



A Regional Analysis of Poverty in Pakistan: Trends and Decomposition

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Abstract: This study conducted a regional analysis of poverty in Pakistan with a particular focus on trends and decomposition. Nine Household Integrated Economic Survey rounds were used in this study from 2001-02 to 2018-19. This study estimated poverty using time series data from all the regions and provinces of Pakistan. The unit of wellbeing used in the study is consumption, and the unit of analysis used is the adult equivalent. Our results show that the poverty rate decreased in all regions and provinces over the analysis period. Poverty rates decreased in all regions from 2001-02 to 2010-11. The decomposition shows that the highest population share is found in Punjab, but it has the lowest poverty share. At the same time, Baluchistan has the lowest population share and the highest poverty share. KPK and Sindh have half of their population below the poverty level. Results show that urban poverty share is higher overall than rural poverty share.

Keywords: Poverty, distribution, trends, decomposition, poverty line.

JEL Classification: I32.

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1. Introduction

Poverty exists when a society or individual lives below the minimum threshold. Measuring poverty has historically been a critical practice. The procedures for measurement have evolved, and different studies utilize specific approaches for their analyses. Tracing the origin of the poverty line is difficult. Numerous studies provide diverse perspectives on its beginnings, but most agree that Charles Booth pioneered this concept.¹

A significant proportion of the world's population lives in poverty. According to the benchmark of \$1.90 a day, nearly 18.8 percent of the world's population falls below the poverty line. The situation is even worse in South Asia, where almost one-fifth of the population lives in poverty (ADB, 2021).

The government of Pakistan has adopted various schemes to alleviate poverty, such as the Benazir Income Support, the Pakistan Poverty Alleviation Fund, Pakistan Bait-ul-Mal, People's Works Programme, and microfinance schemes. Despite these efforts, significant results have not materialized due to governmental instability and fluctuating policies.

1.1. *Purpose of the Study*

The literature on poverty measurement is diverse and utilizes various methodologies. Since the approaches differ, their findings also vary. Moreover, most earlier studies are limited to using a single poverty line to measure poverty in different regions. Pakistan is a diverse country where the cost of basic needs fluctuates across regions, and consumption patterns differ significantly between rural and urban areas. Therefore, relying on a single poverty line may result in the over- or underestimation of poverty.

¹ Simey and Simey, Charles Booth, p.88 (and see pp 184 and 136). This claim is unchallenged in later biographical works (Norman-Butler, Victorian aspirations; O'Day and Englander, Booth's inquiry). 'Booth invented the poverty line; Rowntree perfected it. . . .is the received wisdom' (Englander and O'Day, Retrieved Riches, p.35).

Furthermore, we cannot present a consistent time series of poverty trends based on previous studies. This study aims to construct a reliable time series of poverty trends for rural and urban regions across all provinces. A recent study by Bashir and Idrees (2018) measured poverty at the regional level using different poverty lines for all provinces' rural and urban segments. Using the Cost of Basic Needs Approach, they estimated eight different poverty lines for 2015-16. This study will utilize these poverty lines to present a reliable time series of poverty trends for the last two decades.

The following are the objectives of this study:

- To present a consistent time series of poverty trends for rural and urban segments of all provinces and Pakistan from 2001-02 to 2018-19.
- To analyze the distribution of poverty across rural and urban segments of all provinces from 2001-02 to 2018-19.

1.2. Overview of Poverty in Pakistan

Understanding poverty trends is crucial for the subsequent analysis. This practice allows a comprehensive examination. The official poverty figures in Pakistan indicate fluctuations in headcounts over the past decades. The following methods have been employed to analyze poverty in the existing literature:

- i) Arbitrary poverty line
- ii) Cost of Basic need approach
- iii) Food energy intake
- iv) Relative poverty approach
- v) Subjective approach

Firstly, the government began collecting household data in 1963-64. Most studies utilized this data and employed arbitrary poverty lines, such as those of Ahmed and Ludlow (1989), Zaidi (1992), and Ahmed and Allison (1990). However, from the mid-1970s to the early 1990s, most studies based their analysis on the food energy intake (FEI) approach (Havinga et al., 1989; Irfan and Amjad, 1984; Allaudin, 1975). By the early 1990s, the cost of basic needs approach was adopted by many studies, including Malik (1988), Qureshi and Arif (2001), and Ali (1995). This paper presents an overview of poverty in Pakistan. Since earlier studies on the measurement of poverty are not confined to a single method for estimating poverty lines, their results are

not comparable in certain respects. The poverty estimates in Pakistan from 1963-64 to 1999-2000 are presented in Table 1.1.

Table 1.1: Poverty Estimates in Pakistan (1963-64 to 1999-2000)

Years	Head Count Indices	Studies
1963-64	40.24	Malik (1988)
1966-67	44.50	
1969-70	46.53	
1979	30.68	
1984-85	24.57	Amjad & Kemal (1997)
1987-88	17.32	
1990-91	22.11	
1992-93	22.40	
1996-97	31.00	Qureshi & Arif (2001)
1998-99	22.60	
1999-2000	33.50	

Source: Various studies.

The statistics reported in Table 1.1 show a declining trend in poverty overall. However, in the 1960s, the poverty level was high, with an increasing trend. Some key reasons for these fluctuating trends include the Green Revolution, Pak-India tensions, floods, inconsistent government policies, and political instability. Pakistan began to notice poverty reduction through the Interim Poverty Reduction Strategies (I-PRSP) at the end of 1999, completed in 2000.

1.2.1 Poverty Estimates 2001-02 and Onwards

After 1999-2000, the Government of Pakistan initiated official poverty estimates. Initially, these estimates were based on poverty lines determined through the Food Energy Intake (FEI) approach. Later, in 2013-14, the Government of Pakistan shifted to the Cost of Basic Needs (CBN) approach. The methodologies of these two approaches are quite different; thus, their results are not comparable. Therefore, the Government of Pakistan re-estimated headcount indices from 2001-02 to 2010-11. The official estimates of poverty in Pakistan from 2001-02 to 2015-16 are presented in Table 1.2. These estimates are based on the poverty lines calculated using the CBN approach.

