



Research Report No. 69

**UPDATING POVERTY AND
INEQUALITY ESTIMATES:
2005 PANORA**

SOCIAL POLICY AND DEVELOPMENT CENTRE

**UPDATING POVERTY AND
INEQUALITY ESTIMATES:
2005 PANORAMA**

Haroon Jamal

June 2007

DISCLAIMER:

The views expressed in this Research Report are those of the author and do not necessarily represent those of the Social Policy and Development Centre (SPDC). Research Reports describe research in progress by author (s) and are published to elicit comments and to further debate.

**UPDATING POVERTY AND INEQUALITY ESTIMATES:
2005 PANORAMA**

by

Haroon Jamal

SUMMARY

Social Policy and Development Centre (SPDC) keeps track records of inter-temporal changes in poverty incidence by using the consistent methodology for defining and computing national and regional poverty lines and poverty incidences. This research paper provides latest estimates of poverty for the year 2004-05, by using unit record survey data and by adopting consistent methodology.

1. BACKGROUND

The Government of Pakistan (GoP) has declared a reduction of 10.6 percentage points in the poverty incidence of the country during 2001-05, based on the latest available household survey data. According to the Pakistan Economic Survey 2005-06, poverty declined from 34.46 percent during 2001, to 23.94 percent in 2005. This decline has been witnessed in rural as well as urban areas of the country. In urban areas, the incidence of poverty reduced from about 22.69 percent during 2001, to 14.94 percent in 2005. In rural areas, it declined to 28.1 percent during 2005, compared to 39.26 percent in 2001. The Survey also reports that the poverty line of 2004-05 is adjusted by the inflation rate (Consumer Price Index - CPI) during 2001-05.

On the contrary, the World Bank (WB) report on Pakistan's poverty¹ objects to using CPI for inflating 2000-01 poverty line and instead suggests using the survey based prices index – Tornqvist Price Index (TPI). The report concludes; “In summary, we strongly recommend using the TPI based inflation to update the 00-01 poverty line for 04-05, which yields a poverty headcount of 29.2 percent. This will imply a decline in poverty of 5.2 percentage points between 00-01 and 04-05.”

However, one should be aware how TPI is calculated and what are its drawbacks. TPI can only incorporate homogenous goods like food items and fuels. Moreover, the household survey does not report on quantities of non-food items consumed and provides only expenditures. The WB report recounts, “since a price index to adjust poverty line must include a broader list of items, an adjustment is made to extrapolate from the food price index calculated from the surveys. This procedure, for this analysis, involves using the ratios of price indices between different commodity groups from the CPI, which introduces an element of arbitrariness into the TPI measure.” The extent of adjustment in TPI can be ascertained from the fact that TPI includes only 75 items, whereas CPI includes more than 300 items. Further, TPI might provide a wrong picture on the inflation rate if two or more distinct goods are included within a single commodity. Perhaps having the drawbacks of TPI in mind, the WB Country Director to Pakistan

¹ For detail visit [www.siteresources.worldbank.org/INTSAREGTOPPOVRED/1337567-1152551765388/20987772/PovertyHCR2000-2005.pdf]

– John Wall in his op-ed narrates, “Under the CPI, poverty headcount dropped by 10.6 percent, under the Survey Based Index (TPI) it dropped by five percent. Those two estimates probably capture the extremes. A less flawed price index might well find a third estimate in between these extremes”.

In this backdrop and in the absence of any appropriate price index for inflating poverty line of 2000-01, it is perhaps logical to re-compute the poverty line from the latest survey to circumvent such colossal differences.

SPDC keeps track records of inter-temporal changes in poverty incidence by using the consistent methodology for defining and computing national and regional poverty lines and poverty incidences. This research note provides latest estimates of poverty for the year 2004-05, using unit record survey data and adopting consistent² methodology.

The paper uses Pakistan Social and Living Standard Measurement Survey (PSLM) 2004-05. Household Integrated Economic Survey (HIES) section of the PSLM is mainly used for the estimation of monetary poverty. The HIES includes standard and detailed consumption modules and is traditionally used to estimate poverty in Pakistan.

