

Poverty and Inequality during the Adjustment Decade: Empirical Findings from Household Surveys

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This paper investigates the dynamics of poverty and inequality in Pakistan over the period 1988–1999. The year 1988 was the year of the first formal Structural Adjustment Lending (SAL) from the World Bank and the IMF. Thus, this analysis facilitates the debate regarding the impact of SAL on household welfare and poverty. This is done by analysing changes in poverty and inequality from two comparable household income and expenditure surveys conducted by the Federal Bureau of Statistics. Our findings show an increase both in the Gini coefficient from 0.34 to 0.38 and poverty incidence from 24 to 30. The dynamic decomposition of the poverty index indicates the relative importance of growth and redistribution effects in explaining the changes in poverty. The analysis reveals that increase in poverty can mainly be attributed to low economic growth during the decade especially in the rural areas.

1. INTRODUCTION

Since the start of the structural adjustment programme in the 1980s, a growing debate has emerged as to the efficiency of these programmes to bring about sustainable economic growth, and as to their impact on poverty and basic needs fulfilment. However, the debate is inconclusive to date, and much less clear as to what the impact of the adjustment process has been on the poor. One emerging conclusion from the debate about the structural adjustment programme and its impact is that poverty and the social impacts of adjustment can only rarely be predicted on purely theoretical and *a priori* grounds [Grootaert (1995)]. It implies that the determination of what happens to household welfare and poverty under conditions of structural change is largely an empirical matter. This poses a problem, especially for developing countries, where the required social and economic database is either non-existent or inappropriate.

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Author's Note: The views expressed are those of the author and do not necessarily represent those of the SPDC.

Fortunately, the available data in Pakistan meets two essential conditions. First, any analysis of the impact of macroeconomic change requires comparable data for at least two points in time, situated appropriately relative to the adjustment phase so that they can reflect its impact. Second, the concern with household welfare and poverty requires the availability of micro-level data, which covers the different dimensions of household welfare.

This paper, therefore, facilitates the debate by analysing changes in poverty and inequality from two comparable household income and expenditure surveys conducted by the Federal Bureau of Statistics during 1987-88 and 1998-99. The choice of years is relevant and appropriate for the analysis. In Pakistan, the Structural Adjustment Programme came into force in 1988. Thus, the household data for 1987-88 provides benchmark estimates for poverty and inequality. The household survey of 1998-99 is the latest, and coincidentally it provides household information prior to the consequences of economic crises precipitated by the international sanctions imposed in May 1998.

The outline of the paper is as follows. In the next section, pre- and post-1988 macroeconomic trends are highlighted. Section 3 discusses the estimation procedure for micro analysis from household surveys. Section 4 is reserved for the discussion of inequality and poverty changes during the period, while the final section offers some concluding remarks.

2. MACROECONOMIC SCENARIOS

In assessing the economic performance¹ of the last decade, a convenient starting-point is 1988, the year of the first formal Structural Adjustment Lending (SAL) from the World Bank (WB) and the International Monetary Fund (IMF). During this time, most WB/IMF structural lending programmes for various countries, including Pakistan, had two sets of economic targets. Stabilisation, or demand management targets, was the goal for the short to medium term. Structural adjustments were the targets for the medium to long run. Table 1 and Table 2 illustrate the decade-long performance of indicators, both post- and pre-1988.

In Pakistan, the primary focus of the IMF-sponsored stabilisation programmes has been to lower the budget and current account deficits. In contrast, in Latin American countries the goal of these programmes in the 1970s and 1980s was to fight hyper-inflation. The twin deficits in Pakistan were to be lowered by the removal of price distortions and by making structural changes in almost all sectors of the economy. For example, the budget deficit was to be lessened by reducing and switching public expenditures and broadening the tax base. Table 1 compares the post-1988 decade average performance with the pre-1988 decade. After 1988, Pakistan's economy performed poorly in all the stabilisation indicators except for a

¹This section is drawn from SPDC's annual review *Social Development in Pakistan* (1999).