Table 1.2: Poverty Estimates in Pakistan (1963-64 to 1999-2000)

Years	Head Count Indices
1998-99	57.9
2001-02	64.3
2004-05	51.7
2005-06	50.4
2007-08	44.1
2010-11	36.8
2011-12	36.3
2013-14	29.5
2015-16	24.5

Source: Government of Pakistan (various issues).

A new poverty line was estimated using the CBN approach for 2013-14. The estimates presented in Table 1.2 show that poverty further increased to 64.3 percent in 2001-02; after that, a continuous decline can be observed. This difference is due to modifications in estimating the poverty line.

After 2001, the Government of Pakistan initiated several social safety programs emphasizing poverty reduction. In this regard, the Pakistan Poverty Alleviation Fund, Benazir Income Support Program (BISP), and other schemes like the tractor subsidy scheme, microfinance, People's Works Programme, and Pakistan Bait-ul-Mal (PBM) significantly contributed to alleviating poverty in Pakistan. During 2010-11, the national poverty level further decreased by 7.3 percentage points; in 2013-14, the overall poverty level decreased by another 6.8 points and reached 29.5%. Different projects were initiated during this period to boost the economy and reduce poverty. PKR 468 billion were allocated for infrastructure projects, which included power, transport, communication, and water.

2. Literature Review

There have been many studies on poverty in Pakistan; numerous studies have been conducted at national and provincial levels. The earlier literature utilized different approaches to estimate poverty lines.

A pioneering study in this regard is by Mujahid (1971). This study utilized arbitrary poverty lines to measure poverty in Pakistan. Some other studies also used an ad hoc approach as a benchmark for poverty and analyzed the same poverty trends (Zaidi & De Vos, 1993; Zaidi, 1992). Several previous studies have initiated their research on poverty using a relative approach. The concept of relative poverty was used in a study in which a cross-sectional comparison of poverty considered different

socioeconomic groups in four provinces of Pakistan (Zaidi M., 1992). Then, some of the studies developed a more scientific approach: the food energy intake approach. Numerous studies used the same criteria to measure poverty (Malik, 1992; Irfan & Amjad, 1994). Most of the latest studies focused on analyzing poverty using the CBN approach as a benchmark. It describes poverty more comprehensively than all the previous approaches. A comprehensive summary of all the previous studies that used different approaches is given in Table 2.1 through Table 2.4.

Table 2.1 Studies Measuring Poverty in Pakistan through Arbitrary Poverty Lines

Studies	Regions of Analysis	Poverty Measures	Findings
Mujahid (1971)	Pakistan – Overall	Head Count Index	Household size and monthly income simultaneously measure poverty more accurately than monthly income alone.
Naseem (1973)	Pakistan - Overall, Pakistan - Rural, Pakistan – Urban	Head Count Index Poverty Gap	Rural and urban poverty worsened over time, affecting urban areas more.
Kruijk & Leeuwen (1985)	Pakistan - Overall, Pakistan - Rural, Pakistan – Urban	FGT Index	Poverty decreases over the period
Ahmed & Ludlow (1989)	Pakistan - Overall, Pakistan - Rural, Pakistan - Urban, All Provinces	Head Count Index Sen Poverty Index	Nutritional deficiency in both rural and urban areas but more severe in urban areas
Mahmood et al. (1991)	Pakistan – Urban	FGT Index	Family size is positively related, while education is negatively related to poverty and malnutrition.
Zaidi & de Vos (1993).	Pakistan – Overall	FGT Index	Less educated household heads and rural area households have severe poverty.
Malik (1996)	Pakistan – Urban	FGT Index	Decreasing trend in rural poverty
Azid & Malik (2000)	Pakistan – Urban	Head Count Index,	Household size and dependence ratio inversely while female-male ratio and participation ratio positively related to per capita income of households

Source: Various studies.

Table 2.2 Studies Measuring Poverty through Relative Poverty Lines

Studies	Region of Analysis	Poverty Measure	Findings
Zaidi (1992)	Provinces	Headcount Index	The low poverty level was found by estimating the income-based poverty line. Household head's education is negatively related to poverty.
Jafri (1999)	Rural-Urban	Headcount Index	Observe the decline in poverty in the 90s
Answer (2005)	Rural-Urban	FGT Index.	Relative poverty increased more rapidly than absolute poverty due to worsened income distribution.

Source: Various studies.

Table 2.3 Studies Measuring Poverty through Poverty Lines Based on the FEI Approach

Studies	Region of Analysis	Poverty Measures	Findings
Malik (1992)	Pakistan, Provinces, Rural, Urban, Overall	FGT Index	Rural poverty declines significantly in this period
Irfan & Amjad (1984)	Rural-Urban	Headcount Index	The incidence of poverty declined in urban and rose in rural areas
Amjad & Kemal (1997)	Pakistan	Headcount Index	The percentage of the poor population increased by 22% of the total population.
Chishti & Jamal (1997)	Rural-Urban	FGT Index	One-fourth of households are undernourished in rural areas. Small subsidies on wheat can help them get out of this undernourishment.
Ali & Tahir (1999)	Pakistan, Rural-Urban	Headcount Index	Growth reduces poverty but increases income inequality, increasing poverty more in urban areas than in rural areas.
Qureshi & Arif (2001)	Pakistan	Headcount Index	More rural households are poor than urban households
Jamal (2003)	Pakistan, Rural-Urban	FGT Index	Poverty and inequality increased in the adjustment phase, and the incidence of poverty also increased.
Jamal (2005)	Pakistan, Rural-Urban	FGT Index	Depth, incidence, and severity of poverty are higher in rural than urban areas.
Arif & Bilquees (2007)	Rural-Urban	Headcount Index	More rural households were found in chronic poverty than urban

Studies	Region of Analysis	Poverty Measures	Findings
Cheema & Sial (2010)	Pakistan, Rural-Urban	Headcount Index, Poverty Gap Index & Squared Poverty Gap Index	Over the period, poverty got worse in rural areas and better in urban areas
Cheema & Sial (2012)	Pakistan, Rural-Urban	Headcount Index, Poverty Gap Index & Squared Poverty Gap Index	The net growth elasticity of poverty is smaller than the gross growth elasticity of poverty. Both are higher in rural areas
Idrees (2017)	Pakistan, Provinces, Rural-Urban, Overall	Headcount Index, Poverty Gap Index & Squared Poverty Gap Index	Urban poverty is higher than Rural poverty except in Islamabad

Source: Various studies.