The paper is organized in the following manner. A brief description of the methodology for computing the poverty line is produced in section 2. Subsequently, section 3 presents estimates of the poverty line and poverty aggregates during 2004-05. An inter-temporal comparison is also furnished in this section. Consumption and income inequality estimates are presented in section 4, followed by a conclusion in the final section.

2. METHODOLOGY BRIEF

For an inter-temporal comparison of the poverty line and estimates of poverty aggregates (incidence, depth and severity), it is essential to adhere to consistent methodology and calorie norms. The methodology adopted in Jamal (2002), to estimate poverty for the years 1987-88,

² In Jamal (2002, 2005), constant methodology is applied to estimate poverty for the years 1987-88, 1996-97, 1998-99 and 2000-01. Similar methodology is applied in this paper for the 2004-05 period.

1996-97,1998-99 is applied to the latest available household survey data (PSLM–HIES, 2004-05). The details of various methodological options and recommended steps are provided in the paper (Jamal, 2002). Only a brief description of the major steps to compute the poverty line and poverty is discussed below.

To compute the poverty line, calorie norms (cutoff points) and estimated coefficients of the Calorie-Consumption Function (CCF) are required. The idea is to get the estimates of total household expenditure required to obtain the minimum required calories. This paper follows the 2550 and 2230 calories per day per adult as calorie norms (minimum requirement)³ for rural and urban areas, respectively. Household food consumption is translated into calories using Food Consumption Tables for Pakistan (GoP, 2001).

The CCFs are estimated separately for urban and rural areas. It is argued that consumption behavior, purchasing patterns, dietary habits, taste and ecology are significantly different for urban and rural groups. Following Jamal (2002), these functions are estimated from the lowest quartile of distribution after ranking households by per capita expenditure. Household per adult daily calorie consumption is regressed on total household expenditure (excluding taxes). The functional form is chosen on the basis of maximization of R^2 criterion. Nonetheless, other statistical tests are also applied before choosing the functional form. The results of these functions are furnished in Appendix (Table A–1). The estimated coefficients of calorie-consumption functions are applied to derive the poverty line for urban and rural areas.

Once a poverty line is defined, and the household poverty status is determined through relating poverty line and household consumption, the task is how to aggregate this information into a single index to proxy the status of a group of individuals. The issues in this regard primarily relate to assigning weights to differing intensities of poverty (Foster et.al., 1984). The most popular measure, namely the Head Count Index (HCI) assigns equal weights to all the poor regardless of

³ The Poverty line and, hence, poverty incidence is very sensitive to a change in calorie norms or cutoff points. Therefore, it is highly recommended to adhere to a cutoff point, whatever it may be, for inter-temporal comparison of poverty incidence and the poverty line. Same calorie norms are used for 1987-88, 1996-97, 1998-99, 2000-01 and 2004-05.

the extent of poverty. There are several other measures, which have been suggested. These measures are sensitive to distribution among the poor. A class of functional forms, which has been suggested by Foster, Greer, and Thorbecke (FGT), uses various powers of the proportional gap between the observed and the required expenditure as the weights to indicate the level of intensity of poverty. The higher the power the greater the weight assigned to a given level of poverty. It therefore, combines both the incidence and intensity. The following formula is used for measuring various poverty aggregates.

$$P^\alpha = (1/N) \sum [(Z - EXP) / Z]^\alpha$$

Where;

P^α	= Aggregation measure
N	= Total number of households
EXP	= Observed household expenditure
Z	= Poverty line
\sum	= Summation for all individuals who are below the poverty line

Putting $\alpha = 0$, the formula shows the HCI, i.e., proportion of households whose consumption fall below the poverty line. This simple measure ignores the depth of poverty. Putting $\alpha = 1$, the Proportionate Gap Index or Poverty Gap Index (PGI) is calculated. It measures the average distance from the poverty line. Although, PGI shows the depth of poverty, it is insensitive to the distribution among the poor. Putting $\alpha = 2$, FGT2 index is calculated. The index takes into account inequality amongst the poor and shows the severity of poverty by assigning greater weights to those households who are far from the poverty line.

