

A Validation Exercise on the Official Poverty Estimates for 2005-06

The Ministry of Finance recently invited the World Bank for validating the official poverty estimates from Pakistan Social and Living Standards Measurement Survey (PSLM) 2005-06.¹ This note summarizes the findings.

Poverty estimates are highly sensitive to a variety of factors, including how a poverty line is estimated and updated; which welfare measure is adopted, household expenditure or income; how the scale of household is controlled for, per capita or per adult equivalent; and how spatial price differences are controlled. Each methodology or choice has advantages and limitations. Also, poverty estimates and the trend often vary substantially depending on what methodology is selected. This suggests that the validation exercise needs to be designed carefully. For example, it is not constructive to simply point out the difference between the official poverty estimates and those based on a conceptually different methodology.

After careful considerations, the following exercises were selected for the validation purposes:

- (i) Examine whether the official poverty estimates of 2005-06 followed the official methodology and also whether they can be replicated;
- (ii) Conduct two types of sensitivity analysis:
 - a. Estimate poverty incidence of 2005-06 using the same methodology with a slightly different protocol for data cleaning;
 - b. Estimate poverty incidence of 2005-06 after updating the official poverty line of 2004-05 with an inflation rate based on a household survey based price index.

This note includes the results of the stated validation exercise and briefly introduces the results of poverty estimation.

PSLM 2005-06: Data description

PSLM 2005-06 was conducted between August 2005 and June 2006 and includes 15,453 households in the sample.² After careful data cleaning, fourteen households were dropped from the estimation since the record suggests their monthly food expenditure was zero. Nevertheless, the data quality is good in general. For example, there are a very limited number of outliers in reported quantities and expenditure figures.

Validation exercise (i): Application of official methodology and replication of the official poverty estimates

The official methodology

Using PIHS 1998-99, the Federal Bureau of Statistics (FBS) estimated the official poverty line Rs. 673.54 based on a Food Energy Intake approach with 2350 calories per adult equivalent per day as a calorie threshold. The official poverty line of 1998-99 was updated for each round of PIHS and PSLM surveys using interview months of each survey round and the corresponding monthly CPIs.³

Table 1: Estimates of poverty headcount rate (%) of 2005-06 following the official methodology		
Cleaning protocol	Official	World Bank
Pakistan	22.3	21.9
Urban	13.1	13.3
Rural	27.0	26.2
<i>Source:</i> Staff estimation using PSLM 2005-06 data		
<i>Note:</i> The numbers in column "Official" indicate poverty estimates using the official methodology including the CRPRID's cleaning protocol, while those in column "World Bank" refers to poverty estimates using the official methodology with the World Bank's cleaning protocol.		

¹ The estimates were produced by the CRPRID and are published in chapter 13 of the Economic Survey 2007-08 (see http://www.finance.gov.pk/finance_survery_chapter.aspx?id=18).

² The interview period was found from the dataset from the CRPRID.

³ See Cheema (2005) for details.

Following this procedure, the World Bank team could replicate the official poverty line of 2005/06 (Rs. 944.47). Household expenditure per adult equivalent was chosen as a measure of household welfare. A household is identified as poor if a household's expenditure per adult equivalent is below the poverty line after controlling for regional price differences using spatial price indices. The poverty headcount rate refers to the percentage of poor population identified above.

Validation

The World Bank team confirmed that the official poverty estimates followed the above official methodology accurately, and the team also successfully replicated the official estimates at the national level with the urban-rural breakdown (see Table 1's second column called "Official").

Sensitivity Analysis (ii) a: Use of a different cleaning protocol

Even though the official methodology seems clear, there is potentially large room for subjective judgments, especially in the data cleaning process. For example, like any household survey, PSLM 2005-06 includes some outliers that are likely the results of either data entry or reporting errors. Misunderstanding of unit is typical in this sort of error and causes a report of an extremely low or high quantity compared with the corresponding expenditure figure. Analysts need to make some adjustments for such errors before estimating poverty figures.

The CRPRID, where the official poverty estimates have been produced, conducted detailed data cleaning based on their rich understanding and knowledge of the ground conditions. However, some judgments are not necessarily straightforward to outsiders. Therefore, in addition to simply replicating the official methodology and their cleaning protocols, the World Bank team embarked on a more mechanical and objective cleaning protocol as a robustness check of the official estimates.

