Growth and Income Inequality Effects on Poverty: The Case of Pakistan (1988-2011)

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Abstract

This research assesses the distributional characteristics of growth in Pakistan by applying statistical techniques suggested in the empirical literature on poverty and income inequality. An attempt is also made to determine the relative contribution of economic growth and distribution of income to changes in poverty.

Various episodes of growth are considered during the period 1988-2011. The findings of the research will facilitate policy makers to evaluate growth strategies in terms of pro-poorness or growth with equity.

JEL Classification: I32, D31, D63

Keywords: Poverty Decomposition, Income Inequality, Pro-Poor Growth, Pakistan

1. Introduction

During the last three decades, vast literature on the relationship between growth, poverty and income distribution has flourished. Empirical studies have investigated causality and links from growth to poverty, from growth to inequality, from inequality to growth or from inequality to poverty.

The development literature in 1990s suggested that growth is central to any strategy aimed at poverty reduction. Empirical studies concluded that countries that made noticeable progress on poverty reduction were those which recorded fast and high growth rates. However, this view was modified after empirical investigation and it was suggested that it is not growth per se, but the structure of growth that matters (Ravallion and Datt, 1996, Mellor 1999)[1].

The 'primacy of growth' paradigm assumes a trade-off between growth and equity. Based on initial research findings, it was maintained that distribution policies give rise to distortions in the economy, resulting in inefficiencies that may be substantial enough to adversely affect the overall well being of society. It is also argued that inequality within a country is stable over time and changes too slowly to make a significant difference in poverty reduction. The conclusion drawn is that growth must precede distribution, and that the poor will pay the price of growth in terms of inequality and poverty until such time that growth builds up a 'reservoir' of wealth and its benefits trickle down in sufficient measure to reduce poverty (SPDC, 2004).

The contention of positive relationship between inequality and growth has been questioned in the empirical evidence based on rigorous testing of cross-country data. For instance, Knowles (2001) reconfirms the negative effects of inequality on growth using updated and more comparable inequality data. The emerging consensus now is that inequality is harmful for growth; although disagreement exists on the underlying mechanisms. There are at least three main arguments in support of a negative effect of inequality on growth. These routes or mechanisms have been summarized in Perotti (1996). The first argument is that an unequal distribution of income will lead to pressure for redistribution through higher government expenditure and distortionary taxes. This would reduce the growth rate. The second argument is that inequality may lead to socio-political instability, which in turn will reduce investment and growth. The third argument is that in the presence of imperfect capital markets, inequality will reduce investment in human capital and this will also in turn reduce growth.

While empirical evidence predominantly suggests that inequality is bad for growth (Naschold, 2002), it is reasoned that there does not exist an unavoidable trade-off between growth and equity. The World Development Report (2000/01) concludes that better distribution is possible without a reduction in economic growth. Given that there is no trade-off per se between growth and equality, it follows that distribution can be pursued as an additional policy objective to enhance the poverty reducing effect of growth. The removal or correction of the various anti-poor institutional constraints and policy-induced biases is likely to actually improve market efficiency while promoting equity. For instance, social policy ensuring adequate provision of education and health services to the poor can improve their productivity and contribution to the

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[1] This version or modification is very much similar to the recent literature on the inclusiveness of growth.

economy. Therefore, the conclusion drawn is that poverty reduction is not a function of high or low growth but rather of distribution sensitive growth (Naschold, 2002).

Although, there is plenty of evidence suggesting that the combination of growth and distribution are essential for poverty reduction (e.g., Deininger-Squire 1998; Foster and Szekely 2001; Ravallion 2002; Krayy 2004), Bourguignon (2004) has redirected the attention from the growth-distribution debate to the interaction between growth and distribution in reducing absolute poverty. He suggested a poverty-growth-inequality triangle hypothesis that is based on the idea that development strategy should be guided by the goal of reducing absolute poverty, which can be achieved by implementing country-specific combination of growth and distribution policies.

This research contributes to the debate by assessing the distributional characteristics of growth in Pakistan. Statistical techniques suggested in the empirical literature on redistribution and growth are applied to analyze the historical relationship between growth, poverty and inequality. It also quantifies the relative role of income distribution in Pakistan's poverty reduction. Section 2 describes the situation analysis in terms of trends in the poverty and inequality during the period 1987-88 to 2010-11. The analysis of poverty decomposition into growth and income distribution components is provided in section 3, while the subsequent section evaluates Pakistan's growth with respect to its 'pro-poorness'. The last section summarizes the research findings.

2. Poverty and Inequality Profile

This section furnishes the poverty and inequality estimates, derived from various household surveys during the period 1987-88 and 2010-11. Issues in poverty measurement are also discussed briefly to comprehend the problems and variations in deriving poverty line from household consumption data.

2.1 Poverty Measurement

Among the various approaches of defining monetary[2] (income/consumption) or traditional poverty, 'calorific approach' is the most popular in developing countries due to its practicality. Almost in all studies of poverty in LDCs including Pakistan, poverty level is defined in terms of food inadequacy which is typically measured by the lack of nutritional (calorie) requirements. Correspondingly, Government of Pakistan adopted this approach for estimating official poverty line. According to the Poverty Reduction Strategy Paper (PRSP-I, GOP, 2003), Planning Commission described the following definition for estimating the poverty line.

"Calorific requirement approach wherein all those households (or individuals) are classified as poor who do not have income sufficient to allow a consumption pattern consistent with minimum calorie requirements (2350 calories per adult equivalent per day). It is also assumed that the

[2] The assessment of non-income and multidimensional poverty is also important for policy and planning. However, it is worth highlighting that consumption or income poverty measures only advocate the case for transfer policies and social safety-nets that alleviate poverty in the short-term, whereas multidimensional (education, health, housing etc.) measures facilitate policy makers in designing socio-economic policies that could alleviate the intergenerational poverty in the long-term.

households earning incomes equivalent to poverty line not only have sufficient food to meet the minimum nutrition requirements but also the non-food requirements".

Poverty can then be used to define the poor by total (food and non-food) expenditure failing short of the poverty line by the average dietary pattern the expenditure would translate into fewer calories than required. To estimate poverty line, first step is to translate household food consumption into calories. Food Consumption Tables for Pakistan (GoP, 2001) facilitates this conversion. Moreover, the recommended daily allowances for the Pakistani population for various age and sex composition are also provided in the Food Consumption Tables. These minimum requirements are matched with household demography (sex and age of members) to estimate adult equivalent unit (AEU) for each household. Now, to get the estimates of household expenditure required to obtain the minimum required calories, Calorie-Consumption Function (CCF) is estimated. Poverty line is then computed by combining calorie norms (minimum required calories) and estimated coefficients of the CCF.