3. POVERTY EMPIRICS

Table 1 displays computed poverty lines from estimated calorie consumption functions. Direct estimation of the national poverty line is not attempted because separate calorie-consumption functions are estimated for urban and rural areas. A population weighted average national poverty line, however, turns out as Rs.840 per capita per month at the prices of HIES 2004-05 Survey⁴.

⁴ The official national poverty line is Rs878.64 per adult equivalent per month. However, the GoP does not notify separate poverty lines for urban and rural areas.

TABLE 1		
ESTIMATED POVERTY LINES [2004-05]		
	Urban	Rural
Per Day Calorie Requirements – Per Adult Equivalent Unit	2230	2550
Per Day Calorie Requirements – Per Capita **	1901	2117
Poverty Line – Rupees Per Capita Per Month	990	778
** In order to ease in interpretation, minimum calorie requirements are converted into per capita term using household demographic data and proportionate minimum requirements. The minimum requirements by age and sex are available in Food Consumption Table for Pakistan (GoP 2001).		
Source: Author's estimates based on PSLM/HIES, 2004-05		

The estimated poverty lines for urban and rural areas are mapped on household per capita total expenditure for computing various poverty aggregates. Table 2 displays these measures of poverty during 2004-05. Overall, 30 percent of the population was poor, according to the above definition of poverty and the poverty line. The incidence and depth of rural poverty are high as compared to the urban areas, whereas urban poverty severity is high as compared to its rural counterpart.

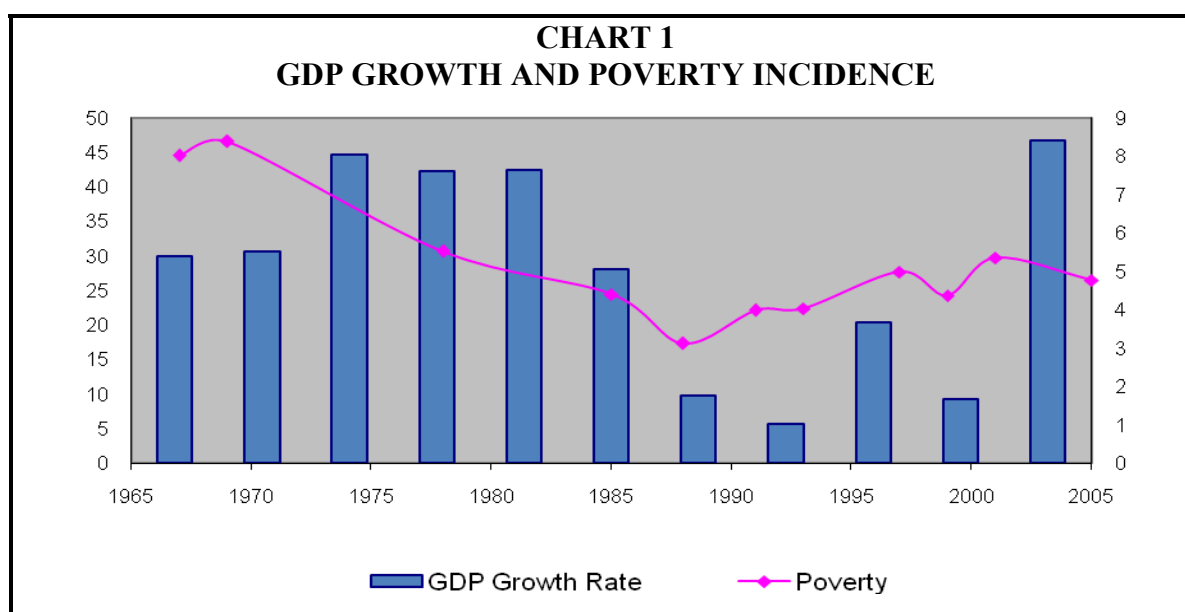
TABLE 2			
ESTIMATES OF POVERTY MEASURES, 2004-05			
<i>[Percent of Poor Individuals]</i>			
	Head Count Index [Incidence]	Poverty Gap Index [Depth]	FGT2 Index [Severity]
Pakistan	29.85	6.51	2.13
<i>Urban</i>	27.70	6.62	2.29
<i>Rural</i>	30.85	6.45	2.06
Source: Author's estimates based on PIHS-HIES, 2004-05			