Table 2.4 Studies Measuring Poverty Cost of Basic Need Approach

Studies	Region of Analysis	Poverty Measures	Findings
Ali (1995)	Pakistan	Headcount Index	47% of the population lived below the estimated total poverty line, while only 10% lived below the food poverty line
Jafri & Khattak (1995)	Pakistan	FGT Index	Percentage of poor and incidence of poverty worsen over this period
Shirazi et al. (1997)	Pakistan	FGT Index	Inter-household transfers reduced the poverty gap and severity of poverty. The effects were stronger in rural than urban areas.
Ahmed (1998)	Pakistan, Provinces	FGT Index	Income and consumption poverty were reduced, but human poverty did not significantly improve.
Shirazi et al. (1999)	Rural-Urban	FGT Index	Poverty increases in all dimensions, and variations in the incidence of poverty among sectors.
Ashraf (2017)	Rural-Urban	HCI	Rural areas suffer more than urban areas
Murtaza (2018)	Pakistan-Provinces	FGT Index	Poverty is found to be higher in all the rural areas throughout Pakistan. The incidence of poverty is highest in Baluchistan.
Bashir & Idrees (2018)	Pakistan	Headcount Index and Poverty Gap Index	Region-specific poverty lines are more consistent and appropriate than single poverty lines.
Iqbal (2020)	Pakistan, Provinces Rural-Urban	Passche formula	There is a decline in poverty in both rural and urban areas, but a significant decline was observed in poverty.

Source: Various studies.

Some recent studies worked on region-specific analysis and contributed by analyzing the spatial distribution of poverty, along with studying the factors causing differences in regional poverty (Dabalen et al. 2020; Calva & Juarez, 2020; Liang, 2020; Jha et al., 2021; and Akinbobola & Olaniyan, 2021).

Literature Gap

The review of studies shows that most past studies focused on measuring poverty at the national or provincial level. Some studies estimated poverty on a regional level, but a very limited literature measured on all three national, provincial, and regional levels (Ahmed & Ludlow, 1989; Malik, 1992; Hussain & Shirazi, 1995; and Idrees, 2017). In addition to a three-tier (national, provincial, and regional) poverty analysis, this study measures different poverty lines for different provinces and regions, unlike most studies reviewed. Moreover, our study is based on the latest available data. There is minimal literature on long-term and comparable estimates of poverty in Pakistan. The present study aims to fill the literature gap by constructing a consistent time series of poverty estimates for all segments of Pakistan, including rural and urban areas of all provinces. We shall present a consistent time series of HeadCount Indices from 2001-02 to 2018-19.

3. Data, Variables and Methodology

3.1. Data Source

This study uses the Household Integrated Economic Surveys (HIES) microdata. This study shall present poverty trends in rural and urban segments of all provinces and Pakistan for the last two decades, i.e., 2001-02 to 2018-19. The microdata is available on the official website of the Pakistan Bureau of Statistics. HIES is representative at the province level; however, the sample size continuously increases.

3.2. Construction of Variables

3.2.1 Indicator of Wellbeing

In general, income and consumption are two units of well-being. The study uses consumption as a unit of well-being, which is considered a better way to measure well-being as it results in less under-reporting and directly measures welfare.

HIES provides comprehensive information on consumption. It defines consumption in four major groups: paid and consumed, wages and salaries in kind consumed, own produced and consumed, and receipts from assistance. Furthermore, based on the nature of commodities, consumption is reported fortnightly, monthly, and yearly. We will convert all consumption expenditures into monthly amounts by dividing annual expenditures by 12 and multiplying fortnightly amounts by 2.1726. Adding the values for all three consumption categories yields detailed monthly consumption expenditure data.

3.2.2 Unit of Wellbeing

The study aims to analyze annual consumption expenditures used to measure welfare. To convert all household members into standard and comparable units, the unit of analysis used is per adult-equivalent consumption. In this method, each household member is expressed as a proportion of an adult.

One method to calculate per adult equivalent consumption is to consider the minimum required calories of the population based on age and gender. The Government of Pakistan (2003) provided a calorie requirement chart according to age and gender. According to this chart, the average calorie requirement for an adult is considered to be 2,350 calories. Many studies, including Hadia & Idrees (2007), Rafat & Idrees (2012), and Idrees (2017), have used this methodology to calculate the number of adult equivalents in a household. The minimum required calories for a healthy life are presented in Table 3.1.

Table 3.1: Minimum Calorie Requirement (Per Day)

Age Group	Males	Female
less < 1 year	1010	1010
1 year to 4 years	1304	1304
5 years to 9 years	1768	1768
10 years to 14 years	2816	2464
15 years to 19 years	3087	2322
20 years to 39 years	2760	2080
40 years to 49 years	3640	1976
50 years to 59 years	2460	1872
60 years & above	2146	1632

Source: Government of Pakistan (2003).

According to this approach, the aggregate minimum required calories are divided by 2,350 to obtain the number of adult equivalents in a household.

Table 3.2 reports the average number of adult equivalents per household across different regions of Pakistan. According to these statistics, the average household fluctuates around six adult equivalents. The province-wise comparisons show that, in general, the average household size is largest in Khyber Pakhtunkhwa, followed by Baluchistan. Punjab and Sind are relatively smaller.

Table 3.2: Average Number of Adult- Adult-Equivalents per Household

Years	Provinces – Rural				Provinces – Urban				Pakistan		
	Punjab	Khyber Pakhtunkhwa	Sindh	Baluchistan	Punjab	Khyber Pakhtunkhwa	Sindh	Baluchistan	Rural	Urban	Overall
2001-02	5.99	7.18	7.26	7.01	6.32	7.17	6.84	7.59	6.86	6.98	6.71
2004-05	6.17	7.26	6.44	6.41	6.26	7.26	6.42	7.14	6.57	6.77	6.54
2005-06	6.03	7.67	7.03	7.22	6.15	7.13	6.59	8.03	6.99	6.98	6.72
2007-08	5.99	7.21	6.59	7.37	6.04	6.70	6.13	7.71	6.79	6.65	6.50
2010-11	5.85	6.92	6.51	6.83	5.92	6.90	6.11	7.31	6.53	6.56	6.34
2011-12	4.89	5.84	5.55	7.13	4.95	5.60	5.35	6.91	5.85	5.70	5.43
2013-14	5.75	6.68	6.05	7.74	5.81	6.62	5.62	8.08	6.56	6.53	6.18
2015-16	5.65	6.91	6.17	8.00	5.66	6.72	5.62	7.53	6.68	6.38	6.14
2018-19	5.43	6.93	6.06	7.62	5.42	7.01	5.76	7.56	6.51	6.44	6.03

Source: Authors' Estimations.

