

## **DISTORTIONS IN PRICES OF FOOD GRAINS IN PAKISTAN: 1996 to 2006**

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The paper has examined and analyzed the domestic producer and international prices of wheat, basmati and IRRI paddy during 1996-06. The analysis has suggested deterioration in the purchasing power of these foodgrains as their annual increases fell short of the general price increase in the economy. The analyses of domestic and international prices during the study period suggest negative protection to domestic production of wheat averaging between 30-34 per cent per year, of basmati paddy varying from 12 to 20 per cent and huge transfer of resource from the producers of these crops. The comparison of domestic prices of IRRI paddy with the export parity prices, estimated at the official exchange rate, generally suggests positive protection to its domestic production averaging at 6 per cent per year. However, when export parity prices are estimated at the equilibrium exchange rate the overall picture changes to one of negative protection or implicit taxation averaging at 4 per cent per year.

### **I. Introduction**

Foodgrain markets in Pakistan have a have a history of government interventions. These interventions, have included monopoly procurement of commodities like wheat and rice as inherited at Independence and continued through 50s [Niaz (1995)], public sector monopolies in exports and imports of various commodities; subsidized inputs and credit for purchase of farm inputs and machinery; fixation of minimum support prices of crops; restrictions on commodity movements; subsidized issue price of wheat procured at support prices and imported in public sector. Such trade and exchange control policy interventions that characterized agricultural markets, from 1960s to mid 1980s distorted agricultural prices and producer incentives and lowered the real prices of tradable commodities [Hamid et al. (1990), and Dorosh and Valdes (1990)].

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Of all the interventions major impact on producers prices have been that of direct interventions in output markets through announcement of prices for procurement, actual procurements and fixation of issue price for the sale of procured produce. Restrictions on commodity movements also create distortions in output prices. Macroeconomic environment as reflected through budget deficit, trade balance, exchange rate, general inflation, etc. also exert indirect but overarching influence on various markets and prices of traded commodities.

Faced with growing budget deficit, rising debt burden the government in the mid 1980s embarked on a program of economic reforms with a major thrust on reducing the role of public sector and allowing more space to private sector and reliance on markets. Major policy reforms in input and output markets were completed in 1995-96 and the period up to 2005-06 has been almost free from input subsidies. This period, which was, by and large, characterized by the interplay of market forces and interventions in commodity markets (announcement of support prices of selected commodities), is the focus of this study. The study period spans over eleven years, 1996 to 2006, which have been free from the input subsidies but experienced considerable price hike. This study examines the incentives and distortions faced by the farmers in the production of major foodgrains, wheat and rice, in Pakistan during the period mentioned above. Wheat and rice, the staple food crops in Pakistan, account for about 86 per cent of the 31 million acres annually sown to foodgrains. They contribute around 88 per cent towards the annual production of foodgrains reported at 30.39 million tons in 2005-06 [Government of Pakistan (2008)]. Wheat has been a major import and rice an important export commodity in Pakistan. Accordingly, any major breakthrough or shortfall in their production can set in motion a chain reaction affecting the entire economy. What happens to the prices and incentives to the production of these commodities has major implications for their domestic production and marketing, food security, international trade, resource transfers and poverty situation in both urban and rural areas of the country. According to the data from Agricultural Census 2000 around 55 per cent of the area under these two crops is on farms of below 12.5 acres. Economic well being and welfare of the households operating these farms is especially dependent on the production and development of these crops.

The rest of the paper is organized in the following way. Methodological framework used in the analysis, based primarily on the analysis of commodity prices in the domestic and world markets, is explained in Section II. Results emerging from the empirical analysis of domestic and international prices of these commodities are reported in Section III. A summary of the conclusions and main findings highlighting the need for strengthening analytical capacity for sound policy formulation are presented in Section IV.

## II. Methodology, Data and Caveats

### 1. Methodological Framework

Prices received by farmers play a crucial role in determining incentives for various commodities and subsequent resource allocation decisions. The government

annually reviews and announces support prices of wheat, basmati and IRRI paddy. The support price has been designed to provide a floor to the market prices during the harvest season. The sale of produce at support prices is voluntary and farmers are free to sell their surplus produce in the open market for better prices [Salam (2001)]. However, as institutional arrangements for protection of the support prices have varied over time and across commodities prices received by farmers in the harvest season have been often at variance with the prices announced by the government.

