bank Credits for the Agriculture Sector as a kind of miscellaneous payment.

Payments based on input use are associated with policy measures based on the use of a specific input or a specific group of inputs or factors of production (Portugal, 2002 p. 3). These payments are calculated by:

$$\sum_{i=1}^{n} (P_{Di}-P_{Wi})\, Q_i \qquad (2)$$

where, Q_i is amount of tradable input i in wheat production, P_{Di} is domestic (subsidized) price of input *i*, P_{Wi} is adjusted reference price for input *i*; and *i= 1,..., n* is the number of subsidized tradable inputs in wheat production. As described in the previous section, in the case of an importable input, adjusting P_{Wi} is similar to adjusting P_{ar}.

In developing countries, like Iran, the researcher must try to include all explicit and implicit types of budgetary assistance, even if they are not paid to farmers directly. According to Melyukhina (2002), "Preferential prices for inputs such as electricity, fertilizer, irrigation, and transportation also may be more important in developing than in developed countries". Therefore, in this study, fuel subsidies and transportation costs have been taken into account as budgetary payments.

Producer Support Estimate (PSE): Support policies which have been implemented in Iran's agriculture production sector may be categorized into five types: (1) Guaranteed Purchase Policy, (2) Crop Insurance Policy, (3) Subsidized Bank Credits (4) Payments based on input use, and (5) Mechanization Development and Production Inputs Supply Policy. The first four policies are directly related to the PSE and affect it.

With respect to these support policies used in Iran's agricultural production sector, the PSE on wheat is specified as the sum of the MPS for wheat, payments based on *input use*, crop insurance payments, and subsidized bank credits[2] where:

1. The MPS for wheat is calculated as total wheat production multiplied by the difference between domestic and world price of wheat (after accounting for transportation costs);
2. Payments based on *input use* is calculated as in equation (2) using the amount of subsidized inputs used in wheat production[3] , and the difference between their domestic and world price (after accounting for transportation costs);
3. Crop insurance payments are for using *area planted/animal numbers*;
4. Subsidized bank credits are calculated by multiplying the difference between the bank interest rate for the agricultural sector and other sectors of economy by the amount of subsidized credit in the agriculture sector;

Percent PSE: Percentage PSE is more appropriate than PSE for comparing the support between countries. According to Portugal (2002) "percentage PSE is the share of gross farm receipts derived from policies" and may be expressed as

$$\%PSE = \left(\frac{MPS + BP}{VP + BP}\right) \times 100 \qquad (3)$$

where *VP* is the value of production at producer prices (not including output payments).

Consumer Support Estimate (CSE): CSE

includes the following explicit and implicit consumer transfers associated with the MPS (Portugal, 2002). In this study, they were measured at the wholesale level. These transfers include:

1.*(Negative) transfers to producers from consumers,* which has a negative value if the consumer price is below the world price, as in Iran. Here, the ceiling price of bread for consumers is lower than both the world price and the producer price for wheat.

2.*Other (negative) transfers from consumers*. According to Portugal (2002, p.5), other transfers from consumers can be represented as the "transfer to the budget or to importers, or both, on the share of consumption that is imported". When this item has a negative value, it means that the country is a net importer and there is a payment from the budget to import the wheat.

3.*Transfers to consumers from taxpayers,* which is the amount of subsidy that the government pays to consumers for bread consumption.

4.*Excess feed cost,* which arises when the government sells a crop (as an input) at a lower price than the world price for feeding[4].

A negative CSE indicates an implicit tax from consumers associated with agricultural policies (Portugal, 2002 p.5).