After finding adult equivalents, we calculated per adult equivalent household consumption expenditure through the following formula:

$$\begin{aligned}
 & \text{Per Adult Average Monthly Consumption Expenditures} \\
 &= \frac{\text{Monthly Consumption Expenditures of a Household}}{\text{Number of Adult Equivalents in a Household}} \quad (3.1)
 \end{aligned}$$

The average per adult equivalent household consumption expenditure is reported in Table 3.3. This table explains the per adult average consumption for all four provinces and regions, calculated by taking the sum of the monthly expenditures from all the provinces and regions. Total expenditures are divided by adult equivalence, and average annual expenditures for provinces and regions are calculated.

Table 3.3: Average Monthly Per-Adult Equivalent Consumption Expenditures

Years	Rural – Provinces				Urban – Provinces				Pakistan - Overall		
	Punjab	Khyber Pakhtunkhwa	Sindh	Baluchistan	Punjab	Khyber Pakhtunkhwa	Sindh	Baluchistan	Average	Maximum	Minimum
2001-02	802	685	750	818	1448	1976	1132	1089	1041	49983	94
2004-05	1293	1119	1171	1252	2069	2132	1711	1494	1509	46161	132
2005-06	1666	1269	1528	1205	2992	2781	2101	1599	1942	105019	156
2007-08	2135	1647	1999	1446	3431	3733	2901	2039	2441	128728	242
2010-11	3316	2679	3071	2776	5010	4604	3994	3178	3630	122158	620
2011-12	4525	3478	4191	3417	7433	7320	5680	4464	5243	198526	900
2013-14	4843	3553	4963	3612	7068	6448	7143	5042	5180	227752	907
2015-16	4806	3729	5090	3654	6655	6726	6307	4640	5750	168925	657
2018-19	5620	4226	5416	4043	7949	6880	6585	5056	5846	114563	1140

Source: Authors' calculations.

The statistics show an over five-fold increase in average monthly nominal expenditures, with an average annual growth rate of around 10 percent. The rural-urban comparison reveals that per-adult-equivalent consumption expenditures are relatively higher in urban areas. This rural-urban difference justifies using different poverty lines for rural and urban areas. The province-wise comparison shows that average expenditures are relatively higher in Punjab and Sind.

3.2.3 Poverty Lines

The statistics reported in Table 3.4 show that the average cost of living is not the same across rural and urban provinces of Pakistan. This indicates that one should estimate different poverty lines for rural and urban segments of all provinces. The present study will use region-specific poverty lines to explore poverty trends in the rural and urban segments of all provinces from 2001-02 to 2018-19. Therefore, the poverty lines estimated by Bashir and Idrees (2018) will be deflated for the preceding years and inflated for the following years. Furthermore, food poverty lines will be adjusted through food CPIs, and non-food poverty lines will be calculated from non-food consumer price indices.

Moreover, the inflation rate is not identical across rural and urban areas of Pakistan. However, in the past, there was no practice for calculating different Consumer Price Indices (CPIs) for rural and urban

areas. Therefore, we used common CPIs to adjust rural and urban poverty lines. The region-specific poverty lines adjusted by CPIs are reported in Table 3.4. The reported statistics show that over the last 18 years, the cost of basic needs has increased by 3.6 times.

Table 3.4: Inflation Adjusted Poverty Lines

Years	Rural – Areas				Urban – Areas			
	Punjab	Sindh	Khyber Pakhtunkhwa	Baluchistan	Punjab	Sindh	Khyber Pakhtunkhwa	Baluchistan
2001-02	687.018	746.38	946.89	946.89	1154.09	1202.36	1135.20	1096.41
2004-05	809.37	879.31	1115.53	1115.53	1359.63	1416.50	1337.37	1291.67
2005-06	873.47	948.95	1203.87	1203.88	1467.31	1528.68	1443.28	1393.96
2007-08	1054.34	1145.46	1453.17	1453.18	1771.16	1845.24	1742.16	1682.63
2010-11	1544.09	1677.53	2128.17	2128.18	2593.86	2702.35	2551.39	2464.21
2011-12	1714.05	1862.17	2362.42	2362.43	2879.37	2999.81	2832.23	2735.45
2013-14	1998.83	2171.56	2754.92	2754.93	3357.77	3498.21	3302.79	3189.93
2015-16	2148.97	2334.68	2961.85	2961.87	3609.98	3760.97	3550.87	3429.54
2018-19	2496.80	2712.57	3441.25	3441.28	4194.29	4369.72	4125.62	3984.64

Source: Based on Poverty Lines Estimated by Bashir and Idrees (2015).

3.3. Estimates of Poverty

3.3.1. Measurement of Poverty

This study shall calculate Head Count Indices to determine a time series of regional poverty in Pakistan. The Head Count Index calculates the proportion of the population that lives below the threshold level or poverty line:

$$P_0 = \frac{\text{Population below Poverty Line}}{\text{Total Population}} \quad (3.2)$$

Its value should remain between $0 \leq P_0 \leq 1$. If the P_0 value is 0, it means no one is living under the threshold; and if the P_0 value is 1, then all the people live below the threshold level.