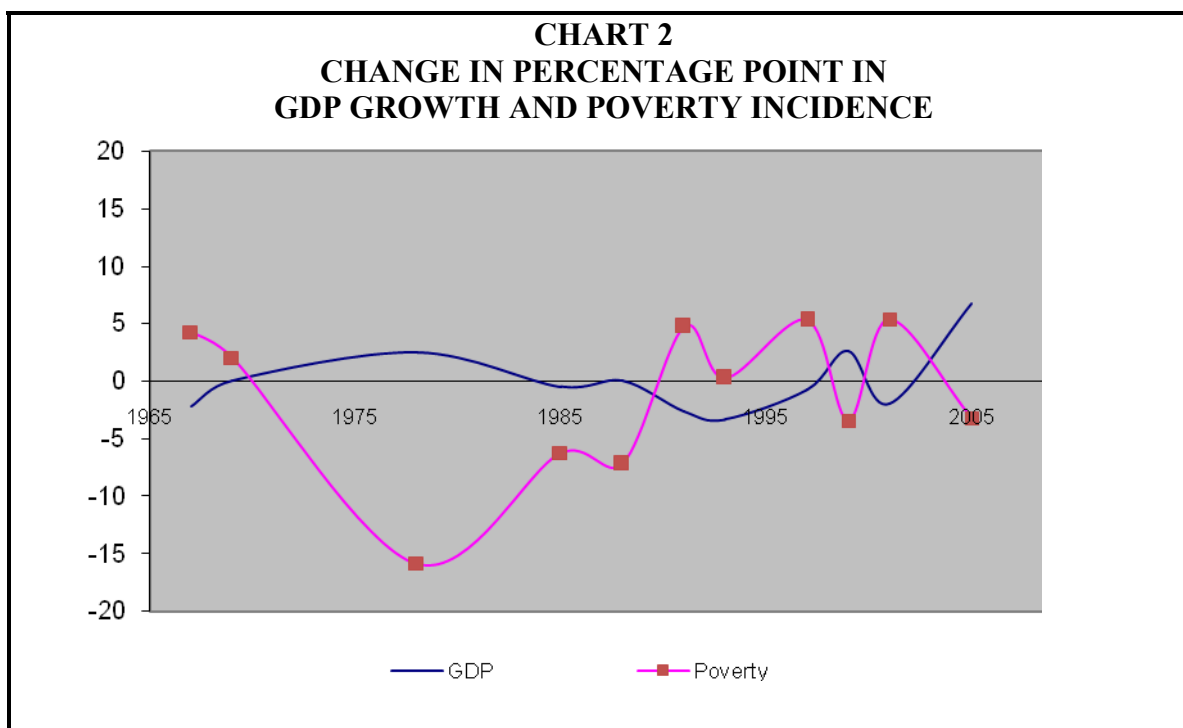
Table 3 compares recent poverty estimates with 2000-01 figures. Our estimates show a decline of about 3.52 percentage points (as against the GoP's claim of 10.6 percentage points) in poverty incidence during last three years. Table 3 also reveals an improvement in terms of the depth and severity of poverty. The incidence figures propose that about 46 million people were below the poverty line during 2004-05, as against 47 million during 2001-02.