Table 1

Performance of Stabilisation Indicators (Pre- and Post-adjustment Era)

	Pre	Post
	1977-78 to 1987-88	1988-89 to 1997-98
Rate of Inflation	7.6	10.7
Budget Deficit (% of GDP)	7.1	6.7
Current Account Deficit (% of GDP)	4.5	5.5
Total Revenue as % of GDP	16.8	17.4
Public Expenditure as % of GDP	24.5	24.4
Export of Goods as % of GDP	16.7	19.2
Import of Goods as % of GDP	18.7	17.9
Growth Rate in Export of Goods (US\$)	10.5	7.5
Growth Rate in Import of Goods (US\$)	6.8	6.7
Depreciation of Nominal Exchange Rate	6.8	9.4
Growth Rate in Money Supply (M2)	13.6	15.6
Nominal Interest Rate on Deposits	8.0	6.2

Source: *Pakistan Economic Survey* (Various Issues).

Table 2

Performance of Structural Indicators (Pre- and Post-adjustment Era)

	Pre	Post
	1977-78 to 1987-88	1988-89 to 1997-98
GDP Growth Rate	6.4	4.5
• Agriculture	4.0	3.6
• Manufacturing	8.9	5.0
• Other Sectors	7.3	4.6
Growth in Index of Agricultural Production	4.5	2.0
Growth in Total Cropped Area	1.2	0.5
Domestic Savings (% of GDP)	8.2	13.4
Private Investment (% of GDP)	7.3	9.1
Growth in Foreign Direct Investment (US\$ million)	19.1	12.5
Growth in Total Debt Servicing	21.9	19.4
Total Debt Servicing as % of GDP	4.1	7.1

Source: *Pakistan Economic Survey* (Various Issues).

nominal reduction of the budget deficit, and a slight increase in total revenues and share of exports in the GDP. In contrast, many other indicators showed deterioration. Average inflation in the 1990s stood at close to 11 percent as against 8 percent in the 1980s. The current account deficit, on average, rose by a full percentage point in the current decade from the 1980s.

Table 2 compares the economy's structural performance during the post- and pre-1988 decades. One observes significant improvement in the share of domestic savings in the GDP, a nominal rise in the share of private investment in the GDP, and slower growth of total debt servicing. In agriculture, the growth rates of rice and sugarcane yields per hectare are higher in the post-1988 decade. The rest of the indicators show either a nominal or significant decline. On average, GDP growth fell by approximately two percentage points, primarily due to a fall in manufacturing growth from 9 percent in the 1980s to 5 percent in the 1990s. Critics argue that the performance of each individual indicator (see Tables 1 and 2) carries an explicit verdict on the economic management and faulty design of the WB/IMF programmes. Proponents of sound economic management and meaningful implementation would argue that in the absence of a counterfactual scenario (i.e., how the indicators would have appeared in the absence of structural adjustment), the causality remains at best conjectural.

3. THE MICRO PERSPECTIVE—DATA AND ESTIMATION PROCEDURE

On the micro front, the study is based on two household surveys: Household Income and Expenditure Survey, 1987-88, and Household Integrated Economic Survey, 1998-99, undertaken by the Federal Bureau of Statistics. These surveys are very similar in the scope of data collection, sampling design, and coverage; they are nationally representative and the sample selection uses a two-stage stratified random sampling in both designs. Individual and household-level information is collected on a relatively large sample: 18,144 households in the first, and 14,679 in the second. The similarity in the sampling and questionnaire design also facilitates inferences on poverty and inequality trends, and comparisons over time.

Although these surveys collect information on household income and expenditure, it is preferred to use expenditure as a measure of welfare, partly because of non-sampling errors and bias in income under-reporting. This bias may be particularly large when income data are collected on a single visit to households. It is argued that in an economy where most of the economically active population are not in remuneration through salaries but are either self-employed or work on farms or other family business, the reporting of consumption expenditure is likely to be more reliable than that of income.

The expenditure values do not reflect household composition. To account for the differences between the two periods, adult equivalent scales are used to correct

for household age and composition effects. These correction factors are computed endogenously from the survey. Pakistan (2001) provide the recommended daily allowance for the population for various age and sex compositions. These requirements with household data are used to define adult equivalent scales.