Testing the Effects of Government Support for Wheat Production

A simplified acreage response function from Salassi (1995) can be represented by *A= f (P,X)* where A is the planted acreage of the crop, P is the price of the crop, and *X* is a vector of variables representing supply shifters. According to Mahmood *et al.,* (2007) and Salassi (1995) supply shifters include variables such as government support, lagged planted acreage of the commodity, and lagged price of crop. Some studies, such as Krause *et al.,* (1995), also emphasized on the necessity of a vector of prices for substitute crops. Therefore, Hsiao's Granger Causality Test (Hsiao, 1981) was used in conjunction with equation (4) below to examine the relationship between PSE and area under cultivation of wheat. In this equation,

$$Area = a_0 + a_1 TOT + a_2 RPSE + \varepsilon \quad (4)$$

Where, *Area* is the ratio of area under cultivation of wheat to area under cultivation of seven major food crops (barley, corn, rice, sugar beet, soya, cotton, and wheat), *TOT* is terms of trade of wheat to seven major food crops, *RPSE* is the ratio of wheat PSE to total PSE of seven major food crops, ε is error term, and a_0, a_1, a_2 are parameters to be estimated.

Thus, cultivated wheat area (as a proportion of total cultivated area under the major crops) is expressed in equation (4) as a function of relative prices (the TOT) and relative producer supports. An accomplishment of this paper to literature is that in addition to relative prices, vectors of PSEs and area under cultivations for substitute crops are taken into account.

Hsiao's Granger Causality Test (Hsiao, 1981) was also used to examine the relationship between PSE and wheat yield. In the estimating equation (5) below, wheat yield is expressed as a function of wheat PSE as well as other variables that are thought to have an important influence on yield; notably technological improvements and the presence of spring rain. Thus: (5)

$$Yield_i = a_0 + a_1.Trend + a_2.PSE_i + a_3.Rain + \varepsilon_i$$

Where, *Yield* is wheat yield per hectare, *Trend* is index of technology improvement, *PSE* represents wheat *PSE*, *Rain* is the amount of spring rain in millimeters, ε is error term, and a_0, a_1, a_2 are parameters to be estimated.

According to Hsiao (1981) all variables in the above-mentioned models have to be stationary. We used the difference form of Difference Stationary Process (DSP) variables and the detrended form of Trend Stationary Process (TSP) variables to make them stationary.

RESULTS AND DISCUSSIONS

Measures of Support

The data and calculations of annual estimates of wheat support are presented in Tables 1 and 2 below. Table 1 contains the data and calculations for MPS and CSE, while Table 2 contains the data and calculations for PSE. MPS in both nominal and real prices was calculated to be negative from 1989 to 2000, shifting to positive in 2001. That is, until 2000 the domestic price

Table 1: Iran's Wheat MPS and CSE

	Units	1998	1999	2000	2001	2002	2003	2004	2005	2006
I. Level of production	000t	11,955	8,673	8,088	10,202	12,450	13,440	14,568	14,308	14,664
1. of which feed	000t	0	0	0	0	0	0	0	0	0
II. Producer price (at farm-gate)	Rls/t	596,500	672,000	875,400	1,048,600	1,287,000	1,499,100	1,694,500	1,866,600	2,067,800
III. Value of production (at farm-gate)	Rls mn	7,131,205	5,828,389	7,080,021	10,698,289	16,023,461	20,147,251	24,686,290	26,707,256	30,321,693
IV. Level of consumption	000t	11,956	12,073	12,434	12,857	12,799	12,682	12,680	12,776	12,734
V. Consumption price (at farm-gate)	Rls/t	596,500	672,000	875,400	1,048,600	1,287,000	1,499,100	1,694,500	1,866,600	2,067,800
VI. Value of consumption (at farm-gate)	Rls mn	7,131,486	8,113,016	10,884,942	13,481,578	16,472,763	19,011,211	21,486,785	23,846,804	26,331,851
VII. Reference price (at farm-gate)	Rls/t	867,304	1,011,478	946,449	964,629	812,338	1,045,330	1,081,223	975,696	1,232,414
1. Border reference price	USD/t	150	130	130	136	120	150	149	133	160
2. Handling and processing costs	Rls/t	102,950	114,020	118,030	124,520	149,930	203,120	222,080	226,890	243,730
3. Quality adjustment	Ratio	1	1	1	1	1	1	1	1	1
4. Official exchange rate	Rls/USD	6,468	8,658	8,188	8,008	8,019	8,323	8,747	9,042	9,226
VIII. Market price differential	Rls/t	-270,804	-339,478	-71,049	83,971	474,662	453,770	613,277	890,904	835,386
IX. Market transfers	Rls mn	-3,237,611	-4,098,502	-883,441	1,079,591	6,075,365	5,754,598	7,776,542	11,381,771	10,638,002
1. Transfers to producers from consumers	Rls mn	-3,237,484	-2,944,363	-574,627	856,708	5,909,657	5,754,598	5,754,598	11,381,771	10,638,002
2. Other transfers from consumers	Rls mn	-127	-1,154,139	-308,814	222,883	165,709	0	0	0	0
X. Budgetary transfers	Rls mn	4,459,775	5,222,150	5,859,000	6,818,741	10,060,500	12,131,974	15,206,771	25,943,057	27,481,536
1.Transfers to producers from taxpayers	Rls mn	0	0	0	0	0	343,874	1,157,971	1,365,257	1,611,886
2. Transfers to consumers from taxpayers	Rls mn	4,459,775	5,222,150	5,859,000	6,818,741	10,060,500	11,788,100	14,048,800	24,577,800	25,869,650
XI. Market Price Support (MPS)	Rls bl	-3,237	-2,944	-575	857	5,910	6,098	8,935	12,747	12,250
1. MPS in real prices*	Rls bl	-2,727	-2,018	-339	455	2,769	2,471	3,099	4,039	3,460
XII. Consumer Support Estimate (CSE)	Rls bl	7,697	9,321	6,742	5,739	3,985	6,034	6,272	13,196	15,232
1. Percentage CSE	%	288	322	134	86	62	84	84	-1,805	3,295
2. CSE in real prices**	Rls bl	17,901	18,063	11,585	8,857	5,314	6,959	6,272	11,953	12,333