Three pronged approach to examine the situation with regard to prices and incentives in the production of wheat and rice crops has been followed in this paper. In the first stage support prices of wheat and rice (paddy) are compared with the producer prices in the main producer area markets during the harvest- post harvest season, to examine the effectiveness of support price program in ensuring the minimum guaranteed prices to farmers.

The study covers a period of eleven years, 1996 to 2006, which experienced considerable price hikes. In the periods of inflation or deflation the purchasing power of the commodity changes, making comparison of the nominal values of little use over time. To compare values over time, the nominal values of goods must be deflated by an appropriate index to determine their real values [Cramer et al. (1997)]. In the second stage the GDP deflator, a price index that measures the overall level of prices of goods and services included in GDP was calculated by the following formula:

$$\text{GDP deflator} = \text{nominal GDP} / \text{Real GDP}^1$$

The data on nominal and real values of GDP (base year 1999-2000) used in these calculations were obtained from the Pakistan Economic Survey (Statistical Supplement) 2007-08. The producer prices of wheat, basmati and IRRI paddy were deflated by the GDP deflator to estimate the changes in their real values/ purchasing power over time. As the base year for GDP deflator is 1999-2000, the deflated values are expressed in constant rupee of 1999-2000 - adjusted for the effects of inflation and making the comparison in prices of the commodities overtime, meaningful.

The international prices represent the opportunity cost to the country of producing various commodities [Dorosh and Valdes (1990)]. Thus world commodity prices provide a reference and benchmark for comparison of domestic prices and determining whether the country is an efficient producer of a commodity or not. In the third stage economic prices of wheat and rice paddy were calculated from the actual import and export prices of wheat and rice, respectively. These parity prices were then used to estimate the nominal protection coefficients (NPCs) in the domestic production. Further based on these NPCs, distortions to incentives in domestic production of wheat and rice crops were ascertained through calculating the nominal rates of assistance (NRA). The nominal rate of assistance is calculated by subtracting 1.0 from the NPC. Formula for calculating NPC is given below as:

$$NPC_i = \frac{P_i^d}{P_i^w} \quad (1)$$

<sup>1</sup> Abel and Bernanke (2005).

where  $P_i^d$  = domestic price of commodity  $i$  and  $P_i^w$  = international price of commodity  $i$ , converted into local currency, at a comparable point in space and time. The NPC can be converted into nominal coefficients of assistance with the help of formula in equation (2) as:

$$NRA_i = \frac{P_i^d - P_i^w}{P_i^w} \quad (2)$$

This can also be written as:

$$\frac{P_i^d}{P_i^w} - \frac{P_i^w}{P_i^w} \text{ and its equal to } NPC_i - 1 \quad (3)$$

The estimated NPC indicates the actual divergence or distortion between the domestic price of a given commodity and its international price. The divergence between the domestic and international prices reflects the presence of market interventions such as taxes, subsidies, government controlled prices and other policy instruments. It also provides a measure of the incentives or disincentives for the domestic production of a given commodity [Appleyard (1987)]. If  $NPC = 1$  and  $NRA = 0$ , it is a neutral situation reflecting neither incentives nor disincentives i.e., no protection to domestic production. When  $NPC > 1$  and  $NRA$  is positive it reflects a situation of positive protection and incentives for domestic production of the commodity. When  $NPC < 1$  and  $NRA$  is negative it indicates negative protection or disincentives for the domestic industry.

The NPCs account only for the distortions in output markets; they do not reflect interventions and any resulting distortions in input markets. This issue can be addressed by using effective protection coefficients (EPCs), which show how value added, rather than the gross value of production, is affected. Thus, the EPCs account for differences across industries in the value added share of output as well as distortions to intermediate input prices. However, estimating the EPCs is much more demanding in terms of the data requirements, which may be difficult to meet. Moreover, compared to output distortions, farm input subsidies on average, have a small overall impact on value added (as shown in Anderson et. al. 2007). During the period of analysis most of the direct interventions in input markets and subsidies on seed, fertilizers, pesticides, credit, etc. were either totally eliminated or were on their way out. Whatever meager input subsidies or taxes and development surcharges were still in place were common to all the crops. Thus, protection coefficients and rate of assistance as worked out here provide useful insights about the levels of protection/assistance for foodgrains through interventions in their output markets.