Two measures of inequality are used in this analysis: the ratio of the top to the bottom quintile's expenditure (per adult equivalent) and the Gini coefficient. The ratio of the top-to-bottom quintiles is a very commonly used summary measure of inequality in both developed and developing countries. The main drawback of this inequality measure is that it ignores the expenditure of the middle 60 percent of the population, and also the distribution of income or expenditure within the richest and the poorest quintiles. The Gini coefficient is a measure of inequality which varies between 0 (when everyone has the same expenditure or income) and 1 (when one person has everything). The closer a Gini is to 1, the more unequal is the distribution.

The study uses the absolute poverty line for welfare inference.² Exactly the same methodology is used to estimate the poverty lines from two surveys. The methodology adopts a calorific approach and uses per adult equivalent total expenditure as an indicator of household welfare. Following Ercelawn (1992), overall expenditure (economic capacity of household) is used in a calorie-expenditure relationship.³ Specifically, calorie consumption is regressed on non-durable consumption expenditure to estimate expected expenditure for the minimum calorie intake. The daily calories intake norm recommended by the Working Group on Poverty Alleviation of the Planning Commission in 1997 (2550 calories per adult equivalent for the rural and 2230 calories for the urban areas) has been used. Once a poverty line has been set, a number of summary statistics describing the incidence, depth, and severity of poverty may be calculated. These include the headcount index (which measures the incidence of poverty), the poverty gap (which measure the depth of poverty), and the squared poverty gap (which measures the severity of poverty).

Foster, Greer, and Thorbecke (1984) show that these three poverty measures may all be calculated using the following formula:

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

Where;

P^{α} = Aggregation measure

N = Total number of households

EXP = Observed household expenditure

²Instead of inflating or deflating the poverty line, it was felt necessary to estimate the poverty line separately from both data sets to control the changes in the consumption pattern during the decade.

³Detailed methodology and alternative approaches to determination of the poverty line are discussed in Jamal (2002).

Z = Poverty line

Σ = Summation for all individuals who are below the poverty line.

Putting $\alpha = 0$, the formula shows the head count index (HCI), that is, proportion of households whose consumption falls below the poverty line. This simple measure ignores the depth of poverty. Putting $\alpha = 1$, the Proportionate Gap Index or the 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 that are far from the poverty line.

One of the objectives of the paper is to evaluate the poverty and inequality in the context of the macro-economic changes, which occurred over the period of 10 years under the umbrella of the Structural Adjustment Programme. In order to address this question, the methodology first proposed by Ravallion and Huppi (1991) has been selected. The approach is centred around a decomposition of a poverty index. The change in the poverty index over time is decomposed into its growth and distribution components, in order to assess the relative role played by each.

The formula, which decomposes the changes in poverty, is as follows. Let P^{99*} denote the measure of poverty in 1999 in only mean consumption, which has changed since 1988 without any change in the relative consumption level; that is, P^{99*} is obtained by applying the 1999 mean to the 1988 Lorenz curve. Similarly, let P^{99**} denotes the poverty level in 1999 if only the Lorenz curve had shifted since 1988, leaving the mean consumption unchanged. In practice, the redistribution component is calculated by multiplying each observation in the 1999 data set by the ratio of the 1988 to the 1999 mean consumption. The observed change in poverty between the two dates can then be decomposed into growth and distributional effects as follows:

$$P^{99} - P^{88} = \frac{(P^{99*} - P^{88})}{(P^{99**} - P^{88})} \text{ growth effect}$$

$$\text{distribution effect}$$

4. INEQUALITY AND POVERTY TRENDS

As mentioned earlier, per adult equivalent household expenditure is used as a welfare indicator for both periods: 1987-88 and 1998-99. This will control any changes in the composition of households during the decade. Table 3 presents the magnitude of the Gini coefficients and population shares for per adult equivalent expenditure. About 11 percent or a 4 percentage points increase in the overall Gini coefficient is evident from the Table. More or less the same trends are observed with respect to the urban and rural inequality. This is an average position of inequality according to the Gini coefficients. The most glaring information is provided by the share of income accruing to the lowest quintile (i.e., the lowest 20 percent) and to the