Note: * MPS was deflated using the PPI (base year: 1997).
** CSE was deflated using the CPI (base year: 2004).

of wheat was less than its adjusted reference price and thus during this period, wheat producers paid an implicit tax to consumers.

Since there was a steadily increasing trend in domestic prices (producer and consumer) from 1989 to 2005, we can deduce that MPS fluctuations were mostly affected by the exchange rate and world price fluctuations. After the Exchange Rate Equalization Policy in 2002, the MPS in both current and real terms has had fewer fluctuations. In 2001, the MPS switched from negative to positive, and thereafter its trend has been upwards, rising from a 2001 figure of 857 billion Rials in current prices (US$107 million)to 12,250 billion current Rials (US$1328 million) in 2006; that is a fourteen-fold increase in just five years. Even in real prices, it increased 759 per cent over the same period (from 455 billion Rials in 2001 to 3460 billion Rials in 2006). Such increasing market price supports not only impose a burden on the treasury, but also distort domestic prices severely and keep the wheat economy far from international competitiveness.

The increasing trend of MPS is directly related to the wheat pricing system. In Iran, the wheat pricing mechanism facing farmers is based on a production cost method, which probably was not problematic when the domestic producer price of wheat was less than world parity. However, owing to the high inflation rate in recent years, production costs have increased and hence the domestic producer price of wheat has exceeded its world price equivalent.

Rising prices decrease the competitive power of Iranian wheat in world markets. Thus, continuing with this pricing mechanism no longer seems to make sense. The Law of the Fourth FYNDP also has emphasized the need to revise the pricing system of agricultural products (Agricultural Planning and Economic Institute, 2005a). Other pricing methods such as the border price equivalent method or the terms of trade method might now be more appropriate for Iranian wheat producers.