Using the slightly different cleaning protocol, the World Bank team obtained poverty estimates, which are close to the official estimates (see Table 1's third column called "World Bank").

Sensitivity analysis (ii) b: Use of a Survey Based Price Index (SBPI)

Another sensitivity analysis is to estimate poverty rates after updating the official poverty line of 2004-05 with a Survey Based Price Index (SBPI). As described above, the official methodology uses the CPI series for updating the official poverty line for every round of PIHS and PSLM survey. The CPI series have many attractive features. For example, the CPI collects prices from a long list of items, including both food and non-food items, on a regular basis. However, one issue of the CPI database is that it collects price data only from 35 cities. Since Pakistan has a significant proportion of its population in rural areas, the lack of rural price data could be problematic in estimating a nationally representative inflation rate from the CPI database. The Federal Bureau of Statistics (FBS) has been working on this issue, and is conducting a household budget survey for 75 cities to improve the representativeness of CPI in the future.

There is an alternative way to measure the inflation between two household surveys, called a Survey Based Price Index (SBPI). The PIHS and PSLM surveys include a detailed consumption module with information on both quantities and expenditures for many food and some non-food items. The alternative methodology constructs a database of budget shares and prices (more precisely, unit values) for most of food and some of fuel items from the household surveys, with which the inflation rate between two household surveys is computed.

A SBPI is attractive since: (i) it covers both urban and rural areas; and (ii) prices in the database reflect the actual transactions of households. However, it has some weaknesses as well. For example, PIHS and PSLM consumption modules do not include quantity information for most of non-food items (the only exceptions are some of fuel items). Since the non-food items are

increasingly important for households in Pakistan, ignoring the non-food items from the price index could create a large bias. Another issue is that PSLM 2005-06 reduced the number of items that can be used for constructing a SBPI. As a result, only 59 items could be used for estimating the inflation rate between 2004-05 and 2005-06. With these limitations, the SBPI might not be a perfect substitute for the CPI series in the context of Pakistan, but it is still useful to gauge the potential bias of the CPI due to its lack of coverage for rural areas.⁴

According to the SBPI, the inflation between 2004-05 and 2005-06 is estimated to be 9.4 percent, which is nearly 2 percentage points higher than the CPI based inflation estimate of 7.5 percent. Since the SBPI could be sensitive to the selection of items, some robustness tests were conducted by dropping or adding items. The World Bank team found that such small changes in the selection of items did not matter much.⁵

If the official poverty line of 2004-05 were updated with the SBPI based inflation rate, the national poverty headcount rate of 2005-06 would be 23.4 percent, which is just 1.1 percentage points higher than the official estimate (22.3 percent), and almost no change from the official estimate of 2004-05 (23.9 percent).

This suggests that even if the SBPI-based inflation rate were used to update the official 2004-05 poverty line for 2005-06, the national poverty estimate would decline, but the reduction would not be statistically significant and consistent with the estimates presented above.⁶

Brief summary of the results of poverty estimation

Urban-Rural breakdown over time

Like the national level, both urban and rural areas recorded large reduction in poverty headcount rates between 2000-01 and 2004-05 while they recorded little reduction between 2004-05 and 2005-06 (see Table 2).⁷ Another observation is that the poverty estimate in urban areas is less than half that of rural areas in 2005-06 – this is the first time since 1998-99.

	1998-99	2000-01	2004-05	2005-06
National	31.1	34.5	23.9	22.3
Urban	21.4	22.7	14.9	13.1
Rural	35.1	39.3	28.1	27.0

Source: All poverty headcount rates are the official estimates.

Provincial poverty estimates

We now present spatially disaggregated poverty estimates at the provincial level. Note that the official estimates do not include the provincial estimates. Therefore, all figures here are the results of the World Bank staff estimation.⁸

⁴ See more details of comparison between the SBPI and the CPI in Annex 2.

⁵ The team has also estimated the inflation rate for rural and urban areas, separately. The inflation rate for urban areas is estimated to be 9.3 percent, which is slightly smaller than that of rural areas, 10.0 percent. CPI likely reflects inflation in urban areas, but there remains some difference between the SBPI based inflation rate for urban areas and the CPI based inflation rate. Further analysis would be needed to understand the causes of this gap between the CPI based and the urban SBPI based inflation rates.

⁶ Further details are available in Annex 3.

