Trends in Absolute Poverty in Pakistan: 1990-91 and 2001

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I. INTRODUCTION

Poverty, defined comprehensively as absence of options to shape one's life according to one's own preferences, comes closer to the concept of human development as presented in UNDP's Human Development Reports. Absolute poverty, on the contrary, defines poverty in terms of satisfaction of minimum physical needs of food and non-food items to enable people at the lower end of income distribution to engage in economic activity. From the vantage point of the policy-maker concerned with alleviation of poverty, it is crucial to know the magnitude of the existing level of poverty and identify the policy determinants of poverty as well as constraints standing in the way of an effective attack on the worst forms of absolute poverty.

In Pakistan, like many other developing countries, poverty has emerged as a core issue on the policy agenda. The traditional measures of poverty—headcount, severity and poverty gap indicate that the incidence of poverty during the previous decade have shown no sign of poverty abatement despite numerous policy and institutional initiatives undertaken by the government. The debate on trends in poverty during the 1990s—an era of stabilisation and structural adjustment has been wide-ranging in Pakistan. However, there is no consensus on the poverty outcomes from the policy and institutional reforms. Primarily due to non-availability of basic data, the last year for which poverty estimates are available is 1998-99.

In view of the need to monitor poverty trends and continuously evaluate the efficacy of policies adopted by the government under the poverty reduction strategy, it is important to evolve a consensus on the use of a consistent poverty line, sources of data and data adjustments for measuring poverty. It is this policy context that has guided us to use a consistent definition of poverty line. The paper

is structured as follows. The next section provides an extended critical review of the most recent work on the extent and trends in poverty in the 1990s. The data sets, methods of measurement and derivation of poverty lines are discussed in Section III. Section IV presents detailed results for the two years of 1998-99 and 2001. We believe that the results for the year 2001 are being presented for the first time and that this new information should be useful to evaluate the poverty impact of economic revival package and other policies followed by the government during this period. Main conclusions and research and policy implications conclude the discussion.

II. REVIEW OF PREVIOUS POVERTY STUDIES

A review of the existing work on poverty shows that a large number of attempts have been made to estimate incidence of poverty in Pakistan during the last four decades. Most of these studies are concerned with the estimation of percentage of population or households lying below an arbitrarily chosen or a well defined and estimated poverty line. These studies have used data from the Household Income and Expenditure Surveys (HIES) conducted by the Federal Bureau of Statistics, Government of Pakistan in different years to estimate the poverty rates. The estimates are sensitive to the choice of poverty line and methods employed to estimate the poverty. Therefore, it is difficult to evaluate underlying trends of poverty in a consistent manner. The work on measurement of poverty include [Naseem (1973, 1979); Alauddin (1975); Mujahid (1978); Amjad and Irfan (1984); Kruijk and Leeumen (1985); Malik (1988); Ahmad and Ludlow (1989); Ercelawn (1990); Malik (1991, 1994); Gazdar, *et al.* (1994); Anwar (1996, 1998); Amjad and Kemal (1997); Jafri (1999); Arif, *et al.* (2000); FBS (2001) and World Bank (1995, 2002)]. These authors and/or institutions had employed different methods, chose different poverty lines and used different type of household survey data. It is not surprising that the studies report divergent poverty trends. Chart 1 summarises the evidence on poverty trends.

According to Gazdar, *et al.* (1994) and Jafri (1999) poverty decreased between 1987-88 and 1990-91 while Malik (1994); Anwar (1996) and Amjad and Kemal (1997) found an increase in poverty during the same period. Likewise, Jafri (1999) estimated that poverty increased in urban areas but declined in rural areas between 1990-91 and 1992-93. On the other hand, World Bank (2002) showed a decline in poverty in both urban and rural areas during the same period. More recently Arif, *et al.* (2000) reported an increase in poverty between 1993-94 and 1996-97, whereas FBS (2001) and World Bank (2002) estimated a decline in poverty during the above period. These poverty estimates are not only sensitive to the choice of poverty lines and the use of different type of household data sets but also result from the type of adjustment made for the household size for determining differences in subsistence needs per capita.

Chart 1

Disagreements about Poverty Trends in Pakistan—1960s to1990s

Years	1987-88 to 1990-91	1990-91 to 1992-93	1993–94 to 1996-97	1996–97 to 1998-99
Gazdar (1994) Jafri (1999)	↓ Rural ↓Urban	↓ Rural ↑Urban	–	
Malik (1994), Anwar (1996), Amjad and Kemal (1997)	↑ Rural ↑ Urban	–	–	
Arif (2001)	–	–	↑ Rural ↑ Urban	
FBS (2001)	–	–	↓ Rural ↓ Urban	↑ Rural ↑ Urban
World Bank (2002)	↓ Rural ↓ Urban	↓ Rural ↓ Urban	↓ Rural ↓ Urban	↑ Rural ↑ Urban

Source: Various studies cited above.

↑ : An increase in absolute poverty between two years.

↓ : A decrease in absolute poverty between two years.

However, the major disagreement had emerged regarding the extent of poverty in the late 1980s, when World Bank (1995) using basic needs poverty line estimated 37 percent of population lying below the poverty threshold in 1987-88, whereas Malik (1994); Anwar (1996) and Amjad and Kemal (1997) using minimum calorie need based poverty line estimated poverty incidence in the range of 13 to 17 percent. Thus, it is important to examine these studies critically so as to resolve the debate about poverty trends in Pakistan in the 1990s. Table 1 reports the results of these studies.

