DISTORTIONS IN PRODUCER INCENTIVES OF CASH CROPS IN PAKISTAN

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Abstract. The cultivation of cotton and sugarcane provides raw material for the textile and sugar industries in the country. Based on the domestic and international prices of relevant commodities nominal protection coefficients for these crops, from 1995 to 2015, were estimated to ascertain the situation of producer incentives. The nominal protection coefficients for sugarcane have ranged between 0.70 and 1.54, indicating a mixed situation of producer incentives. The nominal protection coefficients for seed cotton during the study period have varied from 0.55 to 0.94. As the values of NPCs have been less than one, cotton farmers have received prices less than the opportunity cost of their produce and thus subjected to implicit taxation, varying from 6 to 45 percent per year.

Keywords: Border price, Cash crops, Implicit, Incentive, Distortions, Interventions, Market price, Protection

JEL Classification: O31, Q13, H25

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I. INTRODUCTION

Cotton and sugarcane are the two most important cash and industrial crops of Pakistan. Taken together, their annual area of about four million hectares accounts for about 18 percent of the total cropped area, contributing about 40 percent of the value added by important crops in the recent past (Pakistan 2017). The cultivation of cotton and sugarcane is the principal source of raw material for the largest agro based industries, textile and sugar, in the country. Cotton seed, a valuable by product of cotton farming, is used for producing vegetable oil and "ghee", by edible oil industry in the country. In addition, their farming provides valuable feed and fodder   for raising livestock and dairy animals. The production of cotton and sugarcane thus impacts not only the performance and value addition in agriculture but also that of the large scale manufacturing sector in Pakistan.

Pakistan has a history of policy interventions in cotton and sugarcane sectors. These interventions have, inter alia, included: public sector monopoly in trade of sugar and cotton, system of support / procurement prices of sugarcane and cotton crops, minimum export price (MEP) for cotton, government permission to setup sugar mills, sugar mill zones with monopsony of mills in the context of sugarcane, and government approval, permission and subsidy on exports of sugar.

Many of these interventions, however, were effected without in depth analysis and due regard for their implications for producer incentives and consequences for farm production and productivity. In addition, government exchange rate, fiscal and monetary policies have also affected the nature and course of incentives for growers. In the wake of structural adjustment and economic reforms, initiated during mid-80s, most of the above mentioned interventions have been done away. Moreover, role of private sector in domestic marketing and international trade of cotton and sugarcane and their products has expanded as   public sector activities in trade have been rolled back. Thus, domestic prices and farm incentives in production and marketing of cotton and sugarcane crops are by and large, since the 1990s, determined by market forces.

The support price for sugarcane, meant to provide a floor to the market prices, in the absences of institutional mechanism to ensure its implementation, has   lost its effectiveness and utility for farmers. There

are frequent reports in the press, during sugarcane crushing season, highlighting farmers' problems and complaints about sugarcane prices, delayed payments and deductions on one or the other pretext. The system of support price for cotton crop has been nonexistent since the abolition of Cotton Export Corporation (CEC) in the late 1980s. The producer prices of seed cotton are determined by the interplay of market forces. Farmers often complain about erratic behavior of markets, low prices of seed cotton and collusion among the traders and processors. The markets of sugarcane and cotton dominated, as they are, by powerful groups of industrialists, processors and traders, are plagued by many imperfections to the disadvantage of growers. All these factors impact producer prices and incentives and the course of resource allocation, farm production and productivity. It is worth mentioning here that more than 51 percent of the area under sugarcane and 56 percent of cotton area are contributed by small farmers, operating less than 12.5 acres (Pakistan 2012). The small farmers working under several constraints and lacking storage facilities and holding capacity are obliged to sell their produce during harvest season when prices tend to be at their lowest ebb.

In view of the several changes, leading to the increasing role of markets in determining prices of cash crops there is a need to examine and evaluate the changing position of producer incentives. Accordingly, the annual prices of seed cotton and sugarcane, as received by the growers in domestic markets are reviewed and analyzed along with their corresponding border prices. The border prices were estimated from the actual export and imports price of cotton and sugar and further used to calculate the protection coefficients for the respective commodities so as to ascertain the position of producer incentives. The analysis extends from 1995 to 2015, a period which has witnessed a number of changes in political regimes and policy shifts, and is long enough to allow a meaningful analysis of the situation relating to producer incentives.

