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Project Office Hampden Square, 4800 Montgomery Lane, Suite 500, Bethesda, MD 20814 • Telephone: (301) 913-0500
Telex: 312636 • Fax: (301) 652-7530 • Fax: (301) 652-7791

THE USE OF PRODUCER AND CONSUMER SUBSIDY EQUIVALENTS TO MEASURE GOVERNMENT INTERVENTION IN AGRICULTURE:

THE CASE OF PAKISTAN

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Author: Gary P. Ender, Abt Associates Inc.

Prime Contractor: Abt Associates Inc., 55 Wheeler Street, Cambridge, MA 02138 • (617) 492-7100

Subcontractors: **Harvard Institute for International Development**, Harvard University, One Eliot Street, Cambridge, MA 02138 • (617) 495-2164
Food Research Institute, Stanford University, Stanford, CA 94305-6084 • (415) 723-3941
North Carolina State University, Department of Economics and Business, Box 7645, Raleigh, NC 27695-7645 • (919) 737-7187
Abel, Daft & Earley, 1410 King Street, Alexandria, VA 22314 • (703) 739-9090
International Science and Technology Institute, 1129 20th Street, NW, Suite 800, Washington, D.C. 20036 • (202) 785-0831
International Food Policy Research Institute, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036 • (202) 862-5600

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ABSTRACT

Several proposals before the GATT advocate the use of an aggregate measure of support to gauge government intervention in agriculture and monitor its reduction under a liberalization. The producer subsidy equivalent (PSE) is one such aggregate measure. A subsidy equivalent is a measure of the overall value to a producer or consumer of a set of policy interventions by the Government. Ideally such an amount would exactly compensate a group of individuals for the removal of all (measured) policies when their net effect is subsidizing.

PSEs and CSEs are estimated using budget figures and/or parity price comparisons. They include all relevant government policies and can distinguish the separate contribution of each to the overall effect.

This study uses agricultural policies in Pakistan as an example to illustrate the application of the subsidy equivalent method. The results indicate that the taxing effect on producers of Pakistan's trade and output price policies was partly offset by subsidies on inputs, particularly fertilizer, and by investment in infrastructure. Control of trade was the most important agricultural intervention affecting producers.

Overall there was a taxing effect on producers of only about 5 percent of the value of production, but there were significant distortions in individual commodity prices. Consumers were strongly affected by state trading, rationing, and import duties, but on average, the effects of these policies canceled one another, leaving an insignificant aggregate CSE. The annual pattern of the individual CSEs mirrored that of the PSEs: crop CSEs were significant and had opposite signs as the respective PSEs, while livestock product CSEs were negligible.

PSEs and CSEs indicate the areas in which the effects of liberalization would be felt. If world prices for its export commodities rose as a result of reductions of support, Pakistan would reap the benefits of the liberalization at a cost depending on the nature and extent of its own liberalization. Important imports like wheat, sugar, and milk, however, would become more expensive.

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1. INTRODUCTION

Countries party to the General Agreement on Tariffs and Trade (GATT) are participating in an eighth round of multilateral trade negotiations (MTN). The goal of the GATT is "the substantial reduction of tariffs and other barriers to trade." GATT members have generally been reluctant to subject their agricultural policies to international scrutiny and discipline. GATT rules regulating agricultural trade are more lenient than those for nonagricultural trade.

Agricultural policies that have provided income support to farmers and trade barriers have led to surpluses in some countries. In the 1980s, the growth of trade has slowed, and some countries have used export subsidies to try to dispose of their surpluses. Program costs for farm programs have also been rising. This has resulted in friction among exporters and heavy burdens on government budgets. Because of these problems, developed countries are more willing to participate in a MTN which includes agriculture. Indeed the United States and some other countries have given agriculture a prominent place in the so-called Uruguay Round.

Several proposals before the GATT advocate the use of an aggregate measure of support to gauge government intervention in agriculture and monitor its reduction under a liberalization. The producer subsidy equivalent (PSE) is one such aggregate measure.

PSEs and their companion consumer subsidy equivalents (CSEs) shed considerable light on the magnitude of the effects of the various policies pursued in important agricultural producing and exporting nations like Pakistan. They summarize the extent of all policies in a given year and over time. In addition they detail the extent of specific policies in particular years or for particular commodities.

Chapter 2 defines producer and consumer subsidy equivalents (PSE and CSE, respectively), describes their usefulness to agricultural policy, and outlines the direct and indirect policies, taken into account by these measures. Chapter 3 turns to the specific interventions by the Government of Pakistan affecting the agricultural sector, describing the policies, data, and assumptions used to incorporate the policy interventions into PSE and CSE calculations. Chapter 4 discusses the estimated subsidy equivalents for individual commodities (wheat, cotton, basmati rice, IRRI rice, sugar, milk, beef, chicken, and eggs), as well as at the aggregate level. This chapter looks at both the key policy interventions determining the subsidy equivalent level, and how the level of intervention varies across commodities. The final section, Chapter 5, illustrates how the PSE and CSE measures might be used to examine three different scenarios for the future of agricultural trade liberalization under the GATT.

2. METHODOLOGY: PRODUCER AND CONSUMER SUBSIDY EQUIVALENTS

A subsidy equivalent is a measure of the overall value to a producer or consumer of a set of policy interventions by the Government. Ideally such an amount would exactly compensate a group of individuals for the removal of all (measured) policies when their net effect is subsidizing. A subsidy equivalent for a given commodity covers a set of policies affecting that commodity. For each policy a subsidy equivalent is calculated, and the overall subsidy equivalent for the commodity is the arithmetic sum of the subsidy equivalents for the policies affecting it. Subsidy equivalent results are calculated using current prices, but the expression of subsidy equivalents as percents largely mitigates the problem of comparing results across years.

In general, it is convenient (although not always the most appropriate method) to obtain budgetary figures from governments to use in calculating producer or consumer subsidy equivalents. However, such data are not always relevant or available. Even when they are, the figures are rarely accompanied by explanations of their method of calculation, which often makes their use hazardous.

In the absence of well-understood budgetary figures and for many policies which cause a change in market prices, one must estimate a price wedge. By comparing a domestic price under conditions altered by policy with an import (or export) parity price derived from a world reference price, one can deduce the degree of economic subsidization or taxation. A parity price is a representative world price for a comparable commodity, (e.g., "B" index cotton) adjusted by the official exchange rate and for the transformations of marketing, namely transportation, storage, and processing.

Because the PSE/CSE estimation process keeps the effects of different policies separate, one can estimate the effects of government policies not only on producers and consumers, but also on taxpayers. PSEs measure the value to producers of those policies which directly affect the market price of output (e.g., control of trade and price supports) and those which do not (e.g., input subsidies). Policies included in the estimation of CSEs all affect the market price of output. The arithmetic sum of the CSE and the price component of the PSE is the economic loss to the government from its market price intervention. The total economic cost to taxpayers is this amount plus the cost of other subsidies.

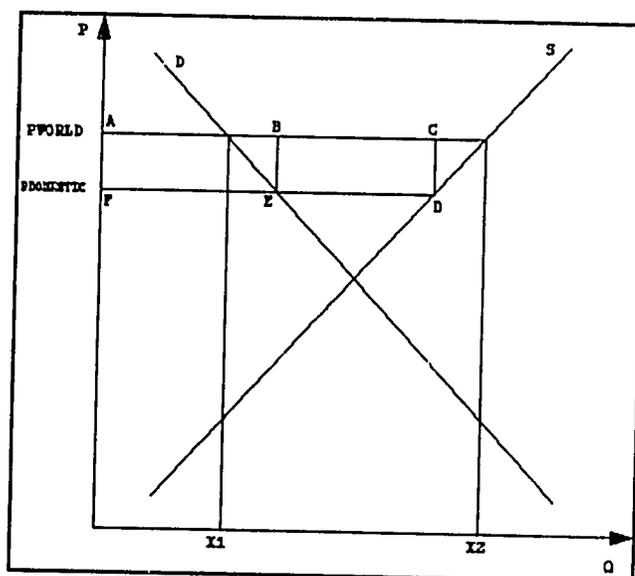
This can be seen in Figure 1. S and D denote the supply and demand curves. Without intervention, the country in question would export an amount, X_1X_2 , at the price, P_{WORLD} , which is exogenously determined. The effect of restriction of trade by a marketing board, e.g., is to reduce the domestic price to $P_{DOMESTIC}$ and the amount exported to ED . The PSE for trade control is thus equal to the price wedge, AF , times the amount actually produced, FD , or the area $ACDF$. The CSE is equal to the price wedge--here we ignore the difference between producer and consumer prices--times the amount actually consumed, FE , or the area, $ABEF$. If the marketing board buys at the domestic price and sells all of the exports at the world price,

the government's gain from trade control is the price wedge times the amount of exports, or *BCDE*.

From the diagram one can see that PSEs and CSEs are similar to producer and consumer surplus. However, because the former use actual observations (and only one for quantity) and not estimated supply and demand curves, certain deadweight losses to society are not estimated. In their use of parity prices, the market price components of subsidy equivalents are similar in philosophy to nominal and effective rates of protection. PSEs have the advantage, however, of including all government policies and being able to distinguish the separate contribution of each to the overall effect.

