

**Pakistan Poverty Statistics:  
Estimates for 2011**

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## **Pakistan Poverty Statistics: Estimates for 2011**

### **ABSTRACT**

Social Policy and Development Centre keeps track records of intertemporal changes in poverty incidence by using a consistent and identical methodology for defining and computing national and regional poverty lines and poverty measures.

This research paper provides poverty statistics estimated from the latest available household survey data. The estimates show that an overall 38 percent of the population was poor according to the methodology adopted for this study during the year 2010-11. The incidence, depth and severity of rural poverty are relatively higher as compared to urban areas. The estimates also indicate an increase of about 8 percentage points in the poverty incidence since 2004-05. Mount in rural poverty is relatively higher as compared with the growth in its urban counterpart.

## 1. BACKGROUND

Since the last published official poverty statistics for the year 2005-06, two household surveys (HIES), which are traditionally used to estimate poverty in Pakistan have been carried out by the Pakistan Bureau of Statistics in the year 2007-08 and 2010-11. Unfortunately, the Government of Pakistan didn't release any estimates of poverty for these years.

According to Pakistan Economic Survey (2008-09), the Centre for Poverty Reduction and Social Policy Development (CPRSPD) estimated a sharp decline in the headcount poverty ratio for 2007-08. The survey, however, did not endorse the declining trend by arguing that findings “appear to contradict other assessments conducted subsequently”. While the Government of Pakistan did not disclose the exact level of poverty incidence (headcount) during 2007-08, Pakistan Country Management Unit of the World Bank in its Country Partnership Strategy (2010) report affirmed “the share of the population living in poverty halved, down from 34.5 percent in 2001/02 to 17.2 percent in 2007/08”. However, eminent economists did not endorse this drop in poverty statistics for the year 2007-08 and questioned the creditability of estimates. It was then argued by the government and Planning Commission that the impact of the economic downturn on poverty levels will only be known when the data of the next household survey is available.

Subsequently, HIES for the year 2010-11 was completed and the survey results were finalised in October 2011. Despite the availability of latest household consumption data, the government did not release poverty estimates yet. In fact the chapter on “Poverty and Inequality” which is usually included in Pakistan Economic Survey had been eliminated. The survey of 2011-12 in the Chapter on ‘Social Safety Nets’ asserts that “A committee of poverty experts has been constituted in Planning and Development Division to estimate Poverty Headcount as well as poverty correlates. The committee is working on its task in a professional ways considering all dimensions of poverty and report of the committee will be available shortly”.

Eventually, Pakistan Bureau of Statistics in September 2012 proclaimed on its website that “HIES data for the year 2010-11 has been released and it is ready for dissemination and provision to students, researchers, policy makers and other stakeholders”.

Against this backdrop, this research note provides estimates of poverty for the year 2010-11, using unit record household level consumption data and adopting a consistent<sup>1</sup> methodology for defining and computing national and regional poverty lines and poverty indices.

The paper is organised as follows. Section 2 presents estimates of the poverty line and poverty indices and aggregates for the year 2010-11. An intertemporal comparison is also furnished in this section. Estimates of income inequality are presented in section 3, followed by a conclusion in the last section.

## **2. ESTIMATION OF POVERTY LINE AND POVERTY MEASURES**

Poverty line for the latest survey year may either be updated by utilising previous estimated poverty line after adjusting with some appropriate index of inflation or it may be re-estimated with the help of new available survey data.

There are many criticisms on using Consumer Price Index (CPI) for updating previous poverty line due to its very low geographical coverage. CPI only covers major urban centers for tracking inflation and ignores price movement in rural areas and small urban locations. Therefore, as an alternative survey based price index, the Tornqvist Price Index (TPI) is suggested. However, it is not a problem-free option, since TPI can only incorporate homogenous goods like specific food items. Further, the household survey does not report the consumption of non-food quantities and provides only expenditures. These complications make TPI an inappropriate measure of inflation. 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.

Re-estimation of poverty line is also criticised on the ground that for monitoring and tracking poverty numbers, the bundle of goods and services should remain same and one should adjust the magnitude of the poverty line with price movement. However, this criticism does not seem valid if 'calorific approach' is used in deriving poverty line instead of 'basic need

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<sup>1</sup> SPDC keeps track records of intertemporal changes in poverty incidence. Constant and identical methodology (see Jamal 2002, 2005 and 2007) is applied to estimate poverty for the years 1987-88, 1996-97, 1998-99, 2000-01 and 2004-05. Similar methodology is applied in this paper for the latest year 2010-11.

approach'<sup>2</sup>. Calorie norms are fixed and it is estimated in the calorific approach that how many rupees are required to obtain minimum required calories for the particular year.