Apart from the disagreement with the official numbers, the reduction in poverty however, does not come as a surprise. The overall average Annual Growth Rate (AGR) of the economy during 2001-05, was nearly six percent compared to only 3.3 percent each year during the preceding four years. There is consensus among researchers and analysts that economic growth may not always be a sufficient condition for poverty reduction but it certainly is a necessary one. To illustrate the point,

	2001	2005	Percent Change	Percentage Points Change
<i>Poverty Incidence (HCI)</i>				
Pakistan	33.37	29.85	-10.55	-3.52
Urban	30.24	27.70	-8.40	-2.54
Rural	34.65	30.85	-10.97	-3.80
<i>Poverty Depth (PGI)</i>				
Pakistan	7.16	6.51	-9.08	-0.65
Urban	7.10	6.62	-6.76	-0.48
Rural	7.18	6.45	-10.17	-0.73
<i>Poverty Severity (FGT2 Index)</i>				
Pakistan	2.27	2.13	-6.17	-0.14
Urban	2.41	2.29	-4.98	-0.12
Rural	2.21	2.06	-6.79	-0.15
Source: Estimated from Household Surveys, 2000-01 and 2004-05				

a historical relationship between the Gross Domestic Product (GDP) growth and poverty incidence in the context of Pakistan is plotted in the following charts. In general, both charts suggest an inverse relationship between poverty and economic growth.





Admitting, that there is a disagreement between “the government” and the “civil society” over the official poverty figures, it is worth highlighting some plausible causes responsible for the decline in the poverty trend. Perhaps the principal factor is the timing of both surveys. First, the period during 2004-05, was exceptionally favorable in terms of growth and macroeconomic stability. A remarkable growth of 7.5 percent in agriculture was recorded in Fiscal Year 2004-05 (FY05) as against 0.1 percent growth during FY02. Similarly, growth in the manufacturing sector was 12.5 percent as against 4.5 percent during FY02. Second, a significant increase in public spending during the past three years created an enabling environment for the decline in the poverty incidence. However, rising trends in inflation (especially food prices), unemployment and in other equality worsening factors did not let poverty decline sharply and substantially.

The trend in poverty incidence is portrayed in Table 4. A few observations emerge. On average, 2 percent rise in annual growth in poverty incidence is estimated during 1987-88 and 2004-05. Table 4 indicates a relatively higher increase in urban poverty during this period. A comparison of 2001-02 and 2004-05, shows that the decline in urban poverty is relatively less than the rural poverty. Rural poverty in this period has dropped with an AGR of 4 percent, while the decline is

about 2 percent in the case of urban poverty incidence⁵. Another important finding of this research is the national poverty incidence during 2004-05, which is the same as the poverty incidence estimated during 1998-99. The regional composition however has slightly altered and now urban poverty is more as compared with the poverty estimates for 1998-99 (28 percent v/s 25 percent).

	1987– 88	1996–97	1998–99	2001–02	2004-05
Pakistan	23	28 (2.4 %)	30 (3.6 %)	33 (3.3 %)	30 (- 3.0 %)
Urban	19	25 (3.5 %)	25 (0 %)	30 (6.7 %)	28 (- 2.2 %)
Rural	26	30 (1.7 %)	32 (3.3 %)	35 (3.1 %)	31 (- 3.8 %)

Note: AGR from previous period are given in parenthesis.

Source: Author's estimate during 2004-05, is based on PSLM/HIES 2004-05. The poverty incidences for other years are taken from Jamal (2002 and 2005). Consistent methodology is applied for all years.

4. INEQUALITY ESTIMATES

In recent years, the role of income and asset distribution in poverty alleviation is widely acknowledged by researchers, academia, civil society organizations and donor agencies. Development and poverty reduction strategies in Pakistan however, are based on 'primacy of growth' or trickle-down paradigm which implies a built-in mechanism for growth leading to greater inequality in the distribution of income at least in the short run. The empirical research indicates⁶ a positive relationship between growth and inequality in Pakistan. The latest household survey data further validates this finding. Table 5 and Figure 2, show the growth in

⁵ According to the official estimates provided in Pakistan Economic Survey, 2005-06, the decline in rural poverty during 2001 and 2005, is 11.16 percentage points while the decrease in urban poverty incidence is 7.79. Although both results are not comparable due to differences in methodology and calorie norms, one important distinction between these two estimates is worth mentioning. This paper uses separate poverty lines for urban and rural areas, while the GoP uses one poverty line for computing official urban and rural poverty incidences. Nevertheless, besides the magnitude of poverty reduction, this research also indicates that the drop in rural poverty is more than the decline in urban poverty.