⁷ Following the convention of Economic Surveys, the poverty estimates of 2000-01 refer to estimates from PIHS 2001-02.

⁸ Consumption data used for estimating provincial poverty rates in Table 3 are slightly different from the official dataset, because the World Bank team embarked on a slightly different cleaning protocol from the official one to create the consumption database. However, as shown in Table 1, the impact on the poverty estimates is minimal.

Table 3 shows trends in provincial poverty estimates since 1998-99. As the Poverty Assessment (World Bank, 2002) cautioned, poverty estimates for Balochistan should be interpreted with proper caveats since sampling and non-sampling errors tend to be higher in Balochistan than other provinces due to its large area with scattered population and diverse socio-economic conditions.

Province	1998-99		2000-01		2004-05		2005-06	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Punjab	23.9	33.0	23.4	34.8	16.8	28.4	12.1	21.0
Sindh	14.9	34.3	20.3	48.0	10.8	22.7	11.5	31.0
NWFP	26.1	43.9	30.4	44.3	22.1	34.5	23.6	28.0
Balochistan	24.5	21.1	27.3	39.0	17.9	28.7	32.4	56.6

Source: World Bank staff estimation using their datasets from PIHS 1998-99, 2001-02, and PSLM 2004-05 and 2005-06
Note: The official consumption data for 1998-99, 2000-01, and 2004-05 are not available to the World Bank team. Instead, the World Bank team constructed consumption data using the cleaning protocol mentioned in the sensitivity analysis (ii) a.

Poverty headcount rates register a substantial increase in rural Sindh and Balochistan between 2004-05 and 2005-06, but in contrast, the poverty rates in both rural Punjab and NWFP have declined substantially (see Table 3). It is interesting to see that the volatility of poverty estimates in rural Sindh and Balochistan are consistent with the growth rates of major crops. In both 2000-01 and 2005-06, rural Sindh and Balochistan experienced substantial increase in poverty while major crops recorded negative growth rates. On the other hand, in 2004-05, when the annual growth rate of major crops was a record-high in a decade – 17.7 percent, we observe a huge reduction in poverty incidence in both rural Sindh and Balochistan.

In urban areas, poverty incidence in Punjab kept declining at an accelerating pace. On the other hand, Balochistan recorded a sizeable increase in poverty between 2004-05 and 2005-06. For both urban and rural areas, further analysis will be needed to understand the factors that drive the observed poverty trends.

Statistical significance of poverty reduction in the reported estimates between 2004-05 and 2005-06

As shown above, the national poverty headcount rate declined between 2004-05 and 2005-06. However, poverty headcount rates of both rounds are estimates and involve sampling errors.⁹ One way to assess the margin of error due to sampling is to construct the 95 percent confidence interval of each poverty estimate – the range of values which includes the true level of poverty incidence with a probability of 95 percent. For example, according to Table 4, the true rate of poverty incidence of 2005-06 can be in the range between 21 percent and 23.7 percent with a probability of 95 percent.

Survey year	Head Count	95% Conf. Interval	
		Lower bound	Upper bound
2005-06	22.3	21.0	23.7
2004-05	23.9	22.6	25.3

Source: CRPRID's staff estimation

Once sampling errors are taken into account, it is not obvious whether the true poverty incidence declined between 2004-05 and 2005-06. It is true that the poverty estimate declined 1.6 percentage points between 2004-05 and 2005-06. But it is possible that the true incidence of poverty of 2004-05 is 23 percent while that of 2005-06 is 23.5 percent, resulting in an increase in poverty incidence between 2004-05 and 2005-06. In fact, a more formal statistical test confirmed

⁹ In fact, non-sampling errors also exist but there is no systematic way to quantify the margin of the non-sampling error.

that the reduction in poverty estimates between 2004-05 and 2005-06 is not statistically significant (see Annex 1 for more details).

Concluding remarks

The World Bank team endorses the official estimates of 2005-06. The team found the official poverty estimates of 2005-06 followed the official methodology accurately. The team could also validate the reliability of the estimates after various sensitivity analyses. The main finding is that the poverty estimate at the national level declined slightly between 2004-05 and 2005-06, but the reduction is not statistically significant.

The World Bank is currently preparing a new poverty assessment, which will further deepen the analysis conducted in the context of this validation exercise and include more detailed poverty diagnostics to understand the status of the poor in a comprehensive manner.

