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Trends and Tendencies of Uni-dimensional Poverty is not the Flip Side of Poverty

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ABSTRACT

This study focused on trends and tendencies of Unidimesnional poverty in overall Pakistan, not only at the national level but also at the provincial and regional level. The FGT methodology was applied to measuring poverty by using PSLM data from 2010–11 and 2019–20. The empirical results show that, while absolute poverty has gone down over the past ten years, relative poverty has gone up in a number of places. Compared to urban areas, rural areas are more likely to see increasing rates of relative poverty. Income disparity is on the rise in the cities of Punjab and KPK compared to the countryside, and the reverse is true in Sindh and Baluchistan. In Punjab and KPK, the trend and tendencies of income inequality are greater in cities than in rural areas, whereas the opposite is true in Sindh and Baluchistan. Further, this study finds out that poverty in Pakistan is not only a monetary phenomenon but also an intellectual one. Therefore, if we focus only on the monetary side of poverty to eradicate it, it will not be possible to eradicate it by 2030, intellectual poverty is actually the flip side of poverty.

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1. Introduction

Most of the research has focused on three different ways to define poverty: absolute poverty, relative poverty, and a combination of absolute and relative poverty. Absolute poverty has to do with a person's ability to live physically. There is a clear line where poverty starts (Andreß, 2019; Foster, Greer, & Thorbecke, 1984). Malthusian subsistence level is an excellent illustration of absolute poverty (Malthus, 1888). Seebohm Rowntree's concept of "primary poverty," which refers to a lack of sufficient resources for survival, also fits under this group (B. S. Rowntree, 1902). In the last few decades, some people have come around to the idea of absolute poverty for example, (Joseph & Sumption, 1979), but it has mostly been seen as a problem in the Third World. However there are issues with using an absolute definition of poverty because not everyone needs the same amount of energy, not everyone needs the same number of clothing, and so on. The products that are considered essential as well as their prices affect the subsistence level. In actuality, it is relative to define poverty a specific aspect in view.

The second part of the 20th century saw the development of a relative definition of poverty. People's lives have been compared to a standard of living that most people agree on (Halleröd, 1997). The requirements of various people vary, hence poverty cannot be consistent over time and geography (Townsend, 1995). According to Halleröd (1997); Townsend (1979), consumption and income are crucial indicators of poverty. This also applies to Rowntree's "secondary poverty," which is the absence of resources necessary for a livable social existence (B. S. Rowntree, 1902; S. Rowntree, 1942).

According to Amartya Sen, poverty includes both absolute and relative components, meaning it depends not only on a basis of absolute poverty but also on social functions (Sen, 1976). Such an understanding of poverty is not wholly novel. Rowntree distinguished between a primary and secondary component of poverty (B. S. Rowntree, 1902; S. Rowntree, 1942). Sen has received a lot of criticism for include absolute factors in his analysis of poverty see, for example, (Piachaud, 1987; Townsend, 1979), but the criticism hasn't effectively demonstrated any errors or misunderstandings in this perspective on poverty. As an illustration, if relative poverty is thought of as a state of relative deprivation, then a person who is homeless would be considered poor since they feel socially inferior to others. On the other hand, the social exclusion theory of poverty contends that homelessness is a sign of poverty since it indicates a person's disconnection from social norms. The consensus strategy, on the other hand, contends that the homeless person is impoverished because their lifestyle is drastically different from what the majority of people view as a "normal" consumption level. The homeless individual also has a poor income and a low standard of living, which should be taken into consideration. All three of these plans don't take into account the fact that most homeless people have to fight for their physical survival. Absolute poverty is something that a homeless person must deal with.

1.1. Development History of Pakistan

During the period of independence, Pakistan's economy has experienced a faster average growth rate than the rest of the world. Pakistan's economic growth was negatively impacted by the 1965 and 1971 wars with India and the subsequent secession of Bangladesh. In the past four decades, Pakistan's development strategies have primarily stressed import-substituting policies, resulting in sectorial and regional imbalances. The percentage share of agriculture in the GDP (gross domestic product) decreased from 46% in 1959-60 to 23% in 1992-93. Pakistan's poverty problem has historically remained a major concern (Amjad & Kemal, 1997). The World Bank named Pakistan the leading reformer in the region in 2005. From 2001-2002 to 2005-2006, the percentage of individuals living in poverty reduced from 34% to 22% (Ahmad, Ludlow, & Mahmood, 1989). The government spent more than one trillion rupees on programs to alleviate poverty. In 2008, the index of povert in Pakistan declined to 17.2% (Niazi & Khan, 2012).