## 2. Data and Some Caveats

Data relating to procurements of wheat used in the paper were taken from the Agricultural Statistics of Pakistan while support prices are taken from the Statistical Supplement of Pakistan Economic Survey 2007-08. Domestic market prices are from various price policy reports of the Agricultural Prices Commission.

Two points about the domestic and world prices use in the analysis of distortions to prices are in order. First domestic prices as used in the estimation and analysis of NPCs/NRAs relate to the harvest and post harvest season, ruling in major producing area markets of the respective commodities. Second import and export parity were worked back from the actual import and export prices of wheat and rice, respectively. These prices data were obtained from the Statistical Supplement of Pakistan Economic Survey: 2007-08. Actual export/import prices were preferred over the quoted international prices as the latter may vary from those at which transactions actually occur, due to quality, timing, mode of payment and delivery, or other practical considerations. Another point in the estimation of international prices relates to the use of exchange rate in converting trade prices into local currency. Although exchange rate during the period covered in the analysis has been free and floating but the country has experienced large trade deficits. Accordingly, in addition to the use of average nominal exchange rate in the estimation of import/export parity prices effective equilibrium exchange rate, as reported in the World Bank study by Dorosh and Salam (2007), was also used. Two sets of coefficients, one based on official exchange rate and the other based on the effective equilibrium exchange rate, were calculated. In these calculations the international prices were adjusted for domestic marketing, transport, handling, and processing costs. The data on these costs were taken from the price policy reports of the Agricultural Prices Commission.

## III. Producer Prices of Wheat and Rice: Analysis of Incentives and Distortions

### 1. Wheat

#### a) Support and Market Prices of Wheat

The government of Pakistan has been announcing support price of wheat for the last several decades. These prices subjected to annual reviews are however revised at irregular intervals.<sup>2</sup> The support prices of wheat, as fixed by the Government for 1995-96 to 2005-06 crops, along with market prices (average of the wholesale prices ruling in important producer area markets during harvest season) are presented in Table 1. The quantity of wheat procured by the government agencies under the support price program, in different years, is also shown in the same table. The data in Table 1 indicates that during the period 1995-96 to 2005-06, wheat support price increased from Rs.173 to 415 per 40 kg. The producer prices of wheat during the harvest season in the main producing area markets were generally higher than the corresponding support prices except for a few years. In the wake of record harvest and procurements from the 1999-00 crop and sufficient stocks in the country, wheat market remained quite subdued in 2001 and 2002 and market prices lagged behind the support prices.

<sup>2</sup> Wheat pricing policy and related issues have been reviewed in a number of studies; two recent studies on the subject are Dorosh and Salam (2008), and Salam and Mukhtar (2008).

TABLE 1

## Support and Market Prices of Wheat and its Procurements

Years	Support Price Rs. 40/kg	Market Price	Procurements Million tons
1995-96	173	185	3.448
1996-97	240	273	2.725
1997-98	240	259	3.984
1998-99	240	261	4.070
1999-00	300	297	8.582
2000-01	300	275	4.081
2001-02	300	292	4.045
2002-03	300	305	3.514
2003-04	350	385	3.456
2004-05	400	432	3.939
2005-06	415	411	4.514

Source: Agricultural Statistics of Pakistan 2008-09 and Price Policy Reports on wheat of the Agricultural Prices Commission.

