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Measuring pro-poor sectoral analysis for Pakistan: trickle down?

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The study aims to establish a pro-poor growth index called the 'Poverty Equivalent Growth Rate', which considers both the extent of sectoral growth and the benefits reaching the poor in Pakistan, using 21 household surveys between 1964 and 2011. The result reveals that despite the positive signs in agriculture growth, the growth process may not be classifiable as pro-poor. The result points out that compared with the non-poor, the poor overall benefited less from the revitalisation of agricultural processes; however, the trend was reversed during 2002 to 2011 when the poverty equivalent growth rates are higher than the growth rate of industry, manufacturing, commodity producing and services value added, which shows sectoral growth favours the poor more than non-poor in Pakistan.

Keywords: economic growth; poverty; inequality; sectoral composition; urban; rural; Pakistan

JEL classifications: D31, D63, I32, O47

1. Introduction

The study aims to establish a pro-poor growth index called the 'Poverty Equivalent Growth Rate', which considers both the extent of sectoral growth and the benefits reaching the poor in Pakistan's subsectors, i.e. agriculture, industry, manufacturing commodity producing and services sectors. Pakistan's economy has gone through various stages of decline and high growth over the country's first five decades (1960s–2000s) which provides an interesting case study of the relationship between poverty, growth and inequality. The data of the first five decades compiled from various resources provide a confused picture of economic growth, poverty and unemployment, as shown in Table 1.

Recent literature and policy-oriented discussions mostly use one of the two definitions for measuring pro-poor growth. Whereas first definition compares variations in income of the poor with the non-poor and considers a pro poor growth if distributional shifts favour the poor (Kakwani & Son, 2004). The second definition focuses more on variations in poverty itself. Pro poor growth benefits the poor in absolute terms as per an agreed measure of poverty (Ravallion & Chen, 2003). Rate of growth and its

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Table 1. Trends in economic growth, public expenditure, and poverty during first five decades.

Decades/ Year	Economic growth (%)	Poverty ratio (%)	Income inequality (%)	Unemployment rate (%)	Expenditure on social sector (% of GDP)	
					Health	Education
1960s	6.8	40.2	35.7	1.35	–	–
1970s	4.8	46.5	39.2	2.43	0.6	–
1980s	6.5	30.7	37.6	3.51	0.8	0.8
1990s	4.6	22.1	40.5	5.23	0.7	2.3
2000s	4.8	33.1	41.8	6.81	0.6	2.1

Sources: GoP (2012).

distributional pattern determine the rate of change in poverty, which reflects the extent of pro-poor growth (Kakwani & Son, 2002). This study takes the relative definition of pro-poor growth. However, even large absolute gains to the poor resulting from rising inequality amidst overall economic growth are not acknowledged as 'pro-poor growth'.

It is of utmost important to examine the performance of various sectors in order to assess the performance of sectoral growth of Pakistan. Agriculture and industry make the most essential sector of the Pakistani economy, i.e. the Commodity Producing Sector (CPS). It has relatively stronger linkages for economic development and prosperity of the country. It amounted to 46.5% of GDP in 2011 fiscal year, declining from 49.1% of GDP in 2001–2002, reflecting an increase in the share of the non-commodity producing sector. The CPS showed an improved performance with 3.28% growth rate in 2011 fiscal year compared with last year's 1.47%. Even the moderate recovery in the agriculture and industrial sector helped to achieve this level. However, the CPS growth remained far below its potential due to largely unforeseen climatic factors (GoP, 2011).

The above discussion confirms the strong connection between the sectoral growth and pro-poor growth in the context of Pakistan. The rest of the study is organised as follows: Section 2 describes the review of literature on the relationship between pro-poor growth and sectoral growth. The data source and methodological framework is explained in Section 3. The estimation and interpretation of results is mentioned in Section 4. Section 5 concludes.

2. Literature review

Development Economics indicates automatic dispersion of economic benefits across all sectors of the society. This is definitely the well-known 'trickle down' hypothesis, which was primary thinking in the 1950s and 1960s. Contextually, recent studies, such as Dollar and Kraay (2001), suggest that economic growth mitigates overall poverty. Dollar and Kraay's (2001) cross-country regressions study is criticised for catering for only an average picture relating to the relation between growth and poverty, where enormous differences across the countries are averaged out. Klasen (2004) suggested two strategies for examining pro-poor economic growth. The first, or direct, way is a pattern of growth that instantly elevates the incomes of the poor. This growth favours those sectors and regions where the poor live (or are moving to) and uses the factors of production that they possess or are able to acquire. The second way, in which economic growth can be pro-poor, the indirect way, functions through public redistributive policies, especially through taxes, transfers, and other government spending. Table 2 shows the different approaches of pro-poor growth analysis.

Table 2. Pro-poor growth approaches.

