

2. RURAL POVERTY IN PAKISTAN

POVERTY TRENDS

Rural poverty in Pakistan, which declined sharply in the 1980s, remained stubbornly high in the 1990s. In the 1980s, agricultural GDP growth averaged 3.9 percent per year, contributing to a steady decline in rural poverty from 49.3 percent in 1984-85 to 36.9 percent in 1990-91. In spite of even faster growth in agricultural real GDP in the 1990s (4.6 percent), however, rural poverty did not decline further. Rather, the percentage of people living in poverty remained essentially unchanged between 1990-91 (36.9 percent) and 1998-99 (35.9 percent).⁸ Several factors help explain rural poverty's stasis in the 1990s, among these overestimates of livestock income growth, a rise in the real consumer price of major staples, unequal distribution of returns to land and the fact that the crop sector contributed a declining share of overall GDP.⁹

Since 1998-99, real household incomes, income-based poverty indicators and agricultural output in Pakistan have fluctuated sharply, with only gradual improvement over the medium term. Recent household survey results indicate sharp reductions in rural poverty in Pakistan over the 2001-02 to 2004-05 period. Longer-term trends are less encouraging though, as these suggest no major changes in real expenditures of the poorest 40 percent of households between 1998-99 and 2004-05. Changes in agricultural output, due in large part to weather, mirror the changes in rural real incomes over the periods in question, but like real expenditures of the poor, agricultural output and incomes have increased only modestly over the entire six-year period (1998-99 to 2004-05). Non-agricultural factors, especially increases in workers' remittances have also contributed to increased rural (and national) incomes since 2001-02. In the medium term, however, econometric evidence suggests that investments in human capital and physical infrastructure have been among the most important determinants of increased real incomes in rural Pakistan.

Preliminary analysis of the 2004-05 Pakistan Social and Living Standards Measurement Survey (PSLM) data indicates that both rural and urban poverty have declined since 2001-02. Planning Commission estimates based on a poverty line of Rs 723.4 in 2001-02 suggest that national poverty fell by 10.6 percent, from 34.5 to 23.9 percent between 2001-02 and 2004-05. Their estimates of rural poverty show a decline of 11.2 percent in the same period, from 39.3 percent to 28.1 percent. World Bank estimates for the same period show smaller declines in poverty: from 34.4 to 29.2 percent (5.2 percentage points) at the national level and from 39.1 to 34.0 (5.1 percentage points) for rural households (Table 2.1). Disparities in these estimates of changes in poverty levels are mainly due to the differing inflation factors used to determine poverty lines.¹⁰

⁸ See World Bank 2002, 20; Government of Pakistan 2003; Pakistan Economic Survey 2002, 2003.

⁹ See Malik 2005; Dorosh, Niazi, and Nazli 2003.

¹⁰ The Planning Commission estimates use the Consumer Price Index to express the 2001-02 poverty line in 2004-05 prices, following the same methodology used in poverty estimates for earlier years. World Bank estimates use inflation rates calculated from price information collected as part of the PSLM survey. Differences in definitions of poverty lines in the base year and data cleaning protocols also contribute to differences in the estimates. See World Bank 2006c for details.

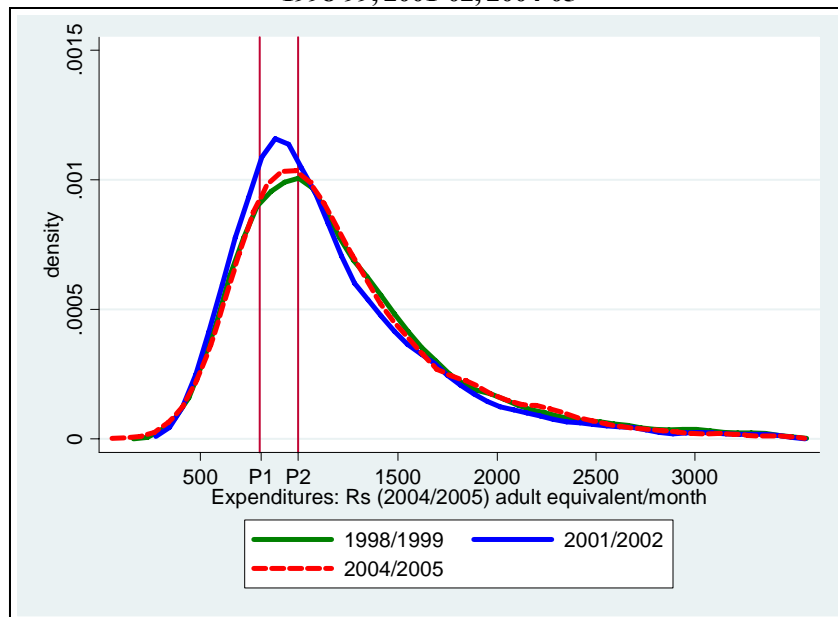
Estimates of poverty in Pakistan vary considerably depending on the methodology used, because a high percentage of rural households have per capita expenditures close to the official poverty line (Figure 2.1). 10.9 percent of rural households in 2001-02 had per capita expenditures within +/- 5 percent of the official poverty line; in 2004-05, 8.95 percent of rural households were within +/- 5 percent of the Planning Commission official poverty line (Rs 878.6). Thus, small changes in calculated real incomes (expenditures), whether due to actual changes in expenditure, price deflators or other methodological factors related to updating a poverty line, can lead to misleadingly large variations in poverty estimates. To minimize this and to avoid misunderstanding of poverty-line definitions, analysis in this chapter focuses on the bottom 40 percent of the per capita household expenditure distribution. The poor by this definition nevertheless overlap considerably with those defined as poor based on various food consumption needs-based poverty lines in Pakistan.¹¹

Table 2.1: Poverty Estimates in Pakistan, 1998-99, 2001-02 and 2004-05

		1998-99	2001-02	2004-05
Poverty	National	30.0	34.4	29.2
Headcount	Urban	21.0	22.8	19.1
	Rural	33.8	39.1	34.0
Poverty Gap	National	6.3	7.0	6.1
	Urban	4.3	4.6	3.9
	Rural	7.1	8.0	7.2
Squared	Nation	2.0	2.1	2.0
	Urban	1.3	1.4	1.2
	Rural	2.2	2.4	2.3

Source: World Bank staff estimates based on PIHS 1998-99, 00-01; and PSLM 2004-05, (World Bank, 2006c).

Figure 2.1: Distribution of Rural Household Expenditures in Pakistan, 1998-99, 2001-02, 2004-05



Source: HIES 1998-99, 2000-01, 2001-02; PSLM 2004-05.

Notes: P1 is the 20th percentile of 2004-05 expenditure distribution (809 Rs (2004-05)/adult equivalent/month); P2 is the 40th percentile of 2004-05 expenditure distribution (995 Rs (2004-05)/adult equivalent/month). The Planning Commission Poverty Line is 937.5 Rs (2004-05)/adult equivalent/month, 5.7 percent less than the cutoff for the 40th percentile of the 2004-05 rural expenditure distribution.

¹¹ Note, however, that focusing on the bottom 40 percent of the per capita household expenditure distribution does not eliminate the issue of the appropriate price index used in comparisons of household expenditures over time (see below).

CHANGES IN REAL INCOMES ACROSS HOUSEHOLD GROUPS

The majority of Pakistan’s rural poor are neither tenant farmers nor farm owners. Non-farm households (excluding agricultural laborer households) accounted for slightly over half (57 percent) of the rural poor in 2004-05. Farmers comprised only 35 percent of households in the bottom 40 percent of rural per capita expenditure distribution. The remainder (8 percent) were agricultural laborer households. This distribution of rural poverty closely reflects land distribution, which is highly unequal in Pakistan. According to the 2000 Agricultural Census, only 37 percent of rural households owned land, and 61 percent of land-owning households owned less than 5 acres, or 15 percent of total land. Two percent of households owned 50 acres, or 30 percent of total land.¹² Moreover, returns to land are estimated to be about half of incomes (value added) from crop agriculture, with only about five percent of value added paid to hired agricultural labor.¹³

Table 2.2. Rural Poverty across Household Groups in Pakistan, 2004-05

	Households (millions)	Expenditures (Rs/person)	Poor (L40) (percent)	Poor (L40) (millions)	Poor (L40) % of Rural Poor
Farm	5.65	1,346	27.1	1.53	34.9
Agricultural Laborers	0.72	1,028	50.3	0.36	8.2
Rural Non-Farm	6.68	1,209	37.3	2.49	56.9
Rural Self-Employed	2.22	1,244	31.2	0.69	15.8
Rural Non-Farm Other	4.46	1,190	40.3	1.80	41.1
Total Rural	13.05	1,259	33.6	4.38	100.0

Source: HIES 1998-99, 2000-01, 2001-02; PSLM 2004-05; and World Bank staff calculations.

Moreover, non-farm income is a major source of revenue, even for farmers with land. According to 2004-05 PSLM data, crop, livestock and agricultural wage labor incomes account for only 25, 8 and 4 percent respectively, of total rural incomes; non-farm incomes (40 percent), remittances (9 percent), and “other income” (15 percent) comprise the remainder. Even for farm households, crop incomes account for only about half (49 percent) of total income (Table 2.3).¹⁴ Estimates from a 2001-02 Social Accounting Matrix for Pakistan are consistent with national accounts figures for value added by sector,¹⁵ which indicates high proportions of non-farm income in total rural incomes: 36 percent for farm households and 57 percent for all rural households (Dorosh, Niazi and Nazli 2003).

Real per capita expenditures of the bottom two quintiles of rural households rose by 3.1 percent between 2001-02 and 2004-05, considerably less than the increase in per capita expenditures of rural households overall (5.9 percent) in the same period (Table 2.4).¹⁶ The

¹² The overall Gini coefficient of land ownership in 2000 in Pakistan was 0.66; including rural landless households, the Gini coefficient was 0.86. By comparison, the Gini coefficient for land ownership in India is 0.71, in Bangladesh, 0.42, and in Brazil, 0.85. See World Bank 2004b.

¹³ This estimate is from a Social Accounting Matrix for Pakistan 2001-02. See Dorosh, Niazi and Nazli 2003.

¹⁴ Unfortunately, data from the PSLM survey on land assets were not available for this report, so no analysis of income or expenditure data by farm size is possible.

¹⁵ Note that PSLM 2004-05 income data show substantially lower earnings from livestock relative to crop agriculture than do the national accounts.

¹⁶ It should be emphasized that the bottom two quintiles of the per capita expenditure distribution do not comprise the same households in the two surveys, because many households likely moved into or out of the bottom two quintiles during the period in question.

largest gains in real per capita expenditures (8.7 percent) were achieved by the richest quintile (the top 20 percent of the household distribution); the poorest quintile saw the smallest gains (1.5 percent). Among the rural poor (the bottom two quintiles of the rural per capita expenditure distribution), the real expenditure of non-farm households rose by nearly twice as much as those of rural farm households (3.6 percent versus 2.3 percent).