The cumulative increase in support price, the pace setter for wheat market price, is 140 per cent. However, the increase has been neither uniformly distributed over the period of analysis nor regular. Nevertheless, there have been substantial procurements every year under the support price program, ranging from 2.72 to 8.58 million tons constituting 16 to 41 per cent of the annual crop harvest. These procurements were instrumental in protecting the support prices especially in years of good crop.

b) *Nominal and Real Prices of Wheat*

As discussed above nominal prices of wheat increased by 140 per cent during the reference period. To ascertain changes in the purchasing power of wheat and incentives thereof, its market prices were deflated by the GDP deflator (1999-2000 = 100). The resulting real values expressed in constant rupee of 1999-00, as presented in Table 2, they reflect a mixed picture. The real value of the wheat market prices estimated at Rs.299/40 kg in terms of 1999-2000 rupees for the 1995-96 crop hiked to Rs.388 in the next year in the wake of a 39 per cent increase affected by the government in the support prices of wheat. This was indeed the highest value of real price during the 11 years period under review. As support price of wheat, the pace setter for the market prices in the harvest season, was irregularly revised; real values of the market prices varied from 255 in 2000-01 to 388 in 1996-97. The average annual increase in nominal price of wheat for the study period works out to 6.65 per cent against the general price increase of 8.39 per cent reflected in the GDP deflator. Accordingly, purchasing power of wheat during the period of study is estimated to have declined at 1.75 per cent per year.

TABLE 2

## Nominal and Real Prices of Wheat: 1996-2006

Years	Nominal price	Real price (Rs/40 kg)
1995-96	185	299
1996-97	273	388
1997-98	259	342
1998-99	261	328
1999-00	297	297
2000-01	275	255
2001-02	292	264
2002-03	305	264
2003-04	385	309
2004-05	432	324
2005-06	411	279

Source: Agricultural Statistics of Pakistan 2008-09 and Price Policy Reports on wheat of the Agricultural Prices Commission.

c) *Domestic and International Prices: Nominal Rate of Assistance in Wheat Production*

Data on domestic market prices of wheat during the harvest season along with the corresponding import parity<sup>3</sup> prices, as estimated from the actual import prices using both official and equilibrium exchange rates, are presented in Table 3. A comparison of the domestic and import parity prices indicates that the latter were always higher than the domestic prices. Accordingly, the nominal rate of assistance to domestic wheat production (at the official exchange rate parity) ranged from -0.10 in 2005-06 to -0.47 in 1995-96. The negative values estimated for the coefficients of assistance throughout the period of analysis, reflects an implicit taxation of wheat production and substantial resource transfers from surplus wheat producing farmers and regions to other sectors of the society/economy. The rate of assistance to wheat production for the 11 years under study averages at -30 per cent.

The import parity prices, calculated at the equilibrium exchange rate, were even higher than those estimated at the official exchange. Thus, rate of negative protection when measured at the equilibrium exchange rate also turned out to be higher and varied from -0.15 to -0.52. Negative protection or the implicit taxation of wheat production at the equilibrium exchange rate averaged at -34 per cent i.e., four percentage points higher than the rate calculated at the official exchange rate.

<sup>3</sup> Since Pakistan has been a net importer of wheat, and only an occasional exporter, its import parity prices represent the opportunity cost of its domestic production.



**TABLE 3**

Domestic Market and International Prices of Wheat: 1996-2006

Years	Domestic price	Import parity 1	Import parity 2	Rs/40 kg	
				(Dp-Imp 1)/ Imp 1	(Dp-Imp 2)/ Imp 2
1995-96	185	349	386	-0.47	-0.52
1996-97	273	350	382	-0.22	-0.29
1997-98	259	346	375	-0.25	-0.31
1998-99	261	303	323	-0.14	-0.19
1999-00	297	365	385	-0.19	-0.23
2000-01	275	504	531	-0.45	-0.48
2001-02	292	523	544	-0.44	-0.46
2002-03	305	522	544	-0.42	-0.44
2003-04	385	567	601	-0.32	-0.36
2004-05	432	581	614	-0.26	-0.30
2005-06	411	458	481	-0.10	-0.15

Notes: Import parity prices estimated at Lahore from the actual import prices of wheat reported in Pakistan Economic Survey (Statistical Supplement) 2007-08. Incidental and related costs in importing wheat adapted from the annual Wheat Price Policy reports of Agricultural Prices Commission. Import parity 1 and 2 are estimated at the official and equilibrium exchange rates.