2.1 Output Price Policies

Export and import parity prices are commonly used to estimate the impact of output price control on both producers and consumers. (They can also be used with regard to the effect on producers of input price control.) A government marketing board may control exports while at the same time the purchase price may function partly as a support price. To jointly estimate the value of these actions to producers, domestic producer prices are compared with export parity prices.



For the PSE, prices are often compared for the form in which the producer sells the product (e.g., sugarcane or seed cotton), as the intention of the analysis is to measure the value of government policies to the producer. Reference prices in these cases are for the more processed forms of the commodity, since these are more common in international trade. Conversion factors and estimated marketing costs are required to complete the parity price comparison. Different forms of a commodity are rarely a problem for the estimation of CSEs, since consumers usually utilize the commodity in the internationally traded form.

2.2 Input Subsidies

Subsidy equivalents for inputs are calculated in the same ways as for outputs. That is, either price gaps or budgetary data can be used. If the Government monopolizes trade in fertilizer, the effect on farmers can be estimated by comparing domestic and international prices. If a subsidy goes directly to farmers, perhaps through a rebate, then budgetary figures would be appropriate. When actual budget figures are not available, the cost of a subsidy program has to be estimated. For example, the volume of loans given at no interest may be known. To

estimate the subsidy involved, an estimate of the prevailing market rate of interest would be required.

2.3 Other Interventions

Other policies normally measured by PSEs include marketing subsidies, direct payments, and long-term structural measures. Marketing subsidies include inspection services and transportation subsidies. Direct payments are income supplements paid directly to farmers who qualify on the basis of particular crops grown or for other reasons. Long-term structural measures include expenditures on research and extension, irrigation construction, etc. These policies are generally measured using budgetary data.¹

2.4 Unmeasured Policies

Estimation of PSEs and CSEs requires the construction of a "model" of government intervention in the agricultural sector. It is well known regarding other sorts of models that if there are significant excluded variables, the model will not be an accurate representation of the area in question. The same is the case here. If significant policies can not be included in the estimation of subsidy equivalents, then comparisons with other countries and other such analyses will not be tenable. Thus it is important to include with the numerical analysis presented an account of the policies included and known to be excluded from the analysis. An estimate of the likely bias or degree of inaccuracy introduced by any omissions will also be useful.

2.5 Misalignment of the Exchange Rate

Overvaluation of the exchange rate is generally not an issue in the calculation of PSEs for many developed countries, because the effects would not be specific to the agricultural sector and because exchange rates tend to float freely. In countries like Pakistan, however, where agriculture-based exports are well over half of all exports, it can be argued that exchange rate distortions affect mostly agricultural producers (and consumers). Overvaluation of the exchange rate is equivalent to a tax on producers. Since PSE components are additive, a convenient way to accommodate this situation is to present the PSEs and CSEs with and without the effect of the exchange rate. Then comparisons can be made on either basis.

¹ For further detail on these categories, see U. S. Department of Agriculture, 1988, pp 101 ff.

2.6 Forms in which Subsidy Equivalents are Expressed

Once calculated, PSEs and CSEs are expressed in several forms: 1) Value of transfers, 2) Percent (of value of production or adjusted gross income²), and 3) Value per unit (i.e., per ton). Expression of the PSE in different forms allows it to be compared across countries, commodities, and policies. Value terms are useful domestically for making budget comparisons, but it would not be appropriate to compare intervention levels in different-sized countries. PSEs and CSEs in percent can be used to compare: 1) Across countries with different sized agricultural sectors and budgets, 2) Relative taxation and/or subsidy to different commodities, and 3) The relative effects of different policies. Per unit PSEs show the relative intervention for a given commodity, but could not be used to compare intervention across commodities.

² In countries where direct payments are made to farmers, adjusted gross income is the value of production plus government payments.

3. APPLICATION OF THE PSE/CSE METHOD TO AGRICULTURE IN PAKISTAN

3.1 Main Agricultural Policy Interventions

During the period covered by this analysis, 1981/82 - 1986/87, the Government of Pakistan was the sole importer of wheat and fertilizer, the sole exporter of rice and cotton³, and played a strong role in sugar imports. It also maintained support/procurement prices. The Cotton Export Corporation of Pakistan (CECP) and the Rice Export Corporation of Pakistan (RECP), in carrying out government policy, generally restricted exports, made profits, and depressed domestic prices. Both the RECP (IRRI rice) and the CECP (cotton) have lost money in some years; that is, exports were subsidized.

The Ministry of Food and Agriculture controlled wheat trade, and, until 1987, the Government maintained a ration system which distributed subsidized flour to consumers. The Government procured and maintained stocks of wheat to stabilize consumer prices, and significantly expanded its storage capacity. It also levied substantial import duties on sugar and milk powder. The duty on sugar complemented producer prices that were supported above world levels.

Trade and output price policies were complemented by subsidies on inputs, particularly fertilizer, and by investment in infrastructure, especially irrigation. The Government has for some years felt that fertilizer subsidies have fulfilled their purpose of introducing farmers to modern inputs⁴. It has been attempting to reduce them. Fertilizer users were subsidized in conjunction with a system of subsidies and taxes on fertilizer producers. Fertilizer prices were fixed by the Government and were the same everywhere in the country.

Irrigation was subsidized through less than full recovery of operating and maintenance expenses. The Government also invested heavily in dams, canals, and public tubewells, and provided direct subsidies for the sinking of private tubewells. Agricultural credit was extended both at below-market rates and to small farmers on an interest-free basis. Finally, the Government employed a differential tariff on electricity to provide another subsidy to agriculture. Pesticides were previously subsidized as well, but have not been to any significant extent since 1980/81. Other agricultural policies affecting producers include the collection of land taxes and Government expenditures on research and extension.

In Pakistan, where agriculture-based exports are well over half of all exports, exchange rate distortions affect mostly agricultural producers (and consumers). Although the rupee was unpegged from the dollar in 1982, it does not float freely. That is, while the rupee is managed

³ In recent years the private sector has been inducted into the export of cotton and basmati rice. Imports of nitrogenous fertilizer and sugar were also "deregulated."

⁴ Government of Pakistan, Planning Commission, Seventh Plan, p.580.

against a basket of currencies, the Government retains control over the rate of exchange and periodically intervened to accelerate or decelerate its rate of change⁵. Thus changes in the official exchange rate can be considered partly policy-induced, and overvaluation can be considered an important intervention.

3.2 Data and Assumptions

3.2.1 Parity Prices

The Government controlled the trade of cotton, basmati rice, IRRI rice and wheat, and its purchase price functioned partly as a support price. To jointly estimate the value of these actions to producers, domestic producer prices are compared with export or import parity prices.

For cotton, export parity prices are based on a world reference price, the "B" index, rather than Pakistan's export unit value, because it is felt that the index better represents the minimum value of Pakistan's cotton. The resulting PSE (CSE) is therefore felt to be a more accurate representation of the value to cotton producers (consumers) of the export regime. As a result of improvements in quality and staple length, moreover, some cotton from Pakistan has been included in the "A" index, so the estimates of value herein are probably still conservative.

For all other crops, an import or export unit value, i.e., the value of exports (imports) divided by the quantity traded, is used as a reference price. However, wheat, sugar, and fertilizer were not imported in all years, so an import unit value had to be estimated. In this case, comparison was made to a series of world reference prices for a comparable quality product.

No parity price comparisons were done for beef, chicken, and eggs, because there were no known policy interventions which directly altered market prices. For milk the effect of an import duty on powdered milk was estimated in the following way. The annual conversion rate between imported milk powder--which included both skim and whole milk powder in varying proportions--and fresh milk was calculated using the quantities imported as weights. The total effect on fresh milk producers of the per kilogram and ad valorem duties on powdered milk was then estimated based on all marketed production of fresh milk and its value, converted at the calculated annual rate.

3.2.2 Marketed Production

The quantity sold by farmers was also used to estimate PSEs for wheat and sugarcane. For cane this was the amount crushed by mills, so indigenous production and consumption of gur and similar products is ignored. Marketed production was used instead of total production because the producer's net revenue would not be directly affected by an output price policy if

⁵ For example, from February, 1985 to March, 1986 the Government held the rupee almost constant in terms of U.S. dollars, allowing it to depreciate with the dollar against other major currencies.

he did not sell the commodity. Government policy affects a subsistence producer both as a producer and as a consumer. One could thus use total production and total consumption in the calculation of the PSE and CSE and increase the value of both. However, the effects on the individual as producer and as consumer would offset each other, and within the accuracy of these calculations, the effects could be considered to be exactly offsetting.

