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WHEAT PRICE POLICIES IN PAKISTAN:

SHOULD THERE BE A SUBSIDY?

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PREFACE

This paper was presented at the annual meetings of the Pakistan Society for Development Economics, which were held at the Holiday Inn, Islamabad, Pakistan, January 7-9, 1992. It should thus appear in the proceedings of these meetings at a future date.

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EXECUTIVE SUMMARY

In the 1980s, Government wheat policies subsidized Pakistan's consumers and taxed its producers. Moreover, the post-rationing, open-ended system of releases has increased the burden on the Government budget. The Government now faces severe shortages of resources at a time when human and physical infrastructure must be maintained and developed.

Should the Government continue to provide a general subsidy on wheat? This depends on what the objective of the subsidy is. One objective could be to raise wheat consumption. Consumers would be likely to consume more wheat if the price of wheat fell, but below a certain price even most poor consumers may not eat more wheat. An alternative objective for a wheat subsidy would be to raise the incomes of the poor. A general subsidy on wheat might do this by freeing up income that could be spent on other items. This would, however, be an inefficient way of raising the incomes of the poor, since the transfer would not distinguish among rich and poor consumers. Regardless of the objective, a government subsidy on wheat, *ceteris paribus*, will reduce other social expenditures, for example on health and education, and may result in misuse of the wheat as well.

What has been the pattern of change of per capita income, the real price of wheat flour, and wheat consumption since the early 1970s? According to the Household Income and Expenditure Surveys (HIES), per capita consumption of wheat has declined in all groups. Over the same period, per capita income increased and the real price of wheat decreased. Wheat may thus have become an inferior good. At the same time, consumption of other valued foods like meat, milk, and ghee has increased. Milk and ghee consumption increased over 40 and 50 percent, respectively, for the average consumer, and over 75 and 125 percent for the lowest income group. Beef consumption by the average consumer increased substantially, and marginally for the lowest income group.

Per capita availability of wheat when estimated by a standard food balance, increased from the early 1970s to the mid-1980s, while it decreased according to the HIES. These trends become consistent with each other, however, if we include in the food balance increases in smuggling, feed use, and losses. An addition for these categories of about a half million tons results in no increase in per capita availability. Less conservative adjustments would result in a decline in per capita availability.

The Government has provided some groups in the country an income transfer in the form of cheaper wheat. Nutrition may have improved marginally, but calorie consumption did not change substantially. Besides the direct fiscal cost of the wheat subsidy, there was considerable waste, use of wheat for feed, and smuggling to other countries. Per capita consumption of wheat did not increase. Expenditures on health, education, and other social programs were lower than they might have been. More foreign exchange also had to be expended on wheat imports.

The Government should eliminate the wheat subsidy. The "domestic" subsidy can be eliminated immediately by raising the release price, while the subsidy on imported wheat should be eliminated as soon as possible. When the subsidy has been removed, the Government may wish to reconsider its massive involvement in wheat marketing.

What should be done for the malnourished? The Government should target food-for-work or other programs to specific groups. This might be done through the *zakat* system. Self-targeting programs like food-for-work will have greater impacts on the target groups and less leakage than the existing general subsidy mechanism. Nutrition education would also help with preventable problems of food choices and intra-family distribution.

1. INTRODUCTION

In the 1980s, Pakistan's wheat policies taxed its producers and subsidized its consumers. Moreover, the post-rationing, open-ended system of releases has increased the burden on the government budget. The Government now faces severe shortages of resources at a time when human capital and physical infrastructure must be developed and maintained. This paper reviews wheat price policies in Pakistan and patterns of wheat consumption over time, and makes recommendations for policy changes.

Wheat is the dominant *rabi*, or winter, crop. However, about half the wheat is grown after cotton. Most of this wheat is planted late and yields substantially less than it could if planted earlier because the producer price and profitability of wheat are depressed by government policies. While cotton prices are also depressed by the Government, cotton, and in particular a fourth picking, remains highly profitable, even with new, earlier varieties. CIMMYT studies have shown that wheat-cotton farmers are rational in planting wheat late, given the prices they receive¹. The average wheat yield has risen since the Green Revolution, due to the adoption of HYVs. However, the yields of HYVs have not risen.

After they harvest their wheat, farmers can sell it to the Government (namely to the Pakistan Agricultural Storage and Services Corporation (PASSCO) or the provincial food departments) at the procurement price, or to a private trader at the market price. Thus two prices prevail in the market at any given time. Wheat moves through both channels primarily because of differences in quality. (In practice farmers sell almost all marketed wheat to traders, and traders then sell about half the marketed wheat to the Government.) Both the Federal and Provincial Governments have at times resorted to movement restrictions that tend to bottle up surpluses in certain districts. Clearly this contributes to farmers' receiving lower prices in many areas.

Wheat production in Pakistan has trended upward. Despite increases in yield and production, however, Pakistan has not achieved self-sufficiency in wheat. Table 1 shows wheat imports in the 1980s. Generally, wheat imported in years in which there was less than 1 million tons imported was for the Afghan refugees, not for Pakistanis. Nevertheless, in five of the last ten and five of the last seven years, Pakistan has imported significant amounts of wheat for its own account.

Wheat is Pakistan's staple food, but urban consumers generally do not purchase it as wheat. They buy flour or in many cases freshly baked *roti*². Wheat moves from traders to millers, and the ground wheat eventually moves to consumers. Wheat also moves through the government channel to reach consumers in the form of flour. Until 1987, the Govern-

¹ Akhtar *et al.*, p. 24.

² *Roti* is a generic term for several kinds of unleavened breads, including *naan* and *chapaati*, which are baked while stuck to the sides of a brick oven.

Table 1 Pakistan: Elements of Wheat Supply and Distribution

Marketing Year	Area	Yield	Production	Opening stocks	Imports
(May/Apr)	1,000 ha	kgs/ha		-----1,000 tons-----	
1980/81	6924	1568	10857	685	320
1981/82	6984	1643	11475	830	346
1982/83	7223	1565	11304	1650	370
1983/84	7398	1678	12414	1620	393
1984/85	7343	1482	10882	1800	1042
1985/86	7259	1612	11703	745	1832
1986/87	7403	1881	13923	1227	374
1987/88	7706	1559	12016	2525	505
1988/89	7308	1734	12675	1200	2240
1989/90	7730	1865	14419	600	2030
1990/91	7847	1818	14262	1522	1050

SOURCES: Government of Pakistan, U.S. Department of Agriculture.

ment maintained a ration system that distributed wheat to millers for grinding at a fixed charge and distributed flour to privately-owned, licensed ration shops. Ration card holders could purchase flour at subsidized prices at ration shops. The Government abolished this system because it was not fulfilling its objective of helping low-income consumers.

While there are no longer ration shops, the Government maintains a substantial presence in wheat marketing. Theoretically, it stands prepared to sell any amount of wheat to anyone at the fixed release price³. In practice, there have been some informal restrictions on the amounts released, keyed to numbers of hours of milling operation per day. The current system does not attempt to target any recipient group. Rather, its role is holding down and stabilizing the price of wheat.

Because of the relationships between procurement and release prices, a major role of the Government in wheat marketing has been storage. Table 2 shows that the release price was sometimes below the procurement price, and never higher by the Rs. 400-600 that

³ There is a minimum purchase of ten tons.

Table 2 Pakistan: Official Wheat Prices

Crop year	Procurement Price (1)	Release Price (2)	Difference (2-1)	Ratio (2/1)
-----Rupees per metric ton-----				
1976/77	991.25	950.00	(41.25)	0.96
1977/78	991.25	950.00	(41.25)	0.96
1978/79	1,205.75	1,000.00	(205.75)	0.83
1979/80	1,450.00	1,220.00	(230.00)	0.84
1980/81	1,450.00	1,325.00	(125.00)	0.91
1981/82	1,450.00	1,567.40	117.40	1.08
1982/83	1,600.00	1,702.90	102.90	1.06
1983/84	1,600.00	1,702.90	102.90	1.06
1984/85	1,750.00	1,702.90	(47.10)	0.97
1985/86	2,000.00	1,702.90	(297.10)	0.85
1986/87	2,000.00	2,000.00	0.00	1.00
1987/88	2,062.50	2,100.00	37.50	1.02
1988/89	2,125.00	2,300.00	175.00	1.08
1989/90*	2,400.00	2,600.00	200.00	1.08

* Release price was initially announced as Rs. 2,500.

SOURCE: Government of Pakistan.

would fully cover marketing costs. Thus the private sector has not had the incentive to store wheat for most of the marketing year, since it could not earn a sufficient return on its investment in storage facilities. Rather, millers have come to depend on the Government to supply a substantial part of their requirement of wheat during the latter part of the year. This can be seen from seasonal release data in Table 3.

The inadequate gap between release and procurement prices has resulted in a subsidy. The burden to the Government of this subsidy on domestic wheat has been reduced, however, by the depressed producer price. That is, if the Government had to procure domestic wheat at a price comparable to world wheat prices, the subsidy would have been more. The relationship between world prices and domestic producer and consumer prices in the 1980s is shown in Figure 1. While producers have borne part of the subsidy burden on domestic wheat, the burden of importing wheat, when necessary, and releasing it at the subsidized price falls entirely on the government budget. When world prices rise quickly

Table 3 Pakistan: Monthly Releases of Wheat

	1987/88	1988/89	1989/90
	Thousand metric tons		
May	262	230	198
June	308	318	168
July	296	328	259
August	278	424	362
September	325	440	367
October	384	547	483
November	453	562	486
December	578	609	530
January	667	665	596
February	555	590	513
March	640	585	522
April	449	439	461

SOURCE: Government of Pakistan, Ministry of Food, Agriculture, and Cooperatives.

Table 4 Pakistan: Wheat Subsidies

Fiscal Year	Federal	Provincial	Total
	Rs. Million		
1986/87	150	2,625	2,775
1987/88	368	3,549	3,917
1988/89	4,947	2,956	7,903
1989/90	4,492	2,667	7,159

SOURCE: Government of Pakistan.

and domestic prices have been raised slowly, the subsidy on imports can be quite large.

The amounts of recent wheat subsidies are shown in Table 4. Data relating to the federal subsidy are from federal budget documents. The provincial subsidies have been taken from annual Economic Surveys. Initially the subsidy arising out of imports was borne by the federal government, while the subsidies paid on domestic operations were carried by provin-

cial budgets. Eventually, however, because of block grants from the Federal Government to the Provinces, the entire cost of wheat operations was shouldered by the federal government.

These amounts are quite substantial in comparison to Pakistan's economy and government expenditures. The largest subsidy, in 1988/89, is about 1 percent of GDP and about 6 percent of total government revenue (or about 13 percent of the difference between total revenue and total expenditures). Pakistan is currently under a combination World Bank structural adjustment loan and IMF standby arrangement, under which various fiscal targets, including reduction of the fiscal deficit, have been set.

In the latter half of the 1980s, the Government has been removing subsidies on fertilizer. In the last two years (1989/90 and 1990/91), the Government has recognized the "squeeze" this put on farmers, and it has also significantly raised the procurement price of wheat. However, as can be seen in Figure 1, it remains below the adjusted world price. The increases in procurement price have made it harder for the Government to increase the gap between the release and procurement prices, for to do so, the release price would have to rise even faster than the procurement price. Thus the ratio rose to its historical high of 1.08, but no further. The Government has also improved cost recovery in its marketing operations by charging more for the bags in which it distributes wheat. Nevertheless, the basic price structure has not changed with the abolition of rationing.