3.3.2. Decomposition / Distribution of Poverty

After calculating the headcount indices of all regions, it will be useful to work out the distribution of poverty. Therefore, we shall

decompose the headcount index as follows: $= (S_1P_{01}) + (S_2P_{02}) + (S_3P_{03}) + \dots + (S_8P_{08})$ (4.3)

Dividing by overall P_0 , we will get the share of each region in overall poverty:

$$1 = \underbrace{\left(\frac{S_1P_{01}}{P_0}\right)}_{\text{Share of Group 1 in } P_0} + \underbrace{\left(\frac{S_2P_{02}}{P_0}\right)}_{\text{Share of Group 2 in } P_0} + \underbrace{\left(\frac{S_3P_{03}}{P_0}\right)}_{\text{Share of Group 3 in } P_0} + \dots + \underbrace{\left(\frac{S_8P_{08}}{P_0}\right)}_{\text{Share of Group 8th in } P_0} \quad (4.4)$$

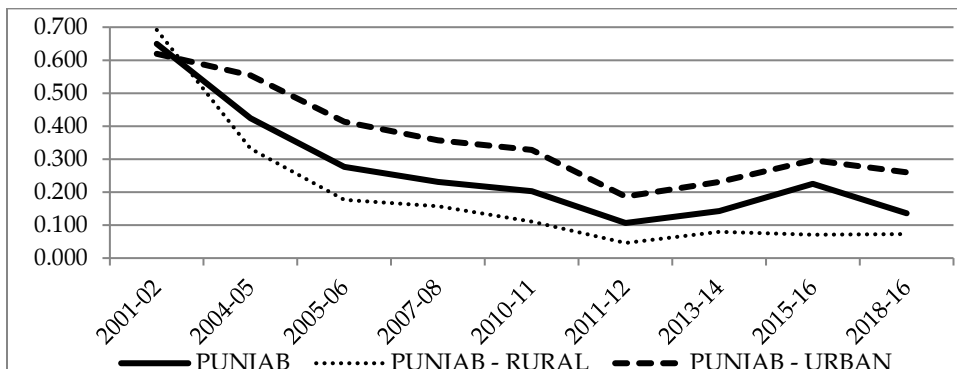
S_i is the population share of the i^{th} group, and P_{0i} is the headcount index for the i^{th} group for the eight groups included.

4. Trends in Poverty

4.1. Poverty Trends in Punjab

Punjab province constitutes the largest share of the country's population. It is a relatively developed province of Pakistan with a strong agricultural base and better infrastructure. The education profile of Punjab is also better than that of the other provinces. Crop farming, livestock, cattle farming, retail trading, and transportation are the main occupations in this province. A significant proportion of the population is engaged in agriculture.

The application of different poverty lines enabled us to incorporate the differences in the cost of living across rural and urban areas. It was observed that urban poverty lines were almost 68% higher than the respective rural poverty lines. This significant difference in the cost of living across the rural and urban areas of Punjab challenges the general perception that poverty is higher in rural areas. We calculated head count indices from 2001-02 to 2018-19. The estimates of head count indices are presented in Figure 4.1.

Figure 4.1: Poverty Trends in Punjab (Headcount Indices)

Source: Authors' calculations.

Figure 4.1 shows that, in general, poverty declined in Punjab. For instance, in 2001-02, 65% of the population was below the poverty line, which shrank to just 13% in 2018-19. In rural Punjab, poverty was 69%, which decreased to 7%. On the other hand, in the urban region of Punjab, the estimated poverty level was 61%, which declined to 26%. Interestingly, from 2001-02, Headcount Indices for urban Punjab were consistently higher than those for rural Punjab, showing that poverty is relatively more intense in urban areas. This result challenges a traditional myth that poverty is more prevalent in rural areas. This is because, in the past, the same poverty lines were used for both rural and urban areas. Since the cost of basic needs is not the same across rural and urban segments, considering the same poverty line overreports poverty in rural areas and underreports it in urban areas.

There are several reasons for the declining poverty trend in Punjab. In the first phase, the poverty rate sharply declined because this was a time of technological advancements and a politically stable environment, leading to smooth economic activities (Azid et al., 2000). In this first phase, the growth rate was high, resulting in a decline in the poverty level. However, after 2007, the growth rate decreased, and the poverty level became unstable again (Farooq & Ahmed, 2020). Punjab has a solid and rich agricultural base, emphasizing wheat, rice, and cotton. The adoption of new technologies and support from the government benefited the rural tenants of Punjab.

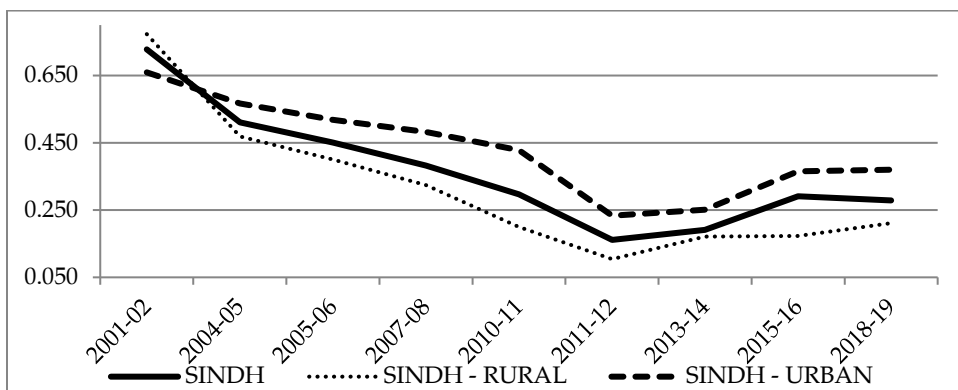
Infrastructure improvement is one of the dominant factors in eliminating poverty in urban Punjab. Better infrastructure increases the mobility of labor and raw materials and provides easy and quick access to markets. All this eventually leads to poverty reduction by enhancing employability and efficiency. However, poverty estimates slightly rose during

2011-12 and 2015-16. This might be due to the 2010 floods, which harshly affected the poor tenants of rural Punjab by destroying their crops and cattle.

4.2. Poverty Trends in Sindh

Sindh is Pakistan's second-largest province, home to around one-fourth of the total population. Its central trading hub and seaport are in Karachi, and the province's agricultural base is very strong. However, the province's feudal system prevails, especially in rural areas, where rich and powerful landlords dominate. Figure 4.2 presents Sindh's poverty trends.

Figure 4.2: Poverty Trends in Sindh (HeadCount Indices)



Source: Authors' calculations.