Many people think that when the N's were in charge of the government from 2013 to 2018, the economy got stronger, grew, and got better. Nevertheless, it was predicated on rate of growth alone, which appear pretty satisfactory when backed by statistics and IMF credit programs. Pakistan has a significant current account deficit, sharply declining exports while maintaining stable imports, neglecting the agricultural sector, and a lack of public sector reforms. PTI took office in 2018. The growth rate dropped to 0.99 percent in FY19, and to 0.38 percent in FY20. The COVID-19 pandemic, which devastated the global economy, has brought it to its knees. Pakistan has also been severely affected, which has caused its economy to contract (Modern Diplomacy, 2021). Pakistan's current fiscal year, which ends in June 2023, is expected to have a growth rate of just 2%. Floods caused damage and messed up plans, so development will move more slowly (World Bank Group, 2022). One can realize the fact that intellectual solution is required to handle this dilemma situation rather than following the already tested puncture approach.

1.2. Poverty in Pakistan

The generalization that poverty prevents the actual realization of the desire for economic growth is well-established. In the history of poverty in the area and over time, Pakistan has seen many of the same patterns as the rest of the world. Poverty has probably always been a problem in Pakistan, based on what we know about its history. The majority of Pakistan's population lives in rural areas, where poverty is a more serious issue. According to studies, there are approximately twice as many poor households in rural areas as there are in metropolitan ones (Zaidi, De Vos, & Malik, 1993).

In the 1990s, numerous factors contributed to the worsening of poverty, including slow growth, shaky macroeconomic policies, the absence of social safety nets, a decrease in the amount of money Pakistani expats were sending home, and a loss in the effectiveness of the government (Haq & Bhatti, 2010). From 1987–1988 to 1990–1991, empirical studies (Kemal, 2003) show that the number of people living in poverty, how bad it is, and how often it happens all went up in Pakistan. Poverty trends are also different in different parts of the economy. Most

of the research that tries to figure out who is poor in Pakistan uses the income/expense threshold approach. But the absolute threshold can't always take into account changing situations and differences between regions (Bhatti, Haq, Javed, & Shirazi, 1999).

In 1999, one third of people of Pakistan were considered poor, and most of them lived in the rural areas. Also, socioeconomic factors like health and education are worse than in other countries, even though they share the same rate of growth and show big differences between rural and urban areas (Word Bank, 2002). In Pakistan, which is one of three Asian nations with literacy rates below 40% and one of the few places in the world where the number of illiterate people is rising with every new year (from 28 million in 1972 to 46 million in 2005), there are 46 million people who lack access to education (Khan, Saboor, Mian, & Malik, 2011).

According to Ali and Ahmad (2013), the number of years spent in school correlates directly with poverty reduction. According to the Pakistan Planning Commission, In 2008, there were 160 million individuals in the world, and 64 million of them lived below the poverty line; curiously, 40 percent of metropolitan residents live in slum areas. Similar to this, (UNDP, 2010) estimated Pakistan's multidimensional poverty incidence to be 54% in 2010. It is noted that between 2008 and 2010, poverty increased unreasonably (World Bank, 2010). The hardest-hit areas would likely experience a worsening of poverty in light of the current flooding. If prompt relief and recovery measures to help the poor are not taken, preliminary predictions show that the national poverty rate may rise by 2.5 to 4 percentage points, putting between 5.8 and 9 million people in poverty. As Pakistan suffers with difficulties such as a significant current account deficit, enormous public debt, and a decline in demand from its traditional export markets during a period of sluggish global economy, macroeconomic risks remain elevated (World Bank Group, 2022).

1.3. Research Gap

In prior studies trends and tendencies of uni-dimensional were not estimated in appropriate logical framework. If someone focused on income inequality, or absolute poverty, they ignored the incidence of poverty, or the gap and severity of poverty. In this study, we have encompassed all studies that have been conducted in the past.

Is it justified to claim that Conventional (uni-dimensional) measures have failed to address broad spectrum of poverty?

2. Review Of Literature

Various studies that are grounded theoretical and empirical bases for uni-dimensional poverty are go through into this section.