Rest of the paper is organized as follows. Important studies relating to the topic are reviewed in section II. Methodology for estimating and analysis of incentives in domestic production is explained in section III. Data used in the estimation and their sources are also described in this section. Empirical estimates of producer incentives in cultivation of sugarcane and cotton are presented and discussed in section IV. Section

V concludes the paper by summing up   salient results emerging from the analysis. It also provides suggestions for consideration of policy makers to improve the economic environment for production of cotton and sugarcane in the country.

II. REVIEW OF LITERATURE

A number of studies in the past have attempted to examine the impact of policy interventions on farmers' incentives and incomes. But given the fast track of changes on the policy landscape, resulting in contraction of public sector and allowing increasing economic space to private sector and markets in economic activities, there is a need to revisit and examine the course of incentives for producers of cash and industrial crops of cotton and sugarcane and this study is designed to do that. Before starting new estimations, some of the important studies examining / impacting the course of incentives on cash crops are reviewed here.

Appleyard (1987) in his pioneering study of comparative advantage of agricultural production systems   in Pakistan observed that difference between domestic prices received by farmers and their respective international equivalent prices indicate whether farmers gain or lose on account of these differences. In his calculations of protection coefficients for seed cotton and sugarcane, for the period of 1975 to 1983, he employed their domestic support prices and found them to be less than their equivalent border prices, indicating implicit taxation of domestic production of these crops.

Hamid, et al. (1990) in their comprehensive analysis of agricultural pricing policies in Pakistan, spanning from 1960 to mid1980s, noted that trade policies, controls on foreign exchange, and major government interventions in domestic agricultural markets created large distortions in agricultural prices. The overall effect of these policies, including the indirect effects of trade policy distortions on real exchange rates, was to lower the real prices of tradable agricultural products. In case of cotton, the study observed that from 1974 to 1986 the Cotton Export Corporation, established in the 1970s, had a monopoly on cotton (lint) exports. By restricting the volume of exports, the Corporation depressed domestic price of cotton below the world price. At the official exchange rate, the nominal rate of assistance (NRA) on cotton lint averaged (-) 12

and (-) 9 percent in the 1970s and 1980s, respectively. Cotton producers nonetheless benefited from the protection for vegetable oils that boosted the domestic price of cotton seed. Including the protection on cotton seed, the total NRAs for cotton farmers were less negative. However, if the dual exchange rate system is taken into account, the average NRAs for cotton become (-)18 percent in the 1960s (-) 6 percent in the 1970s and (-) 2 percent in the 1980s. In their analysis   for sugarcane crop, Hamid *et al*. observed wide variations in domestic production, domestic and world prices of sugar were also reflected in varying estimates of the NRAs. The NRAs averaged over 100 percent in the 1960s, the early 1970s, and the later 1980s, when the international prices fell again. Since then, the NRAs have remained above 50 percent. The authors concluded that sugarcane and refined sugar production had been highly protected.

Orden *et al*. (2006) in their study on the Impact of Global Cotton and Wheat Prices on Rural Poverty in Pakistan observed that domestic prices of seed cotton though less than the export parity prices but had generally followed the trend in the latter. Import parity prices were noted to be substantially higher than the domestic prices. Thus, nominal protection coefficient based on import parity prices was below one, indicating implicit taxation, of domestic cotton producers.

Dorosh and Salam (2007) in their study titled: Distortions to Agricultural Incentives in Pakistan, noted that with the introduction of economic reforms, in the mid-1980s, economic environment had witnessed substantial liberalization and reduction of direct government interventions in agricultural markets. For cotton their nominal rates of assistance (NRA), based on export parity averaging (-) 6.1 percent for the five years ending in 1989, rose to (-) 19.9 percent in the next five years and fell to (-) 7.9 percent in during 1995-2000 but changed to positive protection averaging @ 7 percent for the five-year period ending in 2005. For the sugar industry their NRAs estimates, based on import parity indicated positive protection for the sugar industry, estimated positive protection averaging at 123.7 percent during 1985-89, 52.1 percent in 1990-94, 54.3 percent from 1995-200 and 86.5 percent during 2000-05.