Table 3

<i>Inequality Measures (Household Expenditure Per Adult Equivalent)</i>		
	1988	1999
Gini Coefficients		
Pakistan	0.34	0.38
Urban	0.39	0.42
Rural	0.30	0.33
Share of the Lowest 20 % Population		
Pakistan	8.8	7.8
Urban	7.8	6.6
Rural	9.6	8.7
Share of the Highest 20% Population		
Pakistan	43.5	46.5
Urban	47.8	50.1
Rural	40.0	41.8
Highest to Lowest Ratio		
Pakistan	4.9	6.0
Urban	6.1	7.6
Rural	4.2	4.8

Source: Estimated from Household Surveys, 1987-88 and 1998-99.

highest quintile (i.e., highest 20 percent) of the population. The magnitudes reveal that in 1988 the lowest quintile obtained just about 9 percent of the income share while the highest quintile obtained 44 percent of the income. By 1998, the share of the lowest quintile had yet again declined to 8 and that of the highest quintile increased to 47 percent. The decline in the income share of the lowest quintile and the increase in the income share of the highest quintile have occurred in both the urban as well as the rural areas. However, the situation in the urban areas is more pronounced than its rural counterpart. This can be seen from the fact that the 1988 highest-to-lowest ratio for the urban areas is higher at 6.1 than 4.2 for the rural areas. However, both ratios have continued on an upward trend, with the 1999 inequality ratio rising to 7.6 (an increase of 25 percent) and 4.8 (an increase of 14 percent) for the urban and the rural areas, respectively.

Table 4 presents the poverty estimates.⁴ On the whole, about 24 percent of the people of Pakistan were in the state of poverty in the year 1987-88. This percentage has increased to 30 in the year 1998-99 (an increase of 26 percent). It indicates that

⁴Poverty estimates are sensitive to the choice of methodology and calorie norms. Therefore, a comparison with estimates of other researchers is difficult and would mislead readers. For this study, inter-temporal changes in poverty are analysed with the identical methodology and calorie norms. Similarly, this study uses per adult equivalent household expenditure, instead of per capita household income, as a welfare indicator for computing inequality.

Table 4

Poverty Estimates (Percentage of Poor Population)

	1988	1999	Percent Change
Poverty Incidence (Head-count Index)			
Pakistan	23.5	29.7	26
Urban	18.6	25.0	34
Rural	25.5	31.6	24
Poverty Depth (Poverty Gap Index)			
Pakistan	4.4	6.5	48
Urban	3.5	5.7	63
Rural	4.8	6.9	44
Poverty Severity (FGT2 Index)			
Pakistan	1.3	2.1	62
Urban	1.0	1.9	90
Rural	1.4	2.3	64

Source: Estimated from Household Surveys, 1987-88 and 1998-99.

about 14 million people have fallen in the state of poverty during the decade. Although, the incidence of poverty is relatively higher in the rural than in the urban areas in both years, the change in urban poverty is more pronounced. The table depicts 34 percent and 24 percent change in the urban areas and the rural areas respectively.

The headcount index or incidence of poverty does not consider the distribution among the poor. An understanding of this distribution is necessary to perceive the nature of poverty, chronic or transitory. The low magnitudes of the Poverty Gap Index and the FGT2 Index indicate that poverty in Pakistan is not so deep and most of the poor people are not far away from the poverty line. However, during the decade of analysis, the gap and inequality among the poor has increased sharply. About 63 percent poverty gap (PGI) and 90 percent poverty severity (FGT2) have increased in the urban areas as against the 34 percent increase in the poverty incidence. The magnitudes of percent changes in the depth and severity of rural poverty are relatively lower than those in the urban areas.

Generally, the food share in household expenditure is considered as an indicator of welfare. A high share of food costs is said to imply a relatively higher level of poverty. Table 5 demonstrates this view of poverty. It demonstrates a crude picture of the adjustment in consumption patterns due to income and price effects. The table gives average shares of major commodity groups as reported by the lowest 20 percent population (after ranking households by expenditure per adult). Interesting observations emerge. A small increase in food⁵ share is evident from the

⁵Expenditure on food includes cereals, pulses, milk, oil and ghee, all types of meat, vegetables, and sugar. It excludes meals outside, canned food, dry fruit, beverages, sweets, and biscuits.