Two aspects of the post-rationing system (*i.e.*, since 1987) are disturbing. One is the higher levels of releases, shown in Table 5, which result in high subsidy volumes. To achieve these releases, the Government seeks to procure large amounts and supplements these with imports. Although the new price regime would logically lead to lower procurement, the Government has apparently not reduced its targets. Second, while the domestic per unit subsidy has been gradually reduced, the previous Government was willing to undertake very expensive, subsidized imports. Under the new government, also, imports seem likely to be substantial.

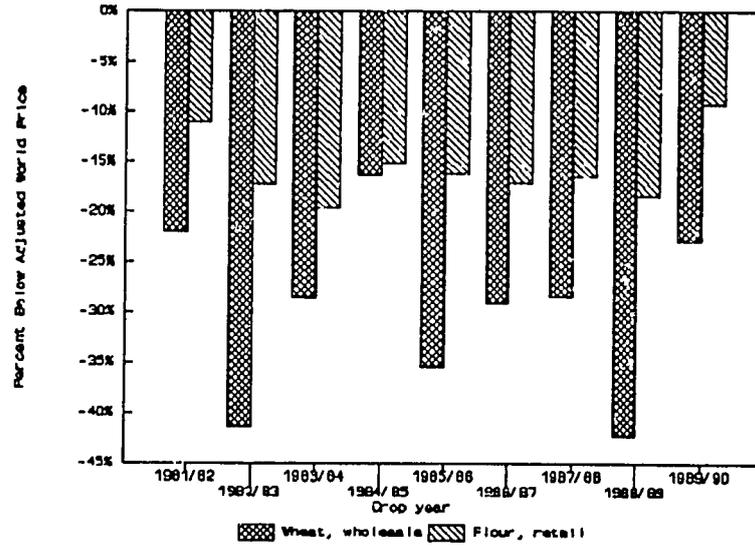
Table 5 Pakistan: Annual Releases of Wheat

1984/85	3,695
1985/86	3,543
1986/87	3,793
1987/88	5,202
1988/89	5,717
1989/90*	5,386

* Estimate.

SOURCE: Economic Survey, 1989-90.

**Figure 1 Pakistan: Wheat Price Distortions
(International Parity Price Comparisons)**



2. RESULTS OF HOUSEHOLD INCOME AND EXPENDITURE SURVEYS

Given these government policies, what has been the pattern of change of per capita income, the real price of wheat flour, and wheat consumption since the early 1970s?

According to official Household Income and Expenditure Surveys (HIES), per capita consumption of wheat has declined in all groups, despite increases in per capita income and decreases in the real price of wheat. Thus, according to time-series evidence, wheat may have become an inferior good. Consumption of other valued foods like meat, milk, and ghee has increased; calorie consumption has not changed significantly. This is true for the average Pakistani and for the lowest income quartile as well.

2.1 Changes in Per Capita Real Income

Pakistan's real GNP expanded by 5 percent or more every year but four in the 1970s and 1980s (Table 6). With population growing at about 3.1 percent, per capita real income has also increased significantly during this period. At the rates of aggregate income growth shown and this rate of population growth, per capita real income over the 18-year period (1968/69 - 1986/87) showed a cumulative increase of over 60 percent.

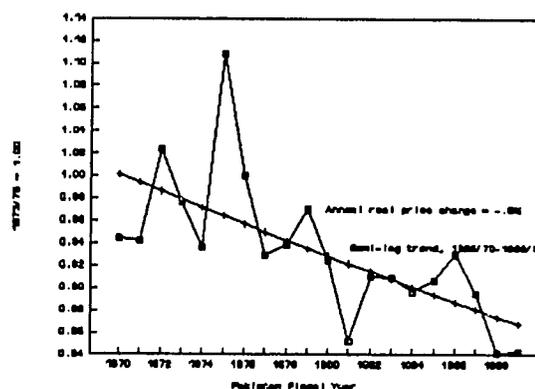
2.2 Changes in the Real Price of Flour

In the 1970s and 1980s, the nominal price of wheat flour increased less rapidly than the Consumer Price Index (CPI) and the CPI for food. The path of an index of the real price of flour (deflated by the CPI) is shown in Figure 2. During 1969/70 - 1971/72, the value of this index was .97; it dropped to .91 during 1984/85 - 1986/87.

2.3 Changes in Consumption

The most comprehensive, ongoing measurement of expenditures in Pakistan is the Household Income and Expenditure Survey (HIES), which is conducted by the Federal Bureau of Statistics. The survey gathers many types of information, including quantities of food consumed and the expenditures made on food items, among other goods and services. The survey has not been conducted every year, but results are available for 1968/69, 1969/70, 1970/71, 1971/72, 1979, 1984/85, 1985/86, and 1986/87. An analysis of the quality of these surveys is given in the Annex.

Figure 2 Pakistan: Index of Real Wheat Price, Deflated by CPI, 1975/76 = 1.00 (Economic Survey, 1989/90)



2.3.1 Survey Results (Time Series)

The simplest way to compare the results of the various surveys is to match them up by income groups. A potential problem with this approach is that, because of inflation, the rupee bounds of the income groups changed from the 1970s to the 1980s. That is, individuals' incomes changed, and the HIES income groups were adjusted in an attempt to give a comparable representation of expenditure patterns. In this situation, if one observes no crossing of graphs or other anomalies, one may conclude that the results, as compared, are a reasonable reflection of the actual trend of consumption. Such results for all of Pakistan are shown in Figure 3⁴. To reduce the effect of bad production years and other temporary phenomena, the results of the four surveys in the late 1960s and early 1970s are averaged, by income group. The same is done for the surveys in the 1980s. Results for individual years are shown in the Annex (Figure 21 and Figure 22).

A more sophisticated way to look at the pattern of wheat and flour consumption is by constructing income quartiles. This ensures that consumers in the same part of the income spectrum are compared. HIES publications provide the data necessary to construct quartiles; limited interpolation was necessary, as the cumulative incomes of these groupings did not always come out equal to exactly 25%, 50%, 75%, and 100%. Wheat and flour consumption by quartile are shown in Figure 4. Results for individual years are shown in the Annex (Figure 23 - Figure 25).

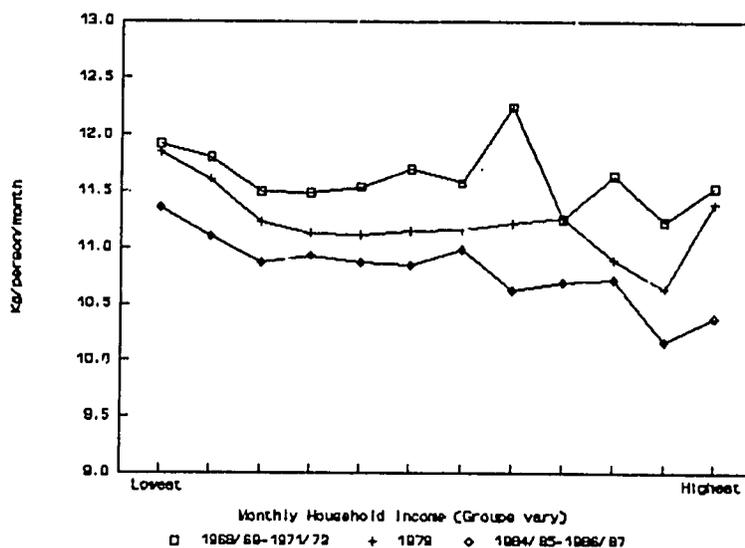
Table 6 Pakistan: Growth of Real GNP

Fiscal Year	Growth of Real GNP
1968/69	7.7
1969/70	11.4
1970/71	1.3
1971/72	1.9
1972/73	6.8
1973/74	5.3
1974/75	3.4
1975/76	5.6
1976/77	5.0
1977/78	10.7
1978/79	5.3
1979/80	8.4
1980/81	6.1
1981/82	6.1
1982/83	9.5
1983/84	4.2
1984/85	6.2
1985/86	5.7
1986/87	4.8
Average	5.9

SOURCE: Economic Survey, 1989-90: 1968/69-1980/81, old method; 1981/82-1986/87, new method.

⁴ While the income variable shown here is monthly household income, monthly per capita income is observed to increase monotonically and very smoothly with household income.

Figure 3 Pakistan: Wheat Flour Consumed in the 1970s and 1980s, By Monthly Household Income Group (HIES)



Both Figure 3 and Figure 4 reveal a pattern of declining wheat consumption over time. When combined with increasing real per capita income and a decreasing real price, this pattern is most consistent with a zero or negative income elasticity. Goldman (1987, p. 24) says that a negative income elasticity for wheat is "plausible." Figure 5 summarizes the results over time for all income groups and the lower groups. Even if there is some inaccuracy in the survey results, the consistent decline in consumption shown by the results should be interpreted to mean at least that there was not the increase in consumption that one would normally expect with an increase in income and a decrease in price.

With a substantial increase in income and a small decline in the price of flour, consumers in the 1980s were able to devote a much smaller part of their total expenditures to wheat. This is shown in Figure 6. Consumers in the first three quartiles reduced significantly the share of their expenditures that went to wheat, while the highest quartile's consumers spent the same share to purchase less wheat, presumably of a higher quality. Finally, the increase in income also led to declines in the share of food in all expenditures, as shown in Figure 7⁵. In the 1980s, food was a smaller share of expenditures for all quartiles, and less than 50% for the upper two quartiles.

⁵ Upper income consumers, who already had a much lower share, may have purchased higher quality foods and diversified sufficiently that their share did not decrease.