⁶ See Jamal (2004)

average per capita expenditure by quintiles (from the lowest to the highest 20 percent of population). The broad difference (almost 4 times) in growth magnitude between the two extremes of population (poorest v/s richest) is an indication of the worsening income distribution.

Expenditure Quintile	HIES 2001-02	PSLM 2005 Nominal	PSLM 2005 Real	Average Annual Growth
Lowest 20% of Population	456	633	488	2.34
21-40 % of Population	629	916	706	4.09
41-60 % of Population	782	1169	901	5.09
61-80 % of Population	1010	1590	1226	7.13
Highest 20% of Population	1928	3166	2441	8.87
Overall	965	1356	1045	2.78

Note: GDP Deflator for Consumption Expenditure is used to deflate 2005 figures. Average nominal quintile expenditure are taken from PRSP, Progress Report for the Second Quarter of 2005-06, www.finance.gov.pk

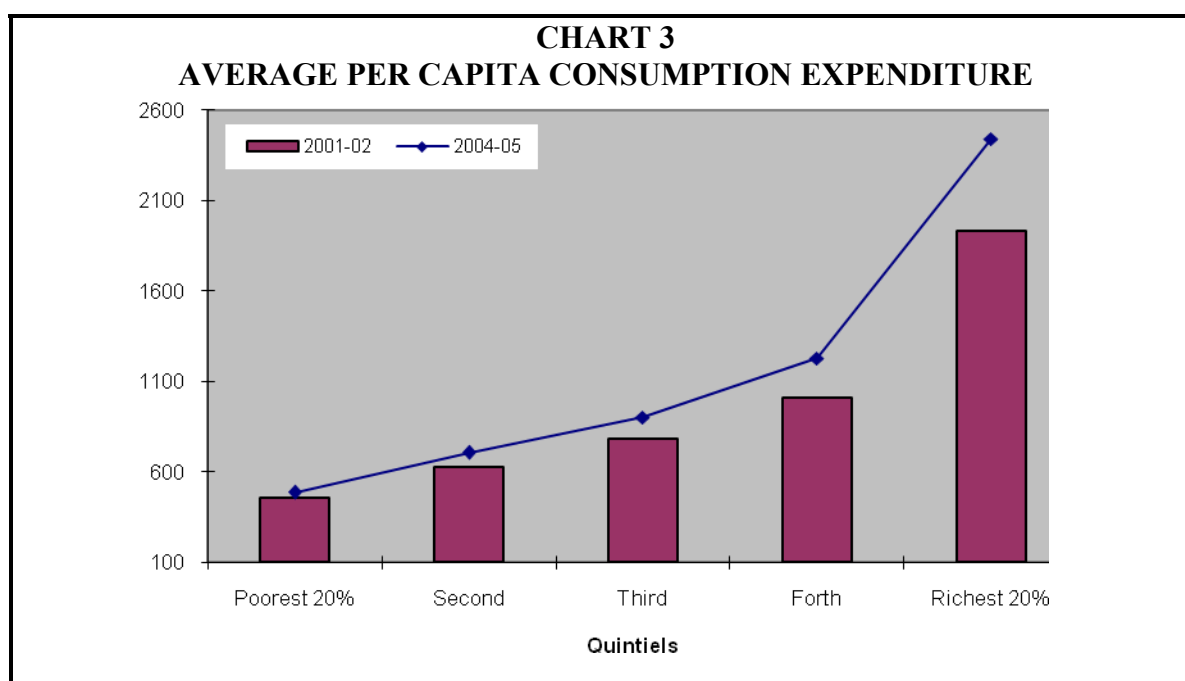


TABLE 6					
INEQUALITY MEASURES – PER CAPITA INCOME					
		1987-88	1998-99	2001-02	2004-05
<i>Gini Coefficients</i>					
Pakistan		0.35	0.40	0.41	0.41
Urban		0.40	0.42	0.44	0.43
Rural		0.30	0.36	0.35	0.35
<i>Income Share of the Lowest 20% of the Population</i>					
Pakistan		8.8	7.8	7.0	7.2
Urban		7.8	6.6	6.6	6.5
Rural		9.6	8.7	8.0	8.5
<i>Income of the Highest 20% of the Population</i>					
Pakistan		43.5	46.5	47.6	48.8
Urban		47.8	50.1	50.3	50.4
Rural		40.0	41.8	43.2	43.4
<i>Ratio of the Highest to the Lowest</i>					
Pakistan		4.9	6.0	6.8	6.8
Urban		6.1	7.6	7.6	7.7
Rural		4.2	4.8	5.5	5.2
Source: HIES, various years					

Traditionally, income distribution is measured through per capita income and not by per capita consumption expenditure. The PSLM/HIES 2004-05, does not give detailed income data by household members; however, it provides household income by category (Section N of the questionnaire). Various inequality measures are computed to observe trends in income inequality. Table 6, furnishes this information.

The GINI coefficient, a widely known inequality measure, shows no change in national and rural income inequality. However, very trivial improvement in overall urban income distribution is noted. Ignoring overall distribution and concentrating only on the lowest 20 percent population, a slight increase in rural share is evident from Table 4 (from 8 to 8.5).

5. CONCLUSION