This author also adopts the calorific approach, defined above to estimate the poverty indices in Pakistan however with slight modifications[3]. The major deviations with the official methodology are as follows:

- Government of Pakistan does not estimate separate urban and rural poverty lines. The rural lifestyle in general requires a greater consumption of calories than the urban lifestyle. It is not irrational to assume that for any given level of income, rural households are likely to consume more calories, on average, than their urban counterparts. Thus poverty estimates derived from official methodology using unique poverty line for both urban and rural households underestimate rural poverty and overestimate the urban poverty.

  This study therefore considers separate calorie requirement and follows the 2550 and 2230 calories per day per adult as calorie norms[4] (minimum requirement) for rural and urban areas, respectively.

- The official methodology uses first three per adult equivalent consumption quintiles (60 percent) to estimate CCF by arguing that the consumption pattern of the rich does not affect the determination of the poverty line. This is however against the popular perception of magnitude of poverty in Pakistan.

  This study estimates CCF from the lowest quartile (25 percent) of distribution after ranking households by per capita expenditure to reflect the average dietary pattern of only low income group in the estimation of poverty line.

- To monitor poverty level or to estimate the inter-temporal changes in the poverty magnitude, poverty line for the latest survey year may either be updated by utilizing

[3] For detail, see Jamal (2002, 2006, 2007 and 2013).

[4] The justifications of taking these norms are described in Jamal (2002).

previous estimated poverty line after adjusting with some appropriate index of inflation or it may be re-estimated with the help of new available consumption data.

Government of Pakistan adjusts the previous poverty line with inflation index to estimate the new level of poverty. To estimate official poverty estimates, two price indices are considered; Consumer Price Index (CPI) and survey based price index; the Tornqvist Price Index (TPI). 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. As an alternative therefore survey based 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 400 items.

On the other hand, re-estimation of poverty line is also criticized 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 approach'[5] . With the fixed norms, in the calorific approach it is estimated that how many rupees are required to obtain minimum required calories with the observed consumption pattern 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.

Specifically to measure the poverty line and poverty estimates, per adult equivalent household calories consumption is regressed on the lowest quintile of household per adult equivalent total expenditure, including value of goods consumed from own production. The provincial dummy variables[6] are also included in the regression function to capture the provincial dissimilarities with respect to socio-economic development. The regression coefficient of CCF gives an idea that how much rupees, on average are required to have one calorie. Rural and urban poverty lines are then computed by combining calorie norms (minimum required calories) and estimated coefficients of the CCF. Once a poverty line is defined, and hence the household poverty status determined through relating poverty line and household consumption, the question is how to aggregate this

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[5] See Jamal (2002) for the methodological consideration and choices.

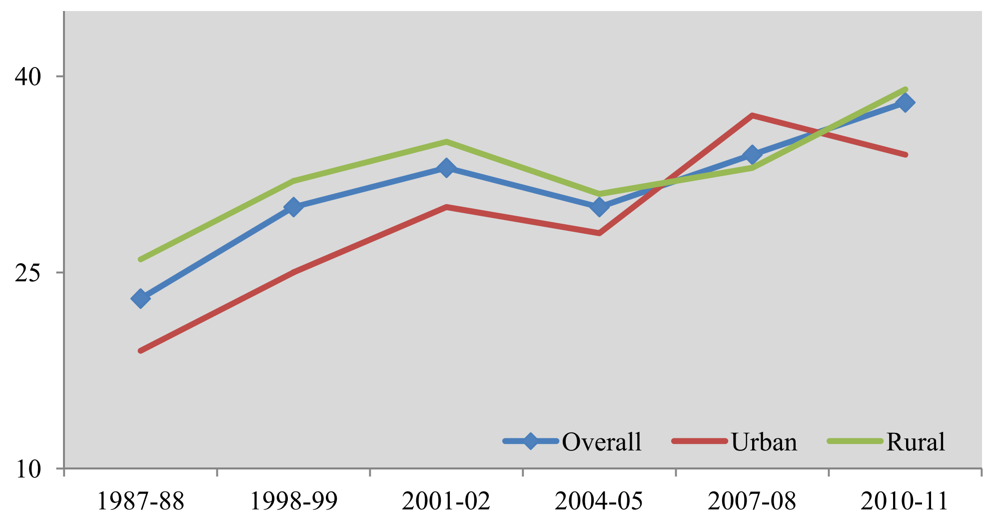
[6] It is worth mentioning that provincial dummy variables are not included in the calorie-expenditure regression function for estimating poverty line in the official (Government of Pakistan) methodology.

information into a single index to proxy the status of a group of individuals. This study reports the most popular measure, namely the Headcount Index or Poverty Incidence[7].

2.2 Poverty Estimates

Figure-1 portrays the trend in poverty incidence since 1987-88. All these poverty numbers are estimated using unit record household level data of Household Integrated Economic Surveys (HIES). The HIES includes standard and detailed consumption modules and is traditionally used to estimate poverty in Pakistan. Moreover, a consistent and identical methodology is applied throughout the period of analysis for estimating poverty line.

Figure - 1
National and Regional Poverty Estimates
[Percentage of Population Below the Poverty Line]



	1987-88	1998-99	2001-02	2004-05	2007-08	2010-11
Overall	23	30	33	30	34	38
		[3.04]	[3.33]	[-3.03]	[4.44]	[3.92]
Urban	19	25	30	28	37	34
		[3.16]	[6.67]	[-2.22]	[10.71]	[-2.70]
Rural	26	32	35	31	33	39
		[2.31]	[3.13]	[-3.81]	[2.15]	[6.06]

Notes: **A**nnualized Growth Rates (percent) from previous period are given in square brackets.
Author's estimates based on unit record data of HIES, various years

[7] Headcount assigns equal weights to all poor regardless of the extent of poverty. However, there are other measures which are sensitive to distribution among the poor and combine both the incidence and intensity of poverty. Poverty Gap and Poverty severity are famous in the poverty literature. For detail see Appendix-B of Jamal (2013). These poverty measures for various years are available in Jamal (2013 and 2007).