## 2. Rice

Until 2001-02, the Government used to annually review and announce the support price of rice (paddy<sup>4</sup>). The support price was protected through market intervention and procurements of paddy in the public sector. Since 2003-04 the government has switched over to announcing only its indicative<sup>5</sup> price and that also irregularly. In the wake of economic reforms and an expanding private sector, government's role in rice sector is now limited to occasional announcement of indicative paddy prices. To determine changes in producer incentives, data on domestic support and market prices of paddy, both nominal and real and corresponding international prices of paddy from 1996 to 2006, are examined. In view of the vast differences in the quality of long grain 'basmati'<sup>6</sup> rice and of coarse varieties 'IRRI'<sup>7</sup> rice, as reflected in their prices and concentration of their cultivation in different regions, are dealt with separately.

<sup>4</sup> Paddy is un-husked rice.

<sup>5</sup> Indicative prices merely meant as a reference price without much guarantee of its implementation.

<sup>6</sup> Aromatic varieties commanding premium price in the local market and Middle East countries.

<sup>7</sup> Rice varieties originally developed at the International Rice Research Institute in the Philippines.

### a) Support and Market Prices of 'Basmati' Paddy

Data on domestic prices of basmati paddy, presented in Table 4, indicate that its nominal support prices increased from Rs.222/40 kg in 1995-96 to Rs.415 in 2004-05 and no support (indicative) price for basmati was announced for the 2005-06 crop. These data also suggest irregular revisions in support prices and inadequate arrangements for the protection of government announced prices. The situation in terms of implementation of support price in 2000-01 was quite unsatisfactory as market prices had fallen much below the announced level of Rs.385 to Rs.300.

**TABLE 4**

Nominal and Real Prices of Basmati Paddy: 1996 – 2006

Years	Nominal Prices of Basmati Paddy		GDP deflator 1999-00=100	Real Prices of Basmati Paddy	
	Support	Market		Support	Market
1995-96	222	231	61.97	358	373
1996-97	255	296	70.28	363	421
1997-98	310	297	75.76	409	392
1998-99	330	362	79.46	415	456
1999-00	350	361	100.00	350	361
2000-01	385	300	108.02	356	278
2001-02	385	379	110.71	348	342
2002-03	385	495	115.61	333	428
2003-04	400	500	124.55	321	401
2004-05	415	543	133.30	311	407
2005-06	N.A.	537	147.28	N.A.	365

Notes: Data on support and market prices of paddy are obtained from the annual Price Policy reports on Rice (Paddy) of the Agri. Prices Commission. GDP deflators are estimated from the National Income Accounts data reported in the Pakistan Economic Survey (Statistical Supplement).

### b) Nominal and Real Prices of Basmati Paddy

Nominal market prices of basmati paddy, during the reference period, has fluctuated between Rs.231 and Rs.537 per 40 kg. The real value of market prices of paddy in terms of 1999-2000 rupees, estimated at Rs.373/40 kg in 1995-96 reached the highest level of Rs.456 in 1998-99; and declined to its lower level, Rs.278, in 2000-01. The real value of market prices had recovered to Rs.407 in 2004-05 but fell to Rs.365 in 2005-06. The GDP deflator is estimated to have increased at 8.39 per cent per year while the average annual increase in market prices of basmati paddy works out to 8.07 per cent (Table - 4).

Although nominal prices of paddy have shown an upward trend but the real prices, both support and market, fluctuated. The revisions in the support prices of paddy were irregular and did not match the annual increase in the overall price level as reflected in the GDP deflator. Thus, its purchasing power though depicting some sharp upward swings in some years has, on the whole been eroded during period of this study.

c) *Domestic and International Prices of Basmati Paddy:  
Rate of Assistance in Basmati Production*