However, comparing 2004-05 per capita expenditures with those of 1998-99, there was almost no change (only -0.2 percent) in real expenditures per capita of households of the poorest 40 percent of households. In other words, the gain in real per capita expenditures for the poorest 40 percent in the second period simply offset the loss in real per capita expenditures incurred in the first period. The same overall pattern holds for rural farmers and non-farmers (Figures 2.2 and 2.3). In contrast, the top 10 percent of farmers (in terms of gross crop income) gained 6.9 percent from 1998-99 to 2004-05; rural agricultural labor households suffered a 4.6 percent decline in the same period.

Figure 2.2. Real Per Capita Rural Household Expenditures in Pakistan, 1998-99 to 2004-05

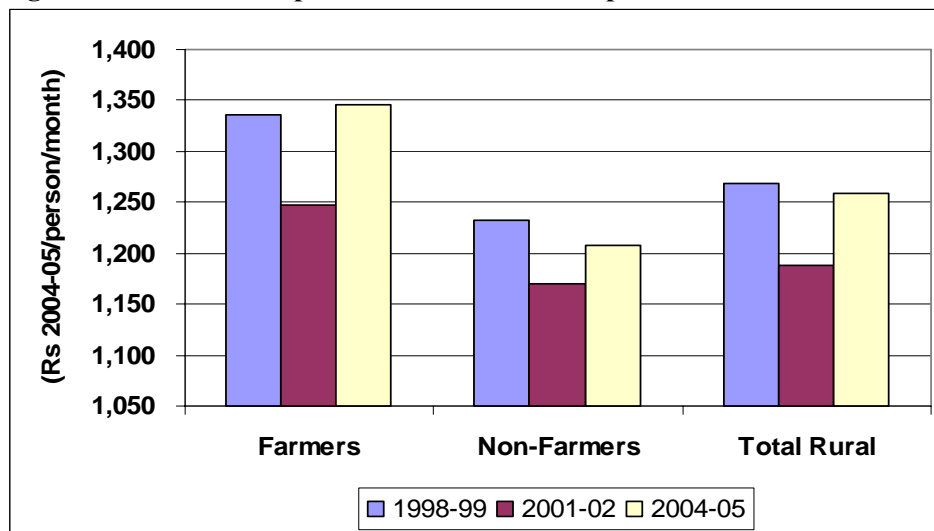
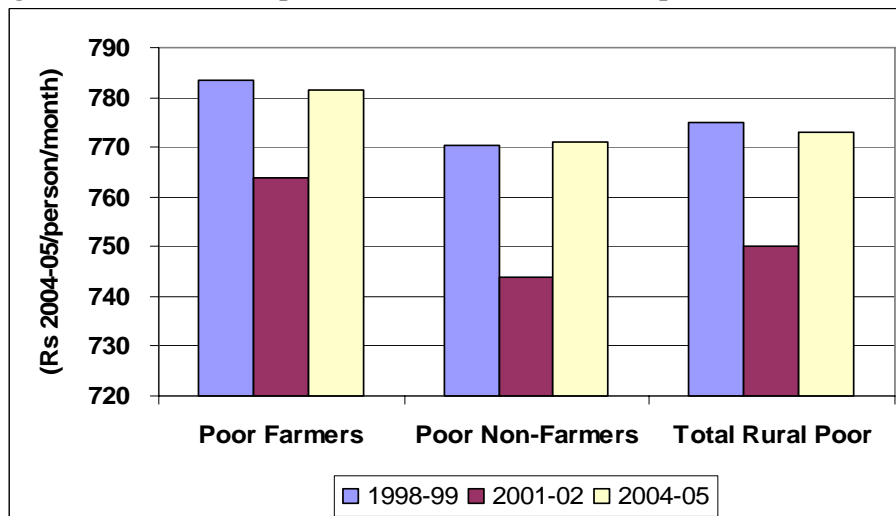


Figure 2.3. Real Per Capita Rural Poor Household Expenditures: 1998-99 to 2004-05



Source: PIHS 1998-99, 2001-02; PSLM 2004-05; and World Bank staff calculations.

Table 2.3. Sources of Income by Rural Household Group in Pakistan, 2004-05

Category	Crop	Livestock	Agric. Labor	Non-farm	Remittances	Other	Total
Poorest Quintile	17.8%	7.3%	7.7%	41.9%	8.6%	16.8%	100.0%
Quintile 2	21.2%	7.8%	5.2%	43.1%	7.2%	15.5%	100.0%
Quintile 3	24.2%	8.9%	3.8%	39.5%	9.2%	14.3%	100.0%
Quintile 4	30.2%	9.1%	1.5%	38.1%	8.1%	13.0%	100.0%
Quintile 5	30.2%	8.9%	1.5%	36.3%	9.3%	13.8%	100.0%
Total	24.7%	8.4%	3.9%	39.8%	8.5%	14.7%	100.0%
Rural Agriculture	43.6%	10.4%	7.3%	10.2%	12.3%	16.2%	100.0%
Rural Farm (Crops)	48.7%	11.0%	0.6%	10.1%	13.4%	16.3%	100.0%
Top 10% of Rural Crop Earners	46.0%	9.6%	0.0%	15.5%	13.2%	15.7%	100.0%
Rural Agricultural Labor	4.1%	5.5%	59.9%	10.8%	4.3%	15.4%	100.0%
Rural Non-farm	6.7%	6.5%	0.8%	67.9%	4.8%	13.3%	100.0%
Self-employed	6.6%	4.1%	0.7%	71.5%	4.0%	13.0%	100.0%
Other	6.7%	7.7%	0.8%	66.1%	5.2%	13.4%	100.0%
Rural Agriculture in L40	37.9%	9.1%	12.8%	8.8%	13.3%	18.1%	100.0%
Rural Farm (Crops) in L40	46.7%	10.2%	0.5%	8.2%	15.7%	18.6%	100.0%
Rural Agric. Labor in L40	2.2%	4.3%	62.9%	11.1%	3.5%	16.0%	100.0%
Rural Non-farm in L40	3.8%	6.3%	1.0%	71.1%	3.3%	14.5%	100.0%
Self-employed in L40	3.6%	2.3%	1.0%	75.6%	2.2%	15.2%	100.0%
Other in L40	3.8%	7.8%	1.0%	69.4%	3.7%	14.3%	100.0%
Rural Lower 40% (L40)	19.5%	7.6%	6.4%	42.5%	7.9%	16.2%	100.0%

Source: PSLM 2004-05 and World Bank staff calculations

Table 2.4. Real Per capita Expenditures of Rural Households in Pakistan, 1998-99, 2001-02 and 2004-05

	2005 Rs/adeq/month						
	1999	2002	2005	99-02 Change	02-05 Change	99-05 Change	
Quintile 1	651	638	648	-1.9%	1.5%	-0.4%	
Quintile 2	899	862	898	-4.2%	4.2%	-0.1%	
Quintile 3	1,105	1,043	1,098	-5.6%	5.4%	-0.6%	
Quintile 4	1,385	1,305	1,373	-5.7%	5.2%	-0.8%	
Quintile 5	2,300	2,097	2,280	-8.9%	8.7%	-0.9%	
Total Rural	1,268	1,189	1,259	-6.2%	5.9%	-0.7%	
Rural Agriculture	1,305	1,205	1,314	-7.7%	9.0%	0.7%	
Rural Farm (Crops)	1,335	1,247	1,346	-6.6%	7.9%	0.8%	
Top 10% of Rural Crop Earners	3,060	2,686	3,271	-12.2%	21.8%	6.9%	
Rural Agricultural Labor	1,078	962	1,028	-10.8%	6.9%	-4.6%	
Rural Non-farm	1,232	1,171	1,209	-5.0%	3.2%	-1.9%	
Self-employed	1,196	1,151	1,244	-3.8%	8.0%	3.9%	
Other	1,254	1,179	1,190	-6.0%	1.0%	-5.1%	
Rural Agriculture in L40	780	756	776	-3.1%	2.6%	-0.6%	
Rural Farmers (Crops) in L40	784	764	781	-2.5%	2.3%	-0.3%	
Rural Agricultural Labor in L40	764	728	748	-4.7%	2.7%	-2.1%	
Rural Non-farm in L40	770	744	771	-3.4%	3.6%	0.1%	
Self-employed in L40	768	748	762	-2.6%	1.8%	-0.8%	
Other in L40	772	740	775	-4.1%	4.7%	0.4%	
Rural Lower 40% (L40)	775	750	773	-3.2%	3.1%	-0.2%	

Source: PIHS 1998-99, 2001-02; PSLM 2004-05; and World Bank staff calculations.

Similar patterns—declines in real expenditures per capita between 1998-99 and 2001-02 and subsequent increases from 2001-02 to 2004-05—are observable in each province. In Punjab, the total change in real expenditures per capita over the 1998-99 to 2004-05 period was small, only 0.3 percent (-1.1 percent for the poorest 40 percent¹⁷ of households). Likewise, in Sindh, the total change for all rural households and for households in the poorest 40 percent of the national rural distribution were small (0.3 and 2.2 percent, respectively), though farmers' gains were substantially larger at 7.4 percent. Farmers in the NWFP and the poorest 40 percent of households also enjoyed substantial overall gains over the six-year period (11.0 percent and 5.9 percent, respectively), although the total rural population gained only 1.5 percent. In Baluchistan, the large decline in per capita expenditures between 1998-99 and 2001-02 (-17.4 percent for the total rural population and -11.9 percent for the poorest 40 percent) outweighed the rather small improvements experienced by most household groups in the 2001-02 to 2004-05 period. As a result, average real per capita expenditures actually fell by 14.0 percent from 1999-2000 to 2004-05 in rural Baluchistan (Annex Tables 2.1–2.4 and Annex Figures 2.1–2.8).

Changes in agricultural output and prices, driven to a large extent by weather, mirror the stagnation of real per capita expenditures, as well as their variation over the survey periods (Table 2.5 and Figure 2.4).¹⁸ There was substantial growth (4.2 percent per year) in real agricultural GDP between 2001-02 and 2004-05, but this growth rate does not reflect longer-term trends because real incomes and expenditures in 2001-02 were negatively affected by a drought that lowered crop production in many parts of Pakistan. Over the 1998-99 to 2004-05 period, the trend growth rate of real agricultural value-added was only 2.3 percent per year, (and only 0.2 percent per year in per capita terms). Moreover, during these periods, agricultural prices declined relative to overall rural prices.¹⁹ Deflating agricultural incomes (as measured by nominal GDP) by the overall rural price index, real agricultural income growth was only 0.2 percent (1.1 percent if the CPI used) and per capita agricultural incomes fell by 1.8 percent per year.

Fluctuations in wheat and cotton—the two most important crops in terms of gross value of production—were even larger than those of overall agricultural incomes, and help explain regional variations. Wheat production rose by only 2 percent between 1998-99 and 2001-02, but then increased by 16 percent between 2001-02 and 2004-05 (Annex Table 2.5). Real wholesale prices also increased by 16 percent in this latter period, so that the value of production increased by 34 percent, to the benefit of net wheat sellers (84.1 percent of producers and 32.0 percent of rural households, overall). Similarly, the real value of cotton production, which had fallen by 9 percent between 1998-99 and 2001-02, increased by 29 percent in 2004-05, as production rose by 38 percent relative to 2001-02.²⁰ This gain in gross cotton incomes helped boost real per capita expenditure of farm households in cotton-wheat cropping system districts in northern Sindh²¹ by 22 percent. Given the large number of farm households with expenditures just below the official

¹⁷ Data are for the poorest 40 percent of the rural per capita expenditure distribution.