Figure-2
Poverty and GDP

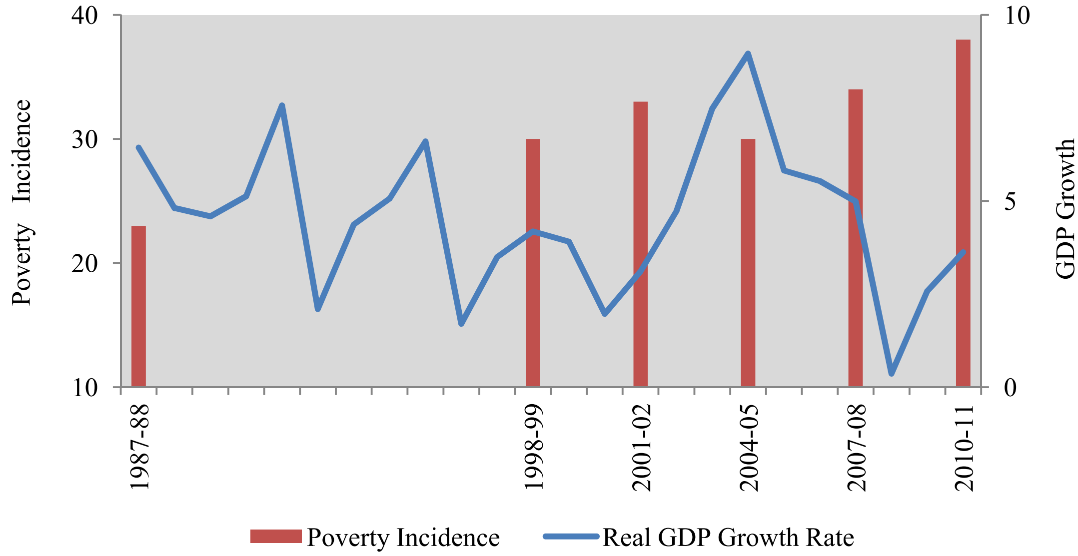


Figure-1 indicates a relatively higher incidence in rural poverty during the period 1987-88 and 2010-11. The figure also reveals that poverty has shown a declining trend only in the period 2001-2005. A comparison of this period shows a decline of 3 percentage point in poverty incidence. Moreover, the decline in urban poverty is relatively less than the rural poverty. Rural poverty in this period has dropped with an annual growth rate of about 4 percent as compared with 2 percent decline in the case of urban poverty incidence. Since 2004-05, poverty incidences are showing again an upward trend. The estimates derived from the latest available HIES data (2010-11) indicate an incidence of 38 percent. The regional picture reveals that about 34 and 39 percent population were below the poverty line during the year 2010-11 for urban and rural areas respectively.

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, a historical relationship between the Gross Domestic Product (GDP) growth and poverty incidence is plotted in Figure-2. In general, the chart suggests an inverse relationship between poverty and economic growth.

2.3 Profile of Income Inequality

Various inequality measures are computed to observe trends in per capita income inequality. Table-1 portrays trends in national, urban, and rural income inequality as measured by *Gini* coefficient and income shares during the period 1988-2011.

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

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-1 furnishes estimates of these inequality measures for various years during the period 1988-2011.

Table–1

Per Capita Income Inequality

	1987-88	1998-99	2001-02	2004-05	2007-08	2010-11
Gini Coefficients						
Pakistan	0.350	0.400	0.411	0.407	0.420	0.407
Urban	0.400	0.420	0.439	0.428	0.428	0.411
Rural	0.300	0.360	0.357	0.347	0.384	0.373
Income Share of the Lowest 20% of the Population						
Pakistan	8.8	7.8	7.0	7.2	6.7	7.0
Urban	7.8	6.6	6.6	6.5	6.6	6.8
Rural	9.6	8.7	8.0	8.5	7.5	8.1
Income of the Highest 20% of the Population						
Pakistan	43.5	46.5	47.6	48.8	49.2	48.7
Urban	47.8	50.1	50.3	50.4	50.8	49.8
Rural	40.0	41.8	43.2	43.4	46.5	45.8
Ratio of the Highest to the Lowest						
Pakistan	4.9	6.0	6.8	6.8	7.3	6.9
Urban	6.1	7.6	7.6	7.7	7.7	7.3
Rural	4.2	4.8	5.5	5.2	6.2	5.7

Note: Author's estimates based on unit record household data of HIES, various years

The table reveals an increase of about 6 basis points in the magnitude of *Gini* coefficient during the period 1988-2011. Rural income inequality has increased more severely in this period than the rise in urban income inequality (73 versus 11 basis points). Persistent low growth during the period 1987-88 and 1998-99 resulted significant deterioration in the income distribution as measured by inequality measures. On the contrary in the high growth episode (2001-2005), an improvement of about 10 basis points is observed in both urban and rural income *Gini* coefficients. A significant deterioration in rural income inequality is also observed during the period 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.

Table-1 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 1987-88, the lowest quintile obtained about 8.8 percent of the national income while the highest quintile obtained 43.5

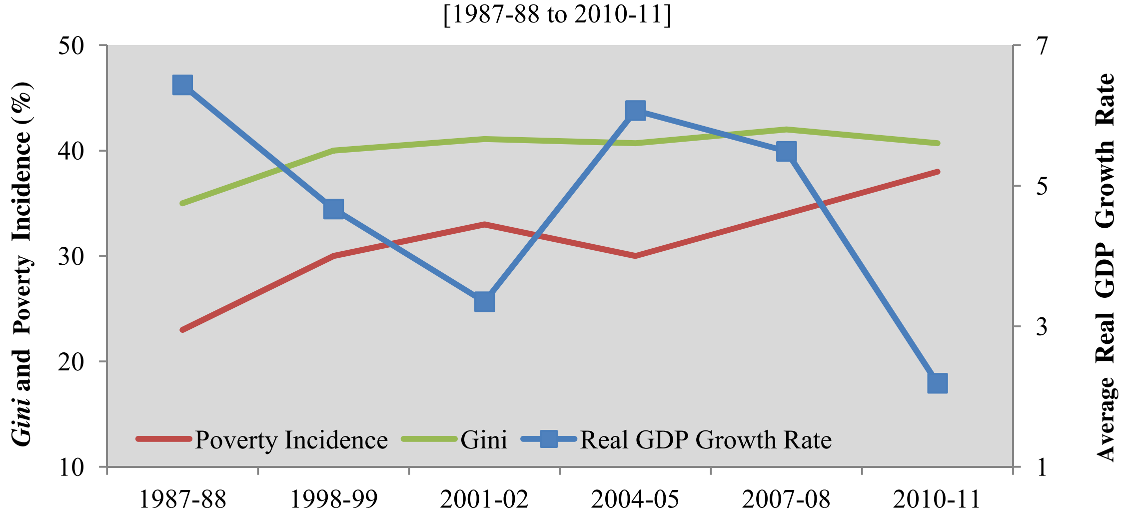
percent of the income. By 2010-11, the share of lowest quintile had reduces to 7 percent and that of the highest quintiles increased to 48.7 percent. The period 2005-2011 witnessed a decline in the national share of lowest 20 percent of population from 7.2 to 7.0 mainly due to the fall (from 8.5 to 8.1) 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 at the cost of lowest income quintile. 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.