2.1. Absolute Poverty

Absolute poverty refers to a definition of poverty based on a universal baseline that has no relation to the income or access to goods of other individuals. Individuals who fail to reach this benchmark are therefore considered impoverished. Absolute poverty is frequently mentioned with relation to the severe poverty in developing countries, despite the fact that absolute and extreme poverty are not identical. A person is in absolute poverty if they can't take care of their most basic needs. In global poverty reduction efforts, such basic necessities are typically characterized as include food, water, housing, basic education, and basic healthcare. Extreme poverty is often described as the lack of access to all or many of the products required to meet these fundamental necessities. The idea that all people's basic requirements must be addressed in order to avoid being poor in the strictest sense and that they are therefore somewhat objectively quantifiable is one that is frequently used to define absolute poverty (Chatterjee, 2011).

2.2. Relative Poverty

Relative poverty is defined relative to the economic condition of other individuals. Consequently, even if they can meet their basic needs, a person can be poor in the relative sense even if they are not poor in the absolute sense. By comparing relative situations within a culture or globally, one might observe relative poverty. Relative poverty is sometimes seen as a phenomenon that is more common in nations where absolute poverty is less of a concern, making it a morally less serious issue. In general, absolute poverty is seen as a failure to uphold

basic human dignity or even human rights, while relative poverty is seen as an absence of distributive justice. Thus, both absolute and relative poverty have two different levels of connection to global justice issues. According to one concept, relative poverty can be thought of in terms of what people mentally want or anticipate from themselves. Alternately, it might be claimed that poverty essentially refers to one's standing in the money economy relative to others. This entails categorising all forms of poverty as relative, with naturally varying degrees of acuteness (Chatterjee, 2011).

2.3. Poverty and Vulnerability

"An individual is vulnerable to poverty when she or he is at risk of becoming poor or at risk of remaining poor."

While the implications of risk on anticipated poverty and income processes have been taken into account, the role of risk as a component of poverty has not been taken into account. A measure of lack of access to consumption-smoothing mechanisms may be taken into consideration, much as deprivations in health and nutrition could be taken into account as part of an extended understanding of poverty. Vulnerability to income shocks may be intrinsically harmful to the poor. Therefore, vulnerability is not merely a byproduct of poverty; it can also strengthen the income mechanisms that cause poverty and further reduce the projected standard of living for the poor (Adger & Winkels, 2014).

2.4. Chronic Poverty

Like the idea of poverty itself, the term "chronic poverty" is a portmanteau. The phrase can be given many different interpretations, each reflecting the unique personal values, and frequently the disciplinary backgrounds, of specific analysts and schools of thought. However, chronic poverty is defined as a person experiencing major capability deprivation for five years or longer (Chaudhuri & Ravallion, 1994).

2.5. Empirical Review of Unidimensional Poverty

This section is divided further into two sub-sections

a. Empirical work on Unidimesnional poverty foreign level
b. Empirical work on Unidimesnional poverty at domestic level

2.5.1. Empirical Work on Unidimesnional Poverty at Foreign Level

The seminal work in Unidimesnional poverty is started in 1984 on Nairobi household survey data by Foster, Greer & Thorbecke (FGT), and their study was published in world's renowned journal "*Econometrica"*. They calculated incidence of poverty (P1), poverty gap (P2) and severity (P3) for capital city (Nairobi) of Kenya, this study found, poverty was worst among short term (less than 2 years) resident of Nairobi and those migrated individuals did not contribute in overall poverty in Nairobi but (those) people contribute 23.8 percent in total poverty who migrated twenty eight years back. This paper gave the formal base to development economist for measurement of poverty. This study only looked at the monetary side of poverty, ignoring the other dimensions of poverty as well as the intellectual side of poverty.

Chaudhuri and Ravallion (1994) classified the concept of poverty not only as objectively but also subjectively by using data of Indonesia. He used the theoretical and analytical methodology of (Foster et al., 1984) and applied different approaches (to find out the relationship) for measurement of poverty objectively. The name of these approaches were Cost of Basic Need (CBN) and Food Energy Intake (FEI), ultimately he found that there is no significant correlation between these two approaches. Subjectively, he extended the concept of poverty from basic needs approach to background circumstances of individuals or their relatives which affect the wellbeing of households.