Table 5

Expenditure Shares—Lowest Quintile of Population (Percentage)

Major Commodity Groups	1988	1999	Relative Percent Change
Food	44.6	46.5	4
Clothing	9.1	8.5	-7
Fuel and Lighting	6.8	7.5	10
Housing	9.2	9.7	5
Transport	2.2	1.3	-41
Health	2.7	4.4	63
Education	0.7	2.0	186
Items for Household and Personal Care	8.9	7.1	-20
Durables	2.2	0.9	-59

Source: Estimated from Household Surveys, 1987-88 and 1998-99.

table. This is understandable. Households in the lowest-income group already have the highest food shares. Therefore, a major upward shifting is implausible. Interestingly, the share of health and education has increased at the cost of durables, consumable household items, and clothing. The table also depicts 10 percent increase in fuel share.

Table 6 gives the picture of another extreme. It displays the shares of the highest quintile of the population. Here also, a major upward change is observed in health and education, while the share of household durables has decreased significantly. The table also confirms small increase in the food, clothing, and fuel shares during the decade.

Table 6

Expenditure Shares—The Highest Quintile of Population (Percentage)

Major Commodity Groups	1988	1999	Relative Percent Change
Food	30.6	31.5	3
Clothing	6.0	7.1	18
Fuel and Lighting	5.4	6.7	24
Housing	13.6	13.5	-1
Transport	4.5	3.8	-16
Health	2.5	4.2	68
Education	1.2	2.8	133
Items of Household and Personal Care	5.2	7.9	52
Durables	4.2	2.2	-48

Source: Estimated from Household Surveys, 1987-88 and 1998-99.

Households in the lowest quintile devote over 45 percent of their budget to food as compared to households in the highest quintile, which devote just over 30 percent. The change in the household budget composition between 1988 and 1999 for the lowest and the highest quintiles is also meaningful. The share of food cost has increased for both quintiles, but the increase is greater for the lowest quintile than for the highest quintile; this indicates an intensification of poverty at lower levels.

The change in poverty which occurred during the decade of Adjustment is the net result of two effects, a fall in the mean level of household real expenditure and a change in the distribution. The formula described above facilitate the decomposition of poverty. These results are presented in Table 7.

Table 7

Decomposition of Poverty Estimates (Percentage)

	Change in Poverty due to		
	Growth Effect	Distribution Effect	Interaction Effect
Poverty Incidence (Head-count Index)			
Pakistan	63	42	-5
Urban	-53	163	-10
Rural	113	-11	-2
Poverty Depth (Poverty Gap Index)			
Pakistan	52	56	-8
Urban	-37	156	-19
Rural	89	14	-3
Poverty Severity (FGT2 Index)			
Pakistan	44	62	-6
Urban	-29	157	-28
Rural	75	24	1

Source: Estimated using decomposing formula.

The growth component captures the effect of the changing level of mean expenditure between 1988 and 1998, while maintaining the 1988 distribution. The redistribution component shows the effect of the changes in distribution during the decade, while maintaining mean expenditure at its 1988 level. The residual component reflects the interaction between changes in the mean and the distribution.

It is evident from the table that in the rural areas, the main factor that remained important during the decade for the rise in poverty was growth and not distribution as such. In the urban areas, however, distribution has significantly affected the poverty incidence. The growth components in the urban poverty incidence, depth and severity, are negative, indicating a reduction in poverty measures due to the growth in the economy. The magnitudes of decomposition for

overall Pakistan reveal that poverty has risen about 63 percent due to low growth and about 42 percent due to rise in inequality. It is worth mentioning here that the decomposition analysis considers only two points in time (1987-88 and 1998-99), ignoring the changing scenario in between. Therefore, the finding should be interpreted accordingly.

5. CONCLUDING REMARKS

This paper demonstrates the dynamics of poverty and inequality over the period 1987–99. This period is brief but critical with reference to the Structural Adjustment Programme. The results indicate that overall poverty and inequality increased during the adjustment phase. Our findings conclude an increase in the Gini coefficient from 0.34 to 0.38 and in the poverty incidence from 24 to 30. The dynamic decomposition of the poverty index indicates the relative importance of growth and redistribution effects in explaining the changes in poverty. In our case, the increase in poverty can be attributed to low economic growth in the rural areas and to a rise in inequality in the urban areas.

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