3. Poverty-Growth-Inequality Nexus

According to Poverty-Growth-Inequality hypothesis, the extent and magnitude of absolute poverty depends on two factors: the growth of the mean level of real per capita income and the degree of inequality in the distribution of income. In general, at any given level of per capita income, the more unequal the distribution of income, the greater is the incidence of poverty. Likewise, for any given pattern of income distribution, the lower the level of per capita income, the greater is the incidence of poverty.

To comprehend the development outcome in terms of growth, poverty and inequality for the period 1988-2011, trends in real GDP, the *Gini* coefficient and headcount (poverty incidence) in Pakistan are sketched in Figure-3.

Figure-3
Poverty, Inequality and Growth
[1987-88 to 2010-11]



In terms of growth-inequality nexus, the phenomenon of low level of inequality with high level of income is evident from the figure. High growth rates have resulted in a slight decline in the *Gini* magnitude during the period 2002 and 2005. Similarly, low growth over relatively a long spell (1987-88 to 1998-99) resulted in higher magnitude of the *Gini* coefficient. The inverse relationship between poverty and growth is, however more discernible in the figure.

To quantify the influence of growth and inequality on poverty, a conventional poverty decomposition approach is used with slight modification. The methodology, which is proposed by Ravallion and Huppi (1991) and Datt and Ravallion (1992) decomposes changes in poverty indices into its growth and distribution components[8] in order to assess the relative role played by each. The decomposition exercise is carried out for various survey years and the estimates are furnished in Table-2. The results answer the question of what the poverty outcomes would be under distributional neutrality.

Table-2
Decomposition of Poverty Incidence

Survey Periods [HIES]	Change in Poverty [Percentage point]	Change Due to:		Real GDP Growth [Periods' Average]	
		Growth	Redistribution	GDP	Per Capita
1988-1999	6.95	6.55	0.40	4.67	2.12
1999-2008	3.93	6.15	-2.22	5.07	2.72
2008-2011	5.10	8.54	-3.44	2.19	0.20
1999-2002	2.97	5.58	-2.61	3.35	0.55
2001-2005	-2.61	-5.04	2.43	6.07	4.03
2005-2008	3.64	5.66	-2.02	5.49	3.14

Note: Author's estimates based on unit record data of HIES, various years.

The decomposition results are arranged according to the governance in the different political regimes during the period of analysis; 1988-98 (democratic rule), 1999-2008 (Military rule) and 2008-2011 (democratic rule). The military rule (Musharaf's era) is further divided in three episodes according to the observed growth phenomenon (low, high and again low growth).

The findings of the table in terms of coefficients of growth and redistribution suggest that overall growth was the main cause for the increase in the poverty level during the period of analysis. On the contrary barring the period 2001-2005, the redistribution component prevented the level of poverty to rise even further. For instance during the period 2008-2011, an increase of 8.54 percent in the poverty incidence is observed due to low growth, while redistribution neutralized this to the extent of 3.44 percent and thus leaving the net change in poverty of about 5 percent.

According to the table, if growth had been distributionally neutral in the 2001-2005 period (high growth period), the incidence of poverty would have declined by 5 percentage points instead of 2.61 percentage points. The evidence clearly reveals that unequal distribution has blunted the impact of growth on poverty. Similarly in a low growth period (1988-98), poverty would have gone up by 6.55 percentage points instead of 6.95 if growth had been distributionally neutral.

[8] A brief description of Datt and Ravallion (1992) methodology is provided in the Appendix-A.

The magnitudes of decomposition reveal that poverty has risen by almost 94 percent due to low growth and about 6 percent due to rise in inequality for the period 1988-98.

Results in Table-2 also suggest that the role of income distribution is relatively more important in high growth periods as evident from the magnitudes of redistribution component in both scenarios. The positive redistribution component is about 6 times higher in the period 2001-05 as compared with the period 1988-98.

4. Assessing Pro-Poorness of Selected Growth Episodes[9]

The evaluation of economic growth to analyze whether distributional changes are "pro-poor" has become increasingly widespread in academic and policy circles. The definition of 'pro-poor growth' however is still somewhat arbitrary. International development agencies define pro-poor growth as "growth that benefits the poor and provides them with opportunities to improve their economic situation".

From the measurement point of view, pro-poor growth can refer to either a relative or absolute concept of poverty reduction. Thus, the debate on defining pro-poor growth has very similar characteristics to the debate on how to measure poverty. This is equivalent to asking whether we should be interested in the impact of growth on absolute poverty or on relative inequality.

The absolute definition concentrates on the absolute level of growth for the poor. Growth is considered pro-poor if the poor population benefits from it in absolute terms, irrespective of how the total gains are distributed within the country in question. According to Ravallion and Chen (2003), the growth process is said to be 'pro-poor' only if poor people benefit in absolute terms. The extent to which growth is pro-poor by this definition depends solely on the rate of change in poverty. However, this will naturally depend in part on what happens to income distribution as well as to average living standards. Ravallion's absolute perspective of pro-poor growth is identical with the concept of poverty reducing growth and refers to the totality of the growth process. Thus, it advocates the 'primacy of growth' paradigm and 'trickle down' philosophy. According to Ravallion and Chen (2001), it is possible that both the poor and the non-poor see a drastic reduction in income but in relative terms, the income of the poor is less severely affected than that of the non-poor. Under a relative measure, this would mean growth would have been pro-poor even though the poor have seen an absolute decrease in income. They also argue that policy interventions targeted at reducing inequality alone may hurt economic growth and have a net negative effect on society. Moreover, Ravallion and Chen are in opinion that in operational terms, absolute measures tend to provide assessments that are more easily understood than relative ones.

The relative definition, proposed by Kakwani and others, classifies growth as pro-poor when growth implies distributional effects favoring the poor. In other words, when the poor gain from economic growth proportionally more relative to the non-poor, the nature of growth is said to be pro-poor. Thus, the relative perspective stresses the existence of a bias in favor of the poor. According to Kakwani and Pernia, 2000), pro-poor growth is described as a situation in which any distributional shifts accompanying economic growth favor the poor, meaning that poverty

[9] This section is largely benefited from the author's previous work, Jamal (2009)

falls more than it would have if all income levels had grown at the same rate. Kakwani et. al. (2004) argue, "The trickle-down development, which was the dominant thinking in the 1950s and 1960s, also reduces poverty but the rate of poverty reduction may be much slower. It is the slowness of poverty reduction that has generated interest in the concept of pro-poor growth. It is now being realized that neither growth itself nor growth-enhancing policies are likely to result in a rapid reduction in poverty. Pro-poor growth raises a call for enhancing growth that also delivers proportionally greater benefits to the poor than to the rich". Therefore, the relative definition of pro-poorness has been widely used in the literature due to its intuitive appeal, but it also has limitations. As maintained by Ravallion and Chen (2001), concentrating solely on the inequality aspects and disregarding the absolute levels of growth might end up favoring growth strategies that are suboptimal for both the poor and the rich.