Figure 4 Pakistan: Wheat Flour Consumed in the 1970s and 1980s, By Income Quartile (HIES)

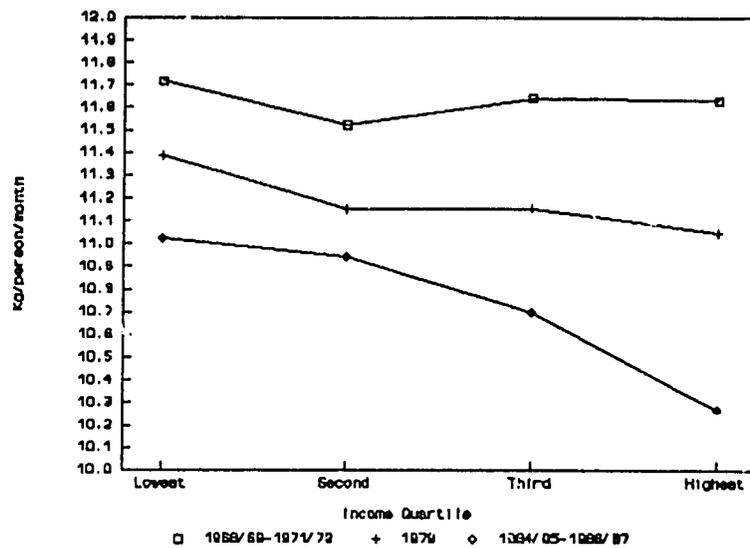


Figure 5 Pakistan: Wheat Flour Consumed, Average and By Lower Income Groups (HIES)

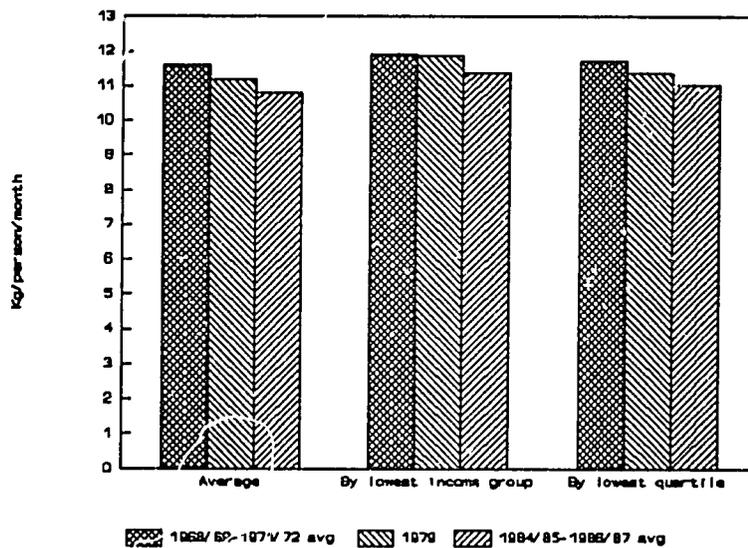


Figure 6 Pakistan: Share of Wheat in All Expenditures (HIES)

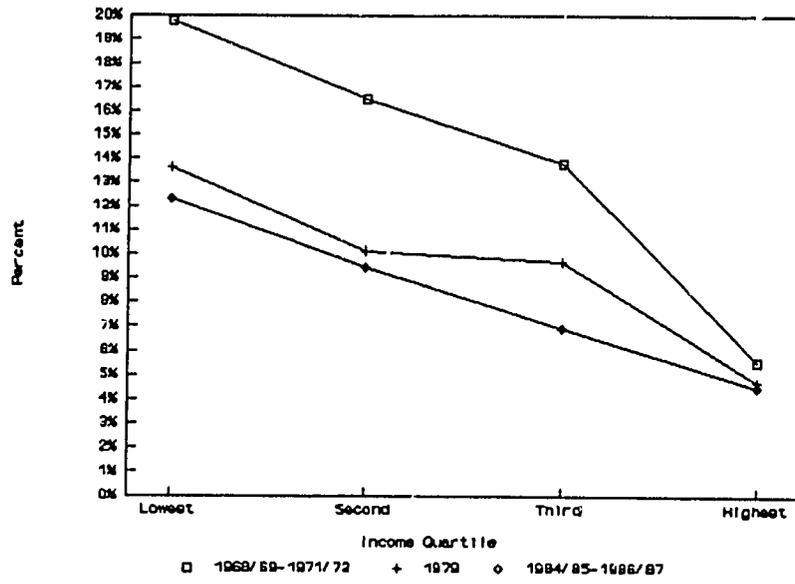
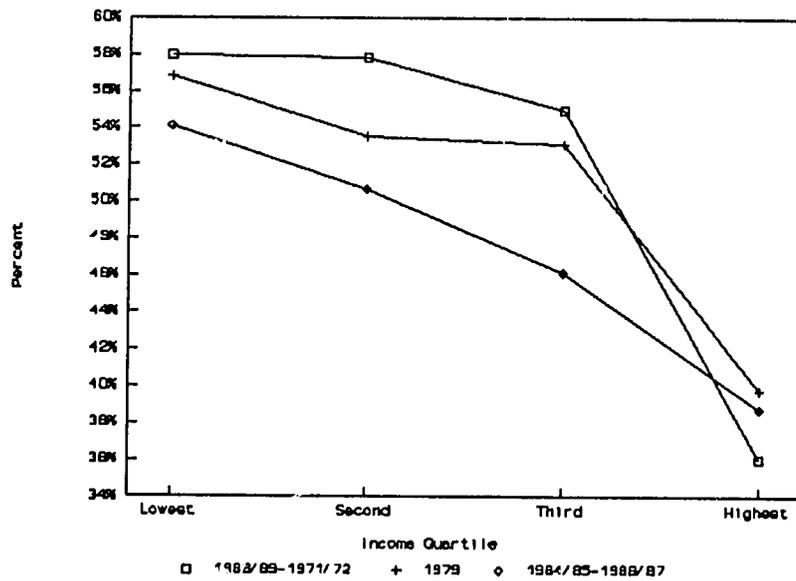
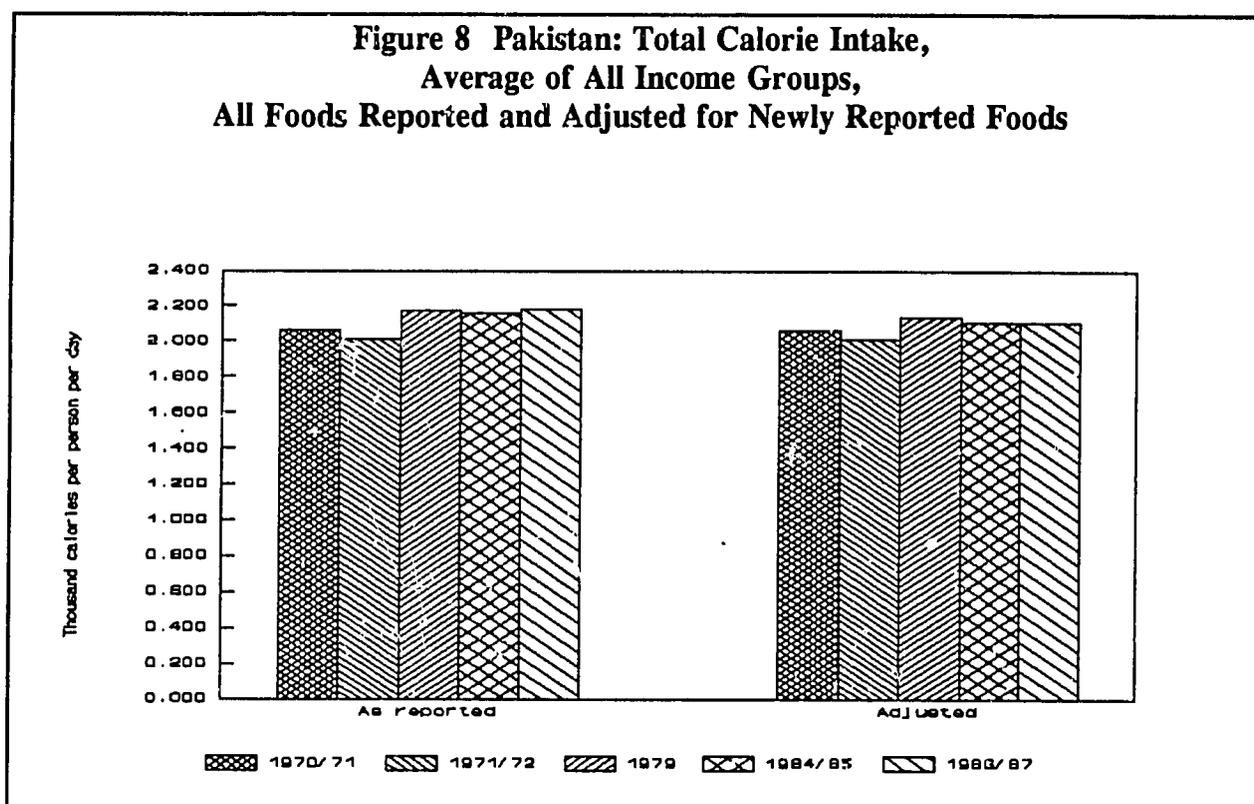


Figure 7 Pakistan: Share of Food in All Expenditures (HIES)



These data are consistent with the notion that, over time, Pakistani consumers have chosen to eat less wheat and more of other foods. That is, there was no general decline in nutrition. Further evidence includes their maintenance of calorie intake and increases in the consumption of other foods. Moreover, it is normal in countries where a high percentage of calories come from one staple food for staple consumption to eventually decline.

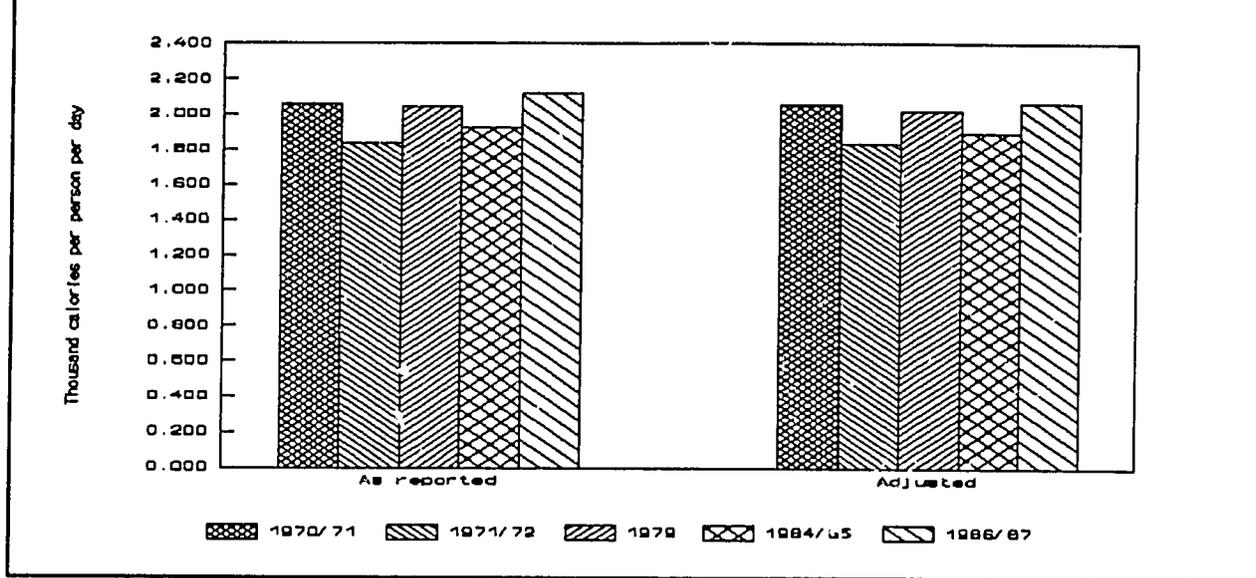
Figure 8 and Figure 9 show the total calorie intakes of all income groups and the lowest income groups over time, as calculated from the HIESs⁶. Because recent surveys have added some foods to those counted, the results are displayed both on an as-reported basis and with the new foods omitted. One observes little change in the average total calorie intake. Calorie intake in the low-income group also varies little, but can be seen to fluctuate with wheat production: 1971/72 and 1984/85 were years of low output.



Calorie intake from certain preferred foods is shown in Figure 10, Figure 11, Figure 12, and Figure 13. The foods shown in these figures--milk, rice, ghee and oil, pulses, beef, and citrus--are the most important calorie sources in the Pakistani diet besides wheat and sugar products. Calorie intake for all income groups and for the lowest income group increases or does not decrease over time for all of these foods.