Study	Pro-poor growth approaches	Country	Findings
McCulloch and Baulch (1999)	Poverty Bias of Growth (PBG)	Andhra Pradesh and Uttar Pradesh states of India	Growth in Andhra Pradesh was pro-poor while growth in Uttar Pradesh was biased against the poor.
Kakwani and Pernia (2001)	Pro-Poor Growth Index (PPGI)	Korea, Thailand, Lao PDR, and Philippines	In Thailand poverty reduction received larger payoff, while growth-maximising policies are more suitable for Korea and Lao, PDR. For the Philippines, a combination of growth and pro-poor policies is suitable.
Ravallion and Datt (2002)	Growth Elasticity of Poverty	India's 15 major states	States with higher elasticities did not experience higher rates of non-farm growth.
Kakwani and Son (2002)	Poverty Equivalent Growth Rate (PEGR)	Korea, Thailand, Lao PDR, and Philippines	Poverty equivalent growth rate is greater than actual growth rate which represent the pro-poor growth process in a countries.
Ravallion and Chen (2003)	Growth Incidence Curve (GIC)	China	The rate of pro-poor growth was around 4% in China, however, the pattern was reversed for a few years in themid-1990s.
Son (2003)	Poverty Growth Curve (PGC)	Thailand	Economic crisis hurt the poor proportionally more than the non-poor.

Source: Authors' results compiled with previous literature.

Bakker (2007) investigated, in Jakarta, Indonesia, the performance of the private sector with respect to network connections for poor households. He did not find evidence for a pro-poor partner, i.e. new connections were favourably targeted at middle and upper-income households over the period 1998–2005, and the numbers of new connections were lower than the original targets. This study further shows that the failure to connect the poor is not solely attributable to the private operators, and identifies disincentives to providing individual network connections to poor households on the part of the municipality, the private concessionaires and poor households. Djurfeldt (2012) examines African re-agrarianisation by using household level longitudinal data from smallholder households in eight African countries for the period during 2002–2008. The result concludes that pro-poor agricultural growth is concentrated in particular villages, where it is highly inclusive. Cheema and Sial (2012) estimated the three pro-poor growth indices, namely, Poverty Bias of Growth (PBG), Pro-poor Growth Index (PPGI) and Poverty Equivalent Growth Rate (PEGR). To determine pro-poor growth they used eight household income and expenditure surveys conducted during 1993 and 2008. They concluded that except for some time, the growth remained pro-poor. Zaman, Khan, and Ahmad (2012a) examined the influence of FDI on the poor in Pakistan using data from 1985–2011 and concluded FDI has a significant mitigating effect on poverty, i.e. a 1% increase in FDI results in 0.46% decrease in poverty. Zaman, Khan, Ahmad, and Shabir (2012b), using two household surveys during 1999–2006, inspected various methods for measuring pro-poor growth rate in the Pakistani sub-sectors; that is, agriculture, commodity producing, manufacturing, and services sectors. They concluded that

due to pro-rich federal policies in Pakistan growth was not pro-poor. Cuesta, Kabaso, and Suarez-Becerra (2012) examined the distributional effect of public spending in Zambia using the 2010 Living Conditions Monitoring Survey. They concluded that no evidence of pro-poor and progressive overall public education spending was found in Zambia.

Zaman and Khilji (2013a) examine the association between poverty, income inequality and economic growth in Pakistan's urban, rural and nationwide populations, over the period 1964–2011. The results conclude that growth processes have not generally been favourable to the poor during the study period. Zaman and Khilji (2013b) examine the relationship between economic growth and poverty over following 25 years, i.e. from the years 2011 to 2035. The results conclude that economic growth, poverty and income inequality are strongly linked to one another that any positive shock between them would be favourable to one variable and may be damaging to the other variable. Khan, Khan, Zaman, and Khan (2014a) examine the relationship between agricultural technological indicators and rural poverty in Pakistan, over the period 1975–2011. The results suggest that agricultural technology indicators are directly linked with economic growth and rural poverty in Pakistan. Khan, Khan, Zaman, and Khan (2014b) examine the relationship between agriculture growth, rural poverty and income inequality in Pakistan over the period 1990–2010. The results show that rural development and national income per capita both have a negative correlation with poverty and income inequality, while there is a positive association with agriculture growth in Pakistan.

Both poverty and sectoral growth have been increasing in Pakistan, hence there is a pressing need to evaluate and analyse the sectoral growth–poverty nexus and to find the inter-relationship. In the following sections an effort has been made to measure pro-poor sectoral contributions in the context of Pakistan.

3. Data and methodology

The Household Integrated Economic Survey (HIES) and Pakistan Integrated Household Survey (PIHS) conducted by the Federal Bureau of Statistics (FBS) in Pakistan provide data from 1960 to 2011 for this study. These household surveys are unit-recorded data, and are used for this study. The GoP (2012) report provides a baseline for poverty, where 2350 calories are the cut-off point for all Pakistan. For income inequality, micro-data are taken from the Federal Bureau of Statistics, Pakistan. Anwar (2006) and GoP (2012) have estimated inequality parameters. The same parameter estimate is taken as a reference in this study. The data for agriculture (AGR); industry (IND); manufacturing (MAN); Commodity producing (CPS) and services (SER) value added as percentages of GDP come from the World Development Indicators (WDI, 2011), which is published by the World Bank. These variables are included as a proxy in the model for overall development policies pursued by Pakistan.