The World Bank (2002) report draws national and regional poverty trends during the 1990s and concludes that poverty in Pakistan was as high at the end of the 1990s as at the beginning of the 1990s. The level of poverty estimated in the report at the end of 1990s seems to be consistent with results from the other studies. However, the main conclusion drawn in the report that poverty rates had stagnated during 1990s is *contrary* to the finding of many other studies on poverty trends in Pakistan (Table 1). On the basis of these studies one can conclude that poverty has almost doubled from 17 percent in 1990-91 to 32 percent in 1998-99. This suggests

Table 1

Headcount Measure for Pakistan—1987-88 to 1998-99

Years	Malik (1992) 2550 Calories	Anwar (1996) 2550 Calories	Amjad and Kemal (1997)	Jafri (1999)	Jamal and Ghaus-Pasha (2000)	Qureshi and Arif (2001)	Arif, Nazli and Haq (2001)	World Bank (2002)	FBS 2550 Calories (2001)	2350 Calories Official Poverty Line
1987-88	13.0	13.81	17.32	29.2	–	–	–	37.4	–	–
1990-91	–	17.26	22.10	26.1	–	–	–	34.0	–	–
1992-93	–	–	22.40	26.8	–	–	–	25.7	26.6	24.9
1993-94	–	–	–	28.7	–	–	27.4	28.6	29.3	27.7
1996-97	–	–	–	–	31.0	–	29.6	24.0	26.3	24.5
1998-99	–	–	–	–	–	35.2	35.2	32.6	32.2	30.6

Source: Various studies cited above.

that the World Bank (2002) had overestimated the poverty incidence in the earlier period—34 percent in 1990-91. This raises a serious question relating to the poverty lines used by the Bank for the estimation of poverty level in 1990-91. Same issue may be pertinent for other studies that find no rise in poverty rates. There is a need to clarify the underlying discrepancies in the methodology used to estimate poverty trends in Pakistan.

The World Bank (2002) reports the results of a background paper by Gazdar, Howes and Zaidi (1994) which was prepared for World Bank's (1995) report on Pakistan's poverty assessment. The authors' poverty lines were based on modifications of the basic need poverty line derived by Ahmad (1992), which was adjusted for inflation to estimate the poverty level in the 1990s. These poverty lines for rural and urban areas are reported in Table 2. Leaving aside the questions of subjectivity and arbitrariness involved in the poverty estimation process used by Ahmad (1993), one can compare these poverty lines with the ones derived by other authors using the calorie consumption functions. A closer look at these poverty

Table 2

Poverty Lines—World Bank and FBS (Government of Pakistan)

Poverty Lines	1990-91	1992-93	1993-94	1996-97	1998-99
WB (2002) Urban	346	424	472	655	767
WB (2002) Rural	307	376	418	581	680
FBS (2001) Overall	–	376.5	418.9	586.5	682

Source: FBS (2001) and World Bank (2002).

lines reveals that World Bank's (2002) modified poverty lines are about 12 to 15 percent higher than the ones derived using the calorie consumption functions by different authors[1] [Malik (1994); Anwar (1996) and Amjad and Kemal (1997)].   The use of a higher poverty line by the World Bank (2002) has resulted in higher (at 34 percent) poverty estimates in 1990-91 than other authors' estimates which were about 17 percent in 1990-91. However, contrary to Malik (1994); Anwar (1996) and Amjad and Kemal (1997) the World Bank[2] (2002) reports that the percentage of all individuals whose consumption expenditure is below the poverty line—fell between 1987-88 to 1990-91 because of the improved policies followed under the IMF/World Bank Structural Adjustment Programme.

However, the conclusion drawn by the World Bank seems not to be very convincing. It may be noted that the World Bank's estimates are derived from the *two incomparable* households surveys—Household Income and Expenditure Survey (HIES) 1987-88 and Pakistan Integrated Household Survey (PIHS) 1990-91. It may be mentioned here that these two household surveys are not comparable in their socio-economic and demographic characteristics. Furthermore, PIHS 1990-91 has a different sampling framework than the HIES 1987-88 since it was designed to capture the extent of use of social services. Thus, it is highly likely that trends of poverty between 1987-88 and 1990-91 from two inconsistent data sets may be a statistical artifact and not reflective of basic economic trends.

Although various studies have been conducted during the 1990s but the World Bank (2002) and FBS (2001) are the two major studies that are comprehensive in scope of analysis and coverage of issues. We now make a detailed comparison of these studies.   It is clear from Table 2 that World Bank's (2002) rural poverty lines are very similar to those of the FBS (2001). However, World Bank (2002) uses *separate* poverty line for urban areas, which is 12 percent higher than the rural ones. It is clear from Tables 2 and 3 that while both the World Bank and FBS have used almost the *same poverty lines* for rural areas in the 1990s, their poverty estimates are *different* from each others.   Generally, World Bank (2002) poverty estimates are one percentage point lower than the FBS (2001). On the other hand, World Bank (2002) poverty lines for urban areas are significantly *different* from (12 percent higher than FBS poverty lines) the ones used by FBS (2001) but the poverty estimates for urban areas are *not very different* from each other. It is found in poverty estimation exercises that using 12 percent higher poverty lines results in 4 to 5 percent higher estimates of poverty. Thus, World Bank (2002) seems to have *underestimated* the poverty in urban areas in 1992-93, 1993-94 and 1996-97.