Thus, in the absence of any appropriate price index for inflating the previous poverty line, it is perhaps reasonable and is also preferred for this research to re-estimate the poverty line from the latest survey to circumvent problems associated with price indices.

To compute the poverty line, calorie norms (cut-off points) and estimated coefficients of the Calorie-Consumption Function (CCF) are required. The idea is to get the estimates of household expenditure required to obtain the minimum required calories. Consistent with the earlier poverty estimates of SPDC, this paper also follows the 2,550 and 2,230 calories per day per adult as calorie norms (minimum requirement) for rural and urban areas<sup>3</sup>, respectively. Household food consumption is translated into calories using Food Consumption Tables for Pakistan (GoP, 2001).

The CCFs are estimated separately<sup>4</sup> for urban and rural areas. It is argued that consumption behaviour, purchasing patterns, dietary habits, taste and ecology are significantly different for urban and rural groups. Again to make the poverty numbers comparable with earlier SPDC poverty research, these functions are estimated from the lowest quartile of distribution after ranking households with respect to per capita expenditure. Household per adult<sup>5</sup> daily calorie consumption is regressed on household expenditure. The functional form is chosen on the basis of maximisation of  $R^2$  criterion. Nonetheless, other statistical tests are also applied before choosing the functional form. The results of these functions are furnished in the Appendix-A.

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<sup>2</sup> See Jamal (2002) for the methodological consideration and choices.

<sup>3</sup> The justifications of taking these norms are described in Jamal (2002).

<sup>4</sup> It is worth to note here that Government of Pakistan did not estimate separate urban and rural poverty lines. Thus poverty estimates derived from official methodology underestimate rural poverty and overestimate urban poverty as calorie requirement are generally low for urban habitants.

<sup>5</sup> Adult equivalent unit is estimated with the help of minimum requirement with respect to age and sex of member in household.

Table-1 displays computed poverty lines from estimated calorie consumption functions. According to the table, rupees 2,575 and 2,299 per adult equivalent unit (or Rs. 2,207 and Rs. 1,928 per capita) per month were required during the year 2010-11 to purchase minimum calories for urban and rural areas respectively. A population weighted average national poverty line, however, turns out as Rs.2,381 per adult equivalent unit (or Rs. 2013 per capita) at the prices of HIES 2010-11.

<b>Table 1</b> <b>Estimated Poverty Lines for the year 2010-11</b>		
	<b>Urban</b>	<b>Rural</b>
Per Day Calorie Requirements – Per Adult Equivalent Unit	2230	2550
Poverty Line – Rupees Per Adult Equivalent	<b>2575</b>	<b>2299</b>
Poverty Line – Adjusted for Per Capita Per Month **	2207	1928
** 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).		
<b>Source:</b> Estimated from household level data of HIES, 2010-11		

The estimated poverty lines for urban and rural areas are mapped on household per adult equivalent total expenditure for computing various poverty measures or aggregates<sup>6</sup>. Table-2 displays these poverty indices. Overall, 38 percent of the population was poor during the year 2010-11. The incidence, depth and severity of urban poverty are relatively lower as compared to rural areas.

<b>Table 2</b> <b>Estimates of Poverty Indices, 2010-11</b> <i>[Percentage of Population]</i>			
	<b>Head Count Index</b> <b>[Incidence]</b>	<b>Poverty Gap Index</b> <b>[Depth]</b>	<b>FGT2 Index</b> <b>[Severity]</b>
Pakistan	37.62	8.05	2.45
<i>Urban</i>	34.09	7.47	2.36
<i>Rural</i>	39.37	8.33	2.49
Source: Estimated from household level data of HIES, 2010-11			

<sup>6</sup> A brief description of poverty indices or poverty aggregates is provided in Appendix-B.

Table 3 compares latest poverty estimates with 2004-05 figures. The estimates show a rise of about 8 percentage points in poverty incidence since 2004-05. Rise in rural poverty is relatively higher (27 v/s 23 percent) as compared with the growth in its urban counterpart. The table also reveals a significant rise in terms of the depth and severity of poverty during this period. The incidence figures propose that about 61 million people were below the poverty line during 2010-11, as against about 46 million during 2004-05.