3.1. Analytical framework

3.1.1. Pro-poor Growth Index (PPGI)

Kakwani and Pernia (2001) reflect that proportionally greater benefits to the poor rather than non-poor determine pro-poor growth. Their Pro-Poor Growth Index (PPGI) shows the ratio of the elasticities for total poverty reduction and poverty reduction in the case of distribution-neutral growth. A ration greater than 1 means pro-poor growth. The PPGI (ϕ) can be formally written as:

$$\phi = \frac{\delta}{\eta} \tag{1}$$

where δ reflects the total poverty elasticity of growth and η means the growth elasticity of poverty (holding inequality constant). Growth is pro-poor if the accompanying change in inequality decreases the total poverty. Thus, the growth is pro-poor if the total elasticity of poverty is greater than the growth elasticity of poverty.

3.1.2. *Poverty Equivalent Growth Rate (PEGR)*

The pro-poor growth index (PPGI) measures the distribution of growth benefits among the poor and non-poor without accounting for the level of the actual growth rate. In response to this, Kakwani and Son (2002) suggested another pro-poor growth method 'poverty equivalent growth rate' (PEGR). The PEGR is defined as the growth resulting in the same level of poverty reduction as the present growth rate with inequality as a constant. The PEGR is derived from the multiplication of PPGI by the growth rate of mean income.

The PEGR ($\gamma*$) can be written as:

$$\gamma* = (\delta/n)\gamma = \phi\gamma \tag{2}$$

where $\gamma = dLn(\mu)$ is the growth rate of the average income and $\phi = \delta/\eta$ is the pro-poor growth index developed by Kakwani and Pernia (2001). This equation indicates that growth is pro-poor if $\gamma*$ is greater than γ. If $\gamma*$ lies between 0 and γ, the growth is escorted by an increasing inequality but poverty still decreases.

The PEGR addresses both the magnitude of growth and the benefits of growth the poor receive. Moreover, the PEGR satisfies the basic monotonicity condition such that the proportional reduction in poverty is a monotonically increasing function of the PEGR. To attain a fast decrease in poverty, it is thus proposed that the PEGR ought to be maximised rather than the growth rate alone.

From the Atkinson theorem, if $g(p) > 0$ or $g(p) < 0$ for all p, then poverty clearly decreases between two periods. The upward poverty growth curve shifts the decrease the poverty. This proposes that the area under the poverty growth curve can be used as a method of pro-poor growth. The index of the pro-poor growth rate is given by

$$\gamma* = \int_0^1 g(p)dp = \int_0^1 \Delta \ln(\mu L(p))dp \tag{3}$$

which can also be written as:

$$\gamma* = \gamma - \Delta \ln(G^*) \tag{4}$$

where

$$\gamma = \Delta \ln(\mu)$$

is the growth rate of the mean income of the whole society and

$G*$ given by

$$\ln(G^*) = 2\int_0^1 [\ln(p) - \ln(L(p))]dp \tag{5}$$

is a new relative measure of inequality.

The second term in equation (5) measures the variation in inequality. If the inequality measured by $G*$ decreases, then the pro-poor growth rate will be greater than the axial growth rate of the average income. Thus, there will be a gain or a loss in growth rate due to changes in inequality. Growth will be pro-poor if there is a gain in growth rate and anti-poor if there is a loss in growth rate. The gain in growth rate is captured through the percentage increase in $G*$: if $G*$ decreases by 1%, the gain in growth rate will be equal to 1%.

This curve also reduces poverty with upwards shifts. This suggests that the area under the growth incidence curve can also be used as a measure of pro-poor growth. Hence, another measure of pro-poor growth rate is

$$\tau* = \int_0^1 r(p)dp = \gamma - \Delta \ln(A) \tag{6}$$

where A given by

$$\ln(A) = \ln(\mu) - \int_0^1 \ln(x_p)dp \tag{7}$$

is the Atkinson (1970) measure of inequality when the utility function is any linear function of a logarithm of individual income. Equation (6) suggests that there is a gain (loss) in growth rate when Atkinson's measure of inequality decreases (increases). The gain (loss) in the growth rate is measured by the percentage decrease (increase) in A: if A decreases (increases) by 1% the gain (loss) in growth rate will be equal to 1%.