¹⁸ Note that expenditure fluctuations are expected to be smaller than income fluctuations because of consumption smoothing (i.e. borrowing to offset declines in income).

¹⁹ The rural price index used here is based on the national CPI for the first triennium and the survey-based price deflator for the second triennium. See Annex Table 2.1 for details.

²⁰ Agricultural Census for 2000 data indicate little fluctuation in cropping pattern by size of farm, suggesting that fluctuations in yields and prices may have been similar across a range of farm sizes (World Bank, 2004b). However, larger farms' better access to water may have limited the decline in their yields during the 2001-02 drought.

²¹ The cotton-wheat cropping pattern region includes Khairpur, Sukkur, Nawabshah, Noshero Feroz, Ghotki, Hyderabad, Tharparkar and Sanghar. The 2004-05 PSLM survey sample included 532 farm households from these districts.

poverty line in 2001-02, gains in cotton incomes were likely a major factor behind the sharp reduction in rural poverty in Sindh.²²

Table 2.5. Growth Rates of Agricultural Output and Income in Pakistan, 1998-99 to 2004-05

	1998-99 to 2001-02	2001-02 to 2004-05	1998-99 To 2004-05
Real Agricultural GDP	0.9%	4.2%	2.3%
Agricultural Income I*	-2.0%	4.8%	1.1%
Agricultural Income II**	-2.0%	2.9%	0.2%
Per Capita Real Agricultural GDP	-1.2%	2.2%	0.2%
Per Capita Agricultural Income I*	-4.1%	2.7%	-1.0%
Per Capita Agricultural Income II*	-4.1%	0.9%	-1.8%

Source: Pakistan Economic Survey, various years; World Bank staff calculations.

Notes: * Nominal agricultural GDP divided by private consumption price index from national accounts.

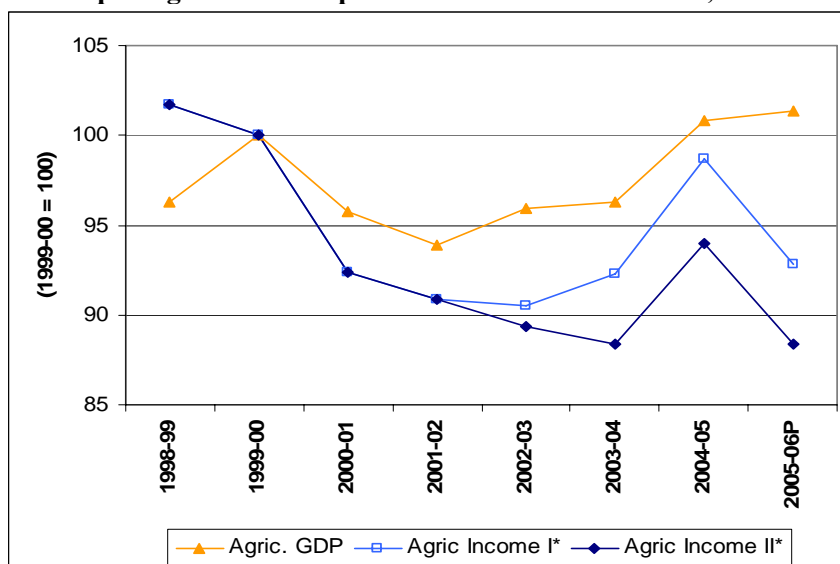
** Nominal agricultural GDP divided by the Survey Based Price Index that uses PRHS 2001-02, 2005-06 price data. See Annex Table 2.6 for details of the calculations.

Other factors have also contributed to good overall economic performance in recent years, as well as to gains in the real incomes (expenditures) of the rural poor.²³ Workers' remittances (some of which accrue directly to rural households), increased sharply from \$1.1 to \$4.2 billion between 2001-02 and 2002-03. However, as remittances have changed little between 2002-03 and 2004-05, further large increases seem unlikely. Growing demand for labor in the overall economy and in the construction sector in particular have also spurred urban and rural employment. Though increases in demand may have contributed to increased employment and incomes, they did not lead to increased real wage rates. In the 2001-02 to 2004-05 triennium, trend growth in real wages was 0.4 percent using the CPI as a deflator, although real wage rates fell by 1.1 percent per year using the national accounts price index of personal consumption as a deflator (Table 2.6). Over the six-year period from 1998-99 to 2004-05, real wage rates declined when assessed by either measure, by -0.9 percent or by -2.4 percent per year, respectively.

²² Using PIHS 2001-02 data, Orden and others (2005) estimate that a 10 percent increase in cotton prices leads to 11 percent and 6 percent increases in real incomes of cotton farmers in Sindh and Punjab, respectively. Cotton farmers account for 13 percent of the rural population nationally; poor cotton farmers are 3.5 percent of the rural population. Given that many cotton farmers in Sindh have incomes just below the poverty line, the poverty rate in Sindh drops the poverty rate *among cotton farmers* in Sindh from 50 percent to 39 percent (and from 36 percent to 31 percent *among cotton farmers* in Punjab). Nationally, rural poverty rates would fall by 0.5 percentage points. Unfortunately, no data on crop production was collected in the 2004-05 survey, so it is not possible to compare real incomes or poverty rates among cotton farmers in 2004-05 with data from earlier years.

²³ Smallholder farmers that derive much of their income from cotton are likely to be an exception to this general pattern.

Figure 2.4. Per Capita Agricultural Output and Real Income in Pakistan, 1998-99 to 2005-06



Source: Pakistan Economic Survey, various years; World Bank staff calculations.

Notes: P indicates provisional data.

* Nominal agricultural GDP divided by the price index for private consumption from the national accounts.

** Nominal agricultural GDP divided by the Survey Based Price Index that uses PRHS 2001-02, 2005-06 price data. See Annex Table 2.6 for details of the calculations.

Table 2.6. Real Wage Rates of Unskilled Labor in Pakistan, 1998-99 to 2004-05

	1998-99	2001-02	2004-05	1998-99 to 2001-02 (% change)	2001-02 to 2004-05 (% change)	1998-99 to 2004-05 (% change)
Wage Rate (Rs/day)	116.5	126.3	152.2	-2.3%	5.9%	3.5%
Real Wage (Rs 2004-05/day)*	153.7	148.8	152.2	-1.5%	0.4%	-0.9%
Real Wage (Rs 2004-05/day)**	166.9	155.8	152.2	-3.0%	-1.1%	-2.4%

Source: Pakistan Economic Survey 2006; World Bank staff calculations.

Notes: Wage rates are the average daily wage of unskilled construction labor in November in five major cities (provincial capitals plus Islamabad).

* Consumer Price Index used as a deflator.

** National accounts personal consumption price index used as a deflator.

Simulations using a computable general equilibrium (CGE) model for Pakistan also suggest that increases in workers' remittances and other capital inflows were the dominant factor in explaining the gain in rural incomes between 2001-02 and 2004-05. Model simulations indicate that the increases in wheat, paddy and cotton productivity (and area harvested of paddy) that occurred between 2001-02 and 2004-05 result in a 1 percent gain in both real incomes of rural poor households and of rural poor farm households.²⁴ An increase in workers' remittances has a much larger effect, however, raising incomes of rural households by four percent, though

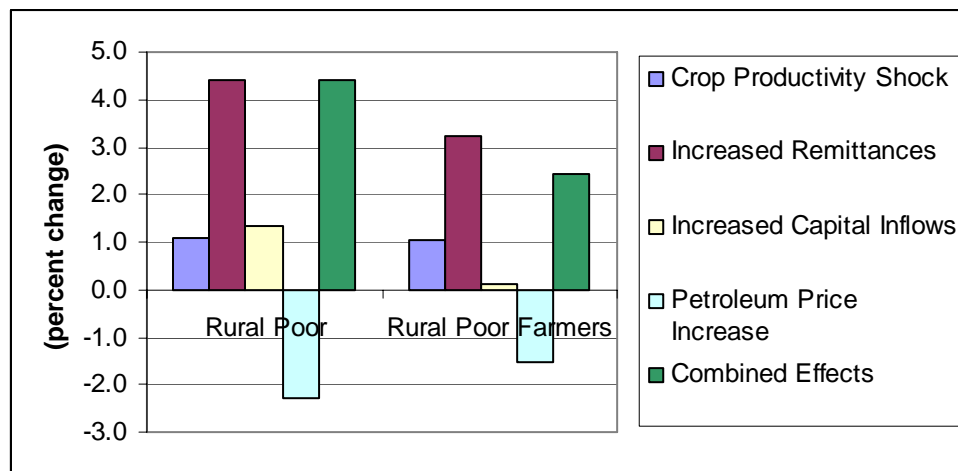
²⁴ Simulations of these agricultural productivity shocks with a fixed-price semi-input-output (SIO) multiplier model result in larger real income gains, about 5 percent for poor farmers and 3 percent for rural non-farm poor. This is so largely because prices do not decline as production increases, as occurs in the CGE simulations (particularly for cotton and rice). Note that these simulations model the productivity shocks as gains in output per capita with constant technology; the CGE simulations implicitly assume that land cultivated per capita does not change.

real incomes of poor farmers rise by only three percent because of a six-percent appreciation of the real exchange rate, which depresses real prices of tradable agricultural products. Including the effects of increased capital inflows and higher petroleum import prices, the total combined effects suggest that these four shocks raised rural incomes by 3.5 percent and real incomes of poor farmers by about 2.5 percent (Figure 2.5).

LONG-RUN DETERMINANTS OF POVERTY TRANSITIONS

Analysis of a panel data set of rural households from four districts of Pakistan (Attock, Badin, Dir and Faisalabad) covering the periods 1986-87 to 1990-91 and 2001-02²⁵ indicates a decline in real incomes over time, though with considerable variation across households and across districts (Annex Tables 2.7 and 2.8). Real incomes of many households declined between the early 1990s and 2002, despite modest gains in provincial and national agricultural output. Net crop income increased by 38 percent for the total sample, and by 81 percent for poor farmers, whose total incomes rose by 23 percent. Nevertheless, rural non-agricultural incomes fell by 30 percent overall and by 16 percent for poor households.

Figure 2.5. CGE Model Simulations of Shocks to Key Determinants of Rural Income in Pakistan



Source: Cororaton and Orden (2007).