Table 2: Iran's Wheat PSE

	Units	1989	1990	1991	1992	1993	1994	1995	1996	1997
I. Level of production	000t	6,010	8,012	8,793	10,179	10,732	10,870	11,228	10,015	10,045
II. Value of production (at farm-gate)	Rls mn	614,224	827,606	1,197,561	1,517,641	2,419,070	2,890,216	3,710,704	4,222,401	4,867,669
III. Producer Support Estimate (PSE)	Rls mn	-389,093	-497,930	613,288	-220,776	374,212	-1,149,834	-4,393,746	-2,590,186	-1,178,544
A. Market price support (based on unlimited output)	Rls mn	-1,160,629	-1,571,803	-485,640	-1,279,847	-779,795	-1,978,903	-5,948,285	-4,653,699	-3,237,864
B. Budgetary Payment	Rls mn	771,536	1,073,872	1,098,928	1,059,070	1,154,006	829,069	1,554,539	2,063,513	2,059,320
IV. PSE (in real prices)	Rls mn	-2,702,035	-2,766,278	2,775,058	-782,894	1,072,240	-2,478,090	-6,414,228	-2,994,434	-1,178,544
V. Percentage PSE	%	-28	-26	27	-9	10	-31	-83	-41	-17
	Units	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
I. Level of production	000t	11,955	8,673	8,088	10,202	12,450	13,440	14,568	14,308	14,664
II. Value of production (at farm-gate)	Rls mn	7,131,205	5,828,389	7,080,021	10,698,289	16,023,461	20,147,251	24,686,290	26,707,256	30,321,693
III. Producer Support Estimate (PSE)	Rls mn	-957,650	542,277	4,690,489	5,706,787	10,628,632	12,183,765	18,505,154	26,913,314	24,819,197
A. Market price support (Based on unlimited output)	Rls mn	-3,237,484	-2,944,363	-574,627	856,708	5,909,657	6,098,471	8,934,514	12,747,027	12,249,888
B. Budgetary Payment	Rls mn	2,279,834	3,486,640	5,265,116	4,850,079	4,718,975	6,085,293	9,570,640	14,166,287	12,569,309
IV. PSE (in real prices)	Rls mn	-806,781	371,677	2,765,619	3,033,911	4,980,615	4,936,696	6,418,715	8,527,666	7,011,072
V. Percentage PSE	%	-10	6	38	37	51	46	54	66	58

Note: PSE was deflated using PPI (base year: 2004).

Referring now to Table 2, BP has been the dominant component of PSE, in both current and real prices, during the years since 2001 (when MPS switched from negative to positive). It increased in current prices between 1989 and 2006 by about 85 percent annually (from 772 billion Rials in 1989 to 12,569 billion Rials in 2006). However, in real prices, it decreased slowly by about 2.83 per cent per year. BP is composed of input use subsidies, crop insurance payments, and subsidized bank credits. Of these, input use subsidies and in particular the fuel subsidy accounts for the largest portion of BP. However, the fuel subsidy may be less distortionary than other agriculturally-specific support measures because it applies more broadly than just agriculture. Generally, BP in Iran comprises only three of the seven budgetary payments normally in use in many developed countries. Thus, the range of agricultural support policies used in Iran is much smaller than, say the OECD.

In current prices, PSE increased from -389 billion Rials (US$ -272 million) in 1989 to 24,819 billion Rials (US$2690 million) in 2006; however, in real prices, it increased from -2702 to 7011 billion Rials in the same period. In the 1999-2006 period, the PSE increased about 19 times (in real prices), while the level of production increased just 1.69 times (Table 1).

Tests of the Effects of Government Support

A key objective of the various FYNDPs has been to increase production of staple foods such as wheat and hence move the country towards self-sufficiency. In this Section we discuss the results of tests of a significant relationship between government support for producers (as measured by PSE) and the components of wheat production (area and yield). Yield of wheat, its area under cultivation and imports in 1989-2006 are used (Yield and area under cultivation: Ministry of Jihad-e Agriculture Import: FAO/FAOSTAT-Agriculture/TradeSTAT).

As proposed in Section 2.2, Hsiao's Granger Causality Test was used to carry out these tests and the results are summarized in Tables 3 and 4 below. In neither case was a significant relationship found between PSE and the corresponding component of production. In Table 3, the insignificant T-Ratio on the RPSE coefficient suggests a lack of relationship between PSE and area under cultivation. In Table 4, the insignificant T-Ratio on the PSE coefficient suggests a lack of relationship between PSE and yield.