4. Results and discussions

Economic growth is a dominant anti-poverty instrument. Pakistan's economy has specific factors that favour growth benefit to the poor. Pro-poor growth deals with the dynamic features of growth-poverty-inequality. Pro-poor growth is calculated by using two sets of household survey conducted at two different points of time. Results from using the Pro-poor Growth Index on these data sets determine whether that period is pro-poor or otherwise. Table 3 shows the sectoral pro-poor growth, i.e. agriculture, industry, manufacturing, commodity-producing and services sectors of Pakistan. The literature regards ten phases between 1964–2011 as pro-poor in the agriculture sector, i.e. 1969–70; 1970–71; 1971–72; 1972–79; 1985–86; 1986–87; 1987–88; 1988–91; 1993–94 and 2002–2006, whereas the remaining periods are pro-rich or anti-poor (the index value is less than one). In the year 1964–67, a 1% growth rate caused 2.154% reduction in poverty incidence. Two main factors explain this reduction in poverty, i.e. –2.154% growth effect and the 0.766% pure inequality effect. This means that if inequality had not increased, a 1% growth would have reduced poverty by 2.154% if inequality was stagnant. The 0.66% corresponding value of the pro-poor growth index was consistently less than the benchmark. This suggests that during 1964–67, growth in the agriculture sector was moderately pro-poor, which shows that the poor benefited proportionally more than the non-poor.

The poverty equivalent growth rates were, overall, higher than the actual growth rates in rural Pakistan during 1972–79. For example, the PEGR was 638.82%, corresponded to the 30.41% agricultural value added in 1972–79, indicating that the poor benefited relatively much more than the non-poor, resulting in a dramatic reduction in poverty; the rural head-count ratio decreased from 49.11% in 1969–70 to 32.51% in

Table 3. Sectoral pro-poor growth analysis.

Survey years	Growth – inequality decomposition	Agriculture sector	Industrial sector	Manufacturing sector	Commodity producing sector	Services sector
1964–67	Growth elasticity	−2.154	2.388	3.213	1.552	−0.910
	Inequality elasticity	0.766	0.075	0.101	0.041	−0.028
	Total poverty elasticity	−1.388	2.463	3.314	1.593	−0.938
	Pro-poor growth index (PPGI)	0.644	1.031	1.031	1.026	1.031
1967–69	Growth elasticity	−1.494	−0.950	−1.068	−3.205	4.675
	Inequality elasticity	0.588	−0.151	−0.169	−0.509	0.743
	Total poverty elasticity	−0.906	−1.101	−1.237	−3.714	5.418
	Pro-poor growth index (PPGI)	0.606	1.159	1.158	1.159	1.159
1969–70	Growth elasticity	−1.501	2.195	14.154	−64.267	17.708
	Inequality elasticity	−1.502	−3.106	−20.030	90.947	−25.059
	Total poverty elasticity	−3.003	−0.911	−5.876	26.680	−7.351
	Pro-poor growth index (PPGI)	2.001	−0.415	−0.415	−0.415	−0.415
1970–71	Growth elasticity	13.650	−3.551	−4.162	−46.536	−10.728
	Inequality elasticity	1.347	0.705	0.826	−68.090	2.130
	Total poverty elasticity	14.997	−2.846	−3.336	−114.626	−8.598
	Pro-poor growth index (PPGI)		0.801	0.802	2.463	0.801
1971–72	Growth elasticity	1.512	1.791	2.615	6.840	−8.831
	Inequality elasticity	0.660	−0.180	−0.177	−0.465	0.600
	Total poverty elasticity	2.172	1.611	2.438	6.375	−8.231
	Pro-poor growth index (PPGI)	1.437	0.899	0.932	0.932	0.932
1972–79	Growth elasticity	−0.219	−1.731	6.392	2.448	−1.638
	Inequality elasticity	−4.381	−0.121	−4.080	−1.563	1.045
	Total poverty elasticity	−4.600	−1.852	2.312	0.885	−0.593
	Pro-poor growth index (PPGI)	21.005	1.070	0.362	0.362	0.362
1979–85	Growth elasticity	3.587	4.140	−6.827	5.453	−3.209
	Inequality elasticity	−1.050	1.105	−1.723	1.376	−0.810
	Total poverty elasticity	2.537	5.245	−8.550	6.829	−4.019
	Pro-poor growth index (PPGI)	0.707	1.267	1.252	1.252	1.252
1985–86	Growth elasticity	4.687	−2.311	−3.855	−17.502	−144.134
	Inequality elasticity	1.093	1.045	−3.541	−16.105	−132.623
	Total poverty elasticity	5.780	−1.266	−7.396	−33.607	−276.757
	Pro-poor growth index (PPGI)	1.233	0.548	1.919	1.920	1.920
1986–87	Growth elasticity	2.618	−4.919	−6.153	27.668	−9.682
	Inequality elasticity	1.654	−2.126	1.253	−5.637	1.972

(*Continued*)

Table 3. (*Continued*).