3.2.3 Inputs

Fertilizer subsidies. Because Pakistan's fertilizer subsidies were implemented through a system of subsidies on the domestic producers of fertilizer, budgetary figures do not necessarily measure the impact on farmers correctly. Reported fertilizer subsidy figures apparently include only the gross subsidy, the development surcharge levied on low-cost producers having gone into general revenue⁶. However, since the subsidy formulas are based on cost of production and imply an arbitrary (and usually guaranteed) level of profit, and since the most important input into urea production--natural gas--was also subsidized, the subsidy to fertilizer producers may be quite different from the subsidy that farmers receive.

For these reasons, the fertilizer subsidy is estimated by comparing import parity prices (for nitrogen and phosphoric acid⁷) to administered prices. Parity prices are based on Pakistan's export unit value rather than the import unit value; the latter may have been inflated by the terms of certain trade arrangements. The share of fertilizer nutrients used on different crops is available in official statistics.

Credit subsidies. Other components of the PSEs and CSEs are estimated by straightforward methods when data are available. To estimate the value of interest-free loans (which went only to small farmers), loan volumes and estimated market interest rates are used, together with the share of small farms planting a given crop out of total small farms. For subsidized-interest-rate loans, rate differentials, loan volumes, and estimated crop shares are employed.

Electricity subsidy. Similarly, in electricity the calculations use the rate differential to agriculture, the amount of electricity used by agriculture, and the estimated crop share. This share is estimated as the share of irrigation water used by a crop, since pumps are the primary use for agricultural electricity.

Irrigation subsidies. For the canal water subsidy, official statistics are available on receipts and on operating and maintenance expenditures. They are also available for the total tubewell subsidy. The share of total irrigation water going to a crop is estimated directly from

⁶ Mr. Shafi Niaz, former Chairman, Agricultural Prices Commission, personal communication, and Chemonics International Consulting Division, Pakistan Fertilizer Policy: Review & Analysis, Report prepared for the Government of Pakistan in collaboration with USAID/Islamabad. January, 1985, p. 113.

⁷ Complete data for potash are not available, and since it is by far the least important of the three nutrients, it is ignored.

various data and estimates of total and irrigated area. Separate figures for the two types of irrigation by crop are not available.

3.2.4 Form of Commodity

For the cotton PSE, prices are compared on a seed cotton basis⁸. This is the form in which the producer sells the product, and the intention of the analysis is to measure the value of government policies to the producer. In making the comparison, one assumes that the effects of government policies on the price of lint are passed through to the producer via the price of seed cotton. Since there are over 1000 gins in Pakistan, this is a reasonable assumption for most farmers.

In a similar fashion, the price of sugarcane is used in the sugar PSE, although the price is a mandated support price, rather than a market price. For milk, wholesale prices are adjusted by estimated marketing margins to arrive at a producer price at the farmgate⁹. For wheat and rice, wholesale and procurement prices are used as the best estimates of producer prices.

3.2.5 Time Periods and Sources

The harvest season is a relevant time period for comparison of producer prices¹⁰, and monthly prices for seed cotton are available for this period. The relevant period for a world reference price is not as clear, however, since the product has been transformed (into lint) and is traded throughout the year. In the price wedge calculation, annual (August/July) averages of "B" index prices were used.

For other crops, it was convenient to use fiscal year (July/June) trade and producer price data because so much official data is available on this basis¹¹. There are no true producer price data available for Pakistan, although monthly wholesale prices are generally available. For import unit values for wheat and many other types of data, like official exchange rates, rail traffic, GDP deflators, however, annual fiscal-year averages were used. In most cases the fiscal year is not too different from the crop or marketing year. The wheat year is May/April, and cotton's is September/August. For rice and fertilizers, calendar year trade data were used.

⁸ "Market" prices of seed cotton are published by the PCCC, which provides no further description. These are probably prices received at gins.

⁹ There is no price wedge (parity price comparison) for milk, but the producer price is necessary to calculate the value of production.

¹⁰ For cotton in Pakistan, the peak harvest season normally spans the period September to February.

¹¹ While many data sources were used, the main ones are the Economic Survey, the Pakistan Statistical Yearbook, and Agricultural Statistics of Pakistan.

3.2.6 Joint Products

To calculate a parity price for seed cotton, it is necessary to take account of the value of the cottonseed produced jointly with the lint. In doing so, it is assumed for convenience that the domestic price of cottonseed is not distorted. (In reality the Government has affected the price of cottonseed both by restricting trade in lint and by levying import duties on vegetable oils.) Using domestic prices for cottonseed, the parity price of seed cotton is reconstructed conceptually from the prices of lint and cottonseed, with ginning ratios as weights. The value of the cottonseed then comprises from 16 to 23 percent of the parity price of seed cotton at the gin.

3.2.7 Marketing Costs

Marketing costs include transportation and handling, storage, and processing. The latter includes ginning of cotton and refining of sugar. Transportation costs were generally estimated using rail and estimated truck costs, estimated shares of the commodity traveling by rail and truck, and distances to producing centers. Transport and handling were included in these estimates, as was storage that was part of the transportation process.

The cost of ginning cotton is significant. However, because farmers sell their seed cotton to ginners or their agents rather than pay a fee to have it ginned, data on ginning charges are not readily available. To estimate the impact of possible errors in measurement, sensitivity analysis was performed. The PSE was not excessively sensitive to assumptions about the cost of ginning¹².

3.2.8 Exchange Rate Misalignment

The official exchange rate is used to convert reference prices into local currency. In addition, because the rupee does not float freely, the possibility of misalignment is also considered.

Estimates of overvaluation are based on the work of Dorosh and Valdes¹³. They provide two estimates, one calculated as the rate required to eliminate the unsustainable part of the deficit in the current account; the other, as the rate required to restore equilibrium among the prices of importables, exportables, and non-traded goods. These two estimates are similar, and for use with the PSEs/CSEs, they are averaged.

¹² An increase (decrease) of 10 percent in the estimate of the ginning charges results in only a 3 percent decrease (increase) in the PSE, or a change from -37 percent to -36 percent (-38 percent). Even a 50-percent increase in the ginning cost leaves the absolute value of the PSE over 30 percent.

¹³ Dorosh, Paul and Valdes, Alberto, Effects of Exchange Rate and Trade Policies on Agricultural Incentives and Income in Pakistan, Draft Report, International Food Policy Research Institute, February, 1989.

4. ESTIMATES OF PSEs AND CSEs FOR PAKISTAN

4.1 Commodity and Policy Coverage

4.1.1 Commodities

Commodity coverage for Pakistan in this study is wheat, cotton, basmati rice, IRRI (ordinary) rice, sugar, milk, beef, chicken, and eggs. Both PSEs and CSEs were calculated for these commodities, which comprise about 90 percent of value added in agriculture. Important commodities not covered in this study include vegetable oils/oilseeds, and goat and sheep meat.

4.1.2 Policies

Measured policies are price supports and state trading, import duties, rationing, input subsidies (taxes), investment in infrastructure, general taxes, and overvaluation of the exchange rate. Inputs covered are fertilizer (nitrogen and phosphorus), credit, irrigation, electricity, and feed. Infrastructure includes investment in irrigation and expenditures on extension. PSE/CSE estimates were made for crop years 1981/82 through 1986/87.

The official exchange rate is used to convert world prices into local currency. Since the rupee does not float freely, however, a measurement of the effect of exchange rate distortion on output prices is also shown.

4.1.3 Unmeasured Policies

Exemption of agriculture from income taxation represents an indirect transfer of resources to agriculture, but data are not available to estimate this effect. Data limitations also prevented the inclusion of government investments in research. The export duty paid by the CECP is not specifically included in the PSE or CSE because it is an intragovernmental transfer.

Most subsidies on pesticides were discontinued as of 1980/81. Farmers must now pay when provincial governments spray their fields, although these governments still subsidize the purchase of sprayers. Data on these subsidies are not available, but they are presumed small and are ignored.

4.2 Aggregate Effects

Overall there was a taxing effect on producers averaging about Rs. 5 billion, or about 5 percent of the value of production. State trading was the most important agricultural intervention. To producers the absolute value of its implicit taxation was about an order of magnitude greater than the subsidy due to the fertilizer subsidy; it was about three times as great as all input subsidies combined and about five times as great as the subsidy due to investment in irrigation. The percent PSE varied with world price, exchange rate, and in some cases,

domestic price changes. The effect of these changes can be seen even in the aggregate PSE in 1982/83.

At the aggregate (of all commodities) level, no one policy category dominated the CSE. State trading achieved the largest annual (implicit) tax and the widest variation: in some years the effect was taxing, in others, subsidizing. Rationing, pertaining almost entirely to wheat, provided the greatest annual and average consumer subsidy. Import duties resulted in the largest average taxation. On average--that is, over the six years--these effects canceled one another, resulting in negligible transfers to (or from) consumers. In individual years the total CSE varied from a Rs. 3 billion subsidy to a Rs. 4 billion tax.

The effects of overvaluation on producers and consumers overshadowed those of agricultural policies. Overvaluation added an implicit tax on producers of about 16 percent and a subsidy to consumers of about 18 percent.