Salam (2009) in his study of distortions in incentives of major crops in Pakistan for the period of 1991 -2008, observed large fluctuations in the domestic and world market prices and noted an upward trend in the

domestic prices which was triggered by the depreciation of the local currency. The protection coefficients based on export parity prices indicated arresting of implicit taxation of cotton since 1997-98 which however was not the case when protection coefficients were worked from the import parity prices. In his analysis of incentives for sugarcane crop he noted a situation of implicit taxation when the protection coefficients were based on export parity prices and of implicit subsidy if import parity price was used to represent border price of the produce. The protection coefficients based on the average of export and import parity prices of sugarcane, however, yielded the average value of protection coefficient close to one.

III. METHODOLOGY AND DATA USED FOR ESTIMATING PRODUCER INCENTIVES

METHODOLOGY

The commodity prices in world markets represent a society's short run opportunity costs with respect to their changed consumption or domestic production (Timmer 1986). They provide a ready reference for ascertaining the competitiveness of domestic production, kind of incentives - protection or taxation and economic environment faced by producers in domestic markets. The world prices also known as border prices are converted into local currency by using an exchange rate (Tsakok 1990). The border prices when expressed into local currency can be easily compared with the corresponding prices in domestic market to figure out their divergence, if any, as trade theory provides for equalizing of prices of traded commodities between the trading partners. The examination and analysis of domestic and border prices is helpful in finding out the protection and its level by estimating the nominal protection coefficient (NPC). The formula for estimating NPC is given below (Tsakok 1990):

$$NPC = P_i^d / P_i^b$$

Where,

P_i^d is the domestic price of commodity i, and

P_i^b is the border price of the commodity i, expressed in local currency, i.e. international price of the commodity multiplied by the exchange rate.

As per the review of literature, NPC provides an empirical estimate of any distortions in domestic production of a given commodity. It also provides a measure of the incentives or disincentives for producers of a given commodity. When NPC > 1, domestic price   is higher than the border price, it indicates incentives and encouragement to the domestic producers. Conversely, when NPC < 1, border price is higher than the domestic price, indicating implicit taxation and disincentives for domestic producers of the commodity (Appleyard 1987). When NPC =1 it is a neutral situation, neither incentive nor disincentive for domestic producers.

DATA

The requisite data for estimating border prices of sugar i.e. actual import and export prices of refined sugar, were compiled from the annual reports of the Pakistan Sugar Mills Association (PSMA). From these data import and export parity prices of sugarcane were worked back after accounting for the processing and marketing costs of sugar and sugarcane. The data on marketing and processing costs were adapted from the sugarcane policy reports of the Agricultural Prices Commission (APCOM) and Agricultural Policy Institute(API)

The statistics relating to domestic market prices of seed cotton were gleaned from the cotton policy reports of APCOM and API. The data pertaining to prices of exports and imports of cotton, forming the basis of export and import parity prices' calculations of seed cotton, were also culled from these reports. The data on marketing and processing costs of cotton were also adapted from these reports and supplemented, where needed, from the industry sources. The miscellaneous data relating to the production of sugarcane and cotton as used in the paper were obtained from various issues of Pakistan Economic Survey (Statistical Supplement).

IV. EMPIRICAL ESTIMATES AND ANALYSIS
OF PRODUCER INCENTIVES

SUGARCANE

Sugarcane, annually cultivated over an area exceeding one million hectares in Pakistan, has emerged as one of the important crops, ranking 4th or 5th largest crop in terms of area (Pakistan 2017). Requiring a high delta of water for its cultivation and occupying the crop fields for a period ranging from 9 to 15 months, area under sugarcane has exhibited a cyclical pattern in response to varying availability of water and economic incentives.   The sugar industry comprising 89 sugar mills, located in the irrigated regions of the country, with annual capacity of producing 6 to 8 million tons of sugar (PSMA 2018), is dependent on sugarcane farming for the supply of its raw material.

Data on annual domestic prices of sugarcane, from 1995 to 2015, in juxtaposition to their corresponding border prices are set out in Table 1. During this period, Pakistan is reported to have imported as well exported varying quantities of sugar, depending on the domestic demand, supply and developments in the world sugar markets. Accordingly, both the import and export parity prices of sugarcane were used to estimate its border prices and opportunity costs of domestic production. The import parity prices were estimated from the actual import prices of sugar while exports parity prices were calculated from the actual export prices of sugar, as reported by the PSMA in its annual reports, after adjusting for processing and marketing costs involved in its imports and exports. The domestic and border prices of sugarcane are presented in Table 1 and also depicted in Figure.1.