Survey years	Growth – inequality decomposition	Agriculture sector	Industrial sector	Manufacturing sector	Commodity producing sector	Services sector
	Total poverty elasticity	4.272	−7.045	−4.900	22.031	−7.710
	Pro-poor growth index (PPGI)	1.632	1.432	0.796	0.796	0.796
1987–88	Growth elasticity	6.753	−7.983	−13.866	−29.156	45.329
	Inequality elasticity	0.274	1.860	3.231	6.795	−10.579
	Total poverty elasticity	7.027	−6.123	−10.635	−22.361	34.750
	Pro-poor growth index (PPGI)	1.041	0.767	0.767	0.767	0.767
1988–91	Growth elasticity	7.223	−10.837	−20.979	12.647	−24.364
	Inequality elasticity	0.125	−2.617	−5.067	3.055	−5.885
	Total poverty elasticity	7.348	−13.454	−26.046	15.702	−30.249
	Pro-poor growth index (PPGI)	1.017	1.241	1.242	1.242	1.242
1991–93	Growth elasticity	−0.302	−0.811	−1.666	1.753	6.570
	Inequality elasticity	0.434	1.174	2.413	−2.538	−9.514
	Total poverty elasticity	0.132	0.363	0.747	−0.785	−2.944
	Pro-poor growth index (PPGI)	−0.437	−0.448	−0.448	−0.448	−0.448
1993–94	Growth elasticity	−7.073	9.146	9.800	−84.258	−8.717
	Inequality elasticity	−0.394	6.280	6.729	−57.854	−5.986
	Total poverty elasticity	−7.467	15.426	16.529	−142.112	−14.703
	Pro-poor growth index (PPGI)	1.056	1.687	1.687	1.687	1.687
1994–97	Growth elasticity	−6.110	4.740	−13.789	11.555	42.692
	Inequality elasticity	0.891	−4.445	12.933	−10.838	−40.041
	Total poverty elasticity	−5.219	0.295	−0.856	0.717	2.651
	Pro-poor growth index (PPGI)	0.854	0.062	0.062	0.062	0.062
1997–99	Growth elasticity	4.688	−13.626	−7.794	180.591	−54.042
	Inequality elasticity	−1.786	4.467	2.555	−59.203	17.716
	Total poverty elasticity	2.902	−9.159	−5.239	121.388	−36.326
	Pro-poor growth index (PPGI)	0.619	0.672	0.672	0.672	0.672
1999–2002	Growth elasticity	16.823	17.667	−6.697	−3.117	−15.162
	Inequality elasticity	−0.197	34.607	13.110	−6.105	−29.701
	Total poverty elasticity	16.626	52.274	6.413	−9.222	−44.863
	Pro-poor growth index (PPGI)	0.988	2.959	−0.958	2.959	2.959
2002–2005	Growth elasticity	2.286	−81.273	−0.930	−6.188	−6.032
	Inequality elasticity	−1.905	−21.716	−5.538	−1.653	−1.611
	Total poverty elasticity	0.381	−102.989	−6.468	−7.841	−7.643

(*Continued*)

Table 3. (*Continued*).

Survey years	Growth – inequality decomposition	Agriculture sector	Industrial sector	Manufacturing sector	Commodity producing sector	Services sector
	Pro-poor growth index (PPGI)	0.167	1.267	6.955	1.267	1.267
2005–2006	Growth elasticity	−0.475	0.350	0.247	−3.957	−1.721
	Inequality elasticity	−5.308	0.244	0.172	−2.754	−1.198
	Total poverty elasticity	−5.783	0.594	0.419	−6.711	−2.919
	Pro-poor growth index (PPGI)	12.175	1.697	1.696	1.696	1.696
2006–2008	Growth Elasticity	0.629	−3.218	0.878	4.482	1.060
	Inequality elasticity	−3.673	−2.749	0.750	3.828	0.906
	Total poverty elasticity	−3.044	−5.967	1.628	8.310	1.966
	Pro-poor growth index (PPGI)	−4.839	1.854	1.854	1.854	1.855
2008–2011	Growth elasticity	−16.935	21.229	−2.427	1.248	−31.843
	Inequality elasticity	0.048	19.686	−2.250	1.157	−29.527
	Total poverty elasticity	−16.887	40.915	−4.677	2.405	−61.370
	Pro-poor growth index (PPGI)	0.997	1.927	1.927	1.927	1.927

Source: Authors' calculation.
Note: For the agriculture sector, we used agriculture value added as a percentage of GDP for the proxy of growth while rural poverty and rural inequality are taken for pro-poor growth decomposition analysis. The manufacturing sector, industrial sector, commodity producing and the services sector's value added contribution in GDP are taken as a proxy for growth, while urban poverty and urban inequality are taken for decomposition of the pro-poor growth.

1972–79, which is almost a 16.6% decline in head count ratio. This fast reduction of destitution amid the 1972–79 periods was accomplished through two elements. One variable was a high economic growth rate of around 7–8% for every annum that had prevailed in the economy. The other component was a consistent decrease in disparity, which encouraged a quick reduction in neediness notwithstanding the positive growth rates. Agriculture assumed an imperative part in the early phases of pro-poor growth. The concentration of the poor in the sector, the large size of its growth linkages to other sectors, and the positive externalities from assuring food security and reducing food prices are a few indirect contributions to pro poor growth, other than its direct contribution to growth (Byerlee, Diao, & Jackson, 2005).