Osmani (2005) however argues that he "find(s) both their definitions problematic". He suggests identifying a benchmark first that allows gauging of the pro-poorness of growth. 'Pro-poor growth' is then defined as a growth process that reduces poverty more than the benchmark.

Due to practical difficulties and subjectivity in identifying the benchmark, most of the empirical literature on 'pro-poorness' however has evolved around Ravallion's absolute and Kakwani's relative perspective. Both perspectives on pro-poor growth are relevant for designing different policies and routes for poverty reduction.

This research evaluates Pakistan's growth performance in terms of both absolute and relative pro-poorness to combine the strength of both perspectives[10]. Two growth episodes are selected for this exercise; 1988-1999 (low growth scenario) and 2001-2005 (high growth scenario). In the context of terminology, 'Rate of Pro-Poor Growth' (RPPG) or Growth Incidence Curve (GIC) and 'Poverty Equivalent Growth Rate' (PEGR) for the absolute and the relative perspectives are used respectively to assess pro-poorness of the growth process. Growth will be assumed to be pro-poor if the average GIC and PEGR are higher than the actual (ordinary) mean growth rate.

Figures 4 and 5 are developed to portray a sketch of the absolute pro-poorness of the growth process as measured by Growth Incidence Curve (GIC)[11]. These figures plot distribution corrected growth in the average decile consumption[12] per capita. A decline in real consumption was observed during low GDP growth period of 90's (1987-88 to 1998-99). However, Figure-4 clearly reveals that the poor (bottom deciles) have been more adversely affected as compared with top deciles. Figure-5 summarizes growth in mean quintile consumption for the high growth episode (2001-2005). The figure also confirms that relatively high growth in the years 2000-01 and 2004-05 did not go to the poor as much as to the non-poor. It is evident from the figure that the highest growth is observed in the top three deciles. Both figures assert the nature of Pakistan's growth, which is evidently not 'pro-poor'.

[10] Brief methodologies for measuring absolute and relative pro-poorness of growth are provided in the Appendix–B.

[11] DAD software (version 4.6) is used for estimating GIC curves and RPPG. The software is designed and developed by Jean-Yves Duclos, Araar Abdelkrim and Cari Fortin of Laval University (Canada).

[12] Traditionally in Pakistan, poverty indices are estimated using consumption data. Therefore, growth in mean decile consumption per capita is plotted instead of mean decile income per capita.

Figure 4
Per Capita Distributionally Corrected Consumption Growth
[1987-1988 to 1998-1999]

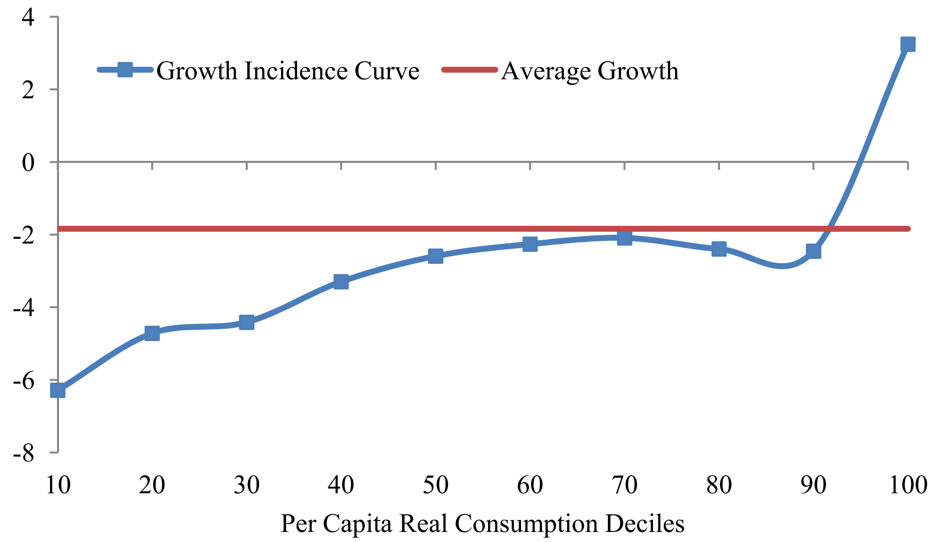


Figure 5
Per Capita Distributionally Corrected Consumption Growth
[2000-2001 to 2004-2005]

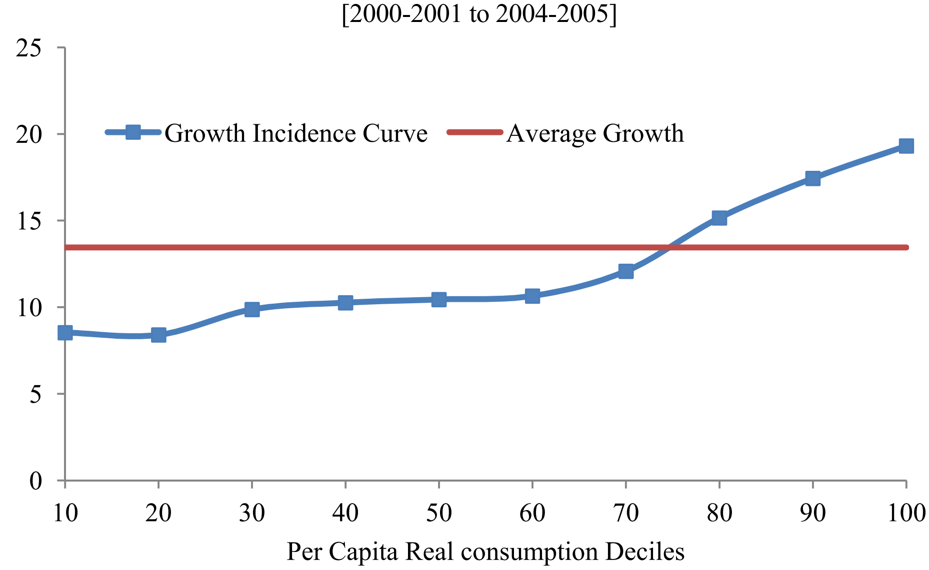


Table 3
Pro-Poorness Assessment in Low and High Growth Episodes

	Low Growth 1987-88 vs. 1998-99	**High Growth** 2001-01 vs. 2004-05
Growth in Real per Capita Mean Consumption – Ordinary Growth [Household Surveys]	-1.84	13.45
RPPG - GIC (50th Percentile) [Absolute Perspective]	-2.59	10.45
Nature of Growth	**[Not Pro-Poor]**	**[Not Pro-Poor]**
Poverty Equivalent Growth Rate [Relative Perspective]	-5.66	6.08
Nature of Growth	**[Not Pro-Poor]**	**[Not Pro-Poor]**