Figure 4.2 indicates that, like Punjab, poverty in Sindh continuously declined from 2001-02 to 2011-12. The rural-urban patterns are similar, showing relatively more poverty in urban areas. Again, the reason is that the cost of basic needs is relatively higher in urban areas. According to estimates of the poverty line, the cost of basic needs in urban areas of Sindh is almost 62% higher than in rural areas.

The sharp decline in poverty from 2001 to 2006 was due to a stable political and economic environment. In 2008, the PPP government initiated pro-poor programs; a major program was BISP, but it did not significantly impact poverty initially. However, it was redesigned after the major flood disaster in 2010, following a more comprehensive approach. Like Punjab, Sindh also has a strong agricultural base. This province is one of the largest exporters of mangoes and dates. However, the devastating floods of 2012 adversely affected this province. The floods impacted almost 80% of the rural belt, leading to the loss of crops and livestock. Consequently, poverty

rose, and increasing trends were observed until 2015-16; after this, poverty figures declined once again.

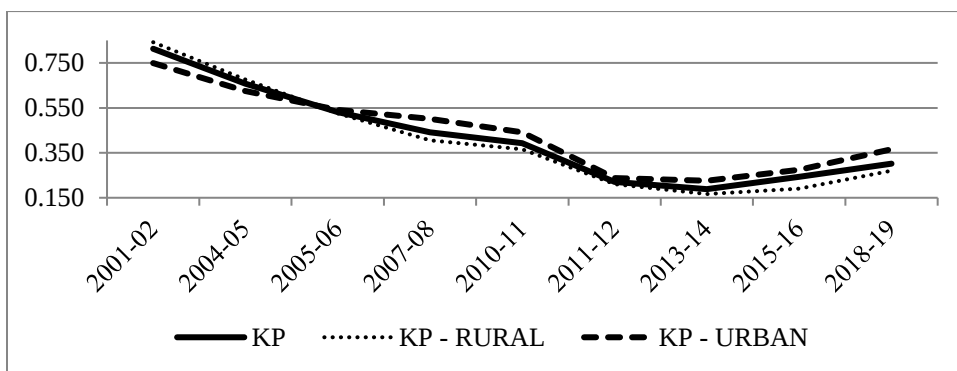
Karachi and Hyderabad dominate Sindh's urban belt. The law and order situation has gradually improved in these two cities, reducing poverty.

4.3. Poverty Trends in Khyber Pakhtunkhwa

Khyber Pakhtunkhwa is the third-largest province in the country, with around one-fifth of the population residing there. Figure 4.3 presents estimates of poverty for this province.

Like Punjab and Sindh, Khyber Pakhtunkhwa also reported a continuous decline in poverty. It was found that 81% of the population lived below the poverty line in 2001-02, decreasing to 30% in 2018-19. Rural poverty decreased from 84% to 27%, and urban poverty reduced from 74% to 36% during the same period. The statistics show that, over the last 17 years, nearly two-thirds of the poor population have been lifted out of poverty, which is remarkable and highlights the success of poverty-alleviating policies across all regions of the country.

Figure 4.3: Poverty Trends in Khyber Pakhtunkhwa (Head Count Indices)



Source: Authors' calculations.

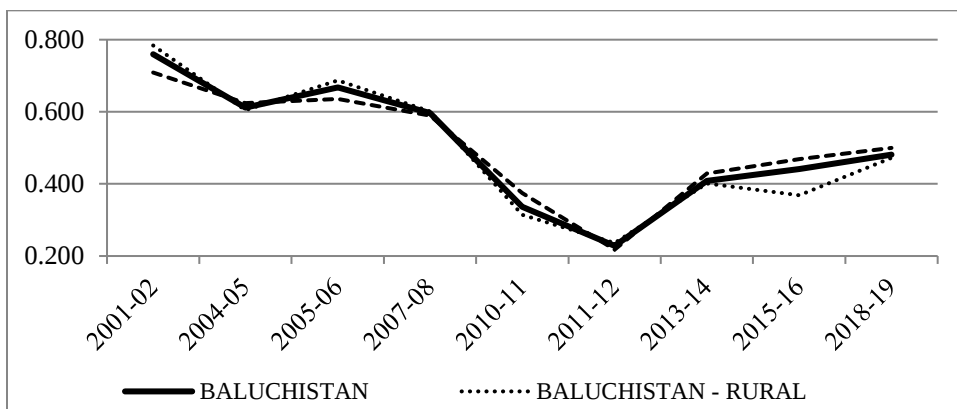
Technological advancement, political stability, smooth economic activities, and government policies favored poverty reduction during 2001-06. After that, poverty trends changed, and urban poverty became higher than rural poverty in KPK. As people started to prefer the city, population pressure in the urban areas increased. The cost of basic necessities went up, pushing more people into poverty. The growing population is also a major

reason for this phenomenon. With a rise in population, the rural economy drives people to move to urban centers for education and work. This makes the already meager urban resources scarcer, leading to higher poverty levels.

4.4. Poverty Trends in Baluchistan

Baluchistan is the least populated province of Pakistan, with around 10% of the country's population belonging to this province. The population density of Baluchistan is the lowest compared to all other provinces in Pakistan. It is enriched with minerals, including gas, coal, marble, and sulfur. Baluchistan is one of the major suppliers of natural gas. The poverty trends in Baluchistan are presented in Figure 4.4.

Figure 4.4: Poverty Trends in Baluchistan (HeadCount Indices)



Source: Authors' calculations.

The poverty trends in Baluchistan differ from those in other provinces of Pakistan in at least three ways. *First*, poverty increased during 2004-05 and 2005-06. *Second*, unlike in the other three provinces, the differences between rural and urban poverty are not very pronounced. Third, the intensity of poverty is much higher than that in the other provinces.