Ravallion's study went into more detail about monetary poverty, but it did not observe at the trends and tendencies of unidimensional poverty and ignored intellectual poverty totally. Kakwani (2003) focused to determine the accurate poverty line for estimation of absolute poverty and relative poverty (to identify to poor households), for this reason he examined the different methodologies of poverty critically. According to him estimation of relative poverty for developing countries is not appropriated. Empirically he used Food Energy Intake (FEI) methodology for estimation poverty for Pakistan and India. Further he highlighted that poverty line should be inflationary adjusted. There is another study that measured the poverty for two

Asian countries, Thailand and Philippines and defined the minimum standard of living of society, which people must be fulfilled otherwise they will be considered poor. This study pointed out the problems of constructing a poverty line, talked about the spatial price index, and poverty line should be adjusted by (this) spatial/boarder effect, this solution could remove the discrepancy and biasness for estimating the absolute and relative poverty. He said, relative poverty line is based on relative perception and deprivation. Developing countries ignore these factors particularly variation in prices and circumstances across time and space. Comparison is possible if all individuals have same standard of living (on poverty line), individual circumstances should be ignored (Kakwani, 2001).

The primary objective of the Kakwani studies in 2001 and 2003 was to create a methodology for a precise poverty line, suggesting a lack of confidence in the existing approach for measuring poverty. The main goal of both of these works was to create a method for dealing with material poverty, not a philosophical basis for dealing with intellectual poverty, and they both ignored the trends and tendencies of intellectual poverty. Using market pricing, the (Word Bank, 2002) investigated the extent of poverty and its trends in Pakistan from 1987–1988 to 1998–1999. According to the data findings, poverty climbed from 30.7 percent to 34 percent between 1987–1988 and 1990–1991 and decreased from 26.7 percent to 24 percent between 1992–1993 and 1996–1997; however, poverty reversed itself in 1998–1999 and now stands at 32.6 percent. With the exception of a few other research, the study points to the higher density (of poverty). The World Bank used a positivist approach to estimate poverty. This study is fairly old; therefore, we need to use the most recent data to identify any new trends. The WB overlooked the multifaceted nature of poverty, particularly intellectual poverty, and did not emphasise poverty tendencies.

2.5.2. Empirical Work on Unidimesnional Poverty at Domestic Level

Naseem (1973) measured the first time poverty levels in Pakistan for different years (1963-64, 1966-67, 1968-69 & 1971-72). He used Household Integrated Economic Survey (HIES) data for measuring poverty. His study defined the various poverty trends and focussed on the variation in per capita income of the population in rural and urban area. Due to the green revolution in 60s PCI (per capita income) of rural population were improved, prior to this revolution traditional methods were used in agriculture sector which were inefficient, and people of rural area by using conventional means of agriculture were worsen off. On the other side income of urban population was significantly greater than rural area. The incidence of poverty evaluated by arbitrary level of annual per capital income and per capita consumption that were Rs. 300 and 250 per annum for rural and Rs. 375 and Rs. 300 for urban zones respectively. The value of gini coefficient of urban area is diminishing over the period of time as compare to rural area.

As Pakistan's first poverty expert, Naseem's work is important, but his study didn't look at how poverty tendencies changed in different parts of the country. Instead, it just looked at the monetary side of poverty and neglected the other dimensions of poverty, including the intellectual side.

Anwar and Siddiqui (2005) disapproved the concept of absolute poverty that just explains the poverty in monetary term. They explained the concept of poverty in relative terms. If people of any society are not able to contribute in ordinary business of live they are considered poor relatively. This study measured absolute poverty as well as relative poverty, two third of total population (on bases of average expenditure) were absolutely poor as compare to 40.3 percent population poor relatively, consequently it was meant that 60 millions of Pakistan population were relatively deprived, which is 34 percent higher than the year of 1984-85. They also defined the poverty in rural region was comparatively higher than urban region. This study looked at the trends of relative poverty in Pakistan's rural and urban areas, but it didn't look at the trends and tendencies of absolute poverty; other dimensions of poverty were also ignored, as well as intellectual poverty.

Amjad and Kemal (1997) used data from the Pakistan Integrated Household Survey (PIHS) and the Household Integrated Economic Survey (HIES) between 1987–1988 and 1992–1993. They talked about the different levels of poverty in Pakistan and the many things that cause it.In their research, they adhered to Malik and Nazli (1999) methodology for estimating

income poverty in 1984–1985 after accounting for inflation (CPI). Results of their study indicated, in given period overall poverty has been increased by 5%, poverty in rural area increased by 19% in 1990-91, that was 15% higher as compare to 1987-88, and decreased 15.5% in 1992-93. They concluded that in 90s poverty was high due to sluggish economic growth, decline in foreign remittances, nonexistence of food subsidies and structural adjustment programme in macroeconomics. Inflation-adjusted income is used in this study to determine the trends of unidimensional poverty in Pakistan. This study looks at old trends, and it also doesn't look at the intellectual and spiritual sides of poverty.