Note: Author's estimates based on unit record data of HIES, various years

Table-3 summarizes the assessment of Pakistan's growth in terms of pro-poorness[13] using both perspectives. The absolute perspective reveals that during the low growth period of the 90's, the RPPG (GIC at 50th percentile) is lower than the rate of average decline. This phenomenon indicates that the nature of growth is not 'pro-poor'. According to Ravallion (2004), if the distributional-shifts favor the poor, than the rate of pro-poor growth exceeds the ordinary growth. It is also evident from the table that the magnitude of RPPG is also lower than the growth in real mean consumption during high growth period (2001-2005). Thus the estimation of RPPG or GIC for Pakistan confirms that the nature of growth is not 'pro-poor', even in high growth episode. The growth, although reduced poverty during the period 2001-05, did not benefit lower income groups by much due to deterioration in the income distribution.

The relative perception of pro-poorness (PEGR), which is more attractive due to giving proportionally more weights to the poor or lower income deciles also asserts that the nature of growth was not in favor of poor for the growth periods considered in the analysis. PERG is lower than the growth in mean consumption in both growth episodes. This suggests that the non-poor benefitted more than the poor, even in a high growth scenario.

[13] Very brief overview of empirical findings in the context of Pakistan from the relevant earlier studies is provided in the Appendix-C.

6. Concluding Remarks

This study scrutinizes the Pakistan's empirics on growth, poverty and inequality in terms of poverty decomposition into growth and distribution components and assessment of growth in terms of its distributional neutrality with the help of widely-used statistical tools.

Decomposition of poverty into growth and inequality components answers the question of what poverty outcomes would be under distributional neutrality. The results presented in this research suggest that unequal distribution has blunted the poverty impact of growth in a high-growth poverty-reducing episode. The findings in terms of coefficients of growth and redistribution suggest that overall growth was the main cause for the increase in the poverty level during the period of analysis. On the contrary, the redistribution component provided a cushion to prevent the poverty to rise even further.

Two growth episodes are examined in term of pro-poorness. High economic growth that occurred during the early 2000's led to poverty reduction but was not accompanied by lowering inequality. The evaluation of growth during 2001-2005 suggests that the rich benefited much more than the poor. This eventually resulted in a lower reduction of the poverty incidence. On the contrary, the poor have been more adversely affected during a low growth scenario during the period 1988-98. The estimated results regarding the measurement of pro-poorness of growth suggest that the nature of growth is not pro-poor in Pakistan.

Pakistan's evidence supports the thesis that economic growth alone does not guarantee sustained poverty reduction. The evidence of high growth during the period 2001-2005 in Pakistan clearly indicates that without equity consideration, the benefit of growth may impede the rate of poverty reduction. For "pro-poor growth" to take place, policies must be both pro-growth and pro-equity.

References:

Anwar, Talat (2010), "Role of Growth and Inequality in Explaining Changes in Poverty in Pakistan", *The Pakistan Development Review* 49:1, 1–17.

Bourguignon, F. (2004) "The Poverty– Growth– Inequality Triangle" Indian Council for Research on International Economic Relations, New Delhi, Working Paper No. 125 (March).

Datt, G. and M. Ravallion (1992). Growth and Redistribution Components of Changes in poverty measures: A Decomposition with Application to Brazil and India in the 1980s. Journal of Development Economics Vol. (38)

Deninger, K. and L. Squire (1998) New Ways of Looking at Old Issues: Asset Inequality and Growth. *Journal of Development Economics*, 57(2): 259-287.

Foster, J. and M. Székely (2001) Is Economic Growth Good for the Poor? Tracking Low Incomes Using General Means. Inter-American Development Bank Research Department Working Paper No. 453.

Government of Pakistan (GOP, 2003), "Accelerating Economic Growth and Reducing Poverty: The Road Ahead", Poverty Reduction Strategy Paper, Poverty Reduction Strategy Paper Secretariat, Ministry of Finance, Government of Pakistan.

Government of Pakistan (GOP, 2001), "*Food Consumption Table for Pakistan*", Department of Agricultural Chemistry, NWFP Agriculture University, Peshawar

Jamal, Haroon (2002), "On the Estimation of an Absolute Poverty Line: An Empirical Appraisal", *The Lahore Journal of Economics*, July-December.

Jamal Haroon (2006), "Does Inequality Matter for Poverty Reduction? Evidence from Pakistan's Poverty Trends", Pakistan Development Review, Autumn

Jamal, Haroon. (2007), "Updating Poverty and Inequality Estimates: 2005 Panorama", SPDC Research Report No. 69, Social Policy and Development Centre, Karachi

Jamal, Haroon (2009), "Growth and Income Distribution for Poverty Reduction: Pakistan's Experience", Policy Brief Number 1, UNDP-Pakistan

Jamal, Haroon. (2013), "Pakistan Poverty Statistics, Estimates for 2011", SPDC Research Report No. 84, Social Policy and Development Centre, Karachi

Kakwani, Nanak and E. Pernia, (2000), 'What Is Pro-Poor Growth?' *Asian Development Review*. 18(1): 1-16.

Kakwani, N.C., S. Khandker and H.H. Son (2004). Pro-poor growth: concepts and measurement with country case studies. *Working Paper Number 2004-1*, International Poverty Center, Brazil

Kraay, A. (2004) When is Growth Pro-Poor? Evidence from a Panel of Countries Policy Research Working Paper, The World Bank Series No. 3225.

Knowles, S. (2001), "Inequality and Economic Growth: The Empirical Relationship Reconsidered in the Light of Comparable Data", *Centre for Research in Economic Development and International Trade*, CREDIT Research Paper Number 3, University of Nottingham

Mellor, J. B. (1999), "The Structure of Growth and Poverty Reduction", (Mimeo) World Bank, Washington D.C.

Osmani Siddiq (2005), "Defining Pro-Poor Growth", One Pager, January, Number 9, International Poverty Centre, Brazil, Omer, M and Sarah Jafri (2008), “Pro-Poor Growth in Pakistan: An Assessment Over the Past Four Decades” South Asia Economic Journal, 9:1 (2008): 51–68

Pasha A. H. and Palanivel T.(2004); “Pro-Poor Growth and Policies: The Asian Experience”, Asia-Pacific Regional Programme on the Macroeconomics of Poverty Reduction, United Nations Development Programme

Perotti, R., 1996, Growth, income distribution, and democracy: what the data say, *Journal of Economic Growth* 1, 149-187

Ravallion, M. and Huppi, M., (1991). “Measuring Changes in Poverty: A methodological case Study of Indonesia during an Adjustment Period”, *The World Bank Economic Review*, 5(1)

Ravallion, M. and G. Datt (1996) “How Important to India’s Poor is the Sectoral Composition of Economic Growth?” World Bank Economic Review 10, pp. 1-25.