This note concludes with the following remarks:

1. PSLM 2005-06 might not be the best dataset to assess some recent economic issues, particularly high inflation in food and fuel prices. The survey was conducted nearly three years ago and the economic and social circumstances might have changed significantly since then. Also, 2005-06 was a year during which the economy was growing at a reasonably high rate and the inflation was not accelerating at the current pace. While projections about the impact of high inflation on the poor can be done with PSLM 2005-06, the ongoing survey, PSLM 2007-08, would be the best database for the analysis.
2. One year interval for household surveys is likely too short to elicit useful information for policy makers and development partners. One year is often not enough to cause a substantial change in poverty estimates beyond the margin of error due to sampling; as a result, it is difficult to distinguish the change is real or just a reflection of sampling errors. Monitoring poverty incidence in a slightly longer interval (three to five years) likely provides more statistically accurate information.
3. Poverty estimates and trends at the province level would be useful for policy makers. So far, the official poverty estimates have been produced only at the national level with the urban-rural breakdown. Even though the estimates show that the poverty incidence did not change much at the national level or in rural and urban areas, this does not mean all provinces experienced the same trend. In fact, the above preliminary analysis suggests that the national level poverty incidence and its trend mask dynamics of poverty at the province level. Since Pakistan is a large country with rich diversity in socio-economic conditions across provinces, such a province level breakdown of poverty data would be useful for policy makers to design effective poverty alleviation policies and strategies.

Annex

Annex 1: Testing statistical significance for changes in poverty estimates

Poverty headcount rates reported in this note are all estimates from sample surveys like PIHS and PSLM surveys and involve certain margins of errors due to both sampling and non-sampling. The sampling errors of a poverty estimate can be calculated based on the sampling frame although the non-sampling errors cannot be measured. Recently, widely-used statistical software like STATA includes a function to estimate the standard error of statistics from a sample survey once basic sampling information is provided. The statistical significance of changes in poverty estimates is computed using the standard error of each poverty estimate assuming each round of household survey is statistically independent from other rounds. Specifically, the standard error of change in poverty estimates between different rounds is computed using the following formula:

$$\sqrt{(\sigma_t^2 + \sigma_{t+s}^2)}$$

where σ_t and σ_{t+s} refer to standard errors of poverty estimates of period t and $t+s$, respectively. If the absolute term of change in poverty estimates is larger than $1.96 * \sqrt{(\sigma_t^2 + \sigma_{t+s}^2)}$, then the change is statistically significant at 5 percent in that a null hypothesis that the change is zero is rejected at 5% significance level.

Following the above procedure, it is tested whether changes in poverty estimates between two adjacent surveys were statistically significant. As Table A-1 shows, the increase in the national poverty rate between 1998/99 and 2000/01 and the reduction between 2000/01 and 2004/05 are both statistically significant. However, the reduction between 2004/05 and 2005/06 is not statistically significant.

Table A-1: Changes in the official estimates of poverty headcount rates with statistical significance at 5% (percentage points)

	98/99-00/01	00/01-04/05	04/05-05/06
National	3.4*	-10.6*	-1.6
Rural	4.2*	-11.2*	-1.1
Urban	1.3	-7.8*	-1.8

Source: The World Bank staff calculations based on the CRPRID's estimates on standard errors for the official poverty estimates

Note: * refers to significance at 5 percent.

Annex 2: Description of a Survey Based Price Index (SBPI)

One way to estimate an inflation rate is to construct a survey based price index. Like a typical Consumer Price Index, a survey price index is constructed from information on prices and budget shares of major consumption items. The main difference is that the SBPI collects information on prices and budget shares from household surveys. For this exercise, the SBPI is computed as a Tornqvist index, which is a weighted geometric index where: (a) Weight of every commodity k in the index is the simple average of the weights of commodity k in base and final periods; (b) Weight of commodity k in either period is the average of the shares of commodity k in the total expenditure of each household in that period. In contrast to (a), the CPI for every year is computed as a Laspeyres index, which uses fixed weights of the base period, which in the case of Pakistan is 2000-01. The use of Laspeyres' index with weights fixed at the base year level is likely to lead to overestimation of the effect of price increase on welfare, when the CPI is used to deflate the poverty lines, since it does not allow for substitution in consumption in response to inflation. Moreover, the fact that the weights are fixed according to the consumption bundle of 2000-01 implies that the CPI does not capture any change in consumption pattern that may have occurred over time due to changing tastes.