A perusal of the data in Table 1 indicates that nominal domestic prices of sugarcane, during 1995 - 2015, ranging between Rs. 21.20 and 180 per 40 kg and depicting considerable fluctuations seem to have trended upward. The import parity prices of sugarcane, fluctuating between Rs. 28.66 and 196.65 per 40 kg, reflecting developments in world markets and changes in exchange rate, also seem to have, over time, trended upward. Similarly, export parity prices of sugarcane, varying between Rs. 19.66 per 40 kg and Rs. 121.25 have moved upward. The average annual growth rates in the domestic, import and export parity

prices of sugarcane work out to 10.73, 10.14 and 9.83 percent, respectively.

A comparison of the import and export parity prices of sugarcane indicates the former to be always greater. This is quite logical and natural as the freight charges involved in international transport are added to the f.o.b costs and domestic marketing and handling costs are added to the resulting c.i.f. costs of imports (OECD, 2016). On the other hand, in estimating export parity prices, starting with f.o.b costs the domestic marketing and handling costs are subtracted from it, leading to a lower value of export parity price in relation to its corresponding import parity. As a sequel to this, values of NPC1, indicating ratio between the domestic price of sugarcane and import parity in Table 1, in comparison with corresponding values of NPC2, calculated as the ratio between domestic and export parity prices of sugarcane, are considerably lower. Accordingly, the resulting position of incentives varies quite widely.

In view of the real situation, involving both imports and exports of sugar, average of the import and export parity prices was adopted to represent the border price and opportunity cost of domestic production of sugarcane in calculating the nominal protection of sugarcane, NPC 3, as given in the last column of Table 1. The annual values of NPC3 showing a wide range, between 0.70 and 1.54, exhibit wide fluctuations, reflecting the underlying varying situation of incentives in the sugar sector. As per the NPC3 estimates in Table 1, in 13 out of the 21 years, under review, sugarcane farming in Pakistan enjoyed considerable protection, ranging from 13 to 54 percent. However, in 5 of the years farmers growing sugarcane were implicitly taxed, varying from 8 to 30 percent per year, and in 3 of the years the producer prices in the domestic market were quite close to the corresponding border prices. The sugarcane growers since 2006 seem to have faced a favorable economic environment, enjoying significant protection, ranging from 10 to 48 percent during most of these years.

TABLE 1

Domestic Market and International Prices
of Sugarcane in Pakistan: 1995 – 2015

Year	Domestic price	Import parity price	Export parity price	NPC 1	NPC2	NPC 3
		Rs/ 40 kg				
1994-95	21.20	35.28	25.64	0.60	0.83	0.70
1995-96	25.00	36.73	27.30	0.68	0.92	0.78
1996-97	39.00	37.21	25.68	1.05	1.52	1.24
1997-98	37.00	34.01	24.23	1.09	1.53	1.27
1998-99	34.00	28.66	21.09	1.19	1.61	1.37
1999-00	38.50	30.27	19.66	1.27	1.96	1.54
2000-01	47.50	39.32	31.76	1.21	1.50	1.34
2001-02	42.00	44.96	29.34	0.93	1.43	1.13
2002-03	35.50	47.75	28.65	0.74	1.24	0.93
2003-04	34.50	44.81	30.00	0.77	1.15	0.92
2004-05	40.50	52.76	41.28	0.77	0.98	0.86
2005-06	60.00	63.43	54.38	0.95	1.10	1.02
2006-07	63.50	67.92	56.49	0.93	1.12	1.02
2007-08	63.50	65.40	45.62	0.97	1.39	1.14
2008-09	100.00	97.44	58.75	1.03	1.70	1.28
2009-10	155.00	104.59	104.82	1.48	1.48	1.48
2010-11	180.00	151.10	136.49	1.19	1.32	1.25
2011-12	151.00	184.89	121.25	0.82	1.25	0.99
2012-13	172.00	196.65	116.70	0.87	1.47	1.10
2013-14	169.50	182.90	107.80	0.93	1.57	1.17
2014-15	169.50	184.63	111.08	0.92	1.53	1.15

Notes: NPC is the ratio between domestic and international prices. NPC 1, NPC 2 and NPC3 are the ratios of domestic prices in relation to import, export, and the average of import and export parity prices, respectively.