Azari (2008) applied the same test to examine the relationship between AMS and production

Table 3: Hsiao's Granger Causality Test for wheat PSE and area under cultivation

Independent Variables	Estimated Coefficient	T-Ratio
RPSE (Difference form)	-0.036	-0.94
TOT (Difference form)	0.622**	10.23
Constant	-0.00075	-0.0555

Dependent Variable: Area (Difference form)
DW=2.01 R^2=%88
Note: Since RPSE was not significant, we did not continue the Hsiao's process to find the optimum lag
** Significant in 1% level

growth of some agricultural commodities, including wheat, in Iran. He also found no Granger causality between the AMS of wheat and its production growth.

This suggests Iranian wheat support policy has been unsuccessful in encouraging domestic production and attaining self-sufficiency. It is true, imports have declined in recent years (see FAO/FAOSTAT-Agriculture/TradeSTAT, years 2004 to 2006). However, this appears to be an aberration because by 2008, imports had climbed back up to 5.9 million tons and for 2009, the Government has passed a by-law allowing the Government Trading Corporation (GTC) of Iran to import more than 7 million tons wheat (Islamic Republic News Agency, 2009).

This failure to improve the yield or to encourage the area under cultivation might be due to the lack of targeting in the support provided to the Iranian wheat industry. For example, one of the most important forms of support is the fuel subsidy, but this is generally available and not just for farmers. In addition, the MPS measures are based on an inappropriate pricing system which is, after all, severely affected by inflation but insensitive to world prices and the internal terms of trade of crops (and hence their substitution possibilities). Support policies for Iranian agriculture generally are minimally distorting as they apply to all producers regardless of their yield and hence tend not to be significantly production enhancing.

Table 4- Hsiao's Granger Causality Test for wheat PSE and yield

Independent Variables	Estimated Coefficient	T-Ratio
PSE (Detrended form)	-0.0006	-0.0337
Rain	2.7482*	2.205
Trend	75.450**	9.902
Constant	1496.7**	12.27

Dependent Variable: Yield (Detrended form)
DW=1.88 R2=%90
Note: Since PSE was not significant, we did not continue the Hsiao's process to find the optimum lag
* Significant in 5% level
** Significant in 1% level

In many ways this has merit because, while the Government may wish to support low-income farmers, this should not be done at the expense of making the wheat industry more market-oriented and competitive. Otherwise agriculture will always remain an infant industry. As shown in Table 6, the wheat PSE for OECD did not exceed US$19 billion during 1986-2004.

Looking now at the consumer subsidies, CSE is comprised of two important components: budgetary transfers and market transfers. In this study, budgetary transfers consist of a bread subsidy and a wheat import subsidy while market transfers are indicated by the extent to which the domestic price is set below the reference price. According to Table 1 and Figure 1, the

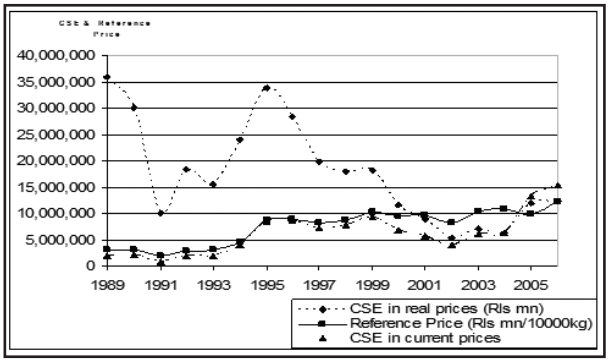

Figure 1. CSE and reference price trends during 1989-2006

CSE for wheat in current prices has an upward trend while in real prices the trend is downward. However, in either real or current terms, its fluctuations closely follow reference price variations.

During the period under review, the bread subsidy rose steadily, and hence fluctuations of market transfers (owing to reference price variations) are the main source of CSE changes. It is interesting to note that for Iran the CSE is positive (see Table 1 and Figure 1). This is unlike the situation for most developed countries and some developing countries where the CSE

Table 5: Wheat PSE and CSE in OECD countries (USD mil)

Year	1986	1990	1995	2000	2001	2002	2003	2004p
PSE	18,949	17,149	14,801	17,415	14,665	14,097	17,330	18,542
CSE	-6,600	-5,326	-1,950	-2,460	-1,122	-1,255	-2,704	-2,050

Note: p: provisional. Source: OECD, PSE/CSE database 2005.

tends to be negative (see, for example the data for OECD member countries in Table 5). The positive CSE for Iranian wheat is indicative of the relative political strength of urban consumers compared to rural producers. It suggests, although transfers from consumers to producers has been positive in recent years (see IX.1 in table 1), there still is an implicit tax on wheat producers in Iran, and continuing this trend will continue to affect them negatively.