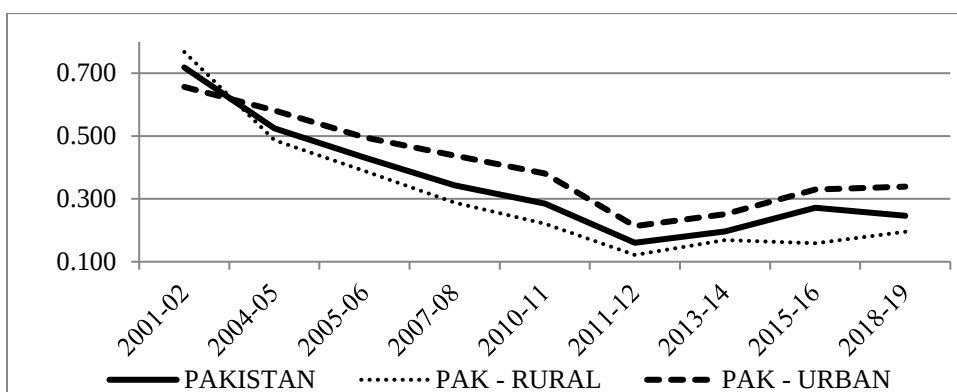
Baluchistan's overall poverty level decreased to 28% from 2001-02 to 2018-19. Rural poverty decreased to 31%, whereas urban poverty decreased to 21%. In Baluchistan, the quality of life is very low, and agricultural production is limited because the land is less suitable for farming (Jamal, 2005). Terrorist activities have consistently caused instability in its social and economic life. The land in Baluchistan province is less conducive to agricultural production. Residents must meet their

basic needs at higher costs (Malik, 1992). The feudal system is dominant in this province and has a major impact on poverty.

4.5. Poverty Trends in Pakistan

After discussing the poverty trends in the province, we shall now focus on the poverty trends in rural and urban areas of Pakistan. The estimates of Head Count Indices from 2001-02 to 2018-19 are presented in Figure 4.5.²

Figure 4.5: Poverty Trends in Pakistan (HeadCount Indices)



Source: Authors' calculations.

In 2001-02, the Head Count Index for Pakistan was 0.718, which fell to 0.246 in 2018-19, showing a decline of 0.472. This indicates that during the last 17 years, almost two-thirds of the poor population were pulled or pushed out of poverty. Similar patterns are evident in rural and urban areas; rural areas recorded a decline of 0.57, while urban areas showed a decline of 0.32. However, it is important to note that the decline is relatively greater in rural areas; this is also encouraging as the majority of households live in rural regions. The same scenario was examined by Naveed et al. (2018), who state that the reduction in rural poverty has been greater than that in urban poverty.

² It is to be noted that poverty estimates for earlier years are too high. If we compare them with the estimates of studies conducted in those periods, all results indicate significantly high poverty. All results are consistent with estimates of the Government of Pakistan. In 2013-14, the Government of Pakistan switched to the CBN approach and used the CBN-based poverty line to re-estimate poverty for the previous years. They also found significantly high poverty rates for the initial years. For details, see the Government of Pakistan. (For details, see Pakistan, Ministry of Finance, 2016.)

There could be numerous reasons behind this decrease in poverty. This also shows the effectiveness of various social safety net programs initiated by the Government of Pakistan. In this regard, the Benazir Income Support Program, Yellow Cap Scheme, Apna Rozgar Scheme, and Waseela-e-Taleem are notable initiatives.

A comparison of rural and urban trends revealed that, except in 2001-02, poverty was much more pronounced in urban areas. This is because the cost of living is comparatively higher in urban areas. The poverty line estimates indicate that, on average, the cost of basic needs is 50% higher in urban areas than in rural areas. In rural areas, people grow and consume food on their land, while in urban areas, people rely on markets for everything. The study also incorporated another type of consumption: "Receipt from assistance." In rural areas, communities share their proceeds as assistance with those who may not be able to afford them.

An upward trend in 2011-12 was mainly due to the devastating floods in Sindh, Punjab, and Khyber Pakhtunkhwa. The floods severely affected agriculture, livestock, and small farmers. This is also supported by Naveed et al. (2018), who observed a high poverty trend during this period. After the floods of 2010, the period was characterized by improvement, mainly due to better poverty-alleviating policies. This period also marked the first democratic government completing its term and the transition to the next government, which saw funding from international donors.

5. Distribution of Poverty

5.1. Distribution of Poverty Across Provinces of Pakistan

The poverty decomposition across the four provinces of Pakistan is presented in Table 5.1. The statistics in the table show that Punjab has the highest share in the sample, followed by Sindh, Khyber Pakhtunkhwa, and Baluchistan. However, the distribution of poverty depicts a different picture.

Punjab has the highest population share, ranging from 39% to 43%. Its share of overall poverty is also the highest, but it is relatively lower than the corresponding population share. For instance, in 2001-02, 39.2% of the sampled adult equivalents were from Punjab; however, their share of overall poverty in Pakistan was 35.4%. This indicates that although 39.2% of adult equivalents belong to Punjab, the poor population of this province accounts for 35.4% of the total poor in the country, which is 3.8% less than the population share.

It is interesting to note that this gap is further widening over time. Eventually, in 2018-19, only 23.5% of the country's poor population was from Punjab, which is 19.2 percentage points less than the overall population share of Punjab. Thus, our results follow a systematic pattern over time; its share of the total population is increasing, while its share of overall poverty is decreasing.

The results for all other provinces follow a different pattern. For Sindh, Khyber Pakhtunkhwa, and Baluchistan, the share of the total population is less than their corresponding share of the poor population. However, the difference is lowest in Sindh, where the share of the country's poor population is around one percentage point higher than this province's overall population share over the period considered. However, it grows to 3 percentage points in 2018-19. This gap is also less pronounced in Khyber Pakhtunkhwa and hovers around 4 percentage points. This situation worsens in Baluchistan, where the gap is around 7 percentage points on average. Furthermore, there is an increasing trend in Baluchistan. In 2001-02, the population of this province was 5 percentage points less than its share in poverty, and this gap widened by 2018-19, as only 11.8% of adult equivalents are from Baluchistan and 23.1% of the Pakistani poor population is living in Baluchistan.

Therefore, we conclude that Punjab consistently performs better in terms of poverty, while the situation is the opposite in Baluchistan. Khyber Pakhtunkhwa and Sindh also suffer from relatively high poverty levels.

It can be attributed to several factors, such as Punjab's relative prosperity, with a strong agricultural and industrial base. Cottage and small-scale industries are significant sources of employment. Punjab also has the lowest average household dependency ratio. Furthermore, the province's education profile is better than that of other provinces (see Bashir, 2020, for details).