[1]Anwar (1996) estimated a poverty line in subsistence term consistent with 2550 calorie intake at Rs 310 per adult equivalent in 1990-91 prices.   See Section 4.
    [2]Word Bank (2002) repeats the results of World Bank (1995) for this period.

Table 3

Poverty Estimates (Headcounts)—World Bank and FBS (2001)

Headcount	1990-91	1992-93	1993-94	1996-97	1998-99
Urban	28.0	20.8	17.2	16.9	24.2
		(20.7)	(16.3)	(16.1)	(22.4)
Rural	36.9	27.7	33.4	27.1	35.9
		(28.9)	(34.7)	(30.7)	(36.3)
Overall	34.0	25.7	28.6	24.0	32.6
		(26.6)	(29.3)	(26.3)	(32.2)

Source: FBS (2001) and World Bank (2002).

Note: FBS (2001) estimates are in parentheses.

Furthermore, it is *surprising* to note that while World Bank (2002) made correction of household expenditure for its composition via a correction in the per adult equivalent ratio in the household for its modified poverty line, the *correction* for household expenditure was not made to compute poverty estimates. This is another reason that explains why World Bank's poverty estimates (34 percent in 1990-91) were substantially higher than estimates from other studies. However, if World Bank (2002) estimates poverty incidence at 34 percent in 1990-91 and uses the same modified poverty lines (adjusted for inflation by CPI as reported), then poverty incidence in the late 1990s should be *higher* than 34 percent supporting an increasing trend in poverty found by all independent analysts and FBS (2001). However, contrary to other studies, which lead to the conclusion that poverty has almost doubled from about 17 percent to 32 percent between 1990-91 and 1998-99, the World Bank (2002) shows that poverty has declined from 34 percent in 1990-91 to 32 percent in 1998-99. Such a conclusion may not be realistic given the contraction in public sector development spending as well as the decline in growth rate of the economy during the 1990s. This suggests that given the World Bank's higher poverty line as well as the method of correction for household expenditure in the late 1980s, it underestimates the poverty in the 1990s.

Finally, the results of *both* World Bank (2002) and FBS (2001) seem to be consistent with the underlying economic trends in 1998-99. However, the results for *1996-97*, which indicate a decline in poverty is *contrary* to the underlying economic performance in 1996-97. The GDP growth rate in 1996-97 was the *lowest* during the 1990s (Table 5). Consequently, GDP per capita *declined* by 1.15 percent in 1996-97. One needs to show a cogent explanation to believe the finding of a decline in poverty in 1996-97 when the economy had experienced the lowest GDP growth rate of the decade in that year.

A closer look at the demographic characteristics of households shows that average household size in HIES 1996-97 is relatively smaller than in 1992-93 and

1993-94. Such differences in the household size are crucial in determining the incidence of poverty.

For example, for a given household expenditure, the lower (higher) the household size, the higher (lower) will be the household per capita expenditure or income. Thus, for a given poverty line, more individuals will be counted above (below) the poverty line and poverty will, therefore, be underestimated (overestimated). Thus, poverty is likely to be underestimated because of lower household size found in 1996-97 than in previous years. The average household size was 6.2 in HIES 1996-97 compared to 6.4 in HIES 1992-93 and 1993-94 (Table 4). The difference is particularly large in Sindh where household size was 5.87 in 1996-97 compared to 6.4 in 1992-93 and 1993-94 [FBS (2001)]. These differences are likely to undermine the validity of poverty trends between 1996-97 and the previous years as it may contribute to an underestimation of poverty in 1996-97. It may also

Table 4

Average Household Size During the 1990s

Region and Province	1992-93 HIES	1993-94 HIES	1996-97 HIES	1996-97 PIHS	1998-99 PIHS
Urban Areas	**6.66**	**6.60**	**6.37**	**6.77**	**6.65**
Punjab	6.64	6.42	6.38	6.78	6.54
Sindh	6.73	6.85	6.29	6.47	6.57
N.W.F.P	6.26	6.79	6.72	7.96	7.63
Balochistan	7.16	6.52	6.46	8.03	8.05
Rural Areas	**6.30**	**6.33**	**6.14**	**7.00**	**6.82**
Punjab	6.16	6.26	6.04	6.64	6.48
Sindh	6.19	6.15	5.48	7.32	6.87
N.W.F.P	7.23	7.23	7.18	8.08	7.84
Balochistan	5.67	5.57	5.71	7.31	7.43
Overall	**6.40**	**6.41**	**6.21**	**6.94**	**6.77**
Punjab	6.29	6.30	6.13	6.67	6.50
Sindh	6.42	6.45	5.87	6.97	6.74
N.W.F.P	7.10	7.16	7.11	8.06	7.80
Balochistan	5.83	5.67	5.85	7.39	7.50

Source: FBS (2001).

be corroborated from other *independent sources of data* such as national accounts, which indicates that GDP per capita declined by 1.15 percent in 1996-97. The decline in GDP per capita gives a clear indication of worsening of poverty in 1996-97. In addition, the worsening of poverty between these years is also indicated by a persistent *decline in the share* of the lowest 20 percent of rural household. The share of the lowest 20 percent of rural household declined from 7.4 percent in 1993-94 to 7.3 percent in 1996-97 [Pakistan (2002)]. Since majority of the poor live in rural areas, it is highly likely that the finding of a decline in poverty between 1993-94 and 1996-97 may be due to *inconsistencies* of household size in HIES data.