The panel data also indicate considerable movement by households into and out of poverty, known as transitory poverty episodes (Figure 2.6). Although poverty rates tended to rise slightly over this period, (as reflected in the combined area of “poor” and “became poor” in Figure 2.6), about one quarter of households moved into or out of poverty each year. Between 1990-91 and 2001-02, however, the percentage of “chronic poor” (households who were poor in both the current and preceding periods) was essentially the same (about 35 percent). Third, poverty in the sample rose substantially in 2001-02, though 15 percent of households made a

²⁵ The household data set used in this analysis is made up of 14 rounds of the International Food Policy Research Institute (IFPRI) sample from 1986/87 to 1990/91, together with a sub-sample of panel data households included in PRHS 2001/02. The 571 household sample used in the analysis includes only the “base” households. Households that have split off from the base household are not included in this analysis. Note also that 103 households that had data for all five years of the IFPRI survey could not be traced after 11 years. On average, these households were poorer than the average household that could be traced: Their real incomes per adult equivalent were 24 percent lower, at Rs (2002) 11,756 compared with 13,842 and their value of household assets were 39 percent lower (Rs (2002) 160, 314 compared with 264,144).

transition out of poverty in this 11-year period, essentially the same percentage as in the earlier period. Poverty transitions using the 1987 to 1991 average income and 2001-02 income also indicate an increase in poverty, with 40 percent of households falling below the poverty line and only 9 percent of households escaping poverty (Figure 2.6).²⁶

Regression analyses indicate that primary and secondary education, land ownership, village electrification and paved roads are all significant factors determining changes in household welfare over time. Using a two-period panel data set consisting of the average of 1989-90 to 1990-91 as the first period and 2001-02 as the second period, and controlling for random effects across households,²⁷ the presence of an additional male with a secondary education in a household increases real expenditures (a measure of long-term incomes) by 10.2 percent; having a household head with primary education increases real expenditures by 21.5 percent (Annex Table 2.9, equation 4).²⁸ Owning five acres of either irrigated or non-irrigated land (a small farm by Pakistan standards) raises real expenditures by about 13 percent, or about half as much as having a household head with primary education. The regression coefficients also imply that village electrification raises real expenditures by about 75 percent and paved roads approximately double real expenditures.

Table 2.7. Real Incomes in Four Rural Districts in Pakistan by source, 1986-87 to 1991-92 and 2001-02

	Crops	Livestock	Non-Farm	Remittances	Total
Full sample					
1986-87 to 91-92 (Rs/hh)	4,592	1,882	5,111	1,780	13,522
1986-87 to 91-92 (share)	0.340	0.139	0.382	0.132	1.000
% change to 2002	22.2%	-18.1%	-30.1%	-49.4%	-13.1%
Poor households					
1986-87 to 91-92 (Rs/hh)	1,920	1,476	3,028	648	7,239
1986-87 to 91-92 (share)	0.265	0.204	0.421	0.090	1.000
% change to 2002	70.5%	-6.9%	-11.9%	2.5%	13.9%
Poor farm households					
1986-87 to 91-92 (Rs/hh)	2,558	1,733	2,436	593	7,498
1986-87 to 91-92 (share)	0.341	0.231	0.328	0.079	1.000
% change to 2002	72.5%	3.0%	-11.1%	6.3%	23.1%
Poor non-farm households					
1986-87 to 91-92 (Rs/hh)	237	797	4,588	793	6,556
1986-87 to 91-92 (share)	0.036	0.122	0.700	0.121	1.000
% change to 2002	15.9%	-63.4%	-13.1%	-5.0%	-14.0%

Source: Dorosh and Malik 2006.

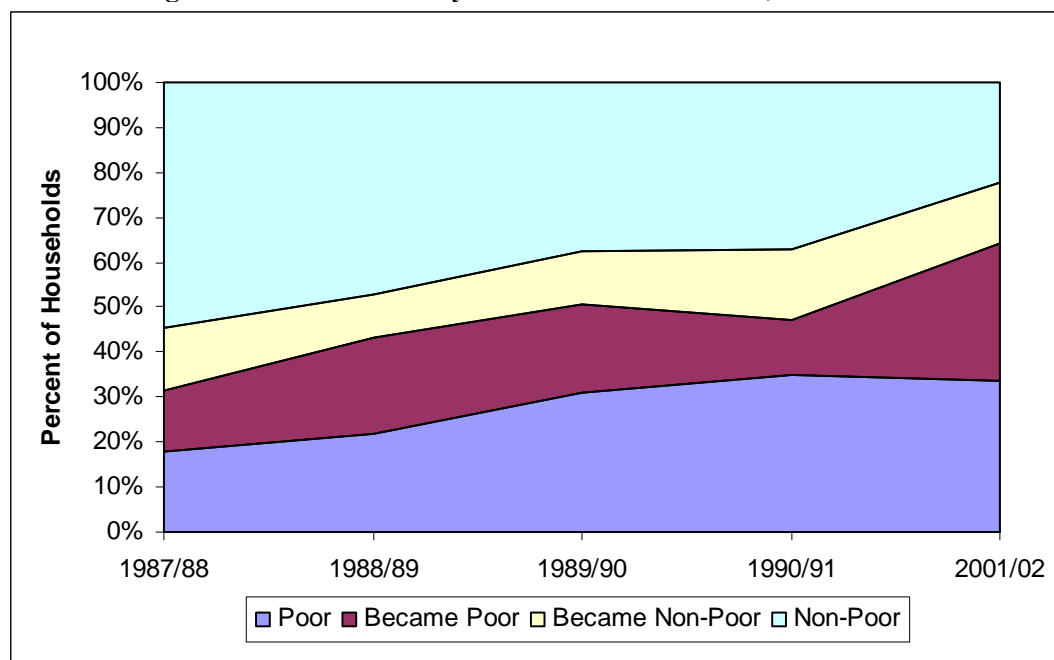
Notes: Calculated from IFPRI panel data set and PRHS 2001-02 for Attock, Badin, Dir and Faisalabad districts. Agricultural wage incomes, which account for less than two percent of total incomes, are not shown.

²⁶ In Figure 2.6, the percentage of households escaping poverty is indicated by “Became Non-Poor”.

²⁷ Village level dummy variables are also included to control for unobserved fixed effects.

²⁸ Comparing separate regressions from the two periods (Annex Table 2.9, columns 2 and 3), the effect of education on the head of household appears to have increased over time.

Figure .2.6. Rural Poverty Transitions in Pakistan, 1987-88 to 2001-02



Source: Authors' calculations from IFPRI panel data; PRHS 2001-02.

Notes: Poverty is defined relative to the national poverty line of 3,648 (1991) Rs/adult equivalent/year.

Table 2.8. Poverty Transitions in Rural Pakistan: 1987-91 to 2002

	1987-1991		2002	Chronic			Sample Size
	Total Poor	Total Poor	Poor	Ascending	Non-Poor	Descending	
Entire Sample	33%	64%	24%	9%	26%	40%	571
Bottom 40%	83%	73%	60%	23%	4%	13%	229
Farm	32%	60%	22%	10%	30%	38%	431
Non-Farm	37%	79%	31%	6%	15%	48%	140

Source: Dorosh and Malik 2006.

Notes: The bottom 40 percent is defined according to the 5-year average of real income per adult equivalent from 1987 to 1991.

Farm households are defined as those which had a minimum of 0.5 acres of land in operation on average over the 1987-1991 period.

Poverty is defined relative to the national poverty line of 3,648 (1991) Rs/adult equivalent/year.

Econometric evidence also suggests that the positive returns of education on income levels in rural Pakistan persist, even after taking into account innate cognitive ability. Analysis of the IFPRI Pakistan rural survey data by Fafchamps and Quisumbing (1999) found that one additional year of schooling for all adult males in a household raises household incomes by 8.9 percent due mainly to higher non-farm productivity (Box 2.1). Although the magnitude of these effects is likely to change over time as the proportion of educated labor in the total labor force rises and the structure of the economy changes, the results reinforce the importance of education in raising rural household incomes, particularly through non-farm activities.

Box 2.1. Human Capital and Household Incomes in Rural Pakistan

Using data from an International Food Policy Research Institute (IFPRI) survey of nearly 1000 rural households in four districts of Pakistan from 1986 to 1989, Fafchamps and Quisumbing (1999) found that education has significant effects on rural incomes. Controlling for the effects of background characteristics (land owned by father, inherited land, father's and mother's schooling) and innate ability (measured using the results of an administered test (Raven's Colored Progressive Matrices Test), one additional year of schooling for all adult males in a household (the mean number of adult males in a household in the sample was 2.0) raises household incomes by 8.9 percent. One-fifth of this additional income ensues from the re-allocation of labor away from agricultural activities and toward non-farm work. The remainder is due to higher non-farm productivity. However, this study found little evidence of the effect of male education on agricultural productivity, nor of female education on agricultural or non-farm productivity, though.

It should be noted, however, that this analysis of household data derives from the context of a "rural labor market with a very low supply of educated people and a mediocre nutritional status in general." (Fafchamps and Quisumbing 1999, 401) Given this environment, the marginal economic returns to education and nutrition for individuals are high. However, these economic returns would almost certainly be lower if a large number of individuals (relative to the size of the labor market) improved their skills and health status, as demand for labor might be insufficient to match the increase in effective labor supply without a decline in real wages. Thus, as the proportion of individuals in the labor force with improved skills and health status in Pakistan increases over time, the marginal returns to education and nutrition may diminish. Changes in the structure of economic output and increases in the share of skilled jobs in overall employment would tend to increase returns to education over time, however.

Source: Fafchamps and Quisumbing 1999.

NON-MONETARY INDICATORS OF WELFARE AND POVERTY

Despite essentially no change in the real per capita expenditures of the poorest 40 percent of the rural population between 1998-99 and 2004-05, there have been major improvements in other welfare indicators (Table 2.9 and Figure 2.7). The gross primary school enrollment rate rose 16 percentage points, from 63 to 79 percent over this period; net enrollment rates rose by 11 percentage points, from 37 to 48 percent.²⁹ The proportion of fully immunized children increased even more sharply, from 55 to 72 percent. Access to tap water nearly doubled, from 12 to 23 percent. For all non-monetary measures of welfare shown, however, urban residents fare much better than do rural residents, particularly with respect to access to tap water, adult literacy rates, and gross primary school enrollment rates.

²⁹ Gross primary school enrollment rates, defined as the number of children attending primary level (class 1-5) divided by the number of children aged 5-9 years, are an indicator of total attendance rates, and include children above the age cutoff. Net primary school enrollment rates are ratios and cover only the number of children aged 5-9 who attend primary school, and thus exclude children above 9 years or below 5 years.

Table 2.9: Social Indicators of Rural Households in Pakistan, 1988-99, 2001-02 and 2004-05

	Rural 1998-99	Rural 2001-02	Rural 2004-05	Urban 2004-05	Rural-Urban 2004-05
Gross Enrollment Rate	63	66	79	104	-25
Net Enrollment Rate	37	38	48	64	-16
Adult Literacy Rate	33	34	40	69	-29
Fully Immunized Children	45	46	72	87	-15
Electricity for Lighting	---	---	74	96	-22
Access to Tap Water	12	10	23	60	-37
Real Per Capita Expenditures	1268	1189	1259	1818	-31%
Bottom 40 Percent	775	750	773	824	-6%

Source: PIHS 1998-99, 2001-02; PSLM 2004-05.