The CPI also differs from the SBPI in the context of point (b) above. In the case of CPI, the weight of commodity k in a period is equal to its share in the total consumption expenditure in that period. Since the better-off consumers are likely to spend more, this method will weight the

price index in favor of the consumption pattern of the wealthy – a property that has been termed as “plutocratic”. In contrast, the SBPI is by construction a “democratic” measure, since by taking the simple average of all shares, it gives all households equal importance in the weights used to compute the price indices. Incidentally, the CPI will always be a plutocratic measure – not being a household survey, it has no information on the share of a commodity in the expenditure of every household, but can discern the share of a commodity in total consumption expenditure from price and quantity information available from the market surveys conducted for the purpose. The question of which type of price indices better represents the “true” change in cost of living does not have a conclusive answer. Some of the salient points to consider in comparing between the two measures are listed below.

- ❑ The SBPI uses a more current consumption bundle from the surveys, and also takes into account substitution in consumption, unlike the CPI (see (a) above).
- ❑ In the context of (b) above, democratic measures including SBPI are more suitable to measure changes in living standard of the poor than plutocratic measures, e.g., CPI.¹⁰
- ❑ The SBPI uses information on prices and budget shares from both urban and rural areas while the CPI uses the information from urban areas only. If the inflation rate varies a lot between urban and rural areas, the CPI might be misleading.
- ❑ One drawback of the SBPI is that it can only incorporate homogenous goods like food items and fuels. Since a price index to adjust poverty lines must include a broader list of items, an adjustment is made to extrapolate from the food price index calculated from the surveys.
- ❑ The SBPI might provide a wrong picture on inflation rate if two or more distinct goods are included within a single commodity. This possibility may not be negligible in PIHS 2004-05 and PSLM 2005-06 surveys since the SBPIs include 59 items whereas CPI includes over 300 items.

The list, median prices and budget shares of all 59 items are attached below (Table A-2). See Deaton and Tarozzi (2005) for further details.

¹⁰ Note that even a SBPI using such “democratic” weights – although more representative of prices faced by the poor than the CPI – would be different from indexes calculated specifically for the poor.

Table A-2: Comparison of Median Price and Mean Budget Share for PSLM 2004/05 and 2005/06

Item	PSLM 2004/05			PSLM 2005/06		
	Code	Median Price	Mean Budget Share	Code	Median Price	Mean Budget Share
Milk (fresh & boiled)	1101	16.00	0.182	1101	20.00	0.192
Milk (packed by milk plants)	1103	32.00	0.003	1102	40.00	0.005
Milk, Powdered (for adults & children)	1104	0.18	0.002	1103	0.23	0.002
Curd / Yoghurt, Lassi (buttermilk)	1107	24.00	0.015	1104	25.00	0.019
Butter, Margarine, Cream, Cheese	1105	0.18	0.009	1105	0.18	0.008
Beef	1201	90.00	0.049	1201	100.00	0.033
Mutton	1202	194.29	0.016	1202	200.00	0.019
Chicken Meat (fresh, frozen) / Other poultry birds (ducks, quail, turkey etc.)	1203	100.00	0.034	1203	100.00	0.034
Eggs	1204	3.00	0.013	1204	3.00	0.010
Fish (fresh, frozen, dried)/ Prawns, Shrimps or Crabs (fresh, frozen, canned)	1206	90.00	0.008	1205	90.00	0.007
Banana	1301	1.60	0.011	1301	1.67	0.007
Citrus fruits (Mosummi, Malta, Kinno etc.)	1302	16.00	0.005	1302	15.00	0.005
Apple	1303	28.00	0.010	1303	33.33	0.008
Dates	1304	40.00	0.003	1304	40.00	0.001
Grapes	1305	45.00	0.001	1305	50.00	0.002
Mango	1306	25.00	0.001	1306	25.00	0.004
Potato	1501	14.00	0.030	1501	18.00	0.029
Onion	1502	14.00	0.024	1502	12.00	0.019
Tomato	1503	20.00	0.013	1503	16.00	0.010
Cabbage, Cauliflower	1504	15.00	0.010	1504	15.00	0.006
Karaila, Lady finger, Brinjal, Cucumber	1505	15.00	0.008	1505	18.33	0.009
Tinda, Pumpkin, Bottle Gourd	1506	15.00	0.005	1506	15.00	0.006
Radish, Turnip, Carrot	1507	10.00	0.006	1507	10.00	0.004
Peas, Moongra	1508	20.00	0.005	1508	20.00	0.008
Salt Simple (rock and sea)	1601	4.00	0.002	1601	4.00	0.002
Salt (Iodised)	1602	9.00	0.001	1602	10.00	0.001
Chillies, red	1603	0.08	0.013	1603	0.08	0.011
Turmeric, Coriander seed	1604	0.10	0.005	1604	0.10	0.005
Ginger	1605	0.10	0.004	1605	0.08	0.003
Garlic	1606	0.04	0.005	1606	0.06	0.007
Sugar (Desi or Milled)	1701	23.00	0.054	1701	32.00	0.073
Gur / Shakkar	1702	22.00	0.006	1702	35.00	0.006
Honey (fresh or processed)	1703	0.20	0.000	1703	0.24	0.000
Confectionery (Toffee, Chocolate, Chewing gum etc)	1704	1.00	0.002	1704	1.00	0.004
Barfi, Jaleebi, Halwa & other sweetmeats	1705	80.00	0.006	1705	100.00	0.005
Carbonated beverages	1801	28.00	0.005	1801	33.33	0.008
Squashes & Syrups (not medicated)	1802	70.00	0.001	1802	70.00	0.002
Wheat and Wheat flour	2101	13.00	0.180	2101	13.00	0.171
Rice and rice flour	2102	25.00	0.035	2102	25.00	0.035