<b>Table 3</b>				
<b>Poverty Estimates: 2011 v/s 2005</b>				
	<b>2004-05</b>	<b>2010-11</b>	<b>Percent Change</b>	<b>Percentage Point Change</b>
<b><i>Poverty Incidence (HCI)</i></b>				
Pakistan	29.85	37.62	26.03	7.77
Urban	27.70	34.09	23.07	6.39
Rural	30.85	39.37	27.62	8.52
<b><i>Poverty Depth (PGI)</i></b>				
Pakistan	6.51	8.05	23.66	1.54
Urban	6.62	7.47	12.84	0.85
Rural	6.45	8.33	29.15	1.88
<b><i>Poverty Severity (FGT2 Index)</i></b>				
Pakistan	2.13	2.45	15.02	0.32
Urban	2.29	2.36	3.06	0.07
Rural	2.06	2.49	20.87	0.43
Source: Estimated from household level data of HIES , 2004-05 and 2010-11				

Apart from the technical aspect and debate on the poverty estimation methodology, rise in poverty in the event of declining trends in macroeconomic indicators does not come as a surprise. 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. Figures 1 and 2 highlight sharp decline in overall and sectoral GDP, especially in the commodity producing sector. Figure-1 also indicates an inverse relationship between poverty reduction and economic growth.



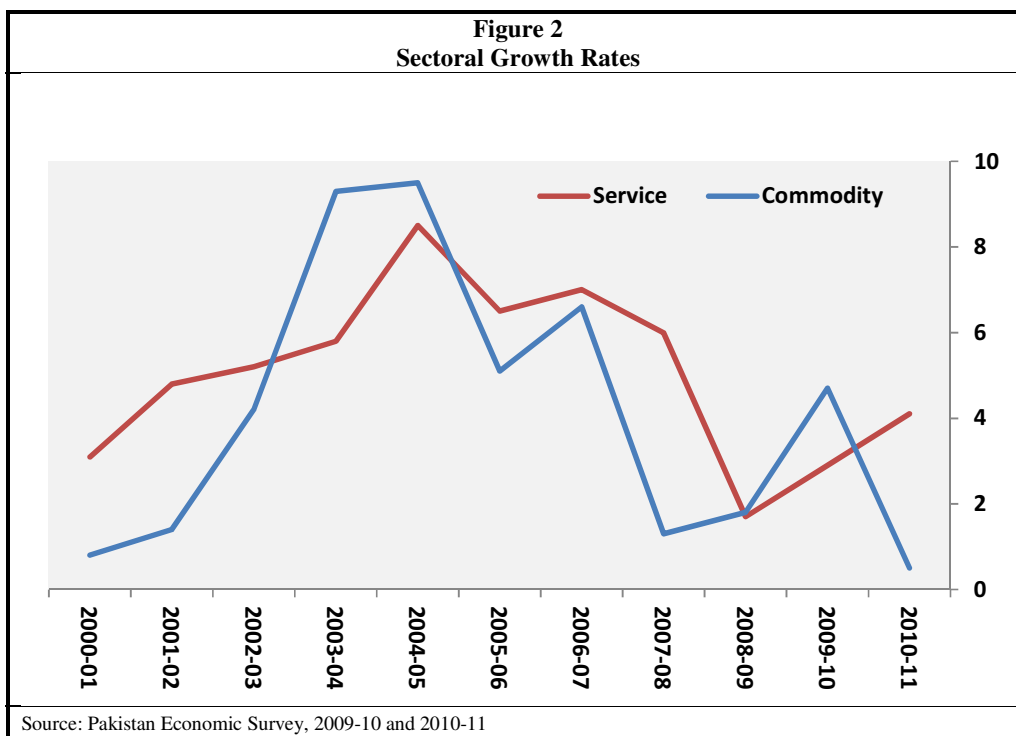
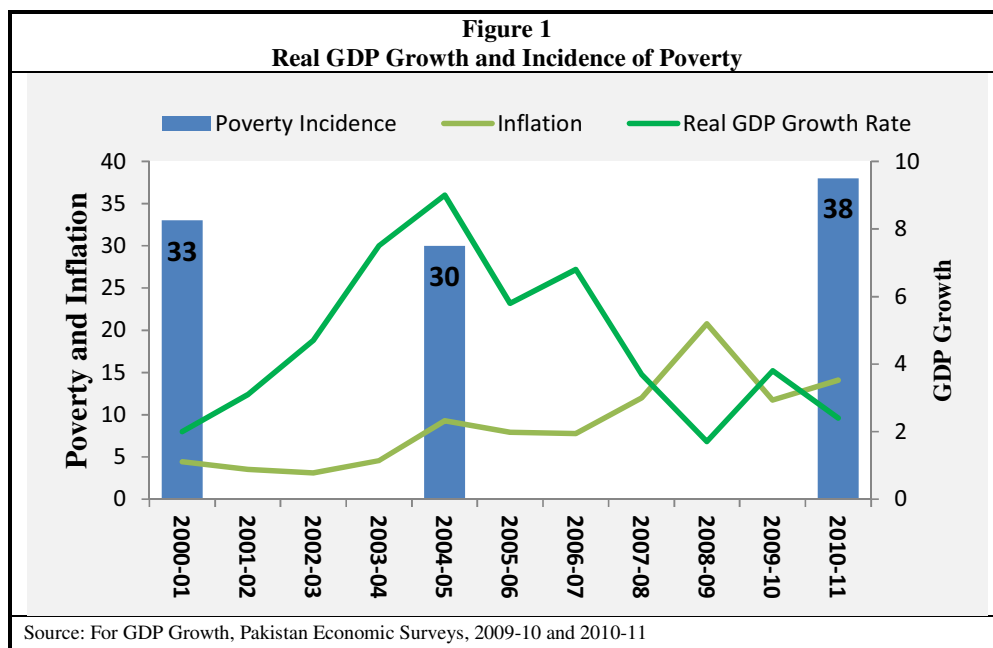