⁶ Lack of time prevented analysis of all surveys and construction of low-income quartiles. The years chosen are representative.

**Figure 9 Pakistan: Total Calorie Intake,
Lowest Income Group,
All Foods Reported and Adjusted for Newly Reported Foods**



The lack of response of wheat intake in Pakistan to increases in income is not unusual. Schiff and Valdes (1990) cite studies which have also found this phenomenon, even at very low income levels. They mention the desire for diversity in the diet as well as for freshness, taste, and convenience as factors that explain the lack of increase in the quantity consumed.

2.3.2 Recent Survey Results

The analysis above can be broadened and further verified with the addition of the results of the 1987/88 HIES. This is a particularly interesting exercise because of the changes in the wheat marketing system that took place in 1987.

The Government operated a ration system for wheat until April, 1987. When the Government abolished the ration system, it took care to have a very large stock of wheat on hand. This would ensure that the end of rationing did not turn into a political calamity. Indeed, the Government then released much more wheat than it ever had (see Table 5). The nominal price of wheat actually fell in 1987/88, the only year this happened in all of the 1970s and 1980s⁷.

⁷ Economic Survey, 1989-90.

Figure 10 Pakistan: Calorie Intake from Milk, Rice, and Ghee/Oil, All Income Groups (Calculated from HIES)

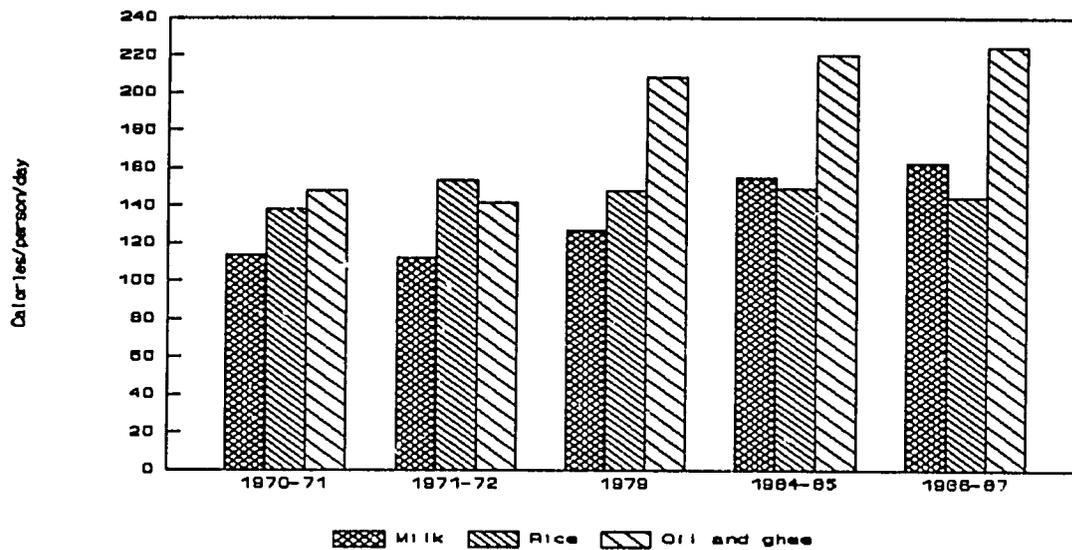


Figure 11 Pakistan: Calorie Intake from Pulses, Beef, and Citrus, All Income Groups (Calculated from HIES)

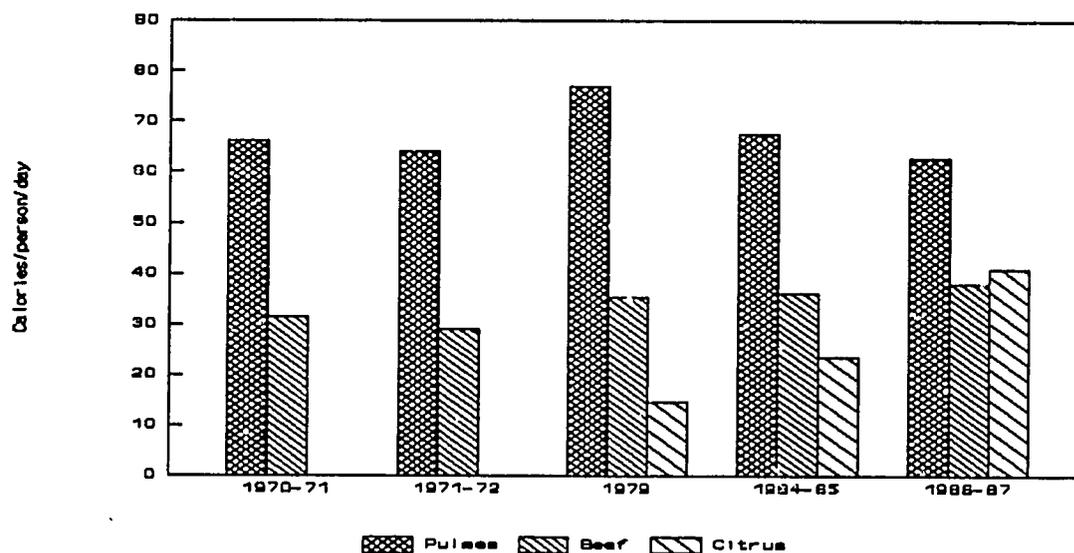


Figure 12 Pakistan: Calorie Intake from Milk, Rice, and Ghee/Oil, Lowest Income Group (Calculated from HIES)

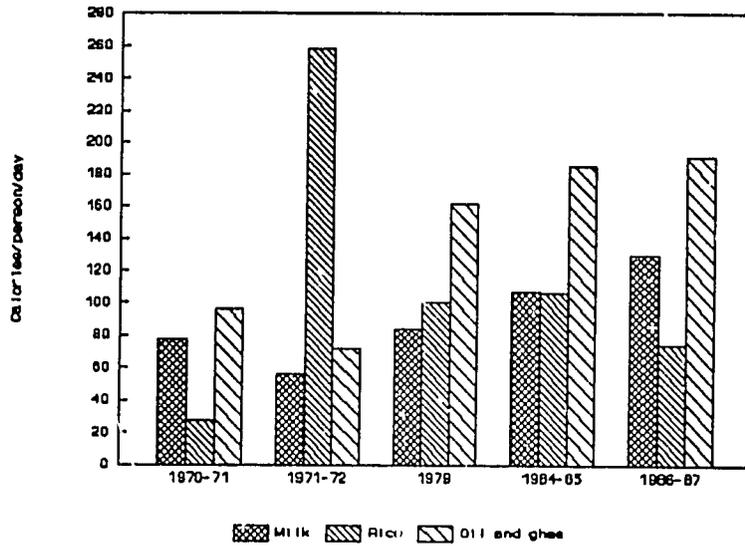
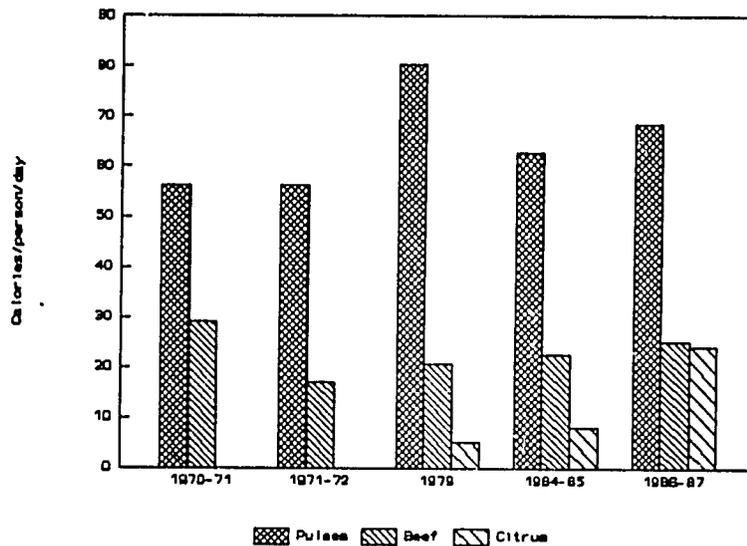


Figure 13 Pakistan: Calorie Intake from Pulses, Beef, and Citrus, Lowest Income Group (Calculated from HIES)



The fall in the nominal price and the corresponding larger decline in the real price induced some lower-income consumers to increase their per capita consumption of wheat flour modestly in 1987/88. The average increase in the quantity of flour consumed by these groups was about 3 percent, from 11.4 to 11.8 kilograms per person per month. This can be seen in Figure 14. Consumption by income groups other than the lowest three was indistinguishable from that in 1986/87. Other data in the HIES reveal that the three lowest income groups in 1987/88 constituted about 4 percent of the total population.

The pattern of consumption in 1987/88 in relation to the average for the other surveys of the 1980s can be seen in Figure 15. (When comparing 1987/88 to the average of the other three surveys in the 1980s, one should bear in mind that in 1984/85, wheat consumption among the poor declined substantially due to low wheat production.) Here it is apparent that the tendency for wheat consumption to decline among the higher-income groups was continuing. The lower nominal price in 1987/88 was able to induce additional consumption only among the very poor, and then only very slightly.

2.3.3 Survey Results (Cross-Section)

Time series analysis of food consumption in Pakistan gives a clear picture of declining wheat flour consumption in the context of diet diversification and a very low or negative expenditure elasticity. Several cross-section analyses, however, do not confirm this result.

A cross-sectional analysis is often thought of as an approximation to a panel or time-series analysis. What one would like to have are data on the same individuals over time so their response to changing income and prices could be observed. In the absence of such data, cross-sectional data like the individual HIESs are used. By using such data to estimate price and income elasticities, one is implicitly assuming that most individuals have the same preferences. That is, the static pattern of consumption across price and income levels in the cross-section will accurately predict what will happen to consumption as prices and incomes change over time. This need not be the case, but the results of time series and cross-sectional analyses have often been consistent.

In the current case the estimates do not seem consistent. Existing estimates, including Ahmad et al. (1987) for 1976 and Ahmad and Ludlow (1988) for 1979, and Alderman (1987) range from .1 to .4. Alderman used the 1979 HIES and a separate 1982 survey, getting higher estimates than Ahmad for many income and price elasticities. Thus there is a paradox: why is the income elasticity of demand for wheat implied by the time series zero or negative while all the cross-section results are positive? Goldman calls this the most important puzzle of Pakistan's food system.