Thus, on the basis of the above supporting evidence,[3] it can be concluded that poverty seems to have increased between 1993-94 and 1996-97, which is not captured by the HIES data in 1996-97.

Table 5

Selected Macroeconomic Indicators (Growth Rates in Real Term)

	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
GDP (Per Capita)	3.7	–0.85	1.26	3.02	2.91	–1.15	0.88	1.90	1.22	0.23	3.19
Consumer Price Index (CPI)	10.6	9.8	11.3	13.0	10.8	11.8	7.8	5.7	3.6	4.4	3.5
GDP	7.6	2.1	4.4	5.1	6.6	1.7	3.5	4.2	3.9	2.5	3.6
Agriculture	9.5	–5.3	5.2	6.6	11.7	0.1	4.5	2	6.1	–2.6	1.4
Manufacturing	8.1	4.4	4.5	2.5	3.7	-0.1	6.9	4.1	1.5	7.6	4.4
Services	6.8	4.6	4.2	4.8	5	3.6	1.6	5	4.8	4.8	5.1

Source: Pakistan (2002).

III. DATA SET AND THE METHODS OF
MEASUREMENT OF POVERTY

The primary data of Household Income and Expenditure Survey (HIES) for the year 1990-91 and Pakistan Integrated Household Survey (PIHS) for the year 1998-99 and 2001[4] have been used to examine the poverty trends in Pakistan. These surveys provide complete information on quantity and expenditure of all food and non-food items.[5] To provide consistent poverty estimates, HIES 1990-91 has been used to estimate the 'base year poverty line'. For 1998-99 and 2001, poverty lines are derived by adjusting the base year poverty line for the inflation rate experienced during this period. In most distributional analysis in developing countries like Pakistan household current consumption expenditure is preferred to income as the indicator of living

[3]Arif, Nazli and Haq (2000) also showed an increase in poverty from 27.4 percent to 29.4 percent between 1993-94 and 1998-99.

[4]There is a debate on the quality of data from the PIHS 2001 especially in the case of province of Balochistan. Poverty estimates may be interpreted and/ or used with proverbial pinch of salt pending a final resolution of the issue of the quality of the basis data of PIHS 2001.

[5]The survey has all information needed on quantity consumption and expenditure of around 600 food and non-food items for each household.

standards. Hence, current consumption expenditure on all non-durables is used as a proxy for 'permanent income' for the measurement of poverty in this paper.

1. Poverty Measures

To measure the poverty, the Foster, Greer and Thorbecke (1984) class of poverty measures P_α, have been used. These measures do not only reflect the severity of poverty but also satisfy the axiom of decomposability and additivity. These measures capture the distribution of living standards among the poor.

$$P_\alpha = \frac{1}{n} \sum_{i=1}^{q} [(Z - y_i)/Z]^\alpha$$

These measures have clear advantages for evaluating policies which aim to reach the poorest. Note that if $\alpha=0$, the FGT index, P_α = Headcount measure, if $\alpha=1$, P_α = Poverty gap index or quotient and if $\alpha=2$, P_α is the mean of squared proportionate poverty gaps and indicates greater severity of poverty among the poorest. The higher the value of α the more sensitive the measure is to the well being of the poorest. As α approaches infinity the measure collapses to one which reflects the poverty of the poorest person.

2. Derivation of Poverty Line

To define the absolute poverty, one needs to recognise that poor nutrition plays a vital role in the conception of poverty. In addition, one should also realise that nobody can live by food alone. Since a large bulk of the population in Pakistan suffers from malnutrition, poor housing, health and education facilities, the poverty line needs to be derived in terms of meeting subsistence requirements. The subsistence approach[6] defines individuals as poor when their income is not sufficient to obtain the minimum necessities of life for the maintenance of physical efficiency such as food, clothing, housing etc. This approach gives a poverty line below which survival of individual is threatened. Thus, the poverty line is derived as the food expenditure consistent with meeting minimum WHO/FAO[7] recommended food energy intake of 2550 calorie per day per adult equivalent (See Table 1A in Appendix) plus a minimum allowance for satisfying non-food needs.

It is generally recognised that individuals within a household differ in their "needs". For example, persons of different ages and sex have different food needs. Existing research shows that poverty assessment in Pakistan has been conducted without taking adequate and proper account of differences in needs among household members. The common practice in Pakistan has been to divide the household expenditure by the household size. We consider this to be rather unsatisfactory. To the

[6]This type of subsistence approach to defining poverty goes back to the work of Rowntree in UK in 1901.
[7]Planning Commission (1985) recommended a food energy intake of 2550 per day per adult.

extent that a per capita measure is positively but less than proportionately related with the household size, this practice over-represents the large households among the poor. Since Pakistan, like many developing countries tends to have disproportionately larger households, aggregate poverty may be overstated. The use of equivalence scales is appropriate to adjust the household level expenditure according to the household size and its composition. An attempt was made to take into account the differences in needs by adjusting household consumption expenditure using the calorie requirements of each individual in each household in the sample.