In view of large variation in the annual values of NPCs, period of study was divided into sub periods of five years, each. The average values of relevant prices data and protection coefficients for these sub-periods are set out in table 2. As per these data, period of 2010-15 was the most favorable for sugarcane farmers since average price received by them exceeded its opportunity cost by 17 percent. The protection enjoyed by sugarcane growers during the entire study period averaged 14 percent per year. The protection during 1st half of study period, 1995-2004, was

10 percent which rose to 15 percent per year during the 2nd half extending from 2005-15.

Empirical estimates of protection coefficients during the period under reference portray a mixed picture of incentives for domestic producers of sugarcane. The emerging situation, notwithstanding introduction of many reforms in the sugar sector, seems to be in line with the findings of the previous studies reviewed in this paper.

FIGURE 1

Domestic and International Prices of Sugarcane in Pakistan:
Rs / 40 kg

An important conclusion emerging from careful examination of the NPCs is that Pakistan may have comparative advantage in domestic production of sugarcane for import substitution. However, with the current technological relationships in production of sugarcane, it's processing and marketing, and organization of domestic sugar industry and its international trade Pakistan would be hard pressed to economically export sugar.

TABLE 2

Nominal Protection Coefficients Based on the Averages
of Domestic and Border Prices of Sugarcane

	Domestic market price	Average of import & export parity prices	NPC3
	Rs/ 40 kg		
1995-99	31.24	29.58	1.06
2000-04	39.60	34.65	1.14
2005-09	65.50	60.35	1.09
2010-15	166.17	141.91	1.17
1995-2004	35.42	32.12	1.10
2005-15	120.41	104.83	1.15
1995-2015	79.94	70.21	1.14

Source: calculated from the data in Table 1

COTTON

Cotton, the 2nd largest crop after wheat in Pakistan, is the principal cash crop and source of raw material for the largest agro - based textile industry in the country. Annually planted on area hovering around 2.87 million hectares in the recent past, it has accounted for 13 percent of the total cropped area and 27 percent of the value added by major crops in the recent past (Pakistan 2017). With the annual production of cotton averaging at 2, 268 thousand tons, Pakistan is the 4th largest cotton producer in the world. Pakistan is also a major player in world cotton markets, exporting as well importing large quantities of the produce in addition to exporting large quantities of cotton made ups   and value added products. With its extensive forward and backward linkages, cotton plays an important role in the performance of overall economy. Starting with the rolling back of the monopoly of Cotton Export Corporation (CEC) in cotton exports in the 80s, cotton sector in Pakistan has become to be closely integrated with the world cotton economy. How the developments in world cotton markets have influenced the incentives in cotton production in Pakistan? This is examined below through the analysis and comparison of domestic and corresponding border prices of seed cotton in Pakistan, during 1995- 2015. The requisite data in this context are presented in Table 3.

An examination of the nominal domestic and border prices of seed cotton, as presented in Table 3, leads to the following conclusions. The prices of seed cotton, domestic as well as border prices, have been prone to wide fluctuations. The movements in domestic prices have closely tracked the border prices. The correlation coefficients between the domestic and import parity as well as those between the domestic and export parity prices, each, for the period under review has been estimated at 0.972. Import parity prices of seed cotton as estimated from the international prices have been higher than the corresponding export parity prices. The domestic market prices of seed cotton have ruled much below the corresponding import parity prices. However, domestic prices have occasionally exceeded the export parity prices estimated from the actual export prices of cotton. This is also apparent from the Chart showing domestic and international prices of seed cotton, Figure. 2.

While analyzing the domestic and international prices, three sets of nominal protection coefficients, as in case of sugarcane discussed above, were estimated. These are: NPC1, depicting the ratio between the domestic and import parity prices of seed cotton; NPC2, showing the ratio between the domestic and export port parity prices of seed cotton and NPC3, representing the ratio between the domestic and the average of import and export parity prices of seed cotton. Given the ground realities involving both imports and exports of cotton in Pakistan during the period under reference, the average of import and export parity prices has been adopted to represent the border price and opportunity cost of domestic production of seed cotton. The values of NPC3, as given in the last column of Table 3, are based on this border price. Further discussion of incentives in cotton production is also in the context of NPC3 estimates.