Basmati exports constituting about 33 per cent of its annual production in normal years have impacted on the domestic prices of the produce. To determine to what extent the domestic prices of rice (paddy) have followed the international prices, export parity prices of paddy were worked back from the actual export prices of basmati rice, both at the official and equilibrium exchange rates. The export parity prices along with the corresponding domestic market prices of paddy are set out in Table 5. Generally speaking domestic producer prices of basmati paddy have lagged behind the export parity prices. The nominal coefficient of assistance for basmati paddy, as worked out from the parity prices calculated at the official exchange rate, was positive, at 0.07 only for 1995-96 and was negative for the rest of the period from 1996-97 to 2005-06, ranging from -0.03 to -0.37. The average rate of assistance for the entire period of analysis works out to -0.12 i.e., negative protection at 12 per cent per year. When these calculations are repeated at the equilibrium exchange rate the whole period of analysis is characterized by negative assistance to domestic production of basmati. Negative assistance or implicit taxation of basmati at the equilibrium exchange rate varied from -0.11 to -0.42 averaged at -0.20 for the period of study.

The estimates of NRA for 'basmati' farming presented in Table 5 also suggest sharp decline in negative protection since 2002-03 and close tracking of the developments in export markets by the domestic markets. The period from 1996-97 to 2001-02 was conspicuous by high incidence of negative protection or taxation of basmati production, averaging at 27 per cent per year. Moderate taxation characterized the years from 2002-03 to 2004-05 but high taxation surfaced again in the year 2005-06.

3a) *Support and Market Prices of IRRI Paddy*

Data on support and market prices of IRRI paddy from 1995-96 to 2005-06, both nominal and real, are presented in Table 6.

The support price of IRRI paddy increased from Rs.112/40 kg to Rs.300 during the eleven year period under review. The support prices, revised regularly until 2000-01, increased from Rs.112/40 kg in 1995-96 to 205 in 2000-01. For the 20001-02 crop support price was maintained at the previous year's level and as no price was announced for the 2002-03 crop the previously announced price was applicable. Thus the price originally announced for the 2000-01 crop was applicable for three crop years. Again from 2003-04 to 2005-06 price was regularly revised albeit as indicative price (instead of support price).

**TABLE 5**

Domestic Market and Export Prices of Basmati Paddy: 1996-2006

Years	Domestic Market Price	Export Parity Price 1	Export Parity Price 2	(Rs.40/kg)	
				NRA 1 (Dp - Ep 1)/Ep 1	NRA 2 (Dp - Ep 2)/Ep 2
1995-96	231	215	253	0.07	-0.09
1996-97	296	315	357	-0.06	-0.17
1997-98	297	355	400	-0.16	-0.26
1998-99	362	395	438	-0.08	-0.17
1999-00	361	481	523	-0.25	-0.31
2000-01	300	477	517	-0.37	-0.42
2001-02	379	512	542	-0.26	-0.30
2002-03	495	509	542	-0.03	-0.09
2003-04	500	515	563	-0.03	-0.11
2004-05	543	565	616	-0.04	-0.12
2005-06	537	615	661	-0.13	-0.19
Average				-0.12	-0.20

*Note:* Export parity prices of paddy are estimated from the actual export prices of Basmati rice reported in Pakistan economic Survey (statistical supplement) 2007-08. Incidentals and related costs in exporting rice used in these estimations are adapted from various Rice price Policy reports of Agri. Prices Commission. Export parity prices 1 and 2 are calculated at the official and equilibrium exchange rates, respectively, at ex rice mill located in basmati rice growing regions of the Punjab. Market prices of paddy are the average of wholesale prices obtained from important producer area markets during the harvest/post harvest season.

**TABLE 6**

Support and Market Prices of IRRI Paddy; Nominal and Real Values: 1996-06

Years	Nominal Prices of IRRI Paddy		Real Prices of IRRI Paddy	
	Support	Market	Support	Market
1995-96	112	181	181	292
1996-97	129	164	183	233
1997-98	153	205	202	271
1998-99	175	234	220	294
1999-00	185	203	185	203
2000-01	205	180	190	167
2001-02	205	206	185	186
2002-03	205	218	177	189
2003-04	215	257	173	206
2004-05	230	338	173	254
2005-06	300	290	204	197

*Note:* Data on nominal support and market prices of IRRI paddy are obtained from Policy reports of the Agricultural Prices Commission.