Ravallion, M. and S. Chen (2001), “Measuring Pro-Poor Growth”, Policy Research Working Paper No. 2666, World Bank, Washington D.C

Ravallion, M. (2002) Externalities in Rural Development: Evidence from China. Policy Research Working Paper, The World Bank, No. 2879.

Ravallion, M. and S. Chen (2003), ‘Measuring Pro-Poor Growth,’ *Economics Letters*,78(1)

Ravallion, M (2004), “Pro-Poor Growth: A Primer”, World Bank Policy Research Working Paper Number 3242, World Bank, Washington DC

Shapley, L. (1953) ‘A Value for n-Person Games’, in: H. W. Kuhn and A. W. Tucker, eds., Contributions to the Theory of Games, Vol. 2, Princeton University Press.

Shorrocks, A. F. (1999) ‘Decomposition Procedures for Distributional Analysis: A Unified Framework Based on Shapley Value’, mimeo, Department of Economics, University of Essex.

Son, Hyun Hwa. (2004). “A Note on Pro-Poor Growth”, Economics Letters, Number (82)

SPDC (2004), “Social Development in Pakistan: Combating Poverty: Is Growth Sufficient?” Social Policy and Development Centre, Karachi

World Bank (2001), “*World Development Report”* (2000/01), Oxford University Press, New York

Appendix – A

Poverty Decomposition Methodology:

The method proposed by Ravallion and Huppi (1991) decomposes the changes in poverty indices (incidence, poverty gap, poverty severity etc.) into its growth and distribution components. Let P^* denote the measure of poverty in period 2 in only mean consumption which has changed since period 1 without any change in relative consumption level; that is, P^* is obtained by applying the period 2 mean to the period 1 distribution. Similarly, let P^{**} denote the poverty level in period 2 if only the distribution (Lorenz curve) had shifted since period 1, leaving the mean consumption unchanged. In practice, the redistribution component is calculated by multiplying each observation in the period 2 dataset by the ratio of the period 1 to the period 2 mean consumption. The observed change in poverty between the two periods can then be decomposed into growth and distributional effects as follows:

$$P_{t2} - P_{t1} = \underbrace{(P^* - P_{t1})}_{\text{[Growth Effect]}} + \underbrace{(P^{**} - P_{t1})}_{\text{[Distribution Effect]}} + Residual$$

The growth component captures the effect of the changing level of mean expenditure between t1 and t2, while maintaining the t1 distribution. The redistribution component shows the effect of the changes in distribution, while maintaining mean expenditure at its t1 level.

This decomposition method however also computes a residual component, which they explain as the interaction of growth and redistribution process. Shorrocks (1999) modified this decomposition method using the concept introduced by Shapley (1953). The advantage of this method is the elimination of the residual component or “black box” that remains unexplained in conventional decomposition techniques. Due to criticism on the residual term, the modified decomposition method proposed by Shorrocks (1999) is used in this paper[14].

[14] *DAD software (version 4.6) is used for decomposing poverty indices. The software is designed and developed by Jean-Yves Duclos, Araar Abdelkrim and Cari Fortin of Laval University (Canada).*

Appendix - B

Methodology for Measuring Pro-Poor Growth:

Absolute Perspective[15]: The measure of the rate of pro-poor growth proposed by Ravallion and Chen (2003) equals the ordinary rate of growth times a "distributional correction" given by the ratio of the actual change in poverty over time to the change that would have been observed under distribution neutrality. If the distributional shifts favor the poor, then the Rate of Pro-Poor Growth (RPPG) exceeds the ordinary rate of growth. If the shifts go against the poor then it is lower than the ordinary rate of growth. Thus, one can think of the second measure of the rate of pro-poor growth as the first measure times the ordinary rate of growth.

For distributional correction component, they proposed to estimate 'Growth Incidence Curve' (GIC) which was first used by Ravallion and Chen (2001) in the pro-poor growth concept. The GIC gives rates of growth by percentiles of the distribution of income. Growth Incidence Curve may be derived as follows:

$$g_t(p) = \left[\frac{L_t\ (p)}{L_{t-1}\ (p)}\ (\gamma_t + 1)\right] - 1$$

where $\gamma_t = (\mu_t\ /\ \mu_{t-1})$ is the growth rate in μ_t. It is evident from the equation that if the Lorenz curve (L) does not change, then $g_t(p) = \gamma_t$ for all p. Also $g_t(p) > \gamma_t$ if and only if $\gamma_t(p)/\mu_t$ is increasing over time. If $g_t(p)$ is a decreasing (increasing) function for all p then inequality falls (rises) over time for all inequality measures satisfying the Pigou-Dalton transfer principle. If the GIC lies above zero everywhere ($g_t(p) > 0$ for all p), then there is first-order dominance of the distribution at date t over t-1. If the GIC switches sign then one cannot in general infer whether higher-order dominance holds by looking at the GIC alone.

At the 50th percentile, the Growth Incidence Curve indicates the growth rate of the median income. Ravallion and Chen (2003) have thus defined the "pro-poor growth rate" as the mean growth rate of the poor. There is clearly a difference between this mean growth rate of the poor and the ordinary growth rate of the mean income or consumption.

Relative Perspective[16]: The poverty reduction depends on two factors. The first factor is the magnitude of economic growth rate; the larger the growth rate, the greater the poverty reduction. The second factor is the distribution of benefits of growth; if the benefits of growth go more to the poor than to the non-poor, then the poverty reduction will be larger. This implies that the policy of maximizing growth alone will not necessarily lead to a maximum reduction in poverty. The idea of "poverty equivalent growth rate" (PEGR) takes into account not only the magnitude of growth but also how much benefits the poor receive from growth. It is demonstrated that the proportional reduction in poverty is a monotonically increasing function of the PEGR; the larger the PEGR, the greater the proportional reduction in poverty. Thus, the maximization of PEGR will lead to a maximum reduction in poverty.

Unit record household data for any two periods is required to estimate the PEGR. The poverty measure θ is fully characterized by the poverty line z, the mean income μ and the Lorenz curve L(p). That is

$$\theta = \theta[z, u, L(p)]$$

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15 For detailed methodology see Ravallion and Huppi (1991) and Ravallion and Chen (2001, 2003).