Notes: * Real per capita expenditures of the bottom 40 percent in Rs (2004-05)/capita.

Gross Enrollment rate is the number of children attending primary level (classes 1-5) divided by the number of children aged 5-9 years.

Net Enrollment Rate is the number of children aged 5-9 years attending primary level (classes 1-5) divided by the total number of children aged 5-9 years.

Fully Immunized Children: The percentage of children aged 12-23 months that have been fully immunized based on record or recall.

Large disparities persist between male and female education and literacy rates (Table 2.10).

For girls, gross primary school enrollment rates rose by 18 percentage points, from 50 percent in 1998-99 to 68 percent in 2004-05, but they remain 21 percentage points below those for boys (89 percent). Similarly, net primary school enrollment rates for girls rose by 12 percentage points, to 42 percent in 2004-05, but this is still 11 percentage points below rates for boys. Similar patterns are observed for middle school enrollment rates in rural areas: 29 percent for girls as compared with 46 percent for boys. Gender gaps are declining only slowly: the disparity in gross primary and middle school enrollment rates declined by a mere five percentage points between 1998-99 and 2004-05. Gender gaps in net enrollment rates fell by only one or two percentage points. Adult literacy of rural women increased by 8 percentage points, to 24 percent in 2004-05, as compared to adult literacy of rural men, which rose by 5 percentage points to 56 percent.

Despite progress, Pakistan's social indicators still lag those of several other South Asian countries (See Figure 1 and Table 2.11).

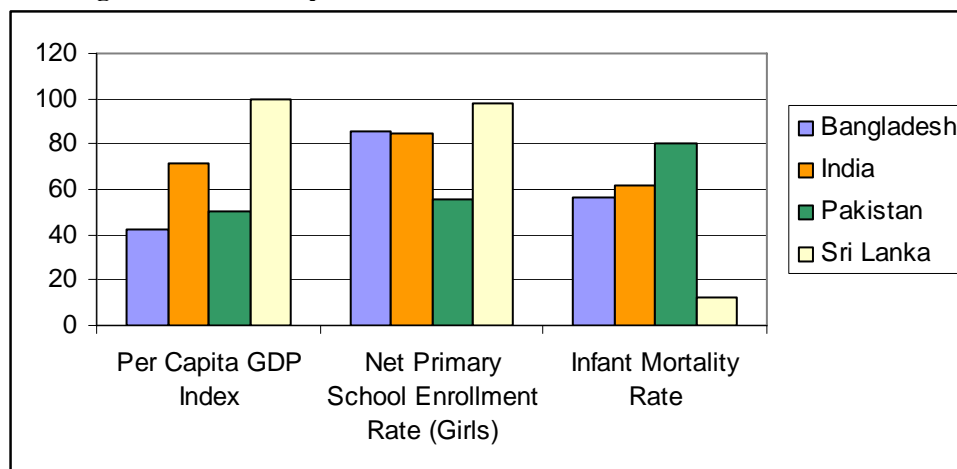
According to PSLM 2005-06 data, the primary school net enrollment rate for girls in Pakistan in rural areas is only 42 percent (48 percent nationally), compared to 86 percent in India (national), 84 percent in Bangladesh (national) and 98 percent in Sri Lanka (national). National infant mortality per 1000 live births is 80 in Pakistan (88 in rural areas) whereas it is only 62 and 12 in India and Sri Lanka, respectively. The infant mortality rate in Bangladesh is 56 per 1000 live births, although Bangladesh's per capita income of \$1870/person is 84 percent that of Pakistan (\$2225/person). These indicators suggest that there is considerable scope for continued improvement in these welfare indicators in Pakistan.

Table 2.10: Education and Literacy Rates in Pakistan, 1998-99, 2004-05

	1998-99 PIHS			2004-05 PSLM		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Gross Primary Level Enrollment Rates (age 5-9)						
All Pakistan	80	61	71	94	77	86
Rural	75	50	63	89	68	79
Urban	95	92	94	107	100	104
Net Primary Level Enrollment Rates (age 5-9)						
All Pakistan	47	37	42	56	48	52
Rural	43	30	37	53	42	48
Urban	58	56	57	66	63	64
Gross Middle Level Enrollment Rates (age 10-12)						
All Pakistan	48	32	40	51	40	46
Rural	43	21	32	46	29	38
Urban	62	60	61	64	63	64
Net Middle Level Enrollment Rates (age 10-12)						
All Pakistan	19	13	16	20	16	18
Rural	16	9	13	17	11	14
Urban	27	25	26	27	27	27
Adult Literacy - 15 Years and Older						
All Pakistan	58	28	43	63	36	50
Rural	51	16	33	56	24	40
Urban	73	53	63	78	59	69

Source: PIHS 1998-99, 2001-02; PSLM 2004-05.

Figure .2.7: Per Capita GDP and Social Indicators in South Asia



Source: World Bank World Development Indicators 2006; UNESCO 2006; PSLM 2004-05; Deolalikar 2005.
 Notes: Per Capita GDP Index figures for Bangladesh are for 2003, and for India, Pakistan and Sri Lanka are for 2004.

Net Primary School Enrollment rates for girls figures for Bangladesh are for 2002, for India and Pakistan are for 2003, and for Sri Lanka, 2004.

Infant mortality rates figures for Bangladesh are for 2003, for India, Pakistan and Sri Lanka are for 2004.

Table 2.11: Social Indicators in South Asia

	Bangladesh*	India*	Sri Lanka*	Pakistan*	Pakistan PSLM (2004-05)**		
					Rural	Urban	All Pakistan
GDP per Capita	1870.3	3139.4	4389.6	2225.4	---	---	---
School Enrollment Gross	106.0	107.4	101.7	82.1	79	104	86
Male	105.0	110.9	102.4	94.6	89	107	94
Female	107.0	103.7	101.1	68.8	68	100	77
School Enrollment Net	84.0	87.0	99.0	66.0	48	64	52
Male	82.0	90.3	98.8	76.4	53	66	56
Female	86.0	84.4	98.4	55.5	42	63	48
Adult Literacy Rate (15 years +)	41.1	61.0	90.7	49.9	40	69	50
Male	50.3	73.4	92.3	63.0	56	78	63
Female	31.4	47.8	89.1	36.0	24	59	36
Mean Years of Schooling	3.9	5.0	9.2	3.5	---	---	---
Male	4.9	6.5	8.9	5.1	---	---	---
Female	2.9	3.6	9.5	2.0	---	---	---
Immunization, measles	77.0	56.0	96.0	67.0	---	---	---
Fully Immunized children	---	---	---	---	49	49	49
Infant mortality rate per 1000	56.4	61.6	12.0	80.2	---	---	---
Under-five mortality rate per 1000	77.0	85.2	14.1	100.8	---	---	---
Improved Water Source	75.0	86.0	78.0	90.0	---	---	---
Access to Tap Water	---	---	---	---	23	39	60
Electricity Consumption per Capita	108.0	421.0	300.0	384.0	---	---	---

Source: * WDI Database, UNESCO (Bangladesh education figures) (2006), EEDRB (electricity consumption figures)

** PSLM 2004-2005.

Notes: All GDP per Capita, Adult Literacy Rates, Immunization and Mortality Rates figures are for 2004, except Bangladesh, which are for 2003;

Mean Years of Schooling figures for Bangladesh and India are for 2000, for Pakistan are for 2001 and for Sri Lanka, 2002.

School Enrollment Rates Gross and Net for India and Sri Lanka are from 2003, for Bangladesh are for 2002 and for Pakistan, 2004;

All Improved Water Source, Electricity Consumption per Capita figures are for 2002.

Improved Water Source: Percentage of households with access to tap water.

Electricity Consumption per Capita (Kwh/capita)

Box 2.2: Reducing Infant Mortality in Pakistan

Econometric analysis of household data from the Pakistan Socio-Economic Survey (PSES), 2000-01 indicates that household income is not a major determinant of infant mortality in Pakistan and that it is only one of several determinants of child malnutrition of children.

The survey data indicate that the average infant mortality rate in rural areas in 2000-01 (covering children born over the 1991-99 period) was 85 per 1000 live births, (compared to 61 in urban areas). The major determinants of infant mortality (defined as the probability of an infant dying during the first 12 months of his or her life) include: household sanitation (having a flush toilet in the household correlates with a decline in infant mortality of 15 per 1000 live births); immunizations (a 1-percent increase in the proportion of children immunized in a district results in a decrease of 9.6 deaths per 1000 live births); and level of mother's education (post-middle school and above). Controlling for other factors, infant mortality rates actually increase as per capita expenditures rise, although this is likely due to spurious correlation. Nonetheless, results strongly suggest that public health measures (immunizations), household sanitation and mother's education all contribute to reducing infant mortality, even in the absence of income growth.

As expected, the probability of a child aged 0-59 months being underweight falls with rising per capita household consumption: a 1 percent increase in per capita household consumption is associated with a 7.6 percentage point decrease in the probability of a child being underweight, from an average of 47.5 percent (PSES 2001-02) to 39.9 percent. But other factors such as mother's formal schooling, electrification of the home and the installation of a flush toilet in the household each contributes to a five percent decline in the proportion of underweight children). Clearly, public investments and public-service delivery related to formal schooling, electricity and sanitation can have a major impact on malnutrition, even in the absence of household income growth.

Source: Deolalikar, A., May 2005. *Attaining the Millennium Development Goals in Pakistan*. South Asia Human Development Sector, Discussion Paper Series Report No. 8. Washington, D.C.: World Bank.

SUMMARY

Survey evidence points to an encouraging 5.1 percentage point decline in rural poverty, from 39.1 percent to 34.0 percent between 2001-02 and 2004-05, and a 3.1 percent increase in the incomes of the poorest 40 percent of the rural income distribution (World Bank estimates). However, longer-term trends (1998-99 to 2004-05) show only very small changes in real per capita expenditures of the rural poor or in the level of rural poverty. Analysis of the structure of household incomes and sectoral output suggest that much improvement in the three-year period reflects a dip in 2001-02 incomes due to drought and lower cotton production. Nonetheless, in spite of the relatively small change in real per capita expenditure over the six-year period, there have been marked improvements in non-monetary welfare indicators, including child immunization, access to drinking water, and electrification of the home. Moreover, educational levels, which are a major factor in raising incomes, have also risen, suggesting improved prospects for future income growth.