Market prices of IRRI paddy by and large, have been higher than the corresponding support prices in the study period. In two of the years, 2000-01 and 2005-06, when market prices fell below the level meant for government intervention the government actions was insufficient and inadequate. Market prices of paddy, at which a major share of the produce is disposed off by the growers has , fluctuated between Rs.164/40 kg and Rs.338/40 kg from year to year, reflecting the size of the harvest and demand situation.

Real value of the market prices of IRRI paddy has ranged between Rs 167/40 kg (in terms of 1990-00 prices) and Rs 294. Real market prices having peaked in 1998-99 at Rs 294 declined sharply in the next couple of years to reach the lowest value of 167, in 2000-01. Nevertheless, as the market prices of paddy rose steadily for the next four crops, reaching the highest nominal value of Rs 338 by 2004-05, its real value recovered a lot of the lost ground to reach 254. However, in the wake of a sharp fall in market prices of paddy in 2005-06, its real value fell to 197. The average annual increase in the nominal market prices of IRRI paddy for the reference period works out to be 5.27 per cent per year. This, however, does not compare favourably with increase of 8.39 per cent in the overall rate of inflation in the economy. Accordingly, purchasing power of IRRI paddy declined at 3.12 per cent per year.

### 3b) Domestic and International Prices:

#### *Nominal Rate of Assistance in Production of IRRI Paddy*

Pakistan has been exporting large quantity of coarse rice, ranging from one to two million tons per year. Bulk of the coarse rice, over 60 per cent , is produced in Sindh where it is also a staple food. Export parity prices of IRRI paddy from 1996 to 2006, estimated at the official and equilibrium exchange rates, along with the domestic market price are reported in Table 7.

The data presented in Table 7 suggest that unlike Basmati domestic market prices of IRRI paddy were generally higher than the corresponding export parity prices; as worked back, at the official exchange rate; from the export prices of cleaned rice. The positive coefficient of assistance, for nine out of eleven years under study, ranged from 0.02 to 0.20. These coefficients indicate varying but positive support to IRRI farming in the country. In the remaining two years, 1995-96 and 2005-06; IRRI rice growers faced negative protection respectively at the rates of 20 and 2 per cent. The average protection rate for IRRI works out to 6 per cent per annum during the period of study.

The export parity prices of IRRI paddy estimated at the equilibrium exchange rate were higher than the ones calculated at the official exchange rate. Accordingly, when these were compared with the domestic market prices, in 6 out of the 11 years domestic prices lagged behind the corresponding international prices and IRRI production experienced negative protection. But in the other 5 years when domestic prices exceeded export parity it enjoyed positive assistance. Moreover, incidence of positive protection calculated at the official exchange rate now became negative in many years while previous negative protection became more regressive. The overall picture emerging in this case is, however, of negative protection at 4 per cent per year for IRRI production in the country at equilibrium exchange rates.

**TABLE 7**

#### Domestic Market and Export Parity Prices of IRRI Paddy: 1996-2006

Years	Domestic Market Price	Export Parity Price 1	Export Parity Price 2	(Rs.40/kg)	
				NRA 1 (Dp - Ep 1)/Ep 1	NRA 2 (Dp-Ep 2)/Ep 2
1995-96	181	227	260	-0.20	-0.30
1996-97	164	161	183	0.02	-0.10
1997-98	205	176	198	0.17	0.03
1998-99	234	195	216	0.20	0.08
1999-00	203	184	201	0.10	0.01
2000-01	180	175	190	0.03	-0.05
2001-02	206	202	214	0.02	-0.04
2002-03	218	198	211	0.10	0.03
2003-04	257	245	267	0.05	-0.04
2004-05	338	293	319	0.15	0.06
2005-06	290	297	319	-0.02	-0.09

*Notes:* Market prices of paddy are the average of wholesale prices obtained from important producer area markets during the harvest/post harvest season. Export parity -1 and export parity-2 respectively are calculated at the official and equilibrium exchange rates from the annual average export prices of rice reported in Economic Survey (Statistical Supplement) 2007-08. Export parity prices of IRRI paddy are calculated at rice mill located in the rice farming regions of Sindh. The domestic paddy prices are the averages of producer area markets located in main IRRI growing areas of Sindh.