4.3 Effects by Commodity

4.3.1 PSEs

Each of the five crops had an average PSE (not including overvaluation) the absolute value of which was greater than 10 percent; none of the livestock products did. For three crops--wheat, cotton, and basmati rice--infrastructure investment and input subsidies to producers were more than offset by the taxing effect of output-price-related policies, primarily state trading. For sugar and IRRI rice the overall effect of agricultural policies was a subsidy. The import duty on powdered milk produced a positive PSE for milk, but the magnitude was small. The PSEs for beef, chicken, and eggs were insignificant; there were no known output price interventions for these commodities.

The price of wheat, the staple, was held down to benefit consumers, and this is reflected in a negative PSE. Transfers from producers averaged Rs. 3 billion, or about 14 percent of the value of production. Cotton and rice are major exports for Pakistan, and trade taxes contribute a large share of total government revenue. It is not surprising, then, that cotton and basmati rice were implicitly taxed--Rs. 2 and Rs. 3.5 billion, or 13 and 70 percent, respectively--by the Government's policies. IRRI rice could not be exported competitively in some years, however. Thus in the 1980s the effect of trade control switched from a tax to a subsidy as the Government promoted exports. Pakistan would like to achieve self-sufficiency in sugar, and supported cane prices about 8 percent above world-equivalent levels to do so.

Variations in support were caused mostly by changes in the official exchange rate and world prices. There was little change in the overall thrust of agricultural policy during the period, except for the ending of sugar rationing in 1983. A 21-percent depreciation of the rupee against the dollar in 1982/83, the year following the move to a new exchange rate system, had a significant impact on PSEs. The annual average depreciation in the official exchange rate over the period studied was about 10 percent. Domestic price changes were important to cotton in

1983/84, when production dropped sharply, and in recent years to basmati rice and sugar, when the Government raised support prices substantially to counteract slipping production. Otherwise the Government has been consistent and generally successful in stabilizing domestic prices.

4.3.2 CSEs

The pattern of the CSEs mirrored that of the PSEs: the five crops had significant CSEs, the signs of which, respectively, were opposite to those of the PSEs, and the CSEs for the livestock products were insignificant. State trading was the only CSE policy measured for most commodities, while for wheat and sugar the effect of rationing was also measured. In addition the analysis includes the import duty on milk powder.

Consumers of wheat and flour were subsidized about 14 percent of the value of consumption by the Government's policies over the period. The effects of both trade control and rationing were important on average, although there were substantial annual variations. The 6-percent subsidy due to trade control lowered the retail price of wheat relative to an import parity price; the 8-percent subsidy from rationing maintained the ration price lower than the retail price of flour.

The CSE for cotton averaged 45 percent. Whereas wholesale cotton prices were quite stable from 1981/82 through 1986/87--except in the year of the major crop shortfall, 1983/84--the level of the CSE varied substantially, revealing the price stabilizing effect of the CECP's operations. Basmati rice consumers received similar benefits via the RECP: a subsidy of about 40 percent and quite stable prices. IRRI rice consumers were implicitly taxed by the RECP's efforts to promote exports, more than 20 percent on average.

4.4 Effects of the Choice of Base Period

Some proposals before the GATT, particularly those of the United States and the Cairns group, have mentioned using an aggregate measure of support like the PSE to monitor implementation of a liberalization. If changes in Pakistan's policies were to be made relative to a one-year base period, the choice of year would have an impact on the amount of reduction required. In two of the most recent years for which calculations have been completed, 1984/85 and 1985/86, e.g., the PSE varied from its lowest value, -1 percent, to -5 percent, or from a tax of Rs. 1.4 billion to a tax of Rs. 5.3 billion. This variation reflects primarily changes in reference prices, not changes in policy.

5. USING SUBSIDY EQUIVALENTS TO ANALYZE LIBERALIZATION

While subsidy equivalents measure the effects of policies relative to a free-market situation, the impact of the removal of these policies cannot be fully determined in a subsidy equivalent analysis¹⁴. Thus the use of PSEs and CSEs does not substitute for a simulation model. Nevertheless, PSEs and CSEs can shed considerable light on the situation of countries like Pakistan vis-a-vis the Uruguay Round of negotiations on policy liberalization in agriculture.

The overall theme of the agricultural policy negotiations at the GATT is the reduction of support to the sector. Analyzing potential reductions in support to agriculture, however, presents particular problems for the analyst of a developing country like Pakistan. For one, the overall level of support for the measured commodities is negative, so it is not clear what a "reduction" in support means. Does it mean that only elements of the PSE that are positive (like input subsidies) would have to be reduced? Or should it be interpreted to mean that the amount of taxation would have to be reduced (i.e., the amount of intervention would be reduced)? Would the Government be free to choose the commodities in which to make changes, or would changes be required in all?

The agricultural trade negotiations in the Uruguay Round might result in either of at least two quite different resolutions. For one, there is the possibility that sweeping reforms might arise through grand compromise among nations to meet the overall objective of reduction in support. The proposals of the United States and the Cairns group have taken this approach. Such a grand compromise is possible because it would give national governments a degree of political leverage at home to implement the agreed-upon changes: the changes could be characterized as stemming from external factors to some extent beyond the government's control. On the other hand, precedent favors marginal changes based on national interests, the approach that seems to be favored by the European Economic Community and Japan.

It is not clear at this time what path agricultural trade liberalization might take, but subsidy equivalents can be used to examine different scenarios. Three are selected here: 1) A reduction in support only when aggregate, net support (to producers) is positive, 2) Reduction of every instance of positive support, and 3) Complete liberalization.

5.1 Reducing Positive Net Aggregate Support

In this scenario, the effects of all measured policies on all included commodities would be summed for each country. By agreement of the GATT members, only those countries whose total PSE was positive would reduce support. If calculations like those shown here were used

¹⁴ In particular an analysis based on PSEs would ignore interactions and the implementation problem of "overshoot." That is, under a liberalization all countries would have to change their policies to lower their support to producers. The result of this initial round of policy changes would be higher world prices, which would in turn have an impact on PSEs in Pakistan and elsewhere.

to evaluate Pakistan's level of support, Pakistan would not need to change any of its agricultural policies, since its aggregate PSE is negative. Pakistan would benefit to the extent that world prices for its export commodities (cotton and rice) rose as a result of the reduction of support (and decreases in production) in other countries; imports of wheat, milk, and sugar, however, would be more expensive.

5.2 Reducing All Instances of Positive Support

In this scenario, the effect of each measured policy on each commodity would be considered separately in each country. By agreement of the GATT members, in each case where there was positive support, it would have to be reduced or eliminated.

5.2.1 Input Subsidies

Some of the Government of Pakistan's existing policies are consonant with such a scenario. The Government has eliminated or is committed to eliminating some of its major input subsidies. In the case of fertilizer and pesticides, the subsidies were provided to promote the introduction of productive inputs into the farming system. Farmers have demonstrated their appreciation of the importance of these inputs by their continual increases in application. The Government now believes that distorting subsidies should be removed to encourage farmers to use the appropriate amounts and methods of application of these inputs¹⁵. For similar reasons, the Government also recognizes the desirability of recovering the operation and maintenance costs of irrigation¹⁶.

5.2.2 Investment in Infrastructure

This category is dominated by investments in irrigation facilities, and also includes expenditures on research and extension. These types of expenditures are included in the PSE for the sake of completeness. Most policymakers, including Pakistan's, would probably argue that such programs are legitimate functions of government, so they are not likely to be negotiated away in the Uruguay round.

5.2.3 Price Supports

Pakistan's PSEs also reveal positive price support to producers of milk, sugar, and IRRI rice. The duty on imported milk powder contributes revenue to the Government's coffers¹⁷. It also provides protection for the establishment of a milk powder production industry in the

¹⁵ Seventh Plan, op. cit.

¹⁶ Seventh Plan, pp.483-4.

¹⁷ About Rs. 200 million annually: Rs. 5/kg plus 22.5 percent ad valorem on imports of over 20,000 tons of powder worth over Rs. 400 million.

context of a world market in which a significant amount of subsidized milk powder is traded. On the other hand, it raises the costs of the existing ultra-high-temperature (UHT) milk industry, one of the main importers.

In the event of a world liberalization, the world price of milk would probably rise, weakening but not removing the infant (milk powder) industry argument. The Government's very tight budgetary position, however, might make it reluctant to give up this source of revenue.

Far more revenue is at stake with sugar policies, however, than with milk. The central excise duty on refined sugar production brings in over Rs. 2 billion per year, and estimated import duty collections in 1985/86 and 1986/87 ranged from Rs 1 to Rs. 3 billion.¹⁸ Although many farmers would probably continue to plant sugarcane to remain diversified, lower prices would likely induce lower production. This in turn would mean higher imports and outlays of foreign exchange, and some sugar mills might be forced to close. If world prices rose with liberalization, price supports might not be necessary to induce self-sufficiency, but the Government would have to find substantial revenue elsewhere.

Pakistan's small price subsidy to IRRI rice producers would also be subject to reduction in this scenario¹⁹. However, as other subsidizing countries reduced support, it is likely that the world price would rise. It would take only a small increase in the border price to reduce Pakistan's positive IRRI rice PSE (for state trading) to zero and make its exports competitive. There would no longer be a tax on IRRI rice consumers, and the Government might not need to change its policy of state-dominated trading in IRRI rice.