Haq and Bhatti (2010) applied FGT (1984) methodology on HIES data set for 1996-97, calculating the class of additively decomposable poverty measures was the aim of this study. She explained that degree of poverty has basically three components, first one is to find out the living standard of individuals, second defined benchmark or the cut-off point and third one is related to the functional form that aggregates the several living standard of poor for measurement of poverty. This study found that the consumption expenditure is a general gauge for measuring the living standard of an individual. She calculated the headcount, depth of poverty and severity of poverty at given poverty line. Author divided the entire population into nine separate skill categories and looked at how much poverty each group experienced. She further divided the labor force into three categories: paid family members and employees, self-employed individuals, and highlighted the greatest differences between the professions of laborer, agricultural expert, and facility worker. Furthermore, top 20 percent have 37.2 percent expenditure share in their total consumption expenditures as compare to 10.5 percent of bottom 20 percent population.

After conducting a critical analysis of this research article, one may conclude that it failed to identify the trends and tendencies of unidimensional poverty. Non-traditional means of determining poverty are disregarded in favour of conventional methods.

CPRSPD (2008) used the HIES and PSLM survey data for year of 2001-02 to 2005-06, applied the FGT methodology and explained the pattern of poverty valuation. Poverty line determined by intake caloric method which was given by PC (Planning Commission of Pakistan), and the poverty threshold was inflationary adjusted. The results of this study showed that the incidence (of three different time frame 2001-02, 2004-04 and 2006-06) of poverty 34.46 percent, 23.95 percent and 22.32 percent respectively, incidence of poverty is higher in rural areas as compare to urban area. This study used the consumption expenditures as a proxy for income (as a prosperity indicator). Derivation of adult equivalent scale on the basis of requirement of nutrition for family members, 0.8 weight assigned for the member of the family whose age is less than 18 years and assigned 1 whose age is greater than 18.

Kemal (2003) also described the several poverty trends in Pakistan, he claimed that the economic growth had not trickledown effect on increase or decrease the poverty levels. He criticised almost all studies in which HIES data set has been used, according to him results of every study is vary to each other due to different poverty lines (and different methods of estimation for poverty), poverty line is not unanimously defined, it is subjective matter. Cheema (2005) criticized methodology for measuring poverty and determination of poverty lines, he used HIES data set and estimated 34.72 percent poverty headcount/poverty incidence. The results by using updating methodology and poverty line were significantly different. In this study also tried to develop the consistent methodology for getting the consistent results.

Arif (2000) used the FGT methodology on Pakistan Household Survey (PHS) 1995-1996, 1996-1997 and Pakistan Socioeconomic Survey (PSES) 1998-1999 data set. He claimed, that increase in poverty in 90s badly affected the socioeconomic indicators, like education, living standard and health, he also concluded that due to unfavorable circumstances gap between rich and poor has been widen at overall and regional level. The falling school enrolments and health facilities mainly in rural area need more attention on education, and preventative measure for poverty. As policy point of view he suggested (for removal of disparities at regional level), government should pay attention to provide basic needs (like drinking water, sanitation and education) in these areas. Arif (2006) investigate poverty alleviation measures by using data set of Pakistan Socioeconomic Survey (PSES) for year of 2000-01. This study's goal was to evaluate the various programs (disbursement of Zakat, food subsidies and microfinance), which were adopted by government of Pakistan for poverty alleviation. He found that actually eligible

people under zakat programmes were limited. Since, he observed that nature of problem is operational rather than theoretical. According to this study, the reason of failure of microfinance programmes were wrongly selected the targeted population, backward areas were ignored in more cases and health conditions in these areas were more vulnerable. Furthermore this study gives the guidelines to policy makers for selection of targeting population for poverty alleviation in general and disbursement of zakat in special.

There are (more) studies (above mentioned literature) that completely disregard the metaphysical aspect of poverty, and these investigations dealt with it simply in a nominal sense. According to the literature on unidimensional poverty, the majority of studies have computed trends; however, these trends are out of date. To determine trends, there is a need to use the most recent data, and no study has ever examined the "tendencies" of poverty or its intellectual aspect. All these aspects are also not found in the studies of CPRSPD (2008),Arif (2000, 2006); Cheema (2005); Kemal (2003); Qadir, Arshad, Guangming, and Rafique (2022).

3. Theoretical and Conceptual Framework of Uni-Dimensional Poverty