After the period of 1997 to 2005, agriculture value added became higher than the PEGRs. This indicates that the poor reforms (in terms of providing high yield of varieties of seed, tractors, and threshers, etc., which were the novel reforms in green revolutionary periods) in the agriculture sector had adverse impacts on the poor rather than on the non-poor. This result is normal in most circumstances as the poor are more defenceless against such financial shocks. This, in turn, requires a permanent arrangement of a social security net, which can secure defenceless groups of individuals in the society from financial downturns. There has been an indication of recovery in the economy in 2008–11; the head-tally proportion declined from 39.26% in 2002 to 28.89% in 2011. In spite of this positive sign, our result recommends that the growth process is not classifiable as pro poor. The profits created from the positive growth amid 2008–11 did

stream relatively to the non-poor more than to poor people. The result indicates that relative to the non-poor, the poor general profited less from the revitalisation of agricultural processes; among the poor the ultra-poor got relatively more profits. Broad-based agricultural productivity raises livelihoods of poor ranch families and family units of landless workers who fundamentally rely on agricultural wages (Rosegrant & Hazell, 2000).

Table 3 shows Pakistan's industrial growth experience in the 1970s. Amid 1970–72, growth was not delegated as pro-poor. Disregarding the very nearly 23.59% of industrial commitment in GDP for that period, the growth process did not relatively profit the poor more than the non-poor. This happened on the grounds that the unfriendly effects of the increment in disparity in that period had neutralised and actually exceeded the good effects anticipated from the industrial growth. Specifically, the corresponding profit streaming to the pro-poor in 1971–72 was considerably short of that streaming to poor people: the extent of PEGRS becomes low in light of the fact that the poverty measure is more susceptible to the prosperity of the poorest individual. Amid 1979–85, the PEGRS were higher than the real growth rates. Along these lines, industrial growth is characterised as pro-poor during 1979 and 1985 in that it profited the poor relatively more than the non-poor. The pro-poor growth came about because of the positive impacts of both high industrial growth rates and inequality decrease over the period. Five subsequent phases are reported as anti-poor where poor substantial not benefited from industrial growth more than the non-poor, i.e. 1985–86; 1987–88. 1992–93. 1996–97 and 1998–99. The trend was reversed during 2002–11 when the PEGRs were higher than the industry value added, which shows that industrial growth is considered as pro-poor between the periods of 2002 to 2011 (in five phases, i.e. 1999–2002; 2002–05. 2005–06; 2006–08 and 2008–2011).

The results of the manufacturing sector demonstrate that amid the 1964–69 periods, the PEGRS were reliably higher than the yearly growth rates of the manufacturing sector. This shows that the growth rates in the manufacturing sector were pro poor in a manner that profited the poor relatively more than the non-poor. This pattern was reversed amid 1970–79, when the PEGRS were less than the manufacturing growth rate, which demonstrates that growth is considered as anti-poor between 1970 and 1979. The positive growth of the manufacturing sector would not trickle down to the poor as contrasted with the non-poor in the resulting stages, i.e. 1986–87, 1987–88, 1992–93, 1996–97, 1998–99 and 1999–2002. Be that as it may, in 2002–11, the poverty equivalent growth rates are generally higher than the real growth in the manufacturing sector. For example, the PEGR was 37.88% in 2008–11, while the manufacturing value added was 19.65% in the same period. This intimates that the poor profited relatively more than the non-poor, as was reflected in a sensational decrease in poverty; the urban headcount ratio diminished from 22.69% in 1999–02 to 15.02% in 2008–11 which is just about a 7.67% decrease in head count ratio. This quick reduction in poverty was attained because of two variables. One variable was a high economic growth rate of around 3–5% for every annum that had prevailed in the economy. The other component was an enduring decrease in inequality, which encouraged a quick diminishment in poverty notwithstanding the positive growth rates. In the event that the growth stays pro-poor in the consequent years, as reflected in the year 2008–11, there is a probability that manufacturing growth trickles down to the poor more than the non-poor.

The pro-poor growth index is generally higher than the actual growth of the commodity producing sector in Pakistan amid the periods 1964–67; 1967–69; 1970–71; 1979–85; 1985–86; 1988–91; 1993–94; 1999–2002; 2002–2005; 2005–2006;

2006–2008 and 2008–11. The result proposes that the poor profited relatively more than the non-poor. This fast decrease in poverty in the commodity producing sector was accomplished primarily because of two variables. One element was the high growth of the commodity producing sector; the other variable was a consistent decrease in urban disparity, this encouraged a fast decline in poverty, notwithstanding the positive growth rates. This pattern was reversed amid 1969–70; 1971–72; 1972–79; 1986–87; 1987–88; 1991–93; 1994–97 and 1997–99 where the poverty equivalent growth rates are generally more diminutive than the actual growth rates of the commodity producing sector. This proposes that the poor do not receive any considerable profits from the development of the commodity producing sector in those periods, in contrast with the non-poor.