#### IV. Summary and Recommendations

Notwithstanding substantial increase in the nominal support and market prices of wheat, over time, their real values during the study period declined reflecting deterioration in its purchasing power. Domestic prices of wheat also substantially lagged behind the corresponding import parity prices, calculated at the official as well equilibrium exchange rates. Consequently, negative protection to wheat production averaged 30-34 per cent per year. An important factor in this context has been the dominant role of public sector in wheat markets, crowding out the private sector to the disadvantage of farm households. The analysis of domestic and international prices of wheat during 1996-06 does not provide a favorable picture of incentives for domestic production but a rather gloomy picture of deteriorating purchasing power and huge resource transfers from wheat farmers/ surplus producing regions to other sectors. These distortions in incentives had a negative impact on the welfare of farm households and also adversely impacted the outcome of other efforts aimed at increasing domestic production and import substitution. Not surprising that the period was characterized by substantial wheat imports.

The support price of basmati paddy, though revised at irregular intervals, increased from Rs.222 per 40 kg in 1995-96 to Rs.415 in 2004-05. The market prices



during the reference period were generally higher than the support prices. But in years of need for arrangements for its protection the measures fell short of the requirements. The real values of market prices of basmati paddy, characterized by sharp fluctuations, drifted downward reflecting decline in its purchasing power. The picture emerging from the examination and analysis of domestic and international prices of Basmati paddy is also that of deteriorating purchasing power over time, and of large scale resource transfers from its growers, portraying a position of disincentives to Basmati sub sector of rice farming in the country during the study period. Nevertheless, the data also suggested negative protection trends overtime, which may have been on account of the increasing role of private sector and competition in rice trade. Negative protection to basmati farmers calculated at the official exchange rate averaged at 12 per cent per year and rose to 20 per cent when export parity prices were calculated at the equilibrium exchange rate.

Generally market prices of IRRI paddy were higher than support price but in some years when it lagged behind and warranted intervention the arrangements for intervention were too little and too late to achieve the desired results. The real value of the market price of IRRI paddy was eroded during the period under reference as IRRI paddy prices on the average increased at 5.27 per cent per year while GDP deflator rose at 8.39 per cent during the period under reference. The comparison of domestic market price of IRRI paddy with the export parity prices, estimated at the official exchange rate, generally suggests positive protection to its domestic producers averaging at 6 per cent per year. However, when export parity prices were estimated at the equilibrium exchange rate the overall picture changed to one of negative protection or implicit taxation averaging at 4 per cent per year.

The foregoing analysis suggests that despite liberalization and reforms in many of the sectors the foodgrains subsector in Pakistan during 1996-06 was characterized by many distortions and disincentive to domestic producers. The disincentives to domestic producers had adverse impact on the outcome of various other measures and efforts aimed at increasing the production of foodgrains, improving food security and alleviating rural poverty in the country. The analysis also underscores the need for liberalizing the foodgrains markets and increasing competition in output markets to pass on the benefits of aligning domestic markets with international markets to the domestic producers.

In view of the fast changes in the international prices of foodgrains and the related developments in the domestic markets a revisit of the subject would be helpful to update the analysis and ascertain how the incentives have changed for domestic producers. In this context, it would be really useful to develop the institutional capacity in the ministry of Food and Agriculture or the Planning Commission for regularly monitoring the developments in the world markets and analyzing relevant policy options and responses to help the cause of food security in the country.

The government intervention in input markets, especially the energy related ones i.e. fertilizers and diesel, seems to have been on the rise while declining in commodity markets in the recent past. Consequently, landscape of commodity markets is witnessing marked changes and regional variations. In view of the changing scenario, it would be useful to have a more disaggregated picture of

incentives, unlike the aggregated one presented and discussed in this paper, to guide policy planning and develop future strategy for increasing farm production. Tracking the developments in important commodity markets during the course of a year would help policy planners understand the dynamics of markets, manipulations if any, and adopt remedial measures to thwart the activities of such manipulators. It is also important to analyze and examine the efficiency in the functioning of various input and output markets as this has a significant bearing on the transmitting of production incentives and their structure. But all this depends upon substantial improvements and investments in market intelligence and analytical capacity building.

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