5.3 Complete Liberalization

In a complete liberalization, all countries would eventually remove all policies that have either a positive or negative effect on producer revenue in all agricultural commodities. In the proposals before the GATT, these changes would take place over a period of several years. To help understand what would happen if the Government agreed to such a liberalization, one can examine the components of the PSEs.

The major agricultural policy components of Pakistan's PSEs have been mentioned above: a price wedge measuring the effects of state trading and price supports, input subsidies, and investment in infrastructure. The average, aggregate PSE was negative, and three of the five measured crops had negative PSEs. Overvaluation of the exchange rate resulted in an additional tax on producers. Investment in infrastructure is too important to be

¹⁸ Excise duty data are from the Central Board of Revenue; import duty collections were estimated from rates and actual imports. The excise duty collection on sugar was second only to that on tobacco.

¹⁹ Allowing for margins of error, one might evaluate the average PSE for state trading as zero. The object of the exposition is to point out the areas of policy change.

negotiated away by any of the countries in the GATT, so no further consideration is given here to this component of support.

The PSEs and CSEs indicate the direction of change for input and output prices under a liberalization. Domestic prices of outputs that were taxed significantly would rise, while prices of outputs that were subsidized significantly would fall. Prices of inputs, because they were subsidized, would rise. Because of interactions among domestic prices and quantities and among the economies of different nations, the PSEs cannot be used to predict the precise amount by which prices would change during a liberalization. Similarly, output effects would have to be determined through the use of an appropriate tool, like a simulation model.

Producers of wheat, cotton, and basmati rice would find themselves in a rather different position after a liberalization. Output prices would be higher, but so would prices of inputs like fertilizer and water²⁰. Thus they would have more of an incentive to produce those crops for which Pakistan has a comparative advantage. They would have an incentive to use fertilizer and water more efficiently. They might also have a greater need for technical information to achieve these objectives. Producers of supported commodities like sugarcane would be squeezed by the price changes of a complete liberalization: output prices would fall and input prices would rise.

If the Government followed through with the liberalization on the consumer side as well, the effects on consumer prices would be derived in an analogous way from the CSEs. Domestic prices of subsidized commodities would rise, and those that had been taxed would fall. The two most important changes here would clearly be increases in the prices of wheat, the staple, and cotton, a key raw material.

²⁰ Observers of the current scene in Pakistan will note that Pakistan is moving in this direction: changes in procurement prices and other policy instruments have raised output prices for wheat and cotton, and much of the fertilizer subsidy is being systematically eliminated.

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STATISTICAL ANNEX

PAKISTAN PSE SUMMARY: NINE COMMODITIES

	Unit	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	Average
A. Agricultural GNP	Mil. Rs.	80,991	87,870	89,143	104,951	116,087	123,534	100,429
B. PSE Coverage	Percent	91%	92%	94%	93%	91%	94%	93%
C. Producer Value (9)	Mil. Rs.	73,427	80,416	84,031	97,883	105,680	116,738	93,029
D. Policy Transfers to Producers								
1. Market Price Interventions								
a. Support Prices & State Trading	Mil. Rs.	-7875	-15190	-9582	-11605	-12209	-16674	-12189
b. Import Duty	Mil. Rs.	173	252	307	387	3,011	3,388	1,253
c. Total	Mil. Rs.	-7701	-14938	-9275	-11218	-9198	-13286	-10936
Percent of Producer Value	Percent	-10%	-19%	-11%	-11%	-9%	-11%	-12%
2. Assistance on Inputs								
a. Fertilizer	Mil. Rs.	1,864	1,319	527	1,896	1,989	680	1,379
b. Credit	Mil. Rs.	285	358	542	682	857	1,195	653
c. Electricity	Mil. Rs.	822	879	923	979	1,127	1,336	1,011
d. Irrigation (O&M)	Mil. Rs.	517	501	670	1,241	1,141	1,377	908
e. Feed	Mil. Rs.	-23	-37	-47	-62	-74	0	-40
f. Total	Mil. Rs.	3,465	3,021	2,615	4,736	5,040	4,589	3,911
Percent of Producer Value	Percent	5%	4%	3%	5%	5%	4%	4%
3. Infrastructure								
a. Investment in Irrigation	Mil. Rs.	1,732	2,066	2,342	2,713	3,065	3,496	2,569
b. Extension	Mil. Rs.			144	101	64	271	145
c. Total	Mil. Rs.	1,732	2,066	2,486	2,813	3,130	3,767	2,714
Percent of Producer Value	Percent	2%	3%	3%	3%	3%	3%	3%
4. General Taxes and Subsidies								
a. Land-Related Revenue	Mil. Rs.	-225	-334	-375	-370	-412	-353	-345
Percent of Producer Value	Percent	-0.3%	-0.4%	-0.4%	-0.4%	-0.4%	-0.3%	-0.4%
5. Total Policy Transfers to Producers								
a. Total	Mil. Rs.	-2729	-10186	-4548	-4039	-1441	-5283	-4704
b. Percent of Producer Value	Percent	-4%	-13%	-5%	-4%	-1%	-5%	-5%
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%	22%
F. Effect of Over-valuation	Mil. Rs.	-12258	-13156	-14968	-14707	-18425	-18142	-15276
Percent of Producer Value	Percent	-17%	-16%	-18%	-15%	-17%	-16%	-16%
G. PSE Including Over-valuation	Mil. Rs.	-14986	-23342	-19516	-18746	-19866	-23424	-19980
Percent of Producer Value	Percent	-20%	-29%	-23%	-19%	-19%	-20%	-21%

PAKISTAN WHEAT: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	Unit	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	11,304	12,414	10,882	11,703	13,922	12,200
B. Producer Price	Ru/40 kg	66	67	76	83	81	85
	Ru/T.	1,657	1,681	1,901	2,069	2,020	2,131
C. Producer Value	Mil. Ru.	18,728	20,865	20,682	24,216	28,116	25,996
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Ru.	-4118	-8637	-5908	-3945	-10028	-7778
Percent of Producer Value	Percent	-22%	-41%	-29%	-16%	-36%	-30%
2. Assistance on Inputs							
a. Fertilizer	Mil. Ru.	1,162	846	362	1,185	1,258	479
b. Credit	Mil. Ru.	155	194	292	362	451	630
c. Electricity	Mil. Ru.	355	380	400	420	497	590
d. Irrigation (O&M)	Mil. Ru.	227	221	298	549	520	627
e. Total	Mil. Ru.	1,899	1,642	1,351	2,517	2,727	2,326
Percent of Producer Value	Percent	10%	8%	7%	10%	10%	9%
3. Infrastructure							
a. Investment in Irrigation	Mil. Ru.	762	913	1,041	1,200	1,397	1,591
b. Extension	Mil. Ru.	0	0	36	25	17	61
c. Total	Mil. Ru.	762	913	1,077	1,226	1,415	1,653
Percent of Producer Value	Percent	4%	4%	5%	5%	5%	6%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Ru.	-89	-139	-155	-157	-184	-134
Percent of Producer Value	Percent	-0.5%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%
5. Total Policy Transfers to Producers							
a. Total	Mil. Ru.	-1546	-6221	-3635	-359	-6070	-3933
Percent of Producer Value	Percent	-8%	-30%	-18%	-1%	-22%	-15%
Transfers per Ton	Ru/T.	-137	-501	-334	-31	-436	-322
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Ru.	-2832	-3624	-3730	-3052	-5580	-3950
Percent of Producer Value	Percent	-15%	-17%	-18%	-13%	-20%	-15%
G. PSE Including Overvaluation	Mil. Ru.	-4378	-9845	-7365	-3410	-11650	-7883
Percent of Producer Value	Percent	-23%	-47%	-36%	-14%	-41%	-30%

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PAKISTAN COTTON: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	2,244	2,472	1,484	3,026	3,651	3,959
B. Producer Price	Ra/40 kg	187	190	296	204	201	213
	Ra/T.	4,678	4,758	7,401	5,099	5,028	5,313
C. Producer Value	Mil. Ra.	10,498	11,762	10,982	15,431	18,359	21,036
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Ra.	-1085	-3668	-1662	-4795	664	-6736
Percent of Producer Value	Percent	-10%	-31%	-15%	-31%	4%	-32%
2. Assistance on Inputs							
a. Fertilizer	Mil. Ra.	311	207	63	315	329	87
b. Credit	Mil. Ra.	46	58	87	108	134	187
c. Electricity	Mil. Ra.	127	137	141	150	181	219
d. Irrigation (O&M)	Mil. Ra.	81	80	105	197	190	232
e. Total	Mil. Ra.	566	482	396	770	835	725
Percent of Producer Value	Percent	5%	4%	4%	5%	5%	3%
3. Infrastructure							
a. Investment in Irrigation	Mil. Ra.	272	330	367	429	510	590
b. Extension	Mil. Ra.	0	0	19	16	11	50
c. Total	Mil. Ra.	272	330	386	446	521	640
Percent of Producer Value	Percent	3%	3%	4%	3%	3%	3%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Ra.	-50	-78	-83	-100	-120	-108
Percent of Producer Value	Percent	-0.5%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%
5. Total Policy Transfers to Producers							
a. Total	Mil. Ra.	-297	-2934	-963	-3680	1900	-5479
Percent of Producer Value	Percent	-3%	-25%	-9%	-24%	10%	-26%
Transfers per Ton	Ra/T.	-132	-1187	-649	-1216	520	-1384
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Ra.	-2695	-3138	-3100	-4092	-4248	-5415
Percent of Producer Value	Percent	-26%	-27%	-28%	-27%	-23%	-26%
G. PSE Including Overvaluation	Mil. Ra.	-2993	-6073	-4063	-7772	-2348	-10895
Percent of Producer Value	Percent	-29%	-52%	-37%	-50%	-13%	-52%