Maize, Barley, Jawar and Millet (Whole and Flour)	2103	12.00	0.003	2103	13.00	0.001
Suji, Maida, Besan	2104	25.00	0.002	2104	32.00	0.002
Gram Whole (Black and White)	2201	36.00	0.004	2201	40.00	0.003
Dal chana	2202	32.00	0.008	2202	35.00	0.007
Mash	2203	40.00	0.004	2203	48.00	0.004
Moong	2204	36.00	0.006	2204	42.00	0.006
Masoor	2205	40.00	0.004	2205	48.00	0.005
Desi Ghee	2301	200.00	0.009	2301	250.00	0.007
Vegetable Ghee	2302	60.00	0.074	2302	60.00	0.070
Cooking Oils, Other oils and fats	2303	65.00	0.012	2303	65.00	0.015
Tea (black, green loose & packed)	2401	0.24	0.028	2401	0.24	0.026
Biscuits (Sweet & Saltish)	2501	0.08	0.005	2501	0.08	0.004
Bread, Bun, Sheermal	2502	11.00	0.003	2502	12.00	0.002
Tandoori Roti, Nan, Kulcha, Puri, Paratha	2505	2.50	0.002	2503	3.00	0.002
Fire wood	2701	2.00	0.039	2701	2.00	0.040
Kerosene oil	2702	30.00	0.006	2702	36.00	0.004
Char coal	2703	3.00	0.000	2703	2.50	0.000
Coal hard & soft peat	2704	10.00	0.000	2704	10.00	0.000
Dung cake (dry)	2705	1.20	0.007	2705	1.25	0.009
Beggasses, Agricultural wastes for fuel purposes (cotton sticks,sawdust, shrubs, weeds, tobacco sticks, etc.),	2710	1.00	0.009	2709	1.00	0.013

Annex 3: Updating poverty lines with the SBPIs and a caveat for trend analysis

The objectives of the validation exercise are to examine whether the official estimates of 2005-06 follows the official methodology, and also to check whether the results would not change much even if a slightly different procedure were adopted.