Table-4 portrays the trend in poverty incidence since 1987-88. All these poverty numbers are estimated using unit record household level data of Household Income and Expenditure Surveys and by applying through-out a consistent and identical methodology for estimating poverty line and poverty indices.

<b>Table 4</b>						
<b>Trends In Poverty Incidence</b>						
<i>[Percentage of Population Living Below the Poverty Line]</i>						
	<b>1987- 88</b>	<b>1996-97</b>	<b>1998-99</b>	<b>2001-02</b>	<b>2004-05</b>	<b>2010-11</b>
Pakistan	23	28 (2.4)	30 (3.6)	33 (3.3)	30 (- 3.0)	<b>38</b> (4.4)
Urban	19	25 (3.5)	25 (0)	30 (6.7)	28 (- 2.2)	<b>34</b> (3.6)
Rural	26	30 (1.7)	32 (3.3)	35 (3.1)	31 (- 3.8)	<b>39</b> (4.3)
<b>Note:</b> Annualised Growth Rates (percent) from previous period are given in parenthesis.						
<b>Source:</b> Latest estimates are based on HIES 2010-11. The poverty incidences for other years are taken from Jamal (2002, 2005 and 2007). Consistent methodology and calorie norms are applied for all years.						

Table-4 indicates a relatively higher incidence in rural poverty throughout during the period 1987-88 and 2010-11. A comparison of 2001-02 and 2004-05, shows a decline of 3 percentage point in poverty incidence. Moreover, the decline in urban poverty is relatively less than the rural poverty. Rural poverty in this period has dropped with an annual growth rate of 4 percent, while the decline is about 2 percent in the case of urban poverty incidence. On the contrary, during 2004-05 and 2010-11, estimated poverty incidences are showing again an upward trend. Further, the rate of growth in rural poverty in this period is relatively higher (4.3 percent) than the increase in urban poverty incidence (3.6 percent).

### **3. ESTIMATES OF INCOME INEQUALITY**

Various inequality measures are computed to observe trends in per capita income inequality. Table-5 portrays trends in national, urban, and rural income inequality as measured by *Gini* coefficient and income shares during the last decade.

The *Gini* coefficient provides an estimate of resource inequality within a population. It is the most popular and well-known measure of inequality and summarises the extent to which

actual distribution of resource differs from a hypothetical distribution in which each person/unit receives an identical share. *Gini* is a dimensionless index scaled to vary from a minimum of zero to a maximum of one; zero representing no inequality and one representing the maximum possible degree of inequality.

Between 2002 and 2005, the *Gini* coefficients, barring very trivial improvement in urban income distribution, show no change in national and rural income inequality. However, a significant deterioration in rural income inequality is observed during the period of 2005-2011. The rural *Gini* coefficient for per capita income has increased approximately 6 percent from 0.35 to 0.37. This decline somehow was adjusted with the slight improvement in the urban income distribution and thus leaving national *Gini* unchanged.