The pro-poor growth assessment in the services sector of Pakistan demonstrates that out of 21 family surveys, 11 phases are viewed as pro-poor in the services sector, i.e. 1964–67; 1967–69; 1978–85; 1985–86; 1988–91; 1993–94; 1999–2002; 2002–2005; 2005–2006; 2006–2008 and 2008–11 while remaining periods are pro rich or hostile to the poor (the index value is less than value 1). In the year 1964–67, a 1% growth rate prompts a decrease in poverty by 0.910%. This decrease in poverty could be clarified by two primary variables, one is a pure growth effect of –0.910% and the other is pure inequality effect of –0.028%. The corresponding value of the pro-poor growth index is around 1.031% which was higher than the benchmark. This proposes that in 1964–67, growth in the services sector was profoundly pro-poor which shows that the poor profited relatively more than the non-poor. Additionally, in 1972–79, the poverty equivalent growth rates were higher than the actual growth rates in the services sector of Pakistan. For instance, the PEGR was 61.34 for every penny in 1979–85, although the services quality included was really 45.98%. This suggests that, the poor profited relatively more than the non-poor, as was reflected in a sensational reduction in poverty; the urban head-count ratio decreased from 30.20% in 1971.72 to 21.17% in 1979–85, which is very nearly a 9.03% decrease in head count ratio. This fast decrease in poverty amid the 1979–85 periods was accomplished because of two components. One variable was a high growth rate of services sector around 3–4% for every annum that had prevailed in the economy. The other variable was a consistent decrease in disparity, which encouraged a quick decrease in poverty notwithstanding the positive growth rates. This pattern vanished during 1986–87; 1987–88 and 1994–97 where actual growth rates of the services sector were higher than the PEGRS. This shows the poor did not get considerable profits from the positive growth of the services sector in contrast to the non-poor. There has been an indication of recovery in the economy in 1997–99; the head-count ratio declined from 30.20% in 1971–72 to 19.13% in 1997–99. Notwithstanding this positive sign, our result proposes that the growth process is not classifiable as pro poor. The profits produced from the positive growth during 1997–99 did stream relatively to the non-poor more than to the poor. The result indicates that compared with the non-poor, the poor general profited less from the recovery of the services process; among the poor the ultra-poor got relatively more profits. This result further extended after the years 2002–05 till 2008–11 where the pro-poor growth index was higher than the benchmark (the index value is greater than one); if the growth stays pro-poor in the consequent years, as reflected in the year 2008–11, there is the probability that the services sector trickles down to the poor more than the non-poor.

The gains and losses of the agriculture, industry, manufacturing, commodity producing and the services sectors are obtained by subtracting the sectoral growth from the poverty equivalent growth rates in Table 4.

Table 4. Sectoral – poverty equivalent growth rates.

	Agriculture value added as percentage of GDP	Industry value added as percentage of GDP	Manufacturing value added as percentage of GDP	Commodity producing value added as percentage of GDP	Services value added as percentage of GDP	Gains (+)/losses (–) of agriculture growth	Gains (+)/losses (–) of Industrial growth	Gains (+)/losses (–) of Manufacturing growth	Gains (+)/losses (–) of Commodity growth	Gains (+)/losses (–) of Services growth
1964–67	38.6896	19.6833	14.582	72.955	41.627	−13.774	0.610	0.452	1.896	1.291
1967–69	37.3848	21.8695	16.013	75.268	40.746	−14.730	3.478	2.530	11.591	6.478
1969–70	36.8301	22.3209	16.064	75.215	40.849	36.867	−31.584	−22.731	−106.429	−57.801
1970–71	35.5258	23.1368	16.564	75.226	41.337	3.517	−4.604	−3.280	110.057	−8.226
1971–72	36.4742	21.6132	15.809	73.896	41.913	15.939	−2.183	−1.075	−5.025	−2.850
1972–79	30.4132	23.5972	15.437	69.448	45.990	608.416	1.652	−9.849	−44.308	−29.342
1979–85	28.5369	22.4672	15.903	66.908	48.996	−8.361	5.999	4.008	16.860	12.347
1985–86	27.6206	23.3531	16.276	67.250	49.026	6.435	−10.555	14.958	61.870	45.105
1986–87	26.2499	24.0187	16.646	66.915	49.731	16.590	10.376	−3.396	−13.651	−10.145
1987–88	26.0222	24.3750	16.788	67.185	49.603	1.067	−5.679	−3.912	−15.654	−11.558
1988–91	26.9492	23.8898	16.615	68.353	49.161	0.458	5.757	4.020	16.541	11.897
1991–93	25.7745	25.4458	17.133	66.386	48.780	−37.038	−36.846	−24.808	−96.127	−70.633
1993–94	24.9940	24.7177	16.675	66.596	50.288	1.400	16.981	11.455	45.751	34.548