PAKISTAN BASMATI RICE: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	1,055	1,010	965	958	883	1,046
B. Producer Price	Ru/40 kg	175	179	191	188	233	247
	Ru/T.	4,366	4,484	4,776	4,706	5,834	6,187
C. Producer Value	Mil. Ru.	4,606	4,529	4,609	4,508	5,151	6,470
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Ru.	-2661	-2817	-2759	-4243	-3768	-6183
Percent of Producer Value	Percent	-58%	-62%	-60%	-94%	-73%	-96%
2. Assistance on Inputs							
a. Fertilizer	Mil. Ru.	74	52	24	71	80	34
b. Credit	Mil. Ru.	14	17	26	32	43	60
c. Electricity	Mil. Ru.	38	38	40	42	47	59
d. Irrigation	Mil. Ru.	24	22	30	55	49	63
e. Total	Mil. Ru.	150	129	119	200	219	215
Percent of Producer Value	Percent	3%	3%	3%	4%	4%	3%
3. Infrastructure							
a. Investment in Irrigation	Mil. Ru.	81	92	104	120	132	159
b. Extension	Mil. Ru.	0	0	8	5	3	15
c. Total	Mil. Ru.	81	92	112	125	135	174
Percent of Producer Value	Percent	2%	2%	2%	3%	3%	3%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Ru.	-22	-30	-35	-29	-34	-33
Percent of Producer Value	Percent	-0.5%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%
5. Total Policy Transfers to Producers							
a. Total	Mil. Ru.	-2451	-2626	-2562	-3947	-3447	-5826
Percent of Producer Value	Percent	-53%	-58%	-56%	-88%	-67%	-90%
Transfers per Ton	Ru/T.	-2323	-2600	-2655	-4121	-3904	-5571
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Ru.	-1691	-1494	-1806	-1771	-2141	-2467
Percent of Producer Value	Percent	-37%	-33%	-39%	-39%	-42%	-38%
G. PSE Including Overvaluation	Mil. Ru.	-4142	-4120	-4369	-5718	-5588	-8294
Percent of Producer Value	Percent	-90%	-91%	-95%	-127%	-108%	-128%

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PAKISTAN ORDINARY RICE: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	2,375	2,435	2,374	2,357	2,036	2,440
B. Producer Price	Rs/40 kg	76	85	89	90	92	100
	Rs/T.	1,900	2,122	2,222	2,258	2,301	2,492
C. Producer Value	Mil. Rs.	4,513	5,166	5,276	5,321	4,684	6,082
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Rs.	-750	1	-279	273	738	251
Percent of Producer Value	Percent	-17%	0%	-5%	5%	16%	4%
2. Assistance on Inputs							
a. Fertilizer	Mil. Rs.	141	94	30	147	149	33
b. Credit	Mil. Rs.	32	40	63	78	99	140
c. Electricity	Mil. Rs.	85	92	98	104	108	137
d. Irrigation	Mil. Rs.	55	54	73	135	113	146
e. Total	Mil. Rs.	312	280	264	464	469	457
Percent of Producer Value	Percent	7%	5%	5%	9%	10%	8%
3. Infrastructure							
a. Investment in Irrigation	Mil. Rs.	183	222	255	296	305	371
b. Extension	Mil. Rs.	0	0	9	6	3	14
c. Total	Mil. Rs.	183	222	265	301	307	385
Percent of Producer Value	Percent	4%	4%	5%	6%	7%	6%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Rs.	-21	-34	-40	-34	-31	-31
Percent of Producer Value	Percent	-0.5%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%
5. Total Policy Transfers to Producers							
a. Total	Mil. Rs.	-277	468	209	1004	1484	1061
Percent of Producer Value	Percent	-6%	9%	4%	19%	32%	17%
Transfers per Ton	Rs/T.	-117	192	88	426	729	435
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Rs.	-1225	-1050	-1362	-1021	-947	-1137
Percent of Producer Value	Percent	-27%	-20%	-26%	-19%	-20%	-19%
G. PSE Including Overvaluation	Mil. Rs.	-1502	-582	-1153	-17	537	-76
Percent of Producer Value	Percent	-33%	-11%	-22%	0%	11%	-1%

PAKISTAN SUGAR: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	Unit	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	36,580	32,534	34,787	32,140	27,856	29,926
B. Producer Price	Ru/40 kg	9.70	9.71	9.70	9.70	9.74	11.87
	Ru/T.	242	243	242	243	243	297
C. Producer Value	Mil. Ru.	8,866	7,896	8,312	7,794	6,782	8,881
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Ru.	740	-69	1026	1,105	184	1,117
Percent of Producer Value	Percent	8%	-1%	12%	14%	3%	13%
2. Assistance on Inputs							
a. Fertilizer	Mil. Ru.	177	120	48	177	173	46
b. Credit	Mil. Ru.	34	43	67	82	106	150
c. Electricity	Mil. Ru.	59	60	62	65	65	72
d. Irrigation (O&M)	Mil. Ru.	38	35	46	86	68	77
e. Total	Mil. Ru.	308	259	223	412	412	346
Percent of Producer Value	Percent	3%	3%	3%	5%	6%	4%
3. Infrastructure							
a. Investment in Irrigation	Mil. Ru.	127	145	161	188	183	195
b. Extension	Mil. Ru.	0	0	14	8	4	21
c. Total	Mil. Ru.	127	145	176	196	187	216
Percent of Producer Value	Percent	1%	2%	2%	3%	3%	2%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Ru.	-42	-53	-62	-50	-44	-46
Percent of Producer Value	Percent	-0.5%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%
5. Total Policy Transfers to Producers							
a. Total	Mil. Ru.	1,132	281	1,362	1,663	739	1,633
Percent of Producer Value	Percent	13%	4%	16%	21%	11%	18%
Transfers per Ton	Ru/T.	31	9	40	52	27	55
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Ru.	-651	-632	-551	-495	-661	-620
Percent of Producer Value	Percent	-7%	-8%	-7%	-6%	-10%	-7%
G. PSE Including Overvaluation	Mil. Ru.	481	-350	811	1168	77	1013
Percent of Producer Value	Percent	5%	-4%	10%	15%	1%	11%

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PAKISTAN MILK: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	Unit	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	9,462	9,662	10,242	10,856	11,508	12,198
B. Producer Price	Rs/40 kg	92	103	109	123	118	125
	Rs/T.	2,308	2,564	2,714	3,085	2,956	3,136
C. Producer Value	Mil. Rs.	21,840	24,775	27,797	33,488	34,013	38,250
D. Policy Transfers to Producers							
1. Market Price Interventions							
a. Support Prices & State Trading	Mil. Rs.	0	0	0	0	0	0
b. Import duty	Mil. Rs.	173	252	307	387	3,011	3,388
c. Total	Mil. Rs.	173	252	307	387	3,011	3,388
Percent of Producer Value	Percent	1%	1%	1%	1%	9%	9%
2. Assistance on Inputs							
a. Fertilizer	Mil. Rs.	0	0	0	0	0	0
b. Credit	Mil. Rs.	1	4	5	13	17	20
c. Electricity	Mil. Rs.	132	140	147	156	177	202
d. Irrigation	Mil. Rs.	85	82	109	203	185	214
e. Total	Mil. Rs.	216	226	261	372	379	436
Percent of Producer Value	Percent	1%	1%	1%	1%	1%	1%
3. Infrastructure							
a. Investment in Irrigation	Mil. Rs.	284	337	383	444	497	544
b. Extension	Mil. Rs.	0	0	46	33	20	85
c. Total	Mil. Rs.	284	337	428	478	517	629
Percent of Producer Value	Percent	1%	1%	2%	1%	2%	2%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Rs.	0	0	0	0	0	0
Percent of Producer Value	Percent	0%	0%	0%	0%	0%	0%
5. Total Policy Transfers to Producers							
a. Total	Mil. Rs.	675	815	997	1,237	3,908	4,453
Percent of Producer Value	Percent	3%	3%	4%	4%	11%	12%
Transfers per Ton	Rs/T.	71	84	97	114	340	365
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Rs.	-2145	-2115	-2855	-2835	-2788	-2546
Percent of Producer Value	Percent	-10%	-9%	-10%	-8%	-8%	-7%
G. PSE Including Overvaluation	Mil. Rs.	-1470	-1301	-1858	-1598	1119	1906
Percent of Producer Value	Percent	-7%	-5%	-7%	-5%	3%	5%