16 For detailed methodology see Kakwani and Pernia (2000) and Kakwani et al. (2004).

Suppose the income distributions in the initial and terminal years have mean income μ_1 and μ_2 with the Lorenz curves $L_1(p)$ and $L_2(p)$, respectively. An estimate of total poverty elasticity can be estimated by

$$\delta = \{[\ \ln[\theta(z, u_2, L_2(p) - \ln[\theta(z, u_1, L_1(p)]]\} / \gamma$$

where γ is given by $\gamma = Ln(\mu_2) - Ln(\mu_1)$, which is an estimate of growth rate of mean income. An estimate of PEGR is given by $\gamma^* = (\delta / \eta)\ \gamma$, where δ is an estimate of the growth elasticity of poverty, which should satisfy $\delta = \eta + \xi$. ξ is an estimate of the inequality effect of poverty reduction. Kakwani's poverty decomposition methodology can then be used to calculate η and ξ by following formulae:

$$\eta = ½\{\ln[\theta(z, u_2, L_1(p))] - \ln[\theta(z, u_1, L_1(p))] + \ln[\theta(z, u_2, L_2(p))] - (\ln[\theta(z, u_1, L_2(p))]\}$$

and

$$\xi = ½\{\ln[\theta(z, u_1, L_2(p))] - \ln[\theta(z, u_1, L_1(p))] + \ln[\theta(z, u_2, L_2(p))] - (\ln[\theta(z, u_2, L_1(p))]\}$$

which will always satisfy $[\delta = \eta + \xi]$. This methodology can be used to estimate the PEGR for the entire class of poverty measures. The proportional reduction in poverty is equal to δ and γ, which is equal to $(\eta\ \gamma^*)$. Since η is always negative (unless $\mu_1 = \mu_2$), the magnitude of poverty reduction will be a monotonically increasing function of γ^*; the larger γ^*, the greater percentage reduction in poverty between the two periods. Thus, maximizing γ^* will be equivalent to maximizing the percentage reduction in poverty.

Growth will be assumed to be pro-poor if the *PEGR* is higher than the actual growth rate. If the *PEGR* is positive but smaller than the actual growth rate, it implies that growth is accompanied by an increase in inequality but a reduction in poverty is still observed. In such a case Kakwani et al. (2004) talk about a "trickle down" process where the poor receive proportionally less benefits from growth than the non-poor. Finally, if the *PEGR* is negative, one has the case where positive economic growth leads to an increase in poverty.

Appendix - C

Assessment of Pro-Poor Growth – Pakistan's Empirics:

Pasha and Palanivel (2005) have estimated the pro-poor growth for South Asia including Pakistan by using Growth Elasticity of Poverty (GEP). They concluded that GEP in case of Pakistan was negative (anti-poor) during 70's and 80's and positive (pro-poor) during the 90's. This simple approach however does not consider distributional characteristics of growth and thus is not an attractive method. Moreover, GEP also depends completely on the poverty measure[17] considered for the pro-poorness investigation.

Son (2004) computed poverty growth curves using international data for poverty and income distribution and concluded that growth in Pakistan was pro-poor during the 60's (1964-1969) and in the early 90's (1990-1996). For other periods the nature of growth was not pro-poor. The results for Pakistan are reproduced in the following Table.

Trends in Nature of Growth – Relative Perspective of Pro-Poorness
[Based on Group Data]

	Annual Growth Rate of Bottom					Nature of Growth
Years	20%	40%	60%	80%	100%	
1964 –1969	11.4	9.12	7.63	6.25	4.54	Pro-poor
1969–1979	0.42	0.64	0.77	0.87	1.07	Not Pro-Poor
1979–1985	2.94	2.85	2.89	2.99	3.02	Not Pro-Poor
1985– 1990	0.88	1.47	1.74	1.88	1.99	Not Pro-Poor
1990– 1996	3.92	3	2.18	1.5	1.39	Pro-poor

Source: Son (2004)

While Son (2004) approach was based on relative criterion of pro-poor growth, Omar and Jafri (2008) assessed Pakistan's growth performance using absolute perception and estimated RPPG proposed by Ravallion and Chen (2003). They found that, "overall….growth in Pakistan was pro-poor in (the) seventies[18], eighties and 2000s, with varying degrees, and anti-poor in the nineties". They also examined growth in incomes of those beneath the poverty line (four bottom deciles). The findings of their research indicate that the bottom decile (1st decile) experienced the sharpest growth (decline) in income relative to subsequent deciles in pro-poor (anti-poor) episodes. This suggests that much of the growth (decline) in the income of the poor took place among the 'poorest of the poor'. The main results from Omar and Jafri (2008) are reproduced below.

Trends in Nature of Growth – Absolute Perspective of Pro-Poorness
[Based on Group Data]

	1970s	1980s	1990s	2000s
Nature of Growth	Pro-Poor	Pro-Poor	Anti-Poor	Pro-Poor
Rate of Pro-Poor Growth	6.33	8.98	–7.13	10.45
Growth in Survey Mean	6.4	1.61	1.14	1.38
GDP Growth	5.05	6.59	5.52	4.72
Growth in Initial Deciles				
1st Decile	7.54	10.62	–8.30	16.3
2nd Decile	5.66	8.84	–5.57	8.98
3rd Decile	5.96	7.4	–4.39	6.92
4th Decile	6.18	6.31	–3.57	6.14

Source: Omar and Jafri (2008)

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17 For this exercise, Pasha and Palanivel used poverty incidence (headcount).

18 The surveys to cover decade as follows: seventies (1979, 1987-88); eighties (1987-88, 1998-99); 2000s (1998-99, 2004-05)

The above statistical findings covering both perspectives of pro-poorness are based on group data (deciles or quartiles). To avoid aggregation biases, Jamal (2009) quantifies the Pro-Poor using unit record data of household surveys for two different political regimes and growth episodes. He concluded that high economic growth that occurred during the early 2000's led to poverty reduction but was not accompanied by lowering inequality. The evaluation of growth during 2000 suggests that the rich benefited much more than the poor. This eventually resulted in a lower reduction of the poverty incidence. On the contrary, the poor have been more adversely affected during a low growth scenario during the 90's.

Anwar (2010) analyzed the role of growth and inequality in explaining changes in poverty using three household surveys; 1998-99, 2001-02 and 2004-05. He assessed the growth in urban and rural area by using absolute perceptive of pro-Poorness. The author narrates that "the Growth Incidence Curve highlighted the role of inequality in the first period and that of growth in the second period in explaining the changes in absolute poverty. Over the period as a whole he concludes that "from 1998-99 to 2004-05, while the effects of growth remained dominant, the redistribution component seems to have benefited only the urban areas. On the other hand, redistribution seems to have adversely affected the poor in rural areas.