As per the estimates of NPC3 in Table 3, ranging between 0.55 and 0.94, cotton production in Pakistan, throughout the period of this study, has been subjected to implicit taxation, varying from 6 to 45 percent per year. Accordingly, prices received by cotton growers have been much below its opportunity cost and thus entailed resource transfers from cotton farmers, resulting in income and welfare losses for them.

TABLE 3

Domestic Market and International Prices
of Seed Cotton in Pakistan; 1995 – 2015

Year	Domestic price	Import parity price	Export parity price	NPC1	NPC2	NPC3
		Rs/ 40 kg				
1994-95	794	1,980	919	0.40	0.86	0.55
1995-96	739	1,190	816	0.62	0.91	0.74
1996-97	840	1,239	879	0.68	0.96	0.79
1997-98	808	1,253	818	0.64	0.99	0.78
1998-99	876	1,177	804	0.74	1.09	0.88
1999-00	580	1,208	640	0.48	0.91	0.63
2000-01	941	1,367	828	0.69	1.14	0.86
2001-02	783	1,019	647	0.77	1.21	0.94
2002-03	842	1,319	818	0.64	1.03	0.79
2003-04	1,282	1,595	1,144	0.80	1.12	0.94
2004-05	893	1,248	846	0.72	1.06	0.85
2005-06	1,038	1,367	963	0.76	1.08	0.89
2006-07	1,144	1,467	989	0.78	1.16	0.93
2007-08	1,200	2,234	1,253	0.54	0.96	0.69
2008-09	1,541	2,141	1,413	0.72	1.09	0.87
2009-10	1,910	2,586	1,709	0.74	1.12	0.89
2010-11	3,936	5,583	4,647	0.71	0.85	0.77
2011-12	3,000	4,039	2,415	0.74	1.24	0.93
2012-13	2,614	3,255	2,356	0.80	1.11	0.93
2013-14	3,001	3,688	2,802	0.81	1.07	0.92
2014-15	2,390	3,838	2,446	0.62	0.98	0.76

Notes: NPC is the ratio between domestic and international price. NPC1, NPC2 and NPC3 are the ratios of domestic market prices in relation to import, export and the average of import and export parity prices of seed cotton, respectively.

On the average, resource transfers from   cotton farmers, in nominal terms, have averaged at Rs.301 per 40 kg of seed cotton per year. The overall average value of the NPC, estimated at 0.83 represents implicit taxation of cotton farmers @ 17 percent per year

FIGURE 2

Domestic and International Prices of Seed Cotton in Pakistan:
Rs / 40 kg
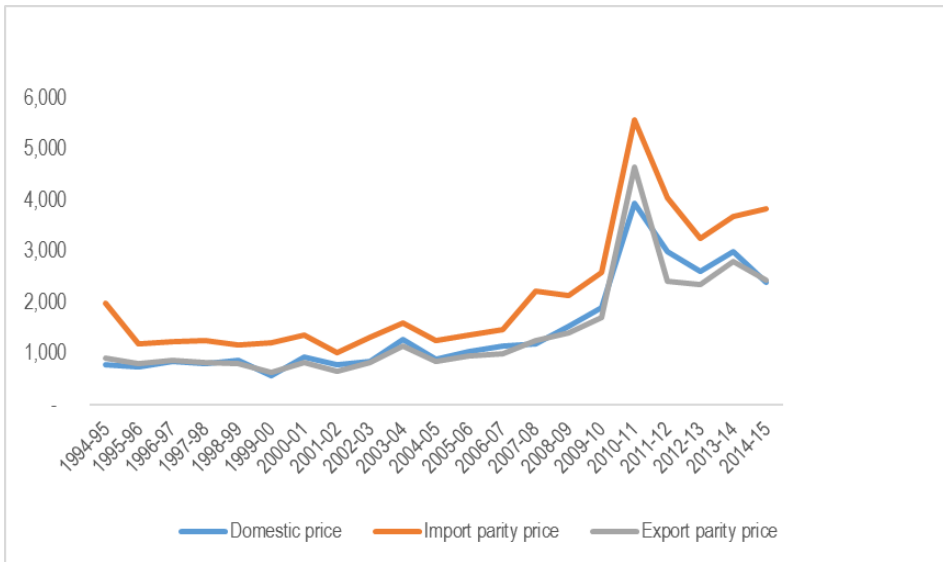
The rate of implicit taxation of domestic seed cotton production during the 1st half of the study period, 1995 – 2004, is estimated at 22 percent per year which declined to 15 percent during the 2nd half spanning 2005-15. As per the results of empirical estimates of protection coefficients presented in Table 4, implicit taxation of cotton production averaging 27 percent per year during 1995-99 has trended downward and was estimated at 14 percent during 2010 – 15.