Figure 14 Pakistan: Wheat Flour Consumed, 1986/87 and 1987/88 (HIES)

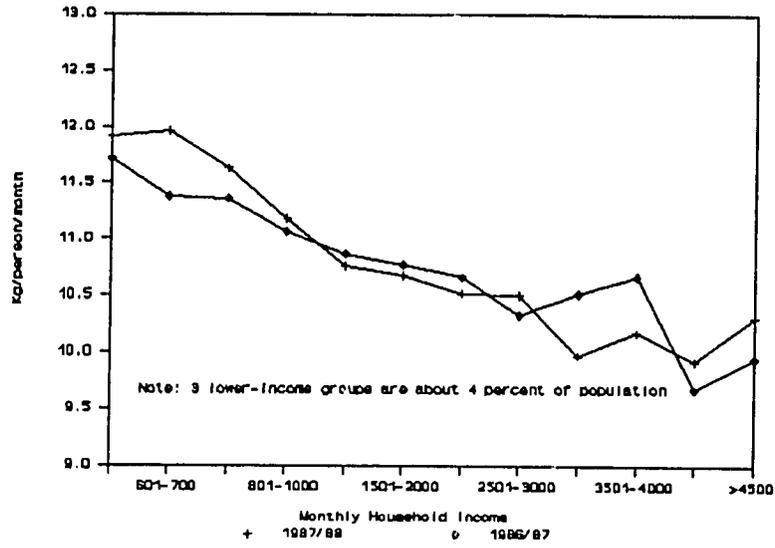
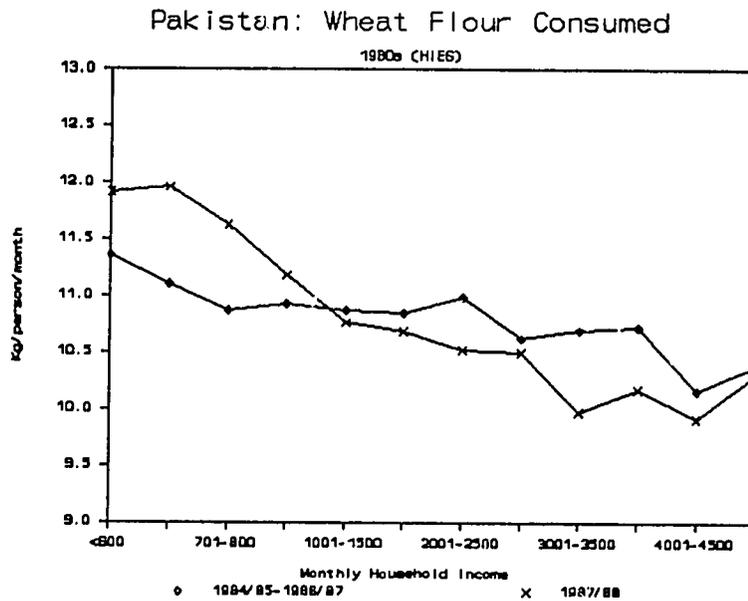


Figure 15 Pakistan: Wheat flour Consumed, 1980s and 1987/88 (HIES)



3. FOOD BALANCE RESULTS

Another perspective on the pattern of wheat consumption can be had by examining annual food balances. One must be careful in using food balances, however, because estimation of consumption is not their primary strength. Indeed, consumption, or more precisely disappearance or availability, is generally estimated as a residual in a calculation that includes several other variables. Any errors in the measurement of these variables can compound in the estimate of consumption. For this reason food balances are better suited to examining trends over time than to measuring consumption in a particular year. By contrast, household surveys are designed to estimate expenditures directly and accurately.

Table 7 shows per capita consumption as estimated by food balances and as measured by the HIES. (The full food balance data are shown below in the Annex, Table 8.) While the HIES levels decline, the food balance estimates increase. Note that the standard assumption of a fixed percentage deducted for "seed, feed, and waste" does not affect the pattern of the apparent decrease, only the level. Given these apparently opposite results, what has been the true path of consumption during this period?

Table 7 Pakistan: HIES and Food Balance Estimates of Wheat Consumption

	HIES	Food Balance No Seed, Feed, & Waste	Food Balance With 10% Seed, Feed, & Waste
		Kg/person/year	
1968/69-1971/72	139	127	114
1984/85-1986/87	129	133	120

To answer this question, one must first realize that, for various reasons including different assumptions and methods, the food balance and survey methods will often not arrive at the same level of consumption⁸. However, it should be possible to reconcile these analyses so that they result in the same pattern of change over time.

During the 1970s and early 1980s, there were at least two important developments that affect this analysis. One was the rapid growth of the commercial poultry industry in

⁸ In particular, production may be consistently underestimated.

Pakistan. The other was the steadily growing volume of wheat handled by the Government in its marketing operations. The Government's objectives during the rationing and post-rationing periods have been to stabilize and depress the retail price of wheat. The decline in the real price of wheat was mentioned above. This cheap wheat became an economical source of calories for the poultry industry; for several reasons, cheap maize imports have not been available. A common estimate of the annual use of wheat for poultry feed in the mid-1980s is 400,000 tons.

In order to have a major impact on the market, the Government had to handle a large percentage of the wheat that was marketed. This it did: the quantity controlled by the Government has increased from about 1 million tons to about 4.5 million since the early 1970s. Along with large-scale wheat marketing operations, however, came the likelihood of increased losses. Losses are always hard to measure, but it stands to reason that in an organization that has no profit motive and that is handling a cheap commodity, losses may be substantial⁹.

Known government losses to insects and shrinkage during storage are about 3.5%¹⁰, but the Government's "no-loss" accounting procedure makes it impossible to know what total losses are. Other ways that grain is lost to consumption include spillage and spoilage¹¹. If by the Government's handling of an additional 3.5 million tons of wheat losses increased by the same 3.5%, the additional losses would reach more than 120,000 tons in the mid-1980s.

Finally, because wheat in Pakistan has been cheaper than in neighboring countries, there were undoubtedly unrecorded exports during this period. Indeed Pakistan has traditionally supplied wheat to deficit Afghanistan. Again, it is difficult to estimate smuggling, but a series increasing to 25,000 to 50,000 tons per year in the mid-1980s may not be unreasonable.

Totalling the adjustments to disappearance, one arrives at about 550,000 tons. We have simulated a series for these adjustments (shown in Table 8) starting in the early 1970s that reaches this amount in 1985/86. (This series increases at about 15% per year at its mean level and about 7% at its peak level in 1986/87.) With these adjustments, per capita availability is 127 kilograms/person/year in the final period (1984/85-1986/87), the same as in the base period (see Table 7).

⁹ Such losses were observed even very recently on the docks in Karachi, as wheat imports were being unloaded.

¹⁰ Baloch *et al.* 1986, p. 21.

¹¹ Grain rotting in Government warehouses is not uncommon. The Government has been urged to do away with the no-loss procedure because rotten grain continues to contaminate sound grain, but the rotten grain cannot be discarded due to the regulation.

We consider these adjustments to be conservative estimates of those necessary. Even with these adjustments, the food balance estimate of wheat consumption is seen to not increase over a 15-year period. With larger adjustments, the estimate would decline. The primary means of measuring actual human consumption remains a household or similar survey. This section shows, however, that consumption as measured by the HIES is not inconsistent with estimates like those from food balances. Both methods reveal that per capita wheat consumption in Pakistan has not increased since the early 1970s and probably declined.

4. NET EFFECT OF POLICIES

The Government of Pakistan has been providing a subsidy on the sale of wheat. Through this subsidy, the Government seems to have given all consumers who purchase wheat, which is the large majority, an income transfer in the form of cheaper wheat. Consumers benefit from the low release price through its dampening effect on the level of wholesale prices.

Millers may also benefit from low and constant release prices. During a given year, the retail price of wheat flour has generally moved along with the wholesale wheat price, while the release price remains constant throughout the year. From Figure 16 one sees that the millers' margins at the end of the year are higher than at the beginning; at that time they are buying mostly from the Government, at the release price, and they are capturing some of the subsidy. The millers' ability to jointly set flour prices helps them capture some of the subsidy at this time. On the other hand, there has been excess capacity and geographical maldistribution in the industry since the rationing period, so the overall return on investment may not be abnormally high.

Over the past twenty years, real prices to consumers have declined, whether due to the subsidy or not, and individuals have not increased their consumption. Even when the nominal price of wheat fell, in 1987/88, the poor who increased their consumption represented only about 4 percent of the population; their increase in consumption was only about 3 percent. Consumption by better-off groups continued to decline. Price stabilization was also a government objective, but presumably this could have been accomplished without depressing the price.

Nutrition may have improved marginally, but average calorie consumption did not change substantially. Nor has severe malnutrition been eliminated. The National Nutrition Survey (1985-87) found that:

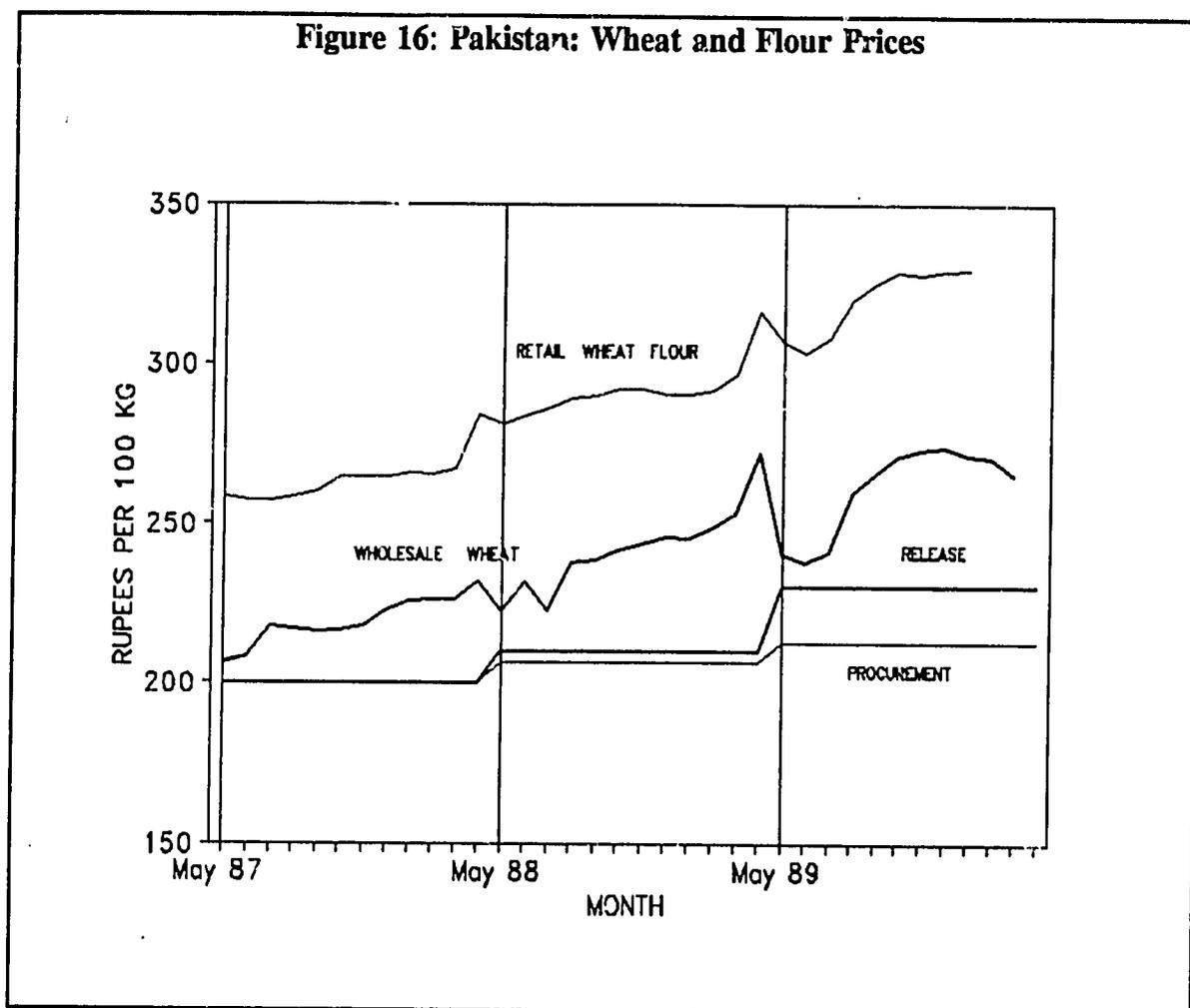
Protein-energy malnutrition and anaemia continues as a serious, widespread problem throughout the country....According to WHO criteria of weight-for-age,...10% [of young children] are severely [malnourished]¹².