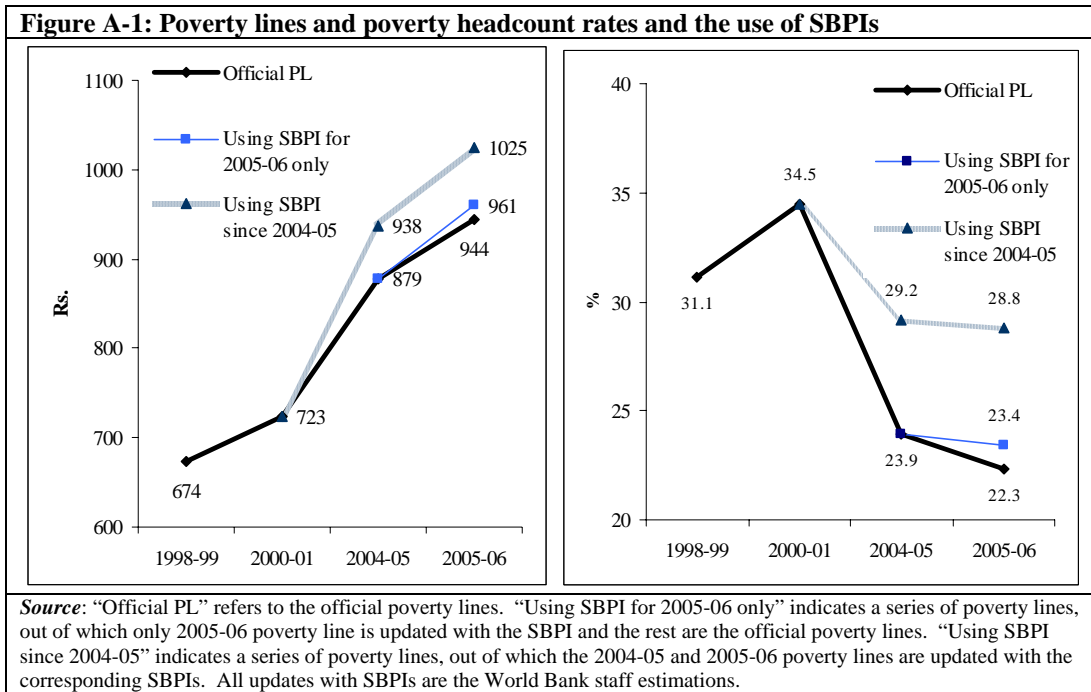
As one of such validation exercises, the 2004-05 official poverty line was updated with the SBPI-based inflation rate and the national poverty headcount rate of 2005-06 were estimated. From Figure A-1, we can see how the trends of poverty lines and the national poverty headcount rates would differ by comparing the trends of “Official PL” with those of “Using SBPI for 2005-06 only”. It is clear that the impact of replacing the CPI with the SBPI for estimating the 2005-06 poverty line is minimal; therefore, it is concluded that the official poverty headcount rate of 2005-06 is robust to a slight change in the selection of price index to update the 2004-05 official poverty line.

A caveat for poverty trend analysis

In general, poverty estimates based on different methodologies/procedures are not comparable because they often vary dramatically depending on the methodologies selected, and how to estimate the official poverty lines is a major methodological choice that the government needs to make.

In this sense, to conduct trend analysis for the period between 2004-05 and 2005-06 properly, it is important to check whether both poverty estimates of 2004-05 and 2005-06 are based on the same methodology/procedure. For example, during the previous validation exercise, the World Bank attempted a different estimation procedure for the 2004-05 poverty line differently (updating the 2000-01 poverty line with the SBPI-based inflation rate) as a robustness check, and found 29.2 percent of population would be poor in 2004-05 if it were used. This estimate should not be compared with any of the above estimates because the current validation exercise was done based on the official poverty line of 2004-05.

Figure A-1 shows how to estimate the 2004-05 poverty line has a large impact on poverty lines and estimates for both 2004-05 and 2005-06. If the 2005-06 poverty headcount rate were estimated based on the alternative poverty line of 2004-05, it would be 28.8 percent (see the trend of “Using SBPI since 2004-05” in Figure A-1), only 0.4 percentage reduction between 2004-05 and 2005-06. Interestingly, *the trend of poverty estimates since 2004-05 is similar to that of the official poverty estimates – a statistically insignificant reduction in poverty estimates between 2004-05 and 2005-06.*



Reference

- Cheema, I. (2005), “Revisiting Poverty Line 2000-01,” CRPRID Discussion Paper No. 2.
- Deaton, A. and A. Tarozzi (2005), “Prices and Poverty in India,” Chapter 16 in Deaton and Kozel (2005), *Data and Dogma: The Great Indian Poverty Debate*, New Delhi, Macmillan India.
- World Bank (2002), *Pakistan - Poverty assessment : poverty in Pakistan - vulnerabilities, social caps, and rural dynamics*, report no. 24296, World Bank, Washington DC.
- World Bank (2005), *Summary of key findings and recommendation*, available on www.worldbank.org/sarpoverty and select Pakistan from “Countries”.