Table A 2-1. Rural Households' Real Per Capita Expenditures in Punjab, Pakistan, 1998-99, 2001-02 and 2004-05

	2005 Rs/adeq/month					
	1999	2002	2005	1999 to 2002 Change	2002 to 2005 Change	1999 to 2005 Change
Quintile 1	652	634	647	-2.7%	2.0%	-0.7%
Quintile 2	901	863	900	-4.2%	4.3%	-0.1%
Quintile 3	1,103	1,045	1,097	-5.3%	5.0%	-0.6%
Quintile 4	1,385	1,312	1,379	-5.3%	5.1%	-0.5%
Quintile 5	2,305	2,134	2,333	-7.4%	9.3%	1.2%
Total Rural	1,305	1,270	1,309	-2.6%	3.1%	0.3%
Rural Agriculture	1,394	1,343	1,405	-3.7%	4.6%	0.8%
Rural Farm (Crops)	1,454	1,409	1,463	-3.1%	3.9%	0.7%
Top 10% of Rural Crop Earners	3,034	2,714	3,311	-10.5%	22.0%	9.1%
Rural Agricultural Labor	992	945	953	-4.7%	0.8%	-4.0%
Rural Non-Farm	1,218	1,199	1,231	-1.5%	2.6%	1.0%
Self-employed	1,178	1,166	1,257	-1.0%	7.8%	6.8%
Other	1,253	1,216	1,214	-3.0%	-0.1%	-3.1%
Rural Agriculture in L40	798	770	775	-3.5%	0.6%	-2.9%
Rural Farm in L40	812	781	790	-3.7%	1.1%	-2.7%
Rural Agricultural Labor in L40	750	741	723	-1.2%	-2.4%	-3.6%
Rural Non-Farm in L40	761	737	764	-3.2%	3.7%	0.3%
Self-employed in L40	755	744	752	-1.4%	1.0%	-0.4%
Other in L40	768	733	770	-4.5%	5.0%	0.3%
Rural Lower 40% (L40)	777	751	768	-3.3%	2.3%	-1.1%

Source: PIHS 1998-99, 2001-02; PSLM 2004-05.

Table A 2-2. Rural Households' Real Per Capita Expenditures in Sindh, Pakistan, 1998-99, 2001-02 and 2004-05

	2005 Rs/adeq/month					
	1999	2002	2005	1999 to 2002 Change	2002 to 2005 Change	1999 to 2005 Change
Quintile 1	643	624	647	-3.1%	3.7%	0.5%
Quintile 2	902	861	897	-4.6%	4.3%	-0.5%
Quintile 3	1,108	1,041	1,101	-6.0%	5.7%	-0.7%
Quintile 4	1,380	1,293	1,370	-6.3%	5.9%	-0.7%
Quintile 5	2,295	1,953	2,199	-14.9%	12.6%	-4.2%
Total Rural	1,237	1,049	1,241	-15.3%	18.4%	0.3%
Rural Agriculture	1,186	1,012	1,251	-14.6%	23.5%	5.4%
Rural Farm (Crops)	1,172	1,023	1,259	-12.7%	23.1%	7.4%
Top 10% of Rural Crop Earners	3,139	2,519	3,238	-19.7%	28.5%	3.1%
Rural Agricultural Labor	1,288	976	1,187	-24.2%	21.6%	-7.8%
Rural Non-Farm	1,301	1,117	1,228	-14.1%	9.9%	-5.6%
Self-employed	1,295	1,177	1,240	-9.1%	5.4%	-4.3%
Other	1,303	1,102	1,223	-15.4%	11.0%	-6.1%
Rural Agriculture in L40	758	722	784	-4.7%	8.6%	3.5%
Rural Farm in L40	753	729	778	-3.3%	6.7%	3.3%
Rural Agricultural Labor in L40	816	701	823	-14.0%	17.4%	0.9%
Rural Non-Farm in L40	792	738	795	-6.9%	7.7%	0.3%
Self-employed in L40	815	769	771	-5.7%	0.4%	-5.3%
Other in L40	783	731	802	-6.7%	9.8%	2.4%
Rural Lower 40% (L40)	772	727	789	-5.8%	8.5%	2.2%

Source: PIHS 1998-99, 2001-02; PSLM 2004-05.

Table A 2-3. Rural Households' Real Per Capita Expenditures in NWFP, Pakistan, 1998-99, 2001-02 and 2004-05

	2005 Rs/adeq/month					
	1999	2002	2005	1999 to 2002 Change	2002 to 2005 Change	1999 to 2005 Change
Quintile 1	614	661	638	7.7%	-3.4%	4.0%
Quintile 2	824	838	885	1.6%	5.6%	7.3%
Quintile 3	1006	981	1,073	-2.5%	9.3%	6.6%
Quintile 4	1249	1,193	1,302	-4.4%	9.1%	4.2%
Quintile 5	2035	1,930	1,918	-5.2%	-0.6%	-5.8%
Total Rural	1145	1,120	1,162	-2.2%	3.7%	1.5%
Rural Agriculture	1,110	1,098	1,226	-1.1%	11.7%	10.5%
Rural Farm (Crops)	1,114	1,104	1,237	-0.9%	12.0%	11.0%
Top 10% of Rural Crop Earners	3,339	2,633	3,397	-21.1%	29.0%	1.7%
Rural Agricultural Labor	1,059	951	1,078	-10.2%	13.4%	1.9%
Rural Non-Farm	1,176	1,142	1,103	-2.9%	-3.5%	-6.3%
Self-employed	1,153	1,064	1,147	-7.7%	7.8%	-0.5%
Other	1,188	1,175	1,091	-1.1%	-7.2%	-8.2%
Rural Agriculture in L40	713	756	786	6.1%	4.0%	10.3%
Rural Farm in L40	709	757	791	6.7%	4.5%	11.5%
Rural Agricultural Labor in L40	751	751	754	-0.1%	0.4%	0.4%
Rural Non-Farm in L40	724	743	743	2.6%	0.0%	2.6%
Self-employed in L40	721	747	765	3.6%	2.3%	6.0%
Other in L40	726	741	739	2.1%	-0.3%	1.8%
Rural Lower 40% (L40)	719	749	761	4.2%	1.6%	5.9%

Source: PIHS 1998-99, 2001-02; PSLM 2004-05.

Table A 2-4. Rural Households' Real Per Capita Expenditures in Baluchistan, Pakistan, 1998-99, 2001-02 and 2004-05

	2005 Rs/adeq/month					
	1999	2002	2005	1999 to 2002 Change	2002 to 2005 Change	1999 to 2005 Change
Quintile 1	753	693	638	-7.9%	-8.0%	-15.2%
Quintile 2	1,019	868	885	-14.8%	1.9%	-13.1%
Quintile 3	1,205	1,022	1073	-15.2%	5.0%	-11.0%
Quintile 4	1,483	1,223	1302	-17.5%	6.4%	-12.2%
Quintile 5	2,308	1,781	1918	-22.8%	7.7%	-16.9%
Total Rural	1,351	1,117	1,162	-17.4%	4.1%	-14.0%
Rural Agriculture	1,417	1,125	1,226	-20.6%	9.0%	-13.5%
Rural Farm (Crops)	1,447	1,147	1,237	-20.8%	7.9%	-14.5%
Rural Non-Farm	1,305	1,110	1,103	-15.0%	-0.6%	-15.5%
Rural Agriculture in L40	898	800	786	-10.9%	-1.7%	-12.4%
Rural Farm in L40	908	810	791	-10.8%	-2.4%	-12.9%
Rural Non-Farm in L40	880	767	743	-12.8%	-3.1%	-15.6%
Rural Lower 40% (L40)	886	781	761	-11.9%	-2.5%	-14.1%

Source: PIHS 1998-99, 2001-02; PSLM 2004-05.

Table A 2-5. Wheat and Cotton Production and Incomes in Pakistan, 1998-99, 2001-02 and 2004-05

	1998-99	2001-02	2004-05	1998-99 to 2001-02	2001-02 to 2004-05	1998-99 to 2004-05
Wheat						
Area (000 ha)	8,230	8,058	8,330	-2.1%	3.4%	1.2%
Yield (tons/ha)	2.17	2.26	2.53	4.2%	12.0%	16.8%
Production (000 tons)	17,858	18,226	21,109	2.1%	15.8%	18.2%
Production per capita (kgs)	134.5	126.7	138.4	-5.8%	9.2%	2.9%
Wholesale Price (Rs 2005/kg) CPI	9.6	9.2	11.2	-3.4%	21.2%	17.1%
Wholesale Price (Rs 2005/kg) PC	10.4	9.7	11.2	-6.9%	15.7%	7.8%
Value Production (bn Rs 2005) PC	185.6	176.4	236.4	-5.0%	34.0%	27.4%
Production per capita (Rs 2005) PC	1,780	1,562	1,974	-12.3%	26.4%	10.9%
Cotton						
Area (000 ha)	2,923	3,116	3,221	6.6%	3.4%	10.2%
Yield (tons/ha)	0.51	0.58	0.77	13.2%	33.2%	50.9%
Production (000 tons)	1,495	1,805	2,486	20.7%	37.7%	66.3%
Production per capita (kgs)	11.3	12.6	16.3	11.4%	29.9%	44.7%
Wholesale Price (Rs 2005/kg) CPI	28.9	22.6	22.1	-21.9%	-1.9%	-23.4%
Wholesale Price (Rs 2005/kg) PC	31.4	23.6	22.1	-24.7%	-6.4%	-29.5%
Value Production (bn Rs 2005) PC	46.9	42.7	55.0	-9.1%	28.9%	17.2%
Production per capita (Rs 2005) PC	450	378	459	-16.1%	21.6%	2.0%
Wheat and Cotton						
Value Production (bn Rs 2005)	232.5	219.0	291.4	-5.8%	33.0%	25.3%
Production per capita (Rs 2005)	2,230	1,940	2,433	-13.0%	25.4%	9.1%

Source: Pakistan Economic Survey 2006; World Bank staff calculations.

Table A 2-6. Estimates of Agricultural Output and Incomes in Pakistan, 1998-99 to 2005-06

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06P	Growth Rate
	(bn 1999-2000 Rs)								
Agricultural GDP	0.871	0.924	0.903	0.904	0.943	0.965	1.030	1.055	2.6%
Agricultural Income I*	0.919	0.924	0.872	0.875	0.889	0.925	1.009	0.966	1.2%
Agricultural Income II**	0.919	0.924	0.872	0.875	0.878	0.886	0.960	0.919	0.3%
	(1999-2000 = 100)								
Per Capita Agricultural GDP	96.3	100.0	95.8	93.9	96.0	96.3	100.8	101.4	0.5%
Per Capita Agricultural Income I*	101.7	100.0	92.4	90.9	90.5	92.3	98.7	92.8	-0.8%
Per Capita Agricultural Income II**	101.7	100.0	92.4	90.9	89.3	88.4	94.0	88.3	-1.7%
Consumer Price Index (CPI)	96.5	100.0	104.4	108.1	111.5	116.5	127.4	137.6	4.9%
Agricultural GDP Price Index	100.6	100.0	104.6	107.1	112.3	120.7	133.7	141.4	5.3%
Private Consumption Price Index	95.3	100.0	108.4	110.6	119.1	126.0	136.5	154.5	6.7%
Survey Based Price Index	95.3	100.0	108.4	110.6	120.6	131.5	143.4	162.3	7.7%

Source: Pakistan Economic Survey, various years; World Bank staff calculations.

Notes: * Nominal agricultural GDP divided by the private consumption price index from national accounts.

** Nominal agricultural GDP divided by the Survey Based Price Index, which uses price information from rural household survey data in 2001-02 and 2005-06.