CONCLUSIONS

During the period under consideration, the Iranian government has intervened heavily in the wheat industry in an attempt both to influence production and consumption. On the production side, it has attempted to both encourage international competitiveness in production and to move the wheat industry towards self-sufficiency. However, it appears to have achieved neither. It has attempted to encourage production by means of market interference through methods such as severely distorting the input and output prices. However, this has failed to have the desired effect probably because of poor targeting of the support through an inappropriate pricing mechanism. However, these same price distorting support measures have also meant that the Iranian wheat industry is no closer to being internationally competitive. Such interventions involve enormous Government outlays to both consumers and producers, which look likely to continue into the future, as well as large market transfers from producers to consumers

Such policies place a huge burden on the Treasury and reinforce neither international competitiveness nor long-term self-sufficiency for three reasons:

1. the high support price of wheat which has a tendency to be above the world price;

2. low input prices which are below the world prices of inputs;

3. an inability to improve the yield.

With regard to the consumer subsidy this appears to be a political issue which will need to be resolved, if at all, in the political arena.

In conclusion, Iranian policy makers need to reconsider the methods of intervention in the wheat industry. Iranian wheat needs a well-targeted policy regime to support efficient production and consumption. Implementing a wider range of support policies, which are designed with respect to special characteristics of different crops and regions, could minimize the price distortions and thereby support policies would perform more efficiently. Also, we suggest that agricultural policies in Iran shift from being effectively transfer mechanisms (where farmers receive payments irrespective of yield) and toward mechanisms that encourage more efficient production, make agriculture more market-oriented, enhance international competitiveness and reduce excess pressure on the Treasury. That is, the Government should consider targeting support for increased productivity to only the more efficient producers while targeting income support to only low-income farmers. The nature of targeted support for increased productivity might include investments in seed breeding, research into new methods of cultivation and increasing efficiency of irrigation.

REFERENCES

1- Alston, J.M. and B.H. Hurd, (19900. Some Neglected Social Costs of Government Spending in Farm Programs. American Journal of Agricultural Economics, 72: 149-156.

2- Alston, J.M., V.H. Smith, A. Acquaye, and S.S, Hosseini, (1999). Least-Cost Cheap Food Policies: Some Implications of International Food Aid. Journal of Agricultural Economics, 20: 191-201.

3- Amid, J., (2007). The Dilemma of Cheap Food Policy and Self-Sufficiency: The Case of Wheat in Iran. Journal of Food Policy, doi: 10.1016/j.foodpol.2006.11.001.