<b>Table 5</b>			
<b>Per Capita Income Inequality</b>			
<b>[Gini Coefficients and Income Shares]</b>			
	<b>2001-02</b>	<b>2004-05</b>	<b>2010-11</b>
<b><i>Gini Coefficients</i></b>			
Pakistan	0.411	0.407	0.407
Urban	0.439	0.428	0.411
Rural	0.357	0.347	0.373
<b><i>Income Share of the Lowest 20% of the Population</i></b>			
Pakistan	7.0	7.2	7.0
Urban	6.6	6.5	6.8
Rural	8.0	8.5	8.1
<b><i>Income of the Highest 20% of the Population</i></b>			
Pakistan	47.6	48.8	48.7
Urban	50.3	50.4	49.8
Rural	43.2	43.4	45.8
<b><i>Ratio of the Highest to the Lowest</i></b>			
Pakistan	6.8	6.8	6.9
Urban	7.6	7.7	7.3
Rural	5.5	5.2	5.7
Source: Estimated from unit record household level data of HIES, various years			

A limitation of the *Gini* coefficient as a measure of inequality is that it is most sensitive to the middle part of income distribution than to that of extremes because it depends on the rank order weights of income recipients and on the number of recipients within a given range. Thus, to capture small changes in extreme parts of income distribution, the lowest and highest quintile income shares are also computed to supplement the estimates of *Gini* coefficient.

Table-5 also provides information regarding the share of income accruing to the lowest 20 percent (i.e. the lowest quintile) and to the highest 20 percent (i.e. the highest quintile) of the population. Statistics with respect to income shares show that in 2001-02, the lowest quintile obtained just about 7 percent of the national income while the highest quintile obtained 47.6 percent of the income. By 2004-05, the share of the lowest quintile had slightly improved to 7.2 percent and that of the highest quintile increased to 48.8 percent. The ratio of the highest to the lowest quintile, however, remained same during 2002 and 2005 period. The period 2005-2011 witnessed a decline in the national share of lowest 20 percent of population from 7.2 to 7.0 mainly due to the fall (from 8.5 to 8.1) in rural income share of the lowest quintile. On the contrary, the table indicates a significant rise in the rural share of highest 20 percent of population from 43.4 to 45.8.

Like *Gini*, the increase in the ratio of the highest to lowest rural income share clearly indicates deterioration in the rural income distribution during the period 2005-11, whereas a slight improvement in the urban income distribution has been recorded during the period.

#### 4. CONCLUSION

This research note provides poverty and income inequality updates, estimated from the latest available household survey of 2010-11. A consistent methodology is applied to compute poverty line and poverty indices.

The estimates show a rise of about 8 percentage points in poverty incidence during the period 2005 and 2011. Overall, 38 percent of the population was poor during 2010-11, indicating that about 61 million people were below the poverty line, as against 46 million during 2004-05. The percentage of rural poor is higher (39.37) as compared to urban poverty incidence which is estimated as 34.09 percent. Similarly, the depth and severity of rural poverty are relatively higher as compared to urban areas. Further, the rate of growth in urban poverty in the period 2004-05 and 2010-11 is significantly lower than the rate of change in rural poverty incidence. Inequality measures in terms of GINI coefficient and income shares also indicate a worsening trend in the rural income distribution. Overall income distribution however remained unchanged during the period 2005 and 2011.

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## APPENDIX – A

Estimated Calorie-Consumption Functions [2010-11]				
	Estimated Coefficients	t-Value	R <sup>2</sup>	F-Value
<b>Rural Areas</b>				
Dependent Variable <i>Log (Per Adult Calorie Consumption)</i>			0.32	292.004
(Constant)	6.943713	354.983		
<i>Per Adult Expenditure</i>	0.000393	32.893		
Dummy variable for Sindh	-0.058124	-6.781		
Dummy Variable for NWFP	0.043661	4.278		
Dummy Variable for Baluchistan	-0.029088	-2.584		
<b>Urban Areas</b>				
Dependent Variable <i>Log (Per Adult Calorie Consumption)</i>			0.26	164.304
(Constant)	7.031748	327.575		
<i>Per Adult Expenditure</i>	0.000263	24.164		
Dummy variable for Sindh	-0.020868	-1.974		
Dummy Variable for NWFP	0.097869	8.106		
Dummy Variable for Baluchistan	0.006028	.463		
<b>Source:</b> Estimated from household unit recode data of HIES, 2010-11.				

**APPENDIX – B****POVERTY INDICES**

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. The most popular measure, namely the Head Count Index (HCI) assigns equal weights to all the poor regardless of 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) (Foster et.al., 1984) 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;

- $P^{\alpha}$  = Aggregation measure
- $N$  = Total number of households
- $EXP$  = Observed household total 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.



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