Nominal agricultural GDP in 1998-99 is calculated using the percentage change in nominal agricultural GDP between 1997-98 and 1998-99 from the 1980-81 base national accounts, and the figure for nominal agricultural GDP in 1999-2000 from the 1999-2000 national accounts. The agricultural GDP price deflator for 1998-99 is calculated using the percentage change in the agricultural GDP price deflator between 1998-99 and 1999-2000 from the 1980-81 base national accounts series;

The Survey Based Price Deflator is equal to the Private Consumption Price Index for 1998-99 through 2001-02. The value for 2004-05 is calculated using the percentage change in the rural price indices between HIES 2001-02 and PSLM 2004-05 (29.6 percent; see World Bank 2006c). Values between 2001-02 and 2004-05 are interpolated using a constant growth rate. The value for 2005-06 is calculated using the inflation rate for that year from the Private Consumption Price Index.

Table A 2-7. Real incomes in Four Districts in Rural Pakistan by source, 1986-87 to 1991-92 and 2002

District/Year	Rental earnings in crops	Net crop profit	Farm wage income	Non-farm income	Net livestock profit	Returns to capital	Remittances	Pension	Total income
Full sample									
1986-87 to 91-92 (Rs/hh)	1,156	3,436	157	4,472	1,882	575	1,780	123	13,522
1986-87 to 91-92 (share)	0.086	0.254	0.012	0.331	0.139	0.043	0.132	0.009	1.000
% change to 2002	-24.4%	37.8%	37.2%	-30.2%	-18.1%	-49.7%	-49.4%	-15.7%	-13.1%
Poor households in 1986-87 to 1991-92 (bottom 40 percent)									
1986-87 to 91-92 (Rs/hh)	215	1,705	167	2,911	1,476	75	648	61	7,239
1986-87 to 91-92 (share)	0.030	0.236	0.023	0.402	0.204	0.010	0.090	0.008	1.000
% change to 2002	-10.2%	80.7%	76.3%	-15.7%	-6.9%	60.0%	2.5%	22.0%	13.9%
Poor farm households									
1986-87 to 91-92 (Rs/hh)	245	2,313	177	2,300	1,733	100	593	61	7,498
1986-87 to 91-92 (share)	0.033	0.308	0.024	0.307	0.231	0.013	0.079	0.008	1.000
% change to 2002	-5.2%	80.7%	54.0%	-16.6%	3.0%	63.2%	6.3%	1.8%	23.1%
Poor non-farm households									
1986-87 to 91-92 (Rs/hh)	135	103	140	4,521	797	9	793	61	6,556
1986-87 to 91-92 (share)	0.021	0.016	0.021	0.690	0.122	0.001	0.121	0.009	1.000
% change to 2002	-33.9%	81.4%	150.8%	-14.4%	-63.4%	-30.0%	-5.0%	74.7%	-14.0%

Source: Dorosh and Malik 2006.

Notes: Calculated from IFPRI panel data set, including IFPRI panel households in the PRHS (2001-02) data set.

Table A 2-8. Real incomes of Poor Households in Four Districts in Rural Pakistan by source, 1986-87 to 1991-92 and 2002

	Crops	Livestock	Non-Farm	Remittances	Total
Full sample					
1986-87 to 91-92 (Rs/hh)	4,592	1,882	5,111	1,780	13,522
1986-87 to 91-92 (share)	0.340	0.139	0.382	0.132	1.000
% change to 2002	22.2%	-18.1%	-30.1%	-49.4%	-13.1%
Poor households					
1986-87 to 91-92 (Rs/hh)	1,920	1,476	3,028	648	7,239
1986-87 to 91-92 (share)	0.265	0.204	0.421	0.090	1.000
% change to 2002	70.5%	-6.9%	-11.9%	2.5%	13.9%
Poor farm households					
1986-87 to 91-92 (Rs/hh)	2,558	1,733	2,436	593	7,498
1986-87 to 91-92 (share)	0.341	0.231	0.328	0.079	1.000
% change to 2002	72.5%	3.0%	-11.1%	6.3%	23.1%
Poor non-farm households					
1986-87 to 91-92 (Rs/hh)	237	797	4,588	793	6,556
1986-87 to 91-92 (share)	0.036	0.122	0.700	0.121	1.000
% change to 2002	15.9%	-63.4%	-13.1%	-5.0%	-14.0%

Source: Dorosh and Malik 2006.

Notes: Calculated from IFPRI panel data set, including IFPRI panel households in the PRHS 2001-02 data set.

Table A 2-9. Determinants of Real Incomes and Expenditures in Rural Pakistan, Regression Results

Period Dependent variable	Average 87-91		Average 90-91		2002		Panel changes					
	Real income		Real Expenditure		Real Expenditure		Real Expenditure					
	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	z-statistic				
Share of remittances in income	---	---	-0.0459	-0.30	0.0020	0.07	0.0055	0.13				
Male youths (% of household)	-0.9445	**	-5.20	-0.7631	**	-2.69	-0.1289	-0.49	-0.4667	*	-1.89	
Children (% of household)	-0.6292	**	-4.89	-0.6510	**	-3.30	-0.4005	*	-1.75	-0.4698	**	-2.92
Female youths (% of household)	-0.8836	**	-4.96	-0.6765	**	-2.78	-0.5691	**	-2.17	-0.5499	**	-2.32
Males w/ basic educ. (% of males)	0.1145		0.73	-0.1592		-0.76	-0.1146		-0.97	-0.1844		-0.90
Males w/ second. Educ. (% of males)	0.9198	**	5.06	0.6295	**	2.73	0.3489	**	2.15	0.4869	**	2.14
Females w/ basic educ. (% of females)	0.0316		0.16	0.0663		0.25	-0.0677		-0.36	-0.1544		-0.62
Females w/ sec. educ. (% of females)	0.1913		0.38	-0.6054		-0.94	0.2846		0.96	0.4752		0.74
Household head basic educ. (yes = 1)	0.0788		1.44	0.0126		0.18	0.1854	**	2.78	0.1949	**	3.01
Rain fed land owned (acres)	0.0066	**	3.07	0.0078	**	3.84	0.0088	**	3.24	0.0099	**	4.45
Irrigated land owned (acres)	0.0163	**	7.04	0.0115	**	2.67	0.0049	**	2.61	0.0096	**	5.15
Value of vehicles (000 2002 Rs)	0.0016	**	2.23	0.0004		0.54	0.0000		0.92	0.0008	**	2.23
Value of tools (000 2002 Rs)	0.0028	**	3.13	0.0002		0.15	0.0000		0.05	0.0018	**	2.56
Tractor ownership (yes = 1)	0.0960	**	2.04	0.0023		0.03	0.0099		0.09	-0.5273	**	-8.78
Village electrified	0.1101		0.39	-0.0575		-0.15	0.7528		1.41	0.5659	**	8.89
Village – paved road	0.4614		1.38	-0.6392		-1.47	0.3503	*	1.68	0.6975	**	14.55
Village - public drainage	-0.4702	**	-1.92	-0.0817		-0.43	-0.5613		-0.99	-0.0103		-0.12
Constant	9.2359	**	24.37	8.7335	**	11.03	8.5548	**	108.06	7.6577	**	87.01
N	571		571		571		1142					
R-squared	0.545		0.259		0.259		0.339					
Within	---		---		---		0.4745					
Between	---		---		---		0.175					

Source: Authors' calculations.

Notes: Regression 4: Random effects estimation: $u_i \sim \text{Gaussian}$, $\text{Wald } \chi^2(17) = 576.36$. $\text{corr}(u_i, X) = 0$ (assumed), $\text{Prob} > \chi^2 = 0.000$.

* Significant at 90 percent confidence level; ** Significant at 95 percent confidence level.

Figure A 2-1. Real Per Capita Household Expenditures of Rural Households in Punjab, Pakistan, 1998-99, 2001-02 and 2004-05

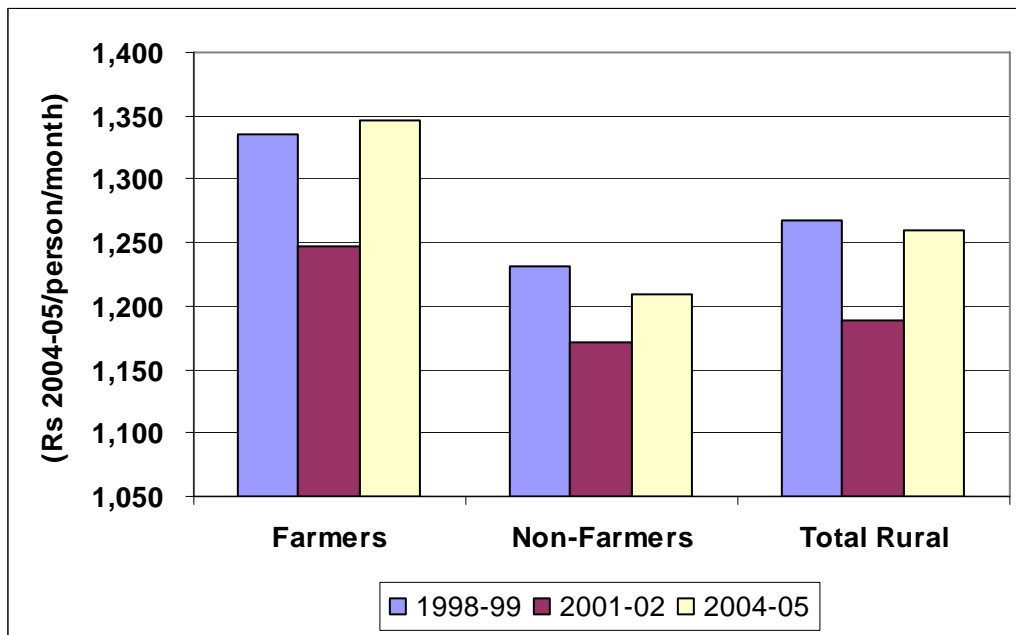


Figure A 2-2. Real Per Capita Household Expenditures of Rural Poor Households in Punjab, Pakistan: 1998-99, 2001-02 and 2004-05