As per results of empirical analysis, presented in this paper and those of the previous studies as reviewed in Section II, domestic cotton producers continue to be taxed implicitly, adversely affecting farm households' income and welfare. In spite of the many reforms aimed at economic liberalization, cotton farmers continue to suffer substantial resource transfers which, inter alia, impairs their capacity to increase farm productivity.

TABLE 4

Nominal Protection Coefficients Based on the Averages
of Domestic and Border Prices of Seed Cotton

Sub periods	Domestic	Border	Border price − Domestic price	NPC 3
	Rs./ 40 kg			
1995-99	811	1,107	296	0.73
2000-04	886	1,059	173	0.84
2005-09	1,163	1,392	229	0.84
2010-15	2,809	3,280	472	0.86
1995-2004	849	1,083	235	0.78
2005-2015	2,061	2,422	361	0.85
1995-2015	1,483	1,784	301	0.83

Source: Calculated from the data in Table 3

V. CONCLUSIONS AND POLICY SUGGESTIONS

During the study period, 1995–2015, nominal domestic prices of sugarcane ranged between Rs. 21.20 and 180 per 40kg; the corresponding import parity prices varied between Rs. 28.66 and 196.65, while export parity prices fluctuated between Rs. 19.66 and 121.25 per 40kg. Domestic prices of sugarcane have been considerably below the import parity but higher than the corresponding export parity prices, reflecting a diverse and fluctuating situation of distortions in incentives to domestic production. The protection enjoyed by sugarcane growers, estimated with respect to the average of import and export parity prices, during the study period averaged 14 percent per year. The protection during the 1st half of study period, 1995–2004, was 10 percent which rose to 15 percent during the 2nd half extending from 2000–15.

Pakistan has imported as well as exported large quantities of cotton during the study period. Domestic market prices of seed cotton have been all along lower than the corresponding import parity prices but occasionally exceeded the relevant export parity prices. The nominal protection coefficients calculated with respect to the average of import and export parity prices of seed cotton have ranged between 0.55 and 0.94. Thus, cotton production in Pakistan throughout the period of this

study has been subjected to implicit taxation, varying from 6 to 45 percent per year. Accordingly, prices received by cotton growers have been much below the opportunity costs and entailed substantial resource transfers from cotton farmers. The implicit taxation on domestic cotton production during the 1st half of the study period, 1995-2004, is estimated at 22 percent per year which declined to 15 percent during the 2nd half or 2005–15. The cotton growing farm households have thus suffered large resource transfers, resulting in huge income and welfare losses which, inter alia adversely impacts their capacity to increase farm productivity.

Incentives in cultivation of cotton and sugarcane crops, during the period under reference, have exhibited a diverse picture, cotton subjected to implicit taxation while sugarcane enjoying protection. With the 18th amendment to the Constitution, enacted in 2011, the subject of agriculture has been devolved to provinces and prices of sugarcane are now determined by the provincial governments. The pricing of sugarcane in Pakistan has all along been a contentious issue. To improve efficiency in sugar sector it is imperative to link pricing of sugarcane to its sucrose contents. The current practice of its pricing is based on weight with no regard to the quality of the produce. Unless provincial governments develop a capacity to address the numerous problems, issues and challenges in this context and balance the conflicting interests of all the stakeholders, the sugar sector will continue to be inefficient and uncompetitive involving wasteful use of resources.

Notwithstanding the hand picking of seed cotton in Pakistan, its post-harvest storage, whether on or off farm, ginning and marketing practices often result in lower quality of the produce. Inadequate attention to grading and poor ginning practices have fetched lower prices for our cotton in international markets resulting in lower domestic producer prices. The cotton farmers suffer large income losses on this count alone. One of the important aspects deserving attention of the provincial governments is the introduction of compulsory grading at the ginneries and improvement of ginning methods and practices.

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