4- Anonymous, (2005a). The Process of Agricultural Policies Evolution in Iran (and evidence from other countries). Tehran: The Ministry of Jihad-e Agriculture, Agricultural Planning and Economic Institute.
5- Anonymous, (2005b). The National Law of Agriculture and Natural Resource Sector Development in Fourth Five-Year National Development Plan. Tehran: The Ministry of Jihad-e Agriculture, Agricultural Planning and Economic Institute.
6- Azari, A. (2008). Calculating Aggregate Measurement of Support and Examining its Causality Relationship with Production Growth of Agricultural Products. M. Sc. Thesis: University of Tehran, Tehran.
7- Cakmak, E.H., (2003). Evaluation of the past and future agricultural policies in Turkey: are they capable to achieve sustainability? Department of Economics, Middle East Technical University, Ankara (Turkey).
8- FAO/FAOSTAT-Agriculture/TradeSTAT: http://faostat.fao.org/site/406/default.aspx
9- Gardner, B.L., (1988). Export Policy, Deficiency Payments, and a Consumption Tax. Journal of Agricultural Economic Research, 40(1): 38-41.
10- Hsiao, C., (1981). Autoregressive Modeling and Money-Income Causality Detection. Journal of Monetary Economics, PP. 85-106.
11- Hoseini Darvishani, S.M. and A. Gharib Reza, (2003). Study and Comparison of Support Policies in Iran and World. Conference of Agriculture and National Development: Agriculture and Economic Globalization, Tehran.
12- Hosseini, S.S., and J. Spriggs, (1998). Iranian Wheat Policy: Implications for Trade. World Trade Organization, edited by: T. Yildrim, Schmitz, and W.H. Furtan: Westview Press.
13- Hosseini, S.S., and M. Torshizi, (2009). An Evaluation of Wheat Support Policy in Iran. Iranian Journal of Agricultural Economics and Development Research. 40-2(2): 1-13.
14- Hosseini, S.S., A. Dourandish, and H. Salami, (2010). Evaluation of Iranian Government Protection Policy in Wheat Market. Iranian Journal of Agricultural Economics, 3(4): 95-120.
15- Hosseini, S.S., S. Eravani, and A. Nikoukar, (2009). Investigation the Effects of Support Policies of Government on Income Risk Paultry Producers in Iran. Journal of Economics and Agriculture Development, (Agricultural Science and Technology). 23(1): 88-97.
16- Hosseini, S.S., S. Rezaei, and H. Rezaei, (2009). Evaluating the Effect of Support Policy on General Services of the Iranian Government on Productivity of Agricultural Sector. Iranian Journal of Agricultural Economics, 3(1): 73-88.
17- Islamic Republic News Agency. April, 19th, (2009). News Code: 442795.
18- Krause, M. A., Lee, J.H., and W.W. Koo, (1995). Program and Nonprogram Wheat Acreage Responses to Prices and Risk. Journal of Agricultural and Resource Economics, 20(1):96-107.
19- Longworth. J., and P. Knopke, (1982). Australian Wheat Policy 1948-79: A Welfare Evaluation. American Journal of Agricultural Economics, 64(4): 642-654.
20- Mahmood, M.A., A D. Sheikh, and M. Kashif, (2007). Acreage supply response of rice in Punjab. Journal of Agricultural Research, 45(3). 231-236.
21- Melyukhina, O., (2002). The Measurement of the Level of Support in Selected Non OECD Countries. In China and the World Economy: Agricultural Policy Adjustments in China after WTO Accession. Paris: Organization for Economic Co-operation and Development.
22- Ministry of Jihad-e Agriculture/ Statistics/Cultivation Data Base: http://www.maj.ir/english/Statistic/Default.asp?p=statistic
23- Mullen, K., D. Sun, D. Orden, and A. Gulati, (2004). Producer Support Estimates (PSEs) for Agriculture in Developing Countries: Measurement Issues and Illustrations from India and China. International Food Policy Research Institute, MTID Discussion Paper No. 74. Washington, D.C.: International Food Policy Research Institute.
24- Orden, D., K. Mullen, D. Sun, and A. Gulati, (2004). Agricultural Producer Support Estimates for Developing Countries, Measurement Issues and Evidence from India, Indonesia, China, and Vietnam. International Food Policy Research Institute, Research Report Abstract, 152.
25- OECD (Organization for Economic Co-operation and Development), (2003). Agricultural Policies in OECD Countries, Monitoring and Evaluation. Paris: OECD.
26- OECD (Organization for Economic Co-operation and Development), (2005). Agricultural Policies in OECD Countries, Monitoring and Evaluation. Paris: OECD.
27- Permeh, R., and M. Seiedi, (2003). Support Policies, International Views and Iran's Agriculture.

Conference of Agriculture and National Development: Agriculture and Economic Globalization, Tehran.
28- Portugal, L., (2002). Methodology for the Measurement of Support and Use in Policy Evaluation. Paris: OECD.
29- Salassi, M.E. (1995). The Responsiveness of U.S. Rice Acreage to Price and Production Costs. Journal of Agriculture and Applied Economics, 27(1995):386–99.