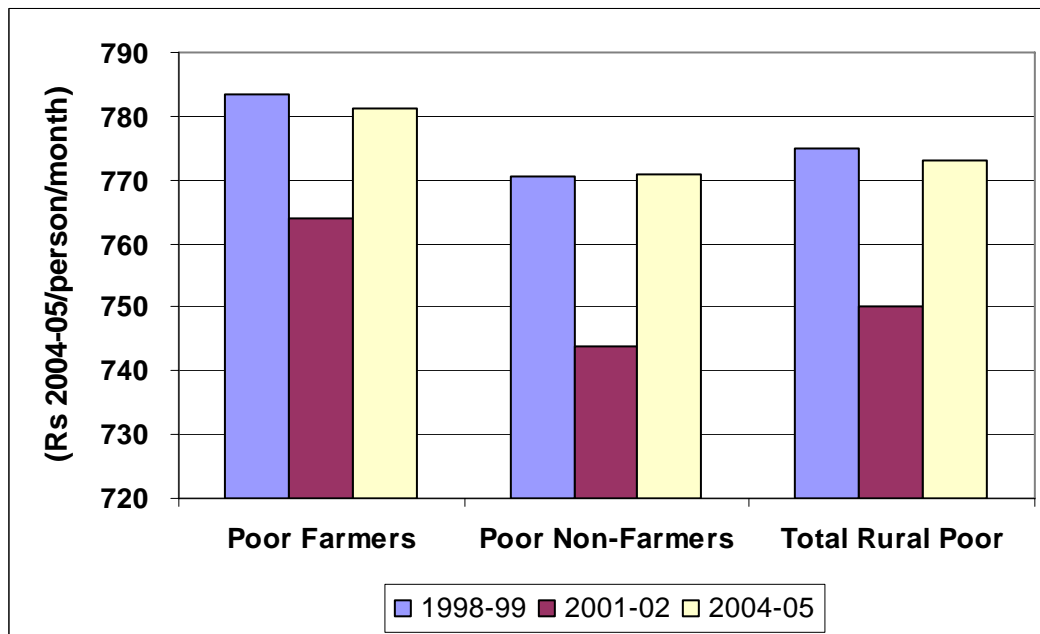


Figure A 2-3. Real Per Capita Household Expenditures of Rural Households in Sindh, Pakistan, 1998-99, 2001-02 and 2004-05

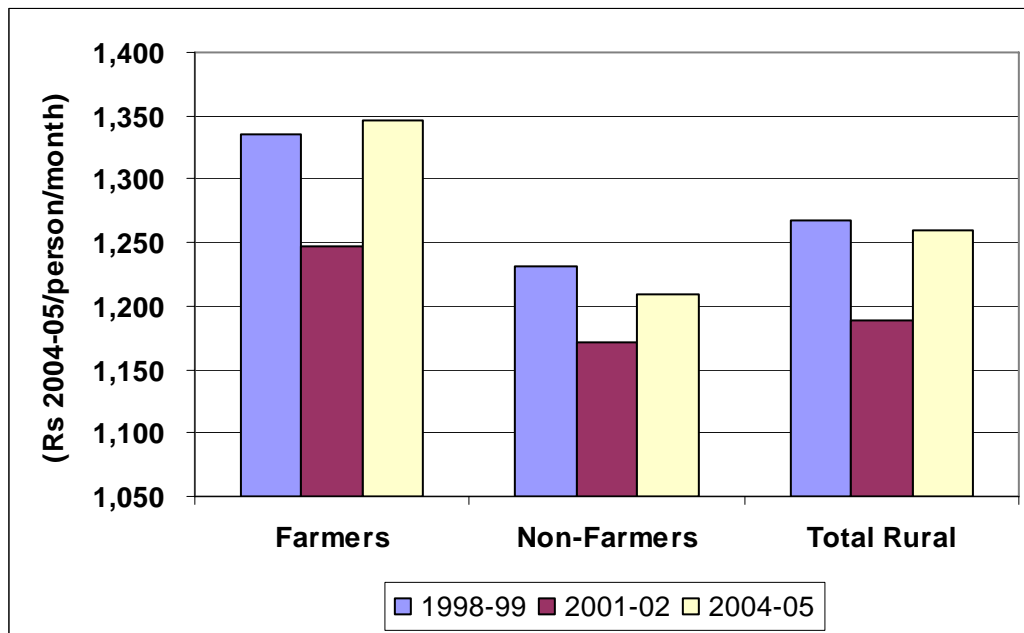


Figure A 2-4. Sindh: Real Per Capita Household Expenditures of Rural Poor Households: 1998-99, 2001-02 and 2004-05



Figure A 2-5. Real Per Capita Household Expenditures of Rural Households in NWFP, Pakistan, 1998-99, 2001-02 and 2004-05

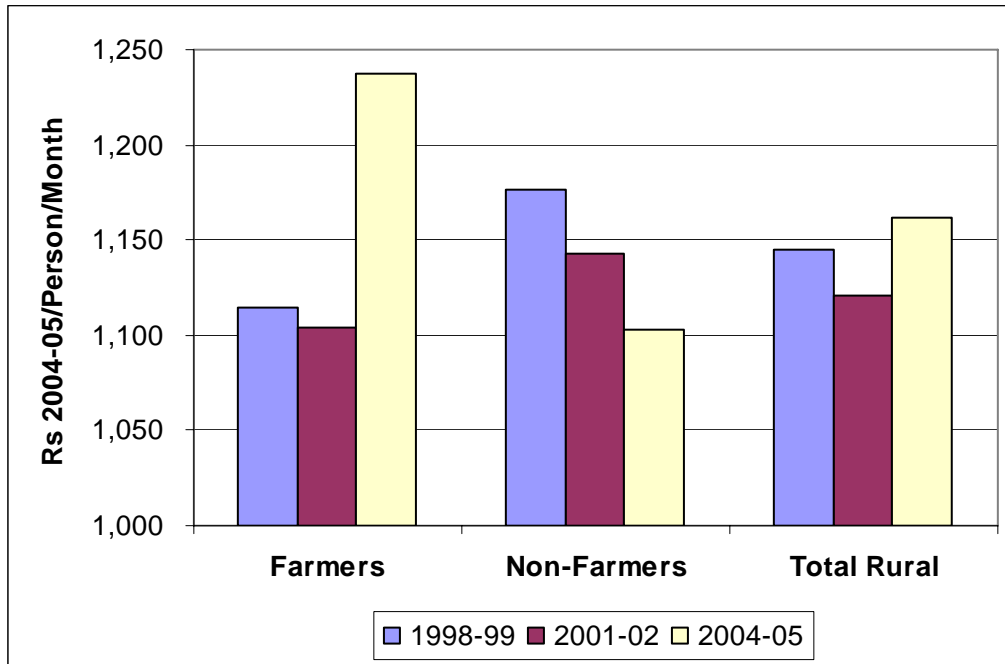


Figure A 2-6. NWFP: Real Per Capita Household Expenditures of Rural Poor Households: 1998-99, 2001-02 and 2004-05

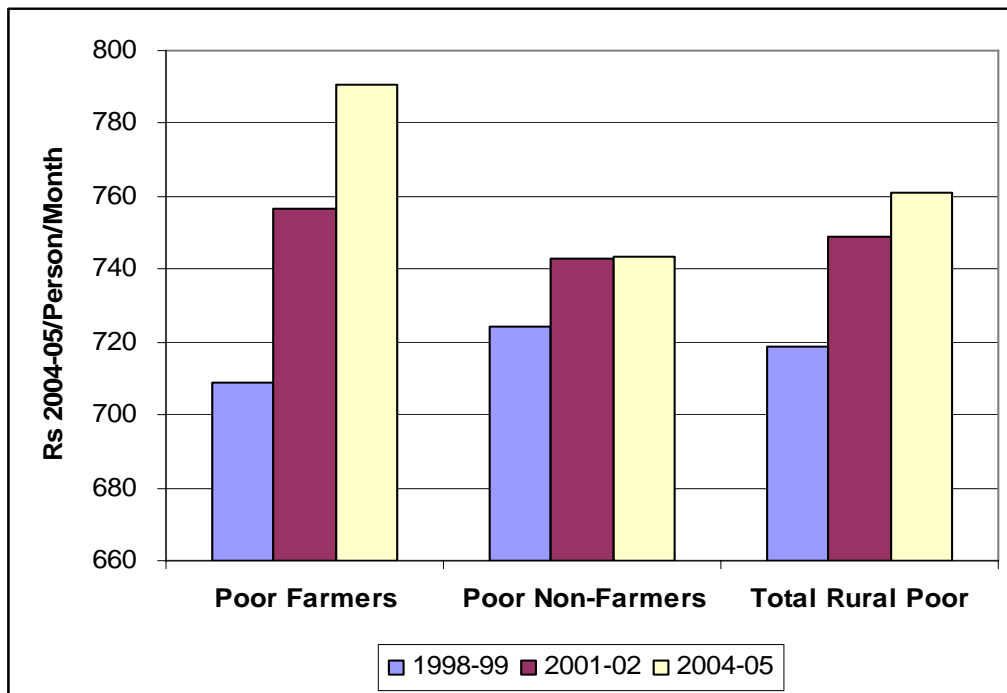


Figure A 2-7. Baluchistan: Real Per Capita Household Expenditures of Rural Households: 1998-99, 2001-02 and 2004-05

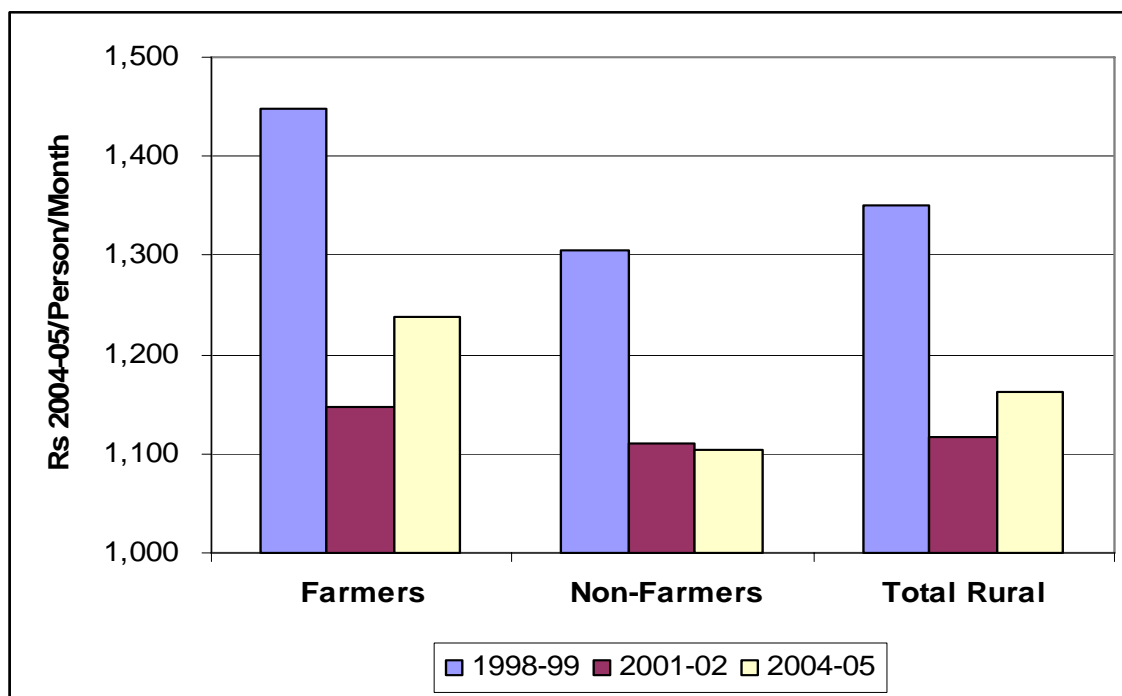


Figure A 2-8. Real Per Capita Household Expenditures of Rural Poor Households in Baluchistan, Pakistan, 1998-99, 2001-02 and 2004-05