PAKISTAN BEEF: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	Unit	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	208	216	227	239	251	264
B. Producer Price	Ru/40 kg	347	359	373	411	415	460
	Ru/T.	8,673	8,964	9,316	10,280	10,373	11,503
C. Producer Value	Mil. Ru.	1,807	1,935	2,116	2,454	2,603	3,036
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Ru.	0	0	0	0	0	0
Percent of Producer Value	Percent	0%	0%	0%	0%	0%	0%
2. Assistance on Inputs							
a. Fertilizer	Mil. Ru.	0	0	0	0	0	0
b. Credit	Mil. Ru.	0	0	0	0	0	0
c. Electricity	Mil. Ru.	11	11	12	12	15	17
d. Irrigation (O&M)	Mil. Ru.	7	7	9	16	16	18
e. Total	Mil. Ru.	18	18	21	28	30	35
Percent of Producer Value	Percent	1%	1%	1%	1%	1%	1%
3. Infrastructure							
a. Investment in Irrigation	Mil. Ru.	23	28	31	34	42	46
b. Extension	Mil. Ru.	0	0	4	3	2	7
c. Total	Mil. Ru.	23	28	34	37	43	53
Percent of Producer Value	Percent	1%	1%	2%	2%	2%	2%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Ru.	0	0	0	0	0	0
Percent of Producer Value	Percent	0	0	0	0	0	0
5. Total Policy Transfers to Producers							
a. Total	Mil. Ru.	41	46	55	65	74	88
Percent of Producer Value	Percent	2%	2%	3%	3%	3%	3%
Transfers per Ton	Ru/T.	199	212	242	271	294	333
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Ru.	-421	-394	-519	-497	-625	-592
Percent of Producer Value	Percent	-23%	-20%	-25%	-20%	-24%	-19%
G. PSE Including Overvaluation	Mil. Ru.	-379	-348	-464	-432	-551	-504
Percent of Producer Value	Percent	-21%	-18%	-22%	-18%	-21%	-17%

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PAKISTAN CHICKEN: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	Unit	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Thou. MT	56	74	85	98	114	122
B. Producer Price	Rs/T.	17,419	18,690	19,086	20,216	21,305	23,856
C. Producer Value	Mil. Rs.	977	1,376	1,618	1,972	2,429	2,910
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Rs.	0	0	0	0	0	0
Percent of Producer Value	Percent	0%	0%	0%	0%	0%	0%
2. Assistance on Inputs							
a. Fertilizer	Mil. Rs.	0	0	0	0	0	0
b. Credit	Mil. Rs.	1	1	1	2	3	3
c. Electricity	Mil. Rs.	6	10	12	15	18	21
d. Irrigation	Mil. Rs.	0	0	0	0	0	0
e. Feed	Mil. Rs.	-21	-35	-44	-59	-70	0
f. Total	Mil. Rs.	-14	-24	-30	-41	-48	24
Percent of Producer Value	Percent	-1%	-2%	-2%	-2%	-2%	1%
3. Infrastructure							
a. Investment in Irrigation	Mil. Rs.	0	0	0	0	0	0
b. Extension	Mil. Rs.	0	0	3	2	2	7
c. Total	Mil. Rs.	0	0	3	2	2	7
Percent of Producer Value	Percent	0.0%	0.0%	0.2%	0.1%	0.1%	0.2%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Rs.	0	0	0	0	0	0
Percent of Producer Value	Percent	0	0	0	0	0	0
5. Total Policy Transfers to Producers							
a. Total	Mil. Rs.	-14	-24	-28	-39	-47	31
Percent of Producer Value	Percent	-1%	-2%	-2%	-2%	-2%	1%
Transfers per Ton	Rs/T.	-252	-326	-326	-403	-412	253
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Rs.	-227	-280	-397	-399	-583	-568
Percent of Producer Value	Percent	-23%	-20%	-25%	-20%	-24%	-19%
G. PSE Including Overvaluation	Mil. Rs.	-242	-304	-424	-438	-630	-537
Percent of Producer Value	Percent	-25%	-22%	-26%	-22%	-26%	-18%

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PAKISTAN EGGS: SUMMARY OF PRODUCER SUBSIDY EQUIVALENTS

	Unit	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Production	Mil. No.	2,630	3,164	3,675	4,052	4,589	5,193
B. Producer Price	Rs./30 dz.	218	240	259	240	278	283
	Rs./Egg	0.60	0.67	0.72	0.67	0.77	0.79
C. Producer Value	Mil. Rs.	1,591	2,111	2,639	2,698	3,544	4,077
D. Policy Transfers to Producers							
1. Support Prices & State Trading	Mil. Rs.	0	0	0	0	0	0
Percent of Producer Value	Percent	0%	0%	0%	0%	0%	0%
2. Assistance on Inputs							
a. Fertilizer	Mil. Rs.	0	0	0	0	0	0
b. Credit	Mil. Rs.	1	1	2	3	4	5
c. Electricity	Mil. Rs.	8	10	12	14	17	20
d. Irrigation	Mil. Rs.	0	0	0	0	0	0
e. Feed	Mil. Rs.	-2	-3	-3	-4	-4	0
f. Total	Mil. Rs.	7	9	11	13	16	25
Percent of Producer Value	Percent	0%	0%	0%	0%	0%	1%
3. Infrastructure							
a. Investment in Irrigation	Mil. Rs.	0	0	0	0	0	0
b. Extension	Mil. Rs.	0	0	5	3	2	10
c. Total	Mil. Rs.	0	0	5	3	2	10
Percent of Producer Value	Percent	0.0%	0.0%	0.2%	0.1%	0.1%	0.2%
4. General Taxes and Subsidies							
a. Land-Related Revenue	Mil. Rs.	0	0	0	0	0	0
Percent of Producer Value	Percent	0	0	0	0	0	0
5. Total Policy Transfers to Producers							
a. Total	Mil. Rs.	7	9	15	16	19	34
Percent of Producer Value	Percent	0%	0%	1%	1%	1%	1%
Transfers per Ton							
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%
F. Effect of Overvaluation	Mil. Rs.	-370	-429	-647	-546	-851	-795
Percent of Producer Value	Percent	-23%	-20%	-25%	-20%	-24%	-19%
G. PSE Including Overvaluation	Mil. Rs.	-363	-421	-632	-530	-832	-761
Percent of Producer Value	Percent	-23%	-20%	-24%	-20%	-23%	-19%

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PAKISTAN CSE SUMMARY: NINE COMMODITIES

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	Average
A. Consumer Cost	Mil. Rs.	83,967	95,055	107,853	120,932	124,718	142,077	112,434
B. Policy Transfers to Consumers								
1. State Trading	Mil. Rs.	2,466	1,676	-27	-4032	-4123	-130	-695
Percent of Consumer Cost	Percent	3%	2%	0%	-3%	-3%	0%	-1%
2. Rationing	Mil. Rs.	-1917	1386	1933	3208	3193	1974	1,629
Percent of Consumer Cost	Percent	-2%	1%	2%	3%	3%	1%	1%
3. Import Duty	Mil. Rs.	-264	-390	-469	-579	-3246	-3642	-1432
Percent of Consumer Cost	Percent	0%	0%	0%	0%	-3%	-3%	-1%
4. Total Policy Transfers to Consumers								
a. Total	Mil. Rs.	285	2672	1437	-1403	-4177	-1799	-497
b. Percent of Consumer Cost	Percent	0%	3%	1%	-1%	-3%	-1%	0%
E. Overvaluation of Exchange Rate	Percent	23%	20%	25%	20%	24%	19%	22%
F. Effect of Overvaluation	Mil. Rs.	16,122	17,661	22,795	18,921	24,671	21,846	20,336
Percent of Consumer Cost	Percent	19%	19%	21%	16%	20%	15%	18%
G. CSE Including Overvaluation	Mil. Rs.	16,407	20,334	24,232	17,518	20,494	20,047	19,838
Percent of Consumer Cost	Percent	20%	21%	22%	14%	16%	14%	18%

PAKISTAN WHEAT: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou. T.	11,521	12,000	12,312	12,754	13,200	13,601
B. Consumer Price	Rs/T.	1,912	2,019	2,107	2,353	2,267	2,457
C. Consumer Cost	Mil. Rs.	22,033	24,232	25,942	30,006	29,928	33,423
D. Policy Transfers to Consumers							
1. State Trading	Mil. Rs.	926	2544	2538	(15)	2,223	3,211
2. Rationing	Mil. Rs.	1,453	1,386	1,933	3,208	3,193	1,974
3. Total Policy Transfers to Consumers							
a. Total	Mil. Rs.	2,379	3,930	4,470	3,193	5,415	5,184
b. Percent of Consumer Cost	Percent	11%	16%	17%	11%	18%	16%
c. Transfers per Ton	Rs/T.	206	327	363	250	410	381
E. Effect of Overvaluation	Mil. Rs.	6,713	7,961	9,379	7,230	11,257	9,174
Percent of Consumer Cost	Percent	30%	33%	36%	24%	38%	27%
F. CSE Including Overvaluation	Mil. Rs.	9,092	11,891	13,849	10,423	16,672	14,358
Percent of Consumer Cost	Percent	41%	49%	53%	35%	56%	43%