To arrive at consistent poverty estimates during the 1990s, the absolute poverty line derived by Anwar (1996, 1998, 1999) from HIES 1990-91 has been used in this paper. To estimate the poverty line, a calorie expenditure function was estimated by OLS.[8] The information on actual calorie intake, C_i and on the food expenditure as a proportion of calorie adult equivalent for each household was computed.   The calorie intake, C_i is then regressed on food expenditure, X_i.   To obtain the representative estimates for the population, a weight is assigned to each observation in the sample according to the weighting factors given in HIES 1990-91. The estimated regression equation for overall Pakistan is reported below.

$$C_i \quad = \quad -5290.55 \; + \; 1528.15 \; ln \, X_i$$
$$\text{R-squared} \; = 0.2664$$

The *t*-ratios are significant at 99 percent level of significance.   Solving the above equation for a recommended daily calorie norm of 2550 per adult equivalent, gives the national food poverty line of Rs 169.14 per adult equivalent per month in 1990-91.   For meeting the non-food human requirement, a minimum allowance for the non-food needs was computed using the average non-food expenditure amongst those identified as being poor according to the food poverty criterion alone.   Using this approach gives a minimum expenditure of Rs 310 per adult per month in 1990-91 prices as a country poverty line. However, there might be substantial differences between rural and urban regions because of a different consumption pattern that varies according to taste, preference and prices.[9] Taking an account for these differences gives a minimum expenditure of Rs 291 and Rs 422 per adult per month for rural and urban region, respectively.   These poverty lines represent average consumption behaviour and prices across rural and urban regions.   It is noteworthy that the urban poverty line is substantially higher than the rural one since it also takes an account of behavioural differences in consumption pattern.   However, the best practices in poverty analysis allow only price and not the behavioural differences in making poverty comparisons between rural and urban areas [Deaton (1994)].   Thus,

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[8]See Greer and Thorbecke (1986) for the derivation of poverty line by this method. Ercelawn (1990) was the first attempt to estimate the poverty line for Pakistan using this methodology.

[9]To investigate these differences, both slope and intercept dummy variables for urban region were used in a regression using full sample.   Both these dummy variables turned out to be significant at 1 percent level of significance. See Anwar (1999) for further details.

we need an adjustment in our national poverty line to take an account of price differences so as to fix the cost of minimum bundle of needs between rural and urban areas across provinces.

Price Adjustment between Rural and Urban Regions

Differences in prices between rural and urban areas and among provinces are required for an adjustment in poverty line. This is because cost of living is higher in urban than in rural areas due to differences in food prices. For example, if two households have exactly the same standard of living but reside in different regions, then consistency requires that poverty line be adjusted accordingly to the price difference. To take an account of differences in prices between rural and urban and among provinces, the regional price indices developed by FBS (2001) were used. These indices are reported in Table 2A in the Appendix. Clearly, there are significant price differences between rural and urban regions across provinces, which should be taken into account while making poverty comparisons. To take account for price the differences, FBS (2001) makes an adjustment in the national poverty line by these indices in order to estimate the poverty incidence. Following FBS (2001), we also make an adjustment in the national poverty line by these price indices to compute the poverty estimates.

Price Adjustment between 1998-99 and 2001

To estimate the poverty in 1998-99 and 2001, the poverty line derived in 1990-91 prices has been adjusted for inflation by the Consumer Price Index (CPI). The adjusted poverty line for Pakistan is Rs 668 per adult per month in 1998-99 prices. It is noteworthy that the adjusted poverty line for 1998-99 turned out to be very close to the one defined by the Planning Commission as official poverty line[10] at Rs 670 in 1998-99. Our adjusted poverty line for 1998-99 is 2 percent lower than FBS (2001) poverty line at Rs 682 per adult per day. Despite a higher calorie threshold (2550) used in this paper, the lower poverty line has resulted from adjustment for differences in need for food requirements for children, female and male of different age groups. On the basis of the lower poverty line, we expect that the level of poverty estimated by us in 1998-99 would be lower than FBS (2001). The use of consistent poverty line also enables us to chart out a consistent picture of poverty trends and rural/urban and/or provincial pattern during the 1990s.

IV. RECENT TRENDS IN ABSOLUTE POVERTY

To examine changes in poverty, the extent of poverty in 1990-91, 1998-99 and 2001 has been estimated using consistent poverty lines for this period. The direction

[10]However, Planning Commission has defined official poverty line as 2350 calorie per adult per day as an average requirement of all individuals. See Table 1A in Appendix. Also see CRPRID (2002).

of change in poverty is then examined by looking at differences in poverty estimates during this period.

Table 6 reports estimates of poverty in Pakistan for FGT class of poverty measures for 1998-99 and 2001.[11] However, we will discuss the results of 1990-91 briefly only at the national level in order to indicate poverty trends between 1990-91 and 1998-99. The results indicate that incidence of poverty increased in Pakistan from 17.2 percent in 1990-91 to 30.4 percent in 1998-99 and finally to 35.6 percent in 2001. The Kakwani test[12] for poverty differences in headcount poverty measures is significant at 5 percent level of significance during this period.