Even if severe malnutrition were half this much, it would still be disturbing.

Besides the direct fiscal cost of the wheat subsidy, there was considerable waste, use of wheat for feed, and smuggling to other countries; per capita consumption of wheat did

¹² Pakistan, National Institute of Health, Nutrition Division, 1988, National Nutrition Survey, 1985-87, pp. vi, vii.

Figure 16: Pakistan: Wheat and Flour Prices

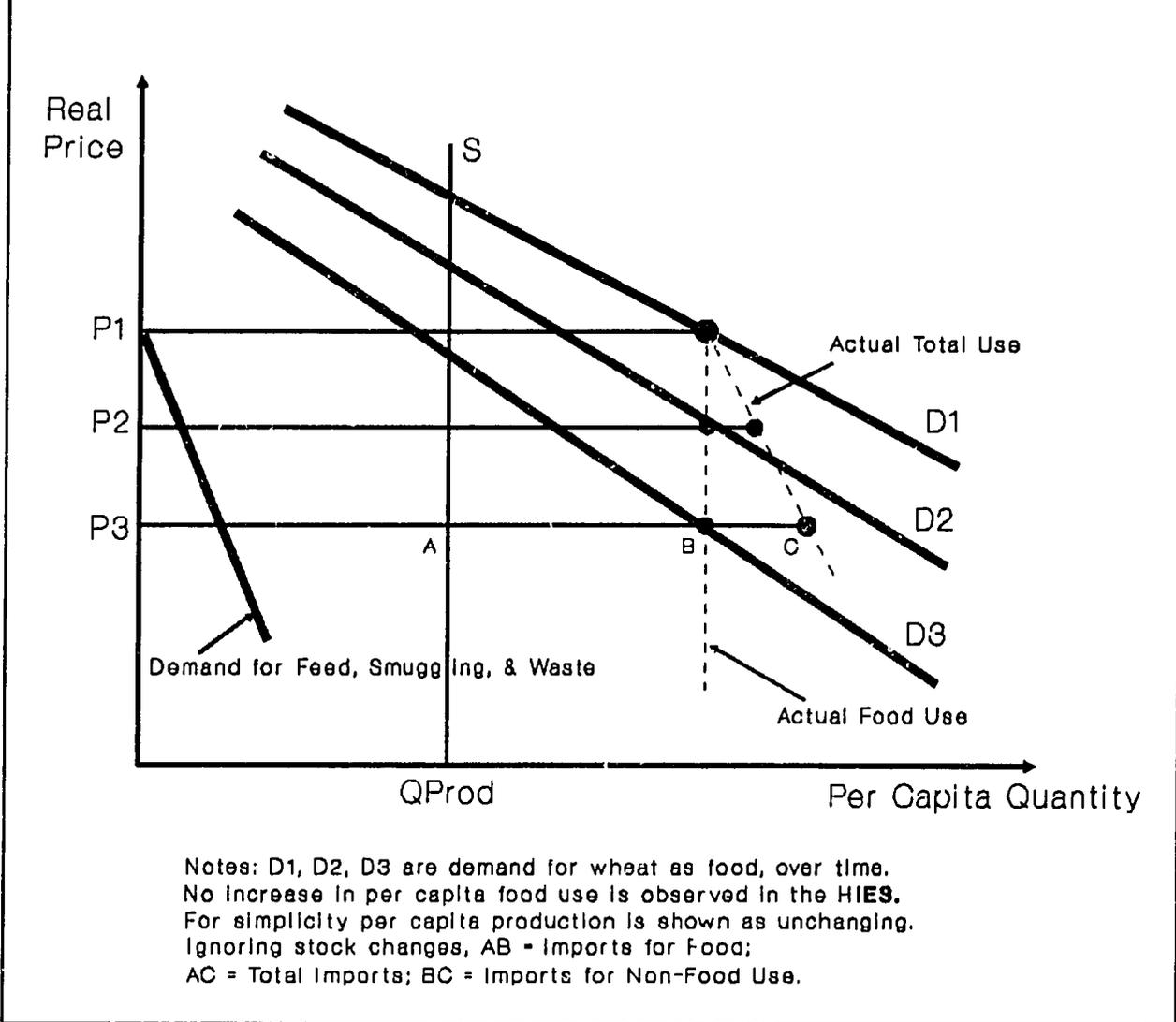


not increase. Expenditures on health, education, and other social programs were lower than they might have been¹³. More foreign exchange also had to be expended on wheat imports.

The interaction of the subsidy and wheat demand is shown in Figure 17. Per capita consumption of wheat as food is shown as constant, although the case can be made that it has declined. Over time, per capita demand (D1, D2, D3) has shifted back. This offsets the effect of the decreasing real price, which is the result of the subsidy and other factors. However, the declining price stimulates demand for other "uses," namely feed, smuggling, and additional losses. Thus, total per capita use (disappearance) continues to increase. Note that calculations based on this concept can reveal the amount of imports that go to non-food uses (BC in the figure).

¹³ Sahibzada and Mahmood (1989) show that literacy in Pakistan and government expenditures on education are quite low by the standard of other comparable, Islamic countries.

The Government has recently made further progress in enlarging the gap between
Figure 17 Pakistan Wheat: Food and Total Use in the 1970s and 1980s



the release and procurement prices. In April, 1991, it announced a second increase (for 1991/92) in the procurement price. More importantly, it effected the largest single increase in the release price--over 19 percent. This raised the gap between the two prices to about 11 percent, and raised the Government's recovery of its marketing costs to about 90 percent. However, the Government is not yet fully committed to removing the wheat subsidy. Moreover, as long as the domestic price remains below the world price, imports, when they are necessary, will remain subsidized.

The wheat subsidy remains, despite progress in reducing poverty. According to the World Development Report (World Bank, 1990, p. 40), "Even countries that are often thought to have followed inegalitarian paths of development, such as Brazil and Pakistan, have succeeded in reducing the headcount index," a simple measure of the number of persons

in poverty. In addition, the average income shortfall--the amount needed to get out of poverty--declined substantially in Pakistan over the past 20 years.

A general thrust of the 1990 Development Report is that the poor need health and skills, and the opportunity to use the skills, which generally means labor-intensive growth. That is, governments should spend scarce resources on health, nutrition, education, roads, etc. The report states that Pakistan has among the lowest expenditures on health and education as a percent of GNP in the world.

These facts lead us to paint a new picture of the existing situation, which we hope will be considered by policymakers. In this view, poverty is less, although it is concentrated in some areas; there is still malnutrition. Wheat consumption is not increasing. Appropriate government measures, we feel, would be a decrease in direct intervention in the economy and a return to its major role of providing infrastructure and building human capital. A general wheat subsidy does not belong in this scheme, but targeted programs do.

5. RECOMMENDATIONS

The Government should eliminate the wheat subsidy. The "domestic" subsidy can be eliminated immediately by raising the release price. The subsidy on imported wheat should be eliminated as soon as possible, especially when it is possible to take advantage of lower international prices of wheat. When the subsidy has been removed, the Government may wish to reconsider its massive involvement in wheat marketing. Specifically, the Government should bring procurement prices up to the world level, at least on a long-run average basis. Then it would be possible to eliminate most of the Government's role in storage.

We have shown that there is little need to keep subsidizing wheat flour to the general economy. Timmer has argued that subsidizing an inferior good is an efficient way to help the poor. However, this line of reasoning usually relies on the use of a secondary staple to achieve targeting. In this case the primary staple may have become inferior (so there is no targeting), and the volume to be subsidized is too large under the budgetary circumstances.

How do we help the malnourished? The Government should target food-for-work or other programs to specific groups. This might be done through the *zakat* system. The *zakat* system achieves targeting by having a social stigma attached to it: only the truly poor receive *zakat*. Self-targeting programs like food-for-work will have greater impacts on the target groups and less leakage than the existing general subsidy mechanism. Nutrition education would also help with preventable problems of food choices and intra-family distribution.

If the Government follows these recommendations, there will be a significant impact on Pakistan's flour millers. No longer will the Government be storing wheat for them at less than full cost. A concomitant of this system has been a lack of credit in Pakistan for agricultural marketing operations. We suggest that, since the Government is also effecting a transition to commercialized banking, it should remove all obstacles to the provision of credit to flour millers and other agribusinesses.

REFERENCES

- Ahmad, Ehtisham, and Stephen Ludlow, 1988. On Changes in Inequality in Pakistan: 1979-84. London School of Economics: June, 1988.
- Ahmad, Ehtisham, and Stephen Ludlow, 1988. Aggregate and Regional Demand Response Patterns in Pakistan. London School of Economics: February, 1988.
- Ahmad, Ehtisham, H-M. Leung, and N. H. Stern, 1987. Demand Response in Pakistan: A Modification of the Linear Expenditure System for 1976. London School of Economics: May, 1987.
- Akhtar, M. Ramzan, Derek Byerlee, Abdul Qayyum, Abdul Majid, and Peter R. Hobbs, 1986. Wheat in the Cotton-Wheat Farming Systems of the Punjab: Implications for Research and Extension. PARC/CIMMYT Paper no. 86-8. Pakistan Agricultural Research Council.
- Alderman, Harold, 1987. Estimates of Consumer Price Response in Pakistan Using Market Prices as Data. IFPRI: September, 1987.
- Baloch, Umar Khan, Hafiz Ahmed, M. Irshad, A. H. Bajoi, G. M. Baloch, S. K. Khalil, and H. A. Qayyum, 1986. Losses in Public Sector Storage in Pakistan: Results of a Loss Assessment Survey, 1984-85. Crop Sciences Division, Pakistan Agricultural Research Council.
- Goldman, Richard H., 1989. Demand Management of Pakistan's Food System, 1960 - 1986. Paper produced for the Agricultural Policy Analysis Project, Phase II. Harvard Institute for International Development: October, 1989.
- Pakistan, National Institute of Health, Nutrition Division, 1988. National Nutrition Survey, 1985-87, Report.
- Sahibzada, Shahmim A. and Mir Annice Mahmood, 1989. "Education in Selected Islamic Countries, A Comparative Analysis." Pakistan Development Review 28:4 Part II (Winter 1989) pp. 803-27.
- Schiff, Maurice and Alberto Valdes, 1990. The Link between Poverty and Malnutrition: A Household Theoretic Approach. PRE Working Paper WPS 536, Country Economics Department, The World Bank, November, 1990.
- World Bank, 1990. Poverty. World Development Report. Oxford University Press.