This research note provides poverty figures estimated from the latest available household survey (PSLM/HIES 2004-05). In the absence of any suitable CPI to inflate poverty line of 2000-01, the poverty line for 2004-05, is recomputed from the latest survey using a consistent methodology.

The estimates show a decline of about 3.52 percentage points (as against the GoP's claim of 10.6 percentage points) in poverty incidence during the past three years. Overall, 30 percent of the population was poor during 2004-05, indicating that about 46 million people were below the poverty line during 2004-05, as against 47 million during 2001-02. The trend in poverty incidence, estimated with the consistent methodology, reveals that national poverty incidence during 2004-05, is exactly the same as was estimated during 1998-99. The composition however, has slightly altered and now urban poverty is more as compared to the poverty estimates for 1998-99. The level of income inequality in terms of GINI coefficient also shows an upward trend.

REFERENCES

- Jamal, H. (2002), "On the Estimation of an Absolute Poverty Line: An Empirical Appraisal", *The Lahore Journal of Economics*, July-December.
- Jamal, H. (2004), "Does Inequality Matter for Poverty Reduction? Evidence from Pakistan's Poverty Trends", Research Report No. 58, SPDC, Karachi.
- Jamal, H. (2005), "In Search of Poverty Predictors: The Case of Urban and Rural Pakistan", *Pakistan Development Review*, Volume 44(1), Spring 2005.
- Government of Pakistan (2001), "*Food Consumption Table For Pakistan*", Department of Agricultural Chemistry, NWFP Agriculture University, Peshawar.

APPENDIX

TABLE A-1				
ESTIMATED CALORIE-CONSUMPTION FUNCTIONS				
	Estimated Coefficients	T-Value	R²	F-Value
Rural Areas			0.35	295.94
Dependent Variable Log (Per Adult Calorie Consumption)				
(Constant)	5.8747	138.36		
Per Adult Expenditure	0.0021	32.30		
Dummy variable for Sindh	-0.1281	-4.48		
Dummy Variable for NWFP	0.2177	7.93		
Dummy Variable for Baluchistan	0.0067	0.18		
Urban Areas			0.17	82.44
Dependent Variable Log (Per Adult Calorie Consumption)				
(Constant)	6.6644	143.94		
Per Adult Expenditure	0.0009	17.00		
Dummy variable for Sindh	-0.1234	-4.22		
Dummy Variable for NWFP	0.0927	3.34		
Dummy Variable for Baluchistan	-0.0196	-0.58		
Source: Estimates are based on the HIES, 2004-05.				