Baluchistan is a province that has faced the most unrest during the past few decades. There are issues regarding law and order, and the province has been a victim of terrorism for several decades. Although the situation has improved significantly over the past five years, it is still not as good as in other provinces of the country.

Feudalism could be another cause of mass poverty in Baluchistan and Sindh. Large landholdings and landless tenants not only cause income disparities but also lead to an increase in poverty.

Table 5.1: Provincial Distribution of Poverty across Provinces of Pakistan

Region	Shares	2001-02 (%)	2004-05 (%)	2005-06 (%)	2007-08 (%)	2010-11 (%)	2011-12 (%)	2013-14 (%)	2015-16 (%)	2018-19 (%)
Punjab	Population Share	39.2	39.5	39.1	39.6	39.5	39.6	39.4	40.0	42.7
	Share in Poverty	35.4	32.0	25.1	26.6	28.1	26.3	28.6	33.2	23.5
Sindh	Population Share	26.6	23.2	24.8	23.8	25.1	26.7	27.8	24.2	24.6
	Share in Poverty	27.0	22.7	25.9	26.6	26.1	26.9	27.0	25.9	27.9
Khyber Pakhtunkhwa	Population Share	19.4	22.4	21.3	20.5	19.7	22.0	21.1	23.8	20.8
	Share in Poverty	22.0	28.1	26.1	26.3	27.2	30.2	20.2	21.3	25.5
Baluchistan	Population Share	14.8	14.9	14.8	16.1	15.8	11.7	11.7	12.1	11.8
	Share in Poverty	15.6	17.3	22.9	28.1	18.6	16.6	24.2	19.6	23.1

Source: Authors' estimations.

5.2. Distribution of Poverty Across Rural and Urban Segments of Pakistan

Table 5.2 shows the poverty decomposition across rural and urban areas of Pakistan. The statistics indicate that the relative population spread is higher in rural areas, as around 60 of the sampled adult equivalents are from rural areas. However, the share of rural areas in overall poverty is relatively lower than its share of the total population for all years except for 2001-02.

In 2001-02, the incidence of poverty was relatively higher in rural areas, but the situation changed after that. For instance, in 2004-05, 60.1 of the total population (expressed in adult equivalents) belonged to rural areas, and 55.8 of the total poor population came from rural areas. This implies that the poor were 7 less than their relative share of the total population. This gap expanded over time, and finally, in 2018-19, the poor in rural areas were 25 less than their relative population share. In 2018-19, 64.60 of the country's total population resided in rural areas, while 48.7 of the poor population came from rural areas. This indicates that the poor were 15.6 percentage points less than the population share.

The urban areas, however, portray a different picture, except for 2001-02. The share of urban areas in overall poverty is greater than the

relative population share, and this difference, in general, has been widening over time. In 2018-19, the urban poor population was almost 16 percentage points higher than the urban population share.

Table 5.2: Distribution of Poverty across Rural and Urban Areas of Pakistan

Region	Shares	2001-02 (%)	2004-05 (%)	2005-06 (%)	2007-08 (%)	2010-11 (%)	2011-12 (%)	2013-14 (%)	2015-16 (%)	2018-16 (%)
Rural Areas	Population Share	55.6	60.1	60.0	60.4	59.9	57.8	65.9	65.9	64.6
	Share in Poverty	59.4	55.8	54.1	50.4	46.5	43.8	43.6	41.4	48.7
Urban Areas	Population Share	44.4	39.9	40.0	39.6	40.1	42.2	34.1	34.1	35.4
	Share in Poverty	40.6	44.2	45.9	50.7	53.5	56.2	56.4	38.5	51.3

Source: Authors' Estimations.

6. Conclusion

Poverty is one of the major issues faced by Pakistan's economy. Poverty estimation began in the 1960s, but using earlier studies, one could not construct a consistent time series of poverty estimates in Pakistan.

This study is an attempt to construct a consistent time series of poverty estimates for the rural and urban segments of all provinces of Pakistan. In this regard, a prerequisite was to consider region-specific poverty lines. We adopted the poverty lines of Bashir and Idrees (2018), deflated them for past years, and inflated them for 2018-19. Food poverty lines were inflated or deflated through the food CPI, and non-food poverty lines were inflated or deflated through the non-food CPI. The weighted average of inflated and deflated food and non-food poverty lines provided regional poverty lines. The weights reflected the shares of food and non-food expenditures in total consumption in respective regions and during respective years.

Poverty trends for all the regions and provinces, as well as the overall national poverty level, were graphically analyzed. Poverty decreased over time at the national, provincial, and regional levels. It is worth mentioning that we found urban poverty to be higher than rural poverty in almost all regions. This was due to the relatively high cost of basic needs in urban areas. We observed a consistent decline in poverty from 2001-02 to 2018-19. In this regard, the government's poverty

alleviation and employment generation programs are critical. Initiatives like the Yellow Cab Scheme, the Nojawan Rozgar Scheme, Kushal Pakistan, and Tameer-e-Watan helped reduce poverty.

We found that Punjab has the lowest poverty estimates, followed by Sindh, Khyber Pakhtunkhwa, and Baluchistan. However, in general, poverty is declining in all provinces. Punjab is the only province whose share of the country's poor population is less than its corresponding population share. In Baluchistan, the share of the poor population is much higher than its relative share of the total population, and this gap is widening over time. The rural and urban comparison revealed that the intensity of poverty is much higher in urban areas, and the majority of the poor are inhabitants of urban areas.

Policy recommendations should be followed to decrease poverty; in rural areas, the agricultural sector should be promoted. Urban poverty levels can be reduced by providing sufficient employment opportunities and public works programs. The inflation rate should also be controlled, as it affects people's purchasing power. It is also necessary to target poor people with proper management and planning so that deserving individuals can receive real benefits. One of the most important recommendations is that the poor should be given skills, as many people are trapped in poverty because they lack those skills.

There is space for more comprehensive research as we considered a single series of CPIs to inflate or deflate poverty lines of all regions due to the non-availability of CPIs for rural and urban areas. However, the inflation trends are not the same across all regions of the country. Therefore, estimating different poverty lines for each year using area specific CPIs can overcome this problem.

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