PAKISTAN COTTON: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou.bales	2,238	2,450	2,030	2,264	2,520	2,990
	Thou. T.	487	533	442	493	549	651
B. Consumer Price	Rs/T.	11,953	12,677	18,898	14,595	12,359	13,324
C. Consumer Cost	Mil. Rs.	5,823	6,761	8,351	7,193	6,780	8,672
D. Policy Transfers to Consumers							
1. State Trading Percent of Consumer Cost	Mil. Rs.	1,938	3,822	2,753	3,255	1,972	5,832
	Percent	33%	57%	33%	45%	29%	67%
E. Effect of Overvaluation Percent of Consumer Cost	Mil. Rs.	1,806	2,153	2,723	2,114	2,101	2,828
	Percent	31%	32%	33%	29%	31%	33%
F. CSE Including Overvaluation Percent of Consumer Cost	Mil. Rs.	3,744	5,975	5,476	5,369	4,073	8,661
	Percent	64%	88%	66%	75%	60%	100%

PAKISTAN BASMATI RICE: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou. T.	595	634	897	747	619	721
B. Consumer Price	Rs/T.	6,307	6,350	6,494	6,546	7,512	7,904
C. Consumer Cost	Mil. Rs.	3,753	4,026	5,826	4,890	4,650	5,699
D. Policy Transfers to Consumers							
1. Total	Mil. Rs.	726	1,029	1,633	2,487	2,147	3,630
2. Percent of Consumer Cost	Percent	19%	26%	28%	51%	46%	64%
3. Transfers per Ton	Rs/T.	1,221	1,623	1,821	3,330	3,469	5,034
E. Effect of Overvaluation Percent of Consumer Cost	Mil. Rs.	1,042	1,028	1,829	1,492	1,632	1,819
	Percent	28%	26%	31%	31%	35%	32%
F. CSE Including Overvaluation Percent of Consumer Cost	Mil. Rs.	1,769	2,057	3,462	3,980	3,779	5,449
	Percent	47%	51%	59%	81%	81%	96%

PAKISTAN ORDINARY RICE: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou. T.	1,599	1,337	1,795	1,419	1,140	1,788
B. Consumer Price	Rs/T.	3,310	3,485	3,748	3,782	3,813	3,779
C. Consumer Cost	Mil. Rs.	5,292	4,659	6,728	5,367	4,347	6,758
D. Policy Transfers to Consumers							
1. Total	Mil. Rs.	-853	-1048	-1451	-1392	-1317	-1198
2. Percent of Consumer Cost	Percent	-16%	-22%	-22%	-26%	-30%	-18%
3. Transfers per Ton	Rs/T.	-533	-784	-808	-981	-1155	-670
E. Effect of Overvaluation	Mil. Rs.	1,033	735	1,294	804	728	1,084
Percent of Consumer Cost	Percent	20%	16%	19%	15%	17%	16%
F. CSE Including Overvaluation	Mil. Rs.	180	-314	-157	-587	-589	-113
Percent of Consumer Cost	Percent	3%	-7%	-2%	-11%	-14%	-2%

PAKISTAN SUGAR: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou. T.	1,137	1,244	1,326	1,594	1,763	1,850
B. Consumer Price	Rs/T.	7,239	8,120	7,820	8,920	9,570	9,740
C. Consumer Cost	Mil. Rs.	8,230	10,097	10,368	14,214	16,869	18,019
D. Policy Transfers to Consumers							
1. State Trading	Mil. Rs.	-272	-371	-5500	-8368	-9148	-9720
2. Rationing	Mil. Rs.	-3370	0	0	0	0	0
3. Total Policy Transfers to Consumers							
a. Total	Mil. Rs.	-3641	-4671	-5500	-8368	-9148	-9720
b. Percent of Consumer Cost	Percent	-44%	-46%	-53%	-59%	-54%	-54%
c. Transfers per Ton	Rs/T.	-3203	-3756	-4148	-5252	-5190	-5254
4. Memo items:							
a. Excise duty	Mil. Rs.	0	-2425	-2432	-2686	-2406	-1917
b. Import duty	Mil. Rs.	0	-8083	-8618	-7968	-7051	-7400
E. Effect of Overvaluation	Mil. Rs.	969	1,104	1,194	1,183	1,854	1,618
Percent of Consumer Cost	Percent	12%	11%	12%	8%	11%	9%
F. CSE Including Overvaluation	Mil. Rs.	-2672	-3567	-4306	-7186	-7295	-8101
Percent of Consumer Cost	Percent	-32%	-35%	-42%	-51%	-43%	-45%

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PAKISTAN MILK: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou. T.	9,703	10,077	10,464	11,100	11,741	12,406
B. Consumer Price	Rs/T.	3,432	3,808	4,051	4,512	4,382	4,582
C. Consumer Cost	Mil. Rs.	33,302	38,376	42,389	50,079	51,447	56,842
D. Policy Transfers to Consumers							
1. State Trading	Mil. Rs.	0	0	0	0	0	0
2. Import duty	Mil. Rs.	-264	-390	-469	-579	-3246	-3642
3. Total Policy Transfers to Consumers							
a. Total	Mil. Rs.	-264	-390	-469	-579	-3246	-3642
b. Percent of Consumer Cost	Percent	-1%	-1%	-1%	-1%	-6%	-6%
c. Transfers per Ton	Rs/T.	-27	-39	-45	-52	-276	-294
E. Effect of Overvaluation	Mil. Rs.	3,271	3,277	4,354	4,239	4,532	4,056
Percent of Consumer Cost	Percent	10%	9%	10%	8%	9%	7%
F. CSE Including Overvaluation	Mil. Rs.	3,007	2,887	3,885	3,661	1,286	413
Percent of Consumer Cost	Percent	9%	8%	9%	7%	2%	1%

PAKISTAN BEEF: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou. T.	208	216	227	239	251	264
B. Consumer Price	Rs/T.	11,943	12,473	14,170	14,387	15,153	17,387
C. Consumer Cost	Mil. Rs.	2,489	2,693	3,218	3,435	3,802	4,590
D. Policy Transfer to Consumers							
1. Total	Mil. Rs.	0	0	0	0	0	0
2. Percent of Consumer Cost	Percent	0%	0%	0%	0%	0%	0%
3. Transfers per Ton	Rs/T.	0	0	0	0	0	0
E. Effect of Overvaluation	Mil. Rs.	579	548	789	695	913	895
Percent of Consumer Cost							
F. CSE Including Overvaluation	Mil. Rs.	579	548	789	695	913	895
Percent of Consumer Cost	Percent	23%	20%	25%	20%	24%	19%

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PAKISTAN CHICKEN: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Thou. T.	56	74	85	98	114	122
B. Consumer Price	Rs./T.	19,198	21,992	22,183	23,803	24,164	25,282
C. Consumer Cost	Mil. Rs.	1,077	1,620	1,880	2,322	2,755	3,084
D. Policy Transfers to Consumers							
1. Total	Mil. Rs.	0	0	0	0	0	0
2. Percent of Consumer Cost	Percent	0%	0%	0%	0%	0%	0%
3. Transfers per Ton	Rs./T.	0	0	0	0	0	0
E. Effect of Overvaluation	Mil. Rs.	251	329	461	470	661	601
Percent of Consumer Cost	Percent	23%	20%	25%	20%	24%	19%
F. CSE Including Overvaluation	Mil. Rs.	251	329	461	470	661	601
Percent of Consumer Cost	Percent	23%	20%	25%	20%	24%	19%

PAKISTAN EGGS: SUMMARY OF CONSUMER SUBSIDY EQUIVALENTS

	UNIT	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
A. Consumption	Mil. No.	2,630	3,164	3,675	4,052	4,589	5,193
B. Consumer Price	Rs./Dozen	8.98	9.83	10.29	10.15	10.83	11.53
	Rs./Egg	0.75	0.82	0.86	0.85	0.90	0.96
C. Consumer Cost	Mil. Rs.	1,968	2,591	3,152	3,427	4,141	4,990
D. Policy Transfers to Consumers							
1. Total	Mil. Rs.	0	0	0	0	0	0
2. Percent of Consumer Cost	Percent	0%	0%	0%	0%	0%	0%
3. Transfers per Ton	Rs./T.	0	0	0	0	0	0
E. Effect of Overvaluation	Mil. Rs.	458	527	773	693	994	973
Percent of Consumer Cost	Percent	23%	20%	25%	20%	24%	19%
F. CSE Including Overvaluation	Mil. Rs.	458	527	773	693	994	973
Percent of Consumer Cost	Percent	23%	20%	25%	20%	24%	19%

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