Table 6

Trends in Poverty Incidence, Intensity, and Severity between
1998-99 and 2001 in Pakistan

Region	Headcount (Po) 1998-99	Headcount (Po) 2001	FGT Poverty Gap Index (P1) 1998-99	FGT Poverty Gap Index (P1) 2001	FGT Index (P2) 1998-99	FGT Index (P2) 2001
Pakistan						
Overall	30.43	35.60	6.30	7.23	1.95	2.16
Rural	32.11	41.02	6.70	8.34	2.07	2.50
Urban	26.39	26.47	5.33	5.37	1.65	1.60
Rural						
Punjab	28.03	33.80	5.59	7.22	1.68	2.29
Sind	31.38	47.28	6.52	10.00	2.06	3.10
NWFP	47.60	43.89	11.0	8.38	3.57	2.34
Balochistan	29.26	43.74	5.62	8.20	1.63	2.22
Urban						
Punjab	26.09	24.10	5.40	5.38	1.70	1.77
Sind	24.98	26.32	4.76	4.96	1.38	1.37
NWFP	33.89	30.61	7.23	5.81	2.44	1.57
Balochistan	31.74	29.53	6.42	5.69	1.85	1.56
Overall						
Punjab	27.47	29.82	5.54	6.46	1.69	2.08
Sind	28.60	39.09	5.75	8.03	1.77	2.42
NWFP	45.59	39.79	10.44	7.58	3.41	2.10
Balochistan	29.58	39.12	5.73	7.39	1.65	2.00

Source: Calculations are based on primary data of PIHS 1998-99 and 2001, Federal Bureau of Statistics, Government of Pakistan.

Note: All Poverty indices are expressed as percentages.

[11]For 1990 poverty estimates see Anwar (1996, 1999).

[12]Kakwani (1990) devised a procedure to estimate the standard error to draw statistical inference with estimated poverty measures. The standard error of estimates of poverty measure ($\hat{P_1} - \hat{P_2}$) will be

$$SE(\hat{P}1 - \hat{P}2) = \sqrt{\frac{\hat{\sigma}_1^2}{n_1} + \frac{\hat{\sigma}_2^2}{n_2}} \ .$$

where $\hat{\sigma}_1^2$ and $\hat{\sigma}_2^2$ be the sample estimators of the variances of the asymptotic distributors of $\sqrt{n1\hat{P}_1}$ and $\sqrt{n2\hat{P}_2}$, respectively. The test statistic will be $\eta = \dfrac{\hat{P_1} - \hat{P_2}}{SE(\hat{P}_1 - \hat{P}_2)}$.

The intensity of poverty reflected by poverty gap measure (P_1) increased from 3.35 percent in 1990-91 to 6.30 percent in 1998-99 and to 7.23 percent in 2001. The severity of poverty, captured by FGT P_2 measure, has also increased from 0.97 percent in 1990-91 to 1.95 percent in 1998-99 and 2.16 percent in 2001 among the poorest group in the country.

The direction of change in poverty rates at the regional level between 1998-99 and 2001, shows that while the rural poverty increased substantially from 32.11 percent to 41.02 percent, the urban poverty had increased only marginally from 26.39 percent to 26.47 during the above period. While both rural poverty gap and severity of poverty increased, the urban poverty gap and severity of poverty declined at countrywide level.

Figure 1 presents the Pen's parade of consumption expenditure of Pakistan at 2001 prices, in which marchers are lined up in order of height (according to income or expenditure) from the shortest to the tallest. The 2001 distribution lies entirely
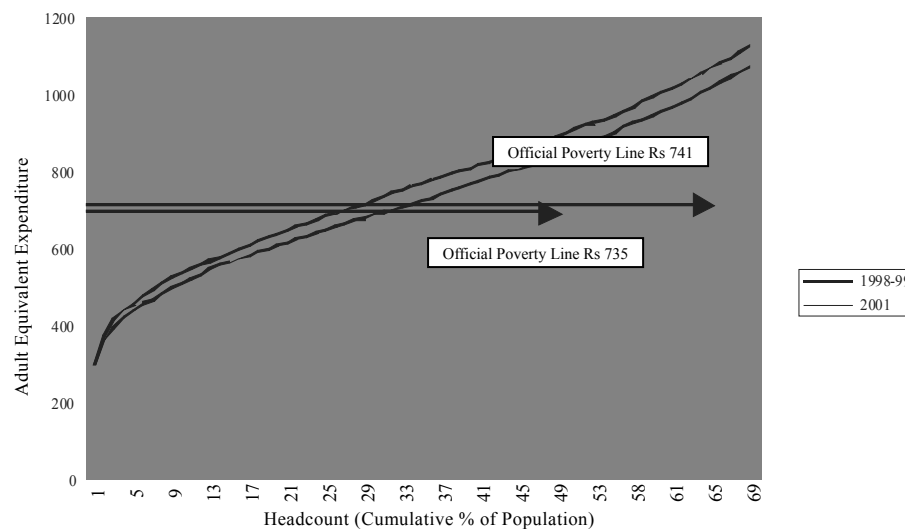

Fig. 1. Pen's Parade Diagram—1998-99 and 2001 (in 2001 Prices).

below the 1998-99 distribution. Thus, it can be concluded that all well-behaved poverty measures and all poverty lines including the inflation adjusted official poverty line at Rs 735 in 2001 will indicate an unambiguous increase[13] in poverty over the period.

[13]Using the official poverty line, poverty level has increased from 30 percent in 1998-99 to 36 percent 2001 as reflected by Figure 1.