ANNEX

Quality of Household Income and Expenditure Surveys

Various scholars, including Ahmad *et al.*, Alderman, and Goldman have analyzed and/or commented on the data in these surveys. Ahmad and Ludlow (1988, p. 2) point out that the surveys in the late 1960s and early 1970s had small sample sizes. This is particularly true for two of the twelve income groups, the highest and lowest; other groups, including the second and third lowest, had more reasonable sample sizes. Small sample sizes in some "cells" makes detailed cross-section analysis hazardous. However, these surveys are still recognized as valid at the national level and for averages of all income groups. Ahmad and Ludlow also mention entry errors in the income data of the 1979 survey.

According to the Director-General of the Federal Bureau of Statistics, Mr. S. M. Ishaque¹⁴, all the HIES surveys have sample frames, and raising factors were used in the estimation of all published results, with the exception of the 1979 survey. The results of this survey should be used with caution. In general, the rural frame varies little, mostly when an area changes from rural to urban. The urban frame was updated in the 1970s, but the raising factors were not applied to the raw data for 1979 when they were published. A new frame completed in 1983 has been applied to the 1980s data.

Goldman (1989, p. 20) states that the surveys of the early 1970s "form a weak statistical base," and may not be comparable to later ones; he describes the 1979 survey as "particularly strong."

The surveys of the 1980s include food consumed outside the home, but it is not known to the authors whether the early surveys did or not. Thus a comparison of the early and recent surveys might be biased toward showing an increase in the consumption of some food items.

One check that can easily be performed on these survey data is to calculate the prices implied by the quantity and expenditure data. Results of such calculations are shown in the Annex (Figure 18 - Figure 20). These figures show that the implied price of wheat purchased by lower-income consumers tended to be lower than that purchased by those with high incomes, and the implied prices increase more or less monotonically. This is consistent with expectations, since higher-income consumers can purchase higher-quality flour, and flour products in more convenient forms.

¹⁴ Personal communication.

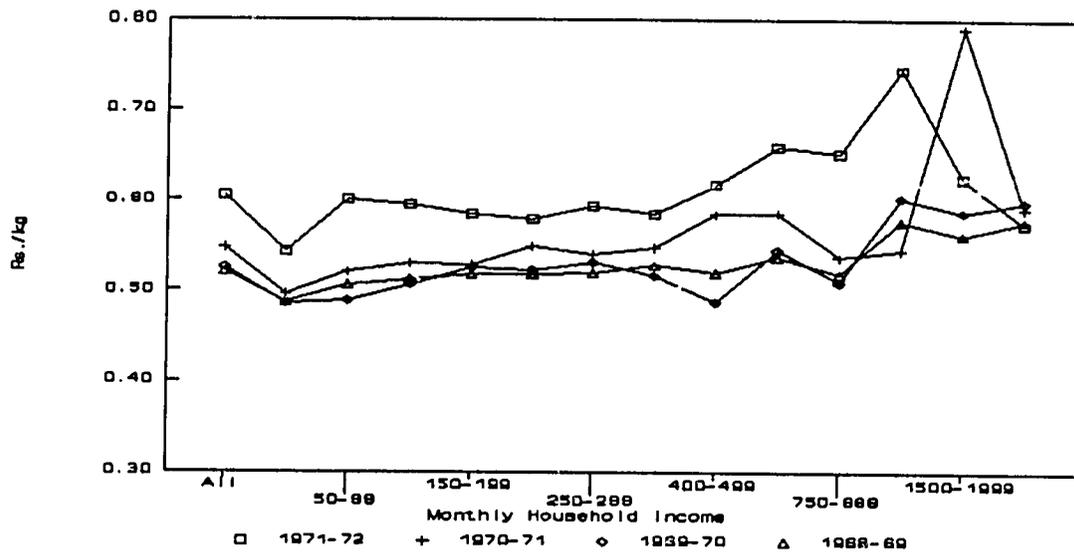
From these comments and analyses, we derive the following conclusions:

- o With the exception of 1979, the HIES results are valid at the national level,
- o Comparisons of the results of the early surveys for the lowest income group with those from the 1980s should be treated with caution, and
- o The existing surveys are the best and in some cases the only information we have on which to base policy.

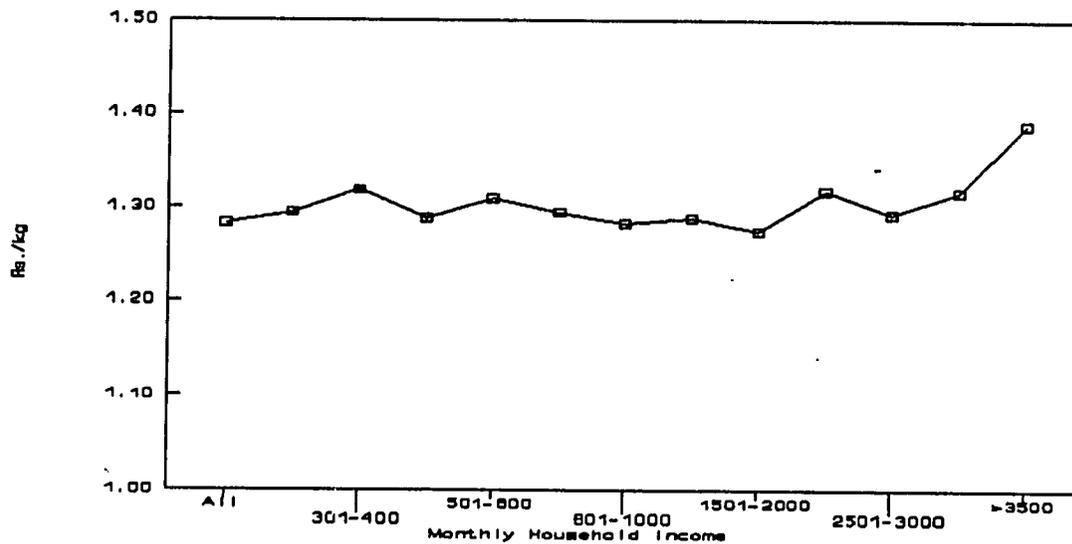
This paper cites data from HIESs from the late 1960s/early 1970s, 1979, and the 1980s. The analysis in this paper depends to only a limited extent on the 1979 data. The conclusions regarding the utility of a subsidy in increasing the consumption of flour by low-income consumers depend on the quality of the data on consumption by this group. The quality of these data are diminished somewhat by the small sample size in the early surveys in the survey's very lowest income group. However, the sample size problem does not seem to be so serious that a rising trend in consumption would be reflected in the survey results as a falling trend. Moreover, flour and baked products consumed outside the home are included in the surveys of the 1980s and may not be in the earlier period, so the comparison of the two sets of surveys may overstate the (relative) level of consumption in the recent period.

Annex Figures

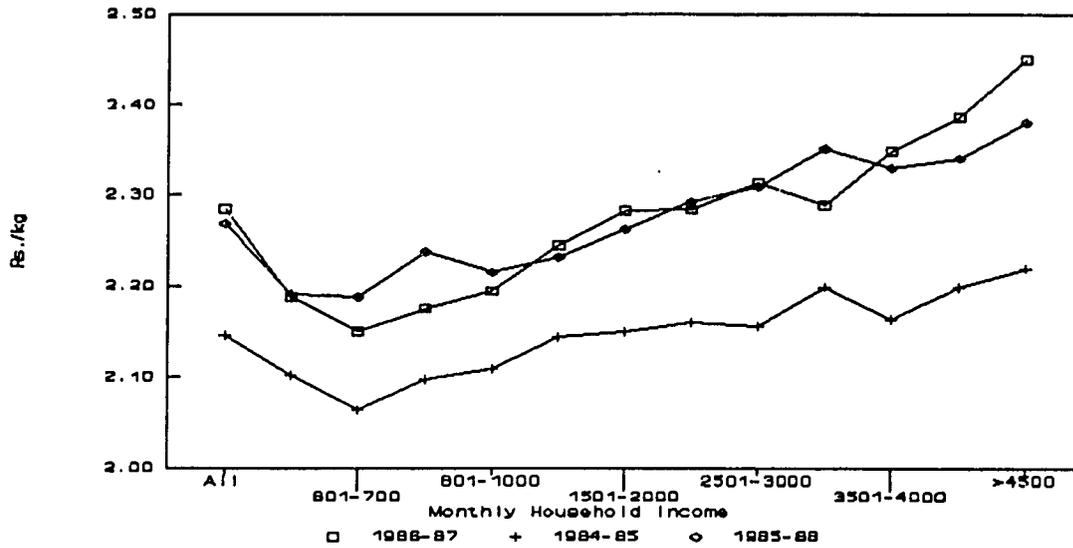
**Figure 18 Pakistan: Implied Price of Wheat and Wheat Flour, 1970s
(Calculated from HIES)**



**Figure 19 Pakistan: Implied Price of Wheat and Wheat Flour, 1979
(Calculated from HIES)**



**Figure 20 Pakistan: Implied Price of Wheat and Wheat Flour, 1980s
(Calculated from HIES)**



**Figure 21 Pakistan: Wheat Flour Consumed, By Income Group, 1970s
(HIES)**

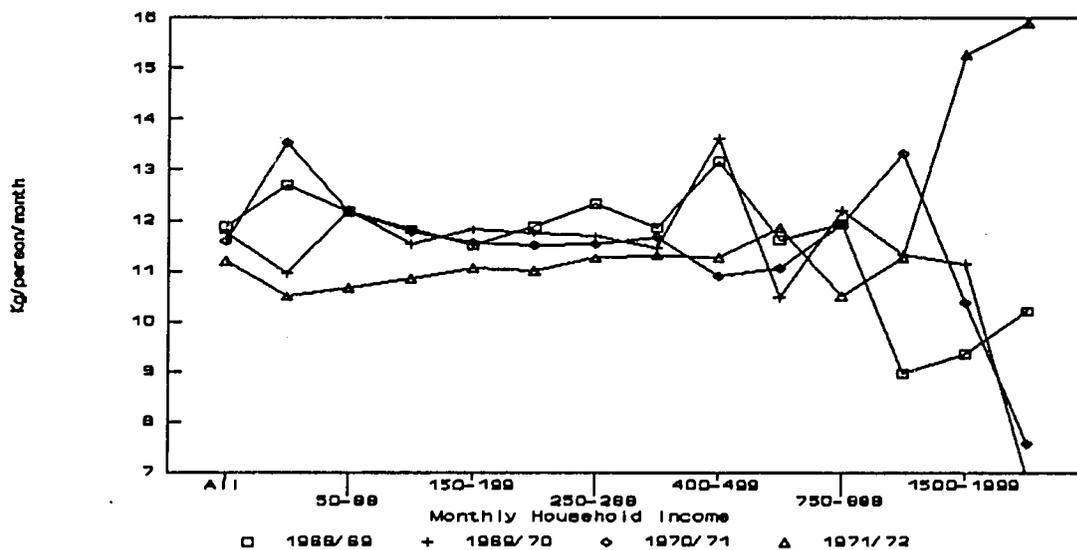


Figure 22 Pakistan: Wheat Flour Consumed, By Income Group, 1980s (HIES)