1994–97	25.5502	24.2647	16.781	66.093	50.185	−3.730	−22.761	−15.741	−61.995	−47.074
1997–99	26.7026	23.5104	15.880	66.250	49.787	−10.174	−7.711	−5.209	−21.730	−16.330
1999–02	27.0316	23.7386	15.480	62.720	49.230	−0.325	46.504	−30.310	122.869	96.441
2002–05	23.3539	23.8618	15.505	67.131	52.784	−19.454	6.371	92.330	17.924	14.094
2005–06	21.4654	27.1011	18.565	66.378	51.433	239.876	18.890	12.921	46.200	35.798
2006–08	20.3565	26.8728	19.149	66.783	52.771	−118.862	22.949	16.353	57.032	45.119
2008–11	20.3312	26.7921	19.659	63.453	52.877	−0.061	24.836	18.225	58.821	49.016

Source: Author's estimations.

Table 4 shows the gains or losses of sectoral growth where gains of growth rates imply a decline in inequality, while losses imply an increase in inequality. Substantial gains in agriculture value added are quite noticeable in the years 1969–70; 1971–72; 1972–79; 1986–87 and 2005–2006. There were gains in agriculture growth equivalent to 36.86; 3.51; 15.93; 16.59 and 239.87% respectively per annum because of falling inequality in those periods. The result suggests that the poor were able to benefit proportionally much more from growth than in the other periods. This growth pattern led to an unprecedented reduction in inequality in rural Pakistan, while substantial losses in industrial growth are noticeable in the years 1969–70; 1985–86; 1991–93 and 1994–97, which were equivalent to –31.58; –10.55; –36.84 and –22.76% respectively per annum. By contrast, the losses were merely –2.18% per year in the 1971–72 period. The result implies that the poor were able to benefit proportionally less from growth. This growth pattern led to an unprecedented increase in inequality in urban Pakistan. There are six phases of manufacturing growth that give gains to the poor of more than 10 percentage points, i.e. 1985–86; 1993–94; 2002–2005; 2005–2006; 2006–2008 and 2008–11. There were gains in growth equivalent to 14.95; 11.45; 92.33; 12.92; 16.35 and 18.22% respectively per annum because of falling inequality in those periods. The result concludes that the poor were able to benefit proportionally much more from growth than in the other periods. This growth pattern led to an unprecedented reduction in inequality in urban Pakistan. The actual growth of the commodity producing sector between the years 1985–86; 1993–94; 1999–2002; 2006–2008 and 2008–11 was 67.25%, 66.59%, 62.72%, 66.78% and 63.45% respectively while the effective growth rate was 129.12%, 112.34%, 185.58%, 123.81% and 122.27% respectively. The gains of 61.85%, 45.75%, 122.86%, 57.03% and 58.82% respectively were obtained from the commodity producing sector of Pakistan. During 1964–67, the poor's gain from the services sector's growth is 1.291% only; however, in the subsequent phases of pro-poor growth, the poor received gains, i.e. 45.10% in 1985–86, 96.44% in 1999–2002, 14.09% in 2002–2005, 35.79% in 2005–2006; 45.11% in 2006–2008 and 49.01% in 2008–11 respectively.

The above results complement the evidence obtained from the 'sectoral decomposition' of poverty in Pakistan and may indeed have a strong bearing on the sectoral shares of poverty.

5. Summary and conclusion

Pro-poor sectoral analysis facilitates and promotes the formulation and implementation of sectoral-related policies that may have a positive impact on the poor. To achieve this, the present study establishes and measures the pro-poor growth index at sectoral level by using the methodology of pro-poor growth proposed by Kakwani and Son (2002), i.e. whether the poor obtained gains or losses from sectoral growth. This technique can also be applied to a wide range of indicators of economic well-being and to assumptions about the poor.

The result shows that compared with the non-poor, the poor overall benefited less from the revitalisation of the agriculture process. The poor received substantial gains from agriculture value added, which were quite evident in the five major years, i.e. 1969–70; 1971–72; 1972–79; 1986–87 and 2005–2006. There were gains in agriculture growth equivalent to 36.86; 3.51; 15.93; 16.59 and 239.87% respectively per annum because of a falling inequality in those periods. The poverty equivalent growth rates are, overall, higher than the actual growth of the commodity producing sector in Pakistan during the years 1964–67; 1967–69; 1970–71; 1979–85; 1985–86; 1988–91;

1993–94; 1999–2002; 2002–2005; 2005–2006; 2006–2008 and 2008–11. The result suggests that the poor benefited relatively more than the non-poor. This rapid reduction in poverty was achieved mainly due to two factors. One factor was the high growth of the commodity producing sector; the other factor was a steady decline in urban inequality, this facilitated a rapid reduction in poverty in addition to the positive growth rates.

This study concludes that empowering the poor is essential for pro-poor policies to address the various aspects of poverty. In order to achieve this, the government officials and policy makers should re-open the debate about pro-poor growth polices in which wealth trickles down to the poor. Policies and resources require facilitating the economic activities for the poor.

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