However, it may be possible that a province may indicate a different trend of poverty from the national level. We have, therefore, examined the provincial poverty trends to see whether any province had contradicted countrywide trends in rural and urban poverty. Results indicate that all provinces but one shared in the countrywide increase of rural poverty. NWFP was the only exception where poverty declined in both rural and urban areas. Sindh rural had shown a substantial worsening of poverty as absolute poverty increased from 31.38 percent in 1998-99 to 47.28 percent in 2001. The poverty gap and the severity of poverty had also shown a substantial worsening trend. On the other hand, all provinces except Sindh observed a declined in urban poverty. It is noteworthy that Sindh urban where the poverty incidence was the lowest in 1998-99, has recorded an increase in poverty from 24.98 percent in 1998-99 to 26.32 in 2001. On the other hand, NWFP urban, which had the highest poverty in 1998-99, observed a decline in poverty between 1998-99 and 2001. This suggests that on the basis of poverty headcount measures the provincial divide has narrowed somewhat during this period.

For 1998-99, the poverty estimates reported in the paper are generally lower than the World Bank (2002) and FBS (2001) as the poverty lines used are lower than the poverty lines in these two studies. The lower poverty threshold has resulted from a proper accounting of differences in varying needs for food requirements between children and adults in each household. The World Bank (2002) and FBS (2001)'s method of adjustment of household expenditure for differences in intra-household needs is somewhat crude. They consider food cost of a child as being 80 percent of food costs for an adult, while we make an adjustment according to age and sex of each household member in the sample. We had derived implied coefficients by dividing the calorie requirement of each child and adult in each age group and sex by the reference male adult at a calorie intake of 2550. For example, the food cost of children with ages between 0-7 years in our study is 50 percent relative to an adult, which is much lower than the figure of 80 percent assigned by the World Bank and the FBS. A comparison of our poverty estimates for 1998-99 with the World Bank (2002) and FBS (2001) shows that our headcount measure for Pakistan is 2 percentage points lower. Both of these studies estimated a headcount measure at about 32 percent in 1998-99 (Table 1). We, therefore, expect the headcount measure for Pakistan would be more than 35 percent in 2001, if the World Bank and FBS poverty lines are used to estimate the poverty in 2001.

We now identify another source of sensitivity for poverty estimates i.e. the extent of price adjustment for differences in living standard between rural and urban areas. We have followed the approach adopted by FBS (2001), which uses the regional price index to adjust for price differences at the province level between rural and urban areas.

On the other hand, the World Bank (2002) takes account of price differences only at national level between rural and urban areas. Using the World Bank approach and considering rural and urban price differences only at national level

gives substantially lower poverty estimates than the one reported[14] in this study. According to this method, poverty headcount measure was at 27.6 percent in 1998-99, which increased to 30.94 percent in 2001. While headcount estimated by this method is 3 percent lower in 1998-99, the headcount for 2001 is substantially lower by 6 percent suggesting larger fluctuations in reported expenditure among households between rural and urban regions at province level in PIHS 2001 than in PIHS 1998-99. Fluctuations seem to be larger in rural areas as the differences in poverty estimates are much larger in 2001 than in 1998-99.

V. CONCLUSIONS AND POLICY IMPLICATIONS

We can be brief in conclusion. First, it needs to be stressed that the adoption of an official poverty line for 1998-99 by the Planning Commission is a major watershed in the policy debate on measuring poverty in Pakistan. The adoption of different yardsticks in different studies was a major problem in analysing poverty trends with some credibility. Notwithstanding the desirability of an official yardstick, it is also important that the yardstick should be based on a scientific methodology. There is an uneasy feeling in comments from some quarters on the official poverty line that the lowering of threshold from 2550 calorie intake to 2350 calorie intake was motivated by a desire on the part of government to show the poverty levels lower than those coming out of a higher calorie threshold. We have used the caloric norm of 2550 calorie intake for an adult and have adjusted for age and sex differentials in calorie needs based on actual consumption data for 1990-91. By inflating the poverty line for inflation, we find the official poverty line in 1998-99 to be quite close to the ones estimated by us for that year. The official poverty line at Rs 670 per adult per month and our poverty line at Rs 668 per adult per month are only 2 rupees apart. In fact, the official poverty is higher by Rs 2 than the poverty line estimated by us. Furthermore, it needs to be pointed out that the changing patterns of physical activity because of mechanisation and automation often lead to lower levels of calorie requirements. In view of this, there is a continuous need to review and update the poverty line in term of calorie requirement and the cost to finance the chosen basket of food. The change in poverty threshold requires lot of sound research. It is comforting to note that the adjusted official poverty threshold was close to our updated poverty line in 1998-99. A constant review of the official poverty is needed, nevertheless, for updating the poverty lines.

Second, we find that the incidence of poverty measured by us is about 2 percentage points lower than World Bank (2002) and FBS (2001)'s estimates and 0.2

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[14]It should be noted that the authors had reported results using the World Bank method of adjusting for price differences at the national level only in the version of paper presented in the Society's meeting.

percentage points lower than the official poverty[15] estimates. If our adjustments in data and method of analysis are valid, then there is a need to revise the poverty rate downwards by an appropriate extent. In view of differentials in poverty rates by location i.e. rural and urban areas and by provinces, the downward adjustment in poverty rates is not a simple matter. More research on this aspect is needed. However, the policy analyst should keep the nature of the bias in view   in appraising the impact of policy interventions on poverty in Pakistan. In view of the millennium development targets fixed for reduction of poverty by half by 2015 from the base level of poverty in 1990, it is important to have correct poverty estimates for the base year as well as all intermediate years.