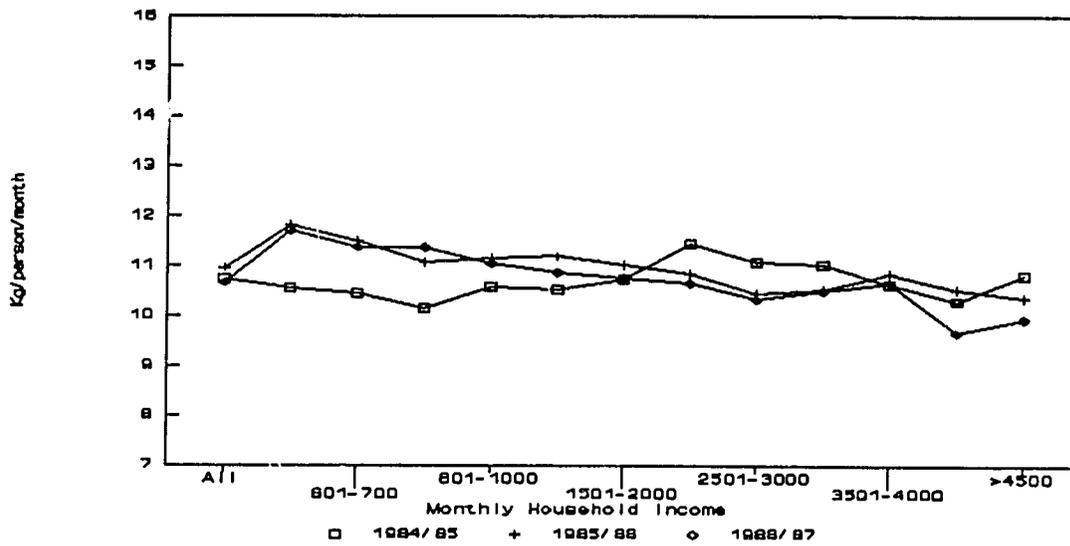


Figure 23 Pakistan: Wheat Flour Consumed, By Income Quartile, 1970s (HIES)

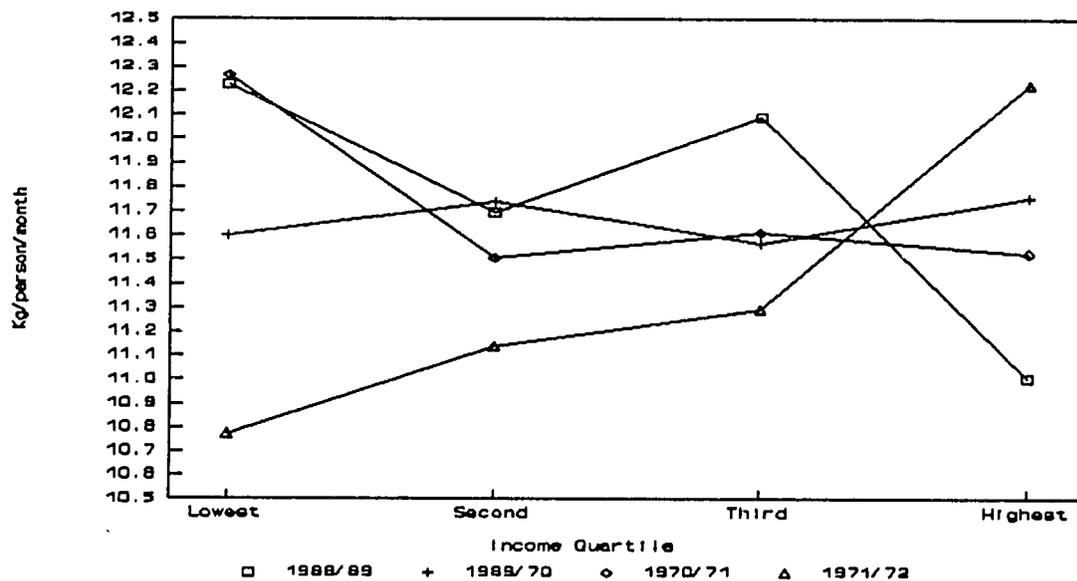


Figure 24 Pakistan: Wheat Flour Consumed, By Income Quartile, 1980s (HIES)

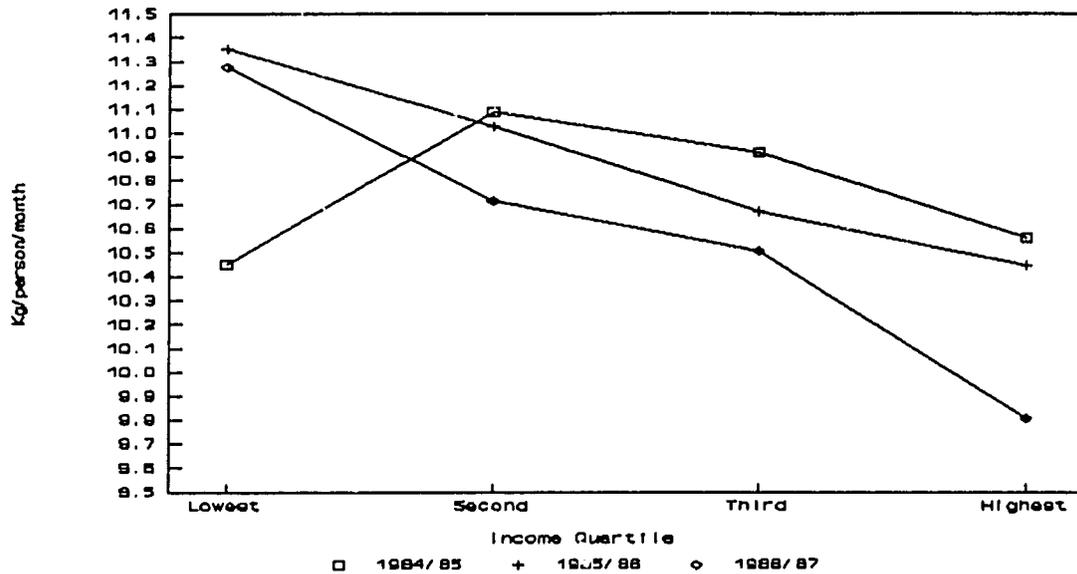
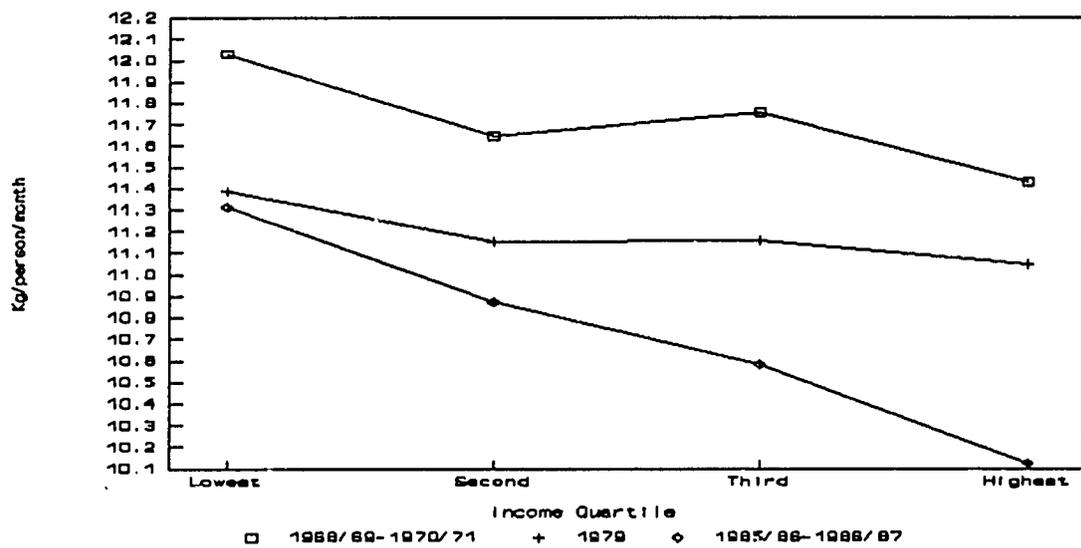


Figure 25 Pakistan: Wheat Flour Consumed, By Income Quartile, 1970s and 1980s, Atypical Years Removed (HIES)



Annex Tables

Table 8 Pakistan: Wheat Supply and Distribution, With Adjustments For Feed, Waste, and Smuggling

Marketing Year	Area	Yield	Pro-duction	Open- ing stock	Im- ports	Ex- ports	Disappearance			Ending stock	Popula- tion	
							Food Total	Per capita	Feed, Waste, Smuggling Total			
(May/ Apr)	1,000 ha	kgs/ ha		1,000 tons			kgs		1,000 tons	1,000's		
1968/69	5983	1073	6418		756	2	7172	124	0	7172		58000
1969/70	6160	1074	6618		1085	0	7703	129	0	7703		59700
1970/71	6229	1171	7294		1075	0	8369	136	0	8369		61490
1971/72	5978	1083	6476		1027	0	7503	118	0	7503		63340
1972/73	5799	1188	6890		1468	0	8338	127	20	8358		65890
1973/74	5973	1246	7442		1106	0	8508	125	40	8548		67900
1974/75	6113	1248	7629		1135	0	8694	124	70	8764		69980
1975/76	5813	1320	7674	217	1289	0	8569	119	100	8669	511	72120
1976/77	6111	1422	8690	511	507	0	9065	122	140	9205	503	74330
1977/78	6390	1431	9143	503	800	0	10057	131	200	10257	189	76600
1978/79	6360	1316	8367	189	2111	0	10018	127	270	10288	379	78940
1979/80	6687	1488	9950	379	668	0	9982	123	330	10312	685	81360

SOURCES: Government of Pakistan, U.S. Department of Agriculture.

Table 9 Pakistan: Wheat Supply and Distribution, With Adjustments For Feed, Waste, and Smuggling (continued)

Marketing Year	Area	Yield	Production	Opening stock	Imports	Exports	Disappearance			Total	Ending stock	Population
							Food	Feed, Waste, Smuggling	Total			
(May/ Apr)	1,000 ha	kgs/ ha		1,000 tons			kgs	Per capita	1,000 tons	1,000's		
1980/81	6924	1568	10857	685	320	0	10652	127	380	11032	830	83840
1981/82	6984	1643	11475	550	346	0	10571	122	430	11001	1650	86440
1982/83	7223	1565	11304	1650	570	78	11356	127	470	11826	1620	89120
1983/84	7398	1678	12414	1620	393	205	11922	130	500	12422	1800	91880
1984/85	7343	1482	10882	1800	1042	49	12405	131	525	12930	745	94730
1985/86	7259	1612	11703	745	1832	0	12503	128	550	13053	1227	97670
1986/87	7403	1881	13923	1227	374	0	12424	123	575	12999	2525	100700
1987/88	7706	1559	12016	2525	505	0	13246	128	600	13846	1200	103820
1988/89	7308	1734	12675	1200	2240	0	14895	139	620	15515	600	107040
1989/90	7730	1865	14419	600	1400	0	15789	143	630	16419	1522	110360
1990/91	7847	1818	14262	1522	700	0	15844	139	640	16484		113781

SOURCES: Government of Pakistan, U.S. Department of Agriculture.