Third, the use of consistent estimates of the poverty line shows that the headcount measure of poverty has increased from 17.2 in 1990-91 to 30.4 percent in 1998-99 and to 35.6 percent in 2001. The pattern of poverty trends found by us differs sharply from the World Bank's conclusion reported in World Bank Report (2002). While we find an upward trend in poverty for all years since 1990-91, the World Bank's conclusion is that poverty has declined by 2 percentage points between 1990-91 and 1998-99. The problems with the World Bank's findings are two-fold. First, the policy reforms introduced by the government under agreements with IMF, World Bank and Asian Development Bank were aimed primarily to reduce fiscal deficit and to remove policy distortions. Kemal (2002) in a comprehensive paper on the impact of the macro policies adopted by Pakistan during 1990s on the incidence of poverty has shown adverse consequences of the adopted policies on the poverty outcomes. The type as well as the quality of fiscal adjustment in the medium term was expected to have an adverse impact on the incidence of poverty. The gain expected from macroeconomic stability and high growth as a result of policy reforms have not yet accrued to the poor. In addition, the wage and employment restraints policies,[16] cut in pro-poor subsidies, cut in development expenditure, increases in sales taxes and utility charges, frequent devaluations and the declining remittances during the 1990s had led to increase in poverty level.

Second, the World Bank's methodology has overestimated poverty due to its peculiar method of measuring poverty at the national level in early to mid-1990s. The stagnation and/or a slight decline in poverty estimates seems to be a statistical artifact due to overestimation of poverty in earlier years relative to the late 1980s by the World Bank.

It should be noted that for the period between 1998-99 and 2001, the increase in poverty is attributable mainly to rising poverty in rural areas (overall) where it has gone up from 32.11 percent in 1998-99 to 41.02 percent in 2001. On the other hand, the poverty rates in urban areas at 26 percent remained stagnant over this period.

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[15]See Chapter 1, *Human Conditions Report 2002*, Centre for Poverty Reduction and Income Distribution, Islamabad.

[16]For further detail, see Anwar (2002) and Anwar (2002a).

Fourth, there are considerable inter-provincial differences in poverty estimates. The rural-urban divide in the incidence of poverty is also substantial. At province level, urban poverty has declined in all provinces except Sindh where it has increased. In rural areas, poverty in NWFP has declined somewhat but has increased in all other provinces.

Fifth, the severity and depth of poverty have also increased at country level between the years. When this finding is seen in conjunction with the head count measure of poverty, it is clear that poverty in all dimensions has increased over time. Absolute poverty is not only pervasive but it is deep as well.

Sixth, there is some sign of urban poverty being checkmated while rural poverty is rising rapidly. The adverse shocks in the agricultural sector due to drought may account for the rapid rise in rural poverty. In addition, structural constraints facing agricultural growth may be more severe than the constraints facing the urban sector growth. The targeting of social safety-nets in urban areas may be also more effective and extensive than in rural areas.

Last but not the least, it should be noted that a counter-factual of the economy without the policy changes introduced between 1998-99 and 2001 is not known. It may be argued that without the recent reforms, the poverty situation could have been much worse than the observed situation under the policy reforms introduced in the recent period.

We can also be brief as far as research and policy implications of our analysis of poverty are concerned. On the research side, the application of the consistent poverty lines needs to be applied to all years for which data sets are available. Only by doing so, one can get an improved understanding of the past trends and pattern of poverty. To design and implement pro-poor policy and institutional packages to reduce the poverty in its various dimensions requires research on the determinants of poverty. The monitoring of poverty outcomes of the policy reforms requires a professional consensus on the definition and measurement of poverty and the design and conduct of the household expenditure surveys that generate data for measures of poverty. There is a need to institute a standing committee comprising experts and all stakeholders to oversee the data collection and the analysis of poverty issues so that a consensus is developed on the accuracy of basic data on poverty and the appropriate poverty measures.

Appendices

Table 1A

Calories Requirements by Age and Sex (Per Capita/Day)

Age in Years	Male	Female
<1	1010	1010
02 – 03	1325	1325
04 – 05	1550	1550
06 – 07	1710	1710
08 – 09	1875	1875
10 – 12	2100	2200
13 – 15	2500	2300
16 – 19	2950	2100
20 – 39	2550	2160
40 – 49	2420	2050
50 – 59	2300	1940
60 +	2040	1730
–Reference level as average of calorie requirement		2350*
–Reference level calorie requirement as male adult, aged 20-39 involve in moderate physical activities		2550**

Source: Government of Pakistan, Planning Commission (1985).

　* Planning Commission recently defined official poverty line at 2350 calorie take as average of all individual's calorie requirement.

　** Most of the authors have chosen 2550 calorie intake as reference level for Pakistan for poverty analysis.

Table 2A

Mean Price Index by Regions, PIHS, 1998-99

Province	Urban	Rural
Punjab	1.026	0.932
Sind	1.138	0.979
NWFP	1.075	1.052
Balochistan	1.125	1.103

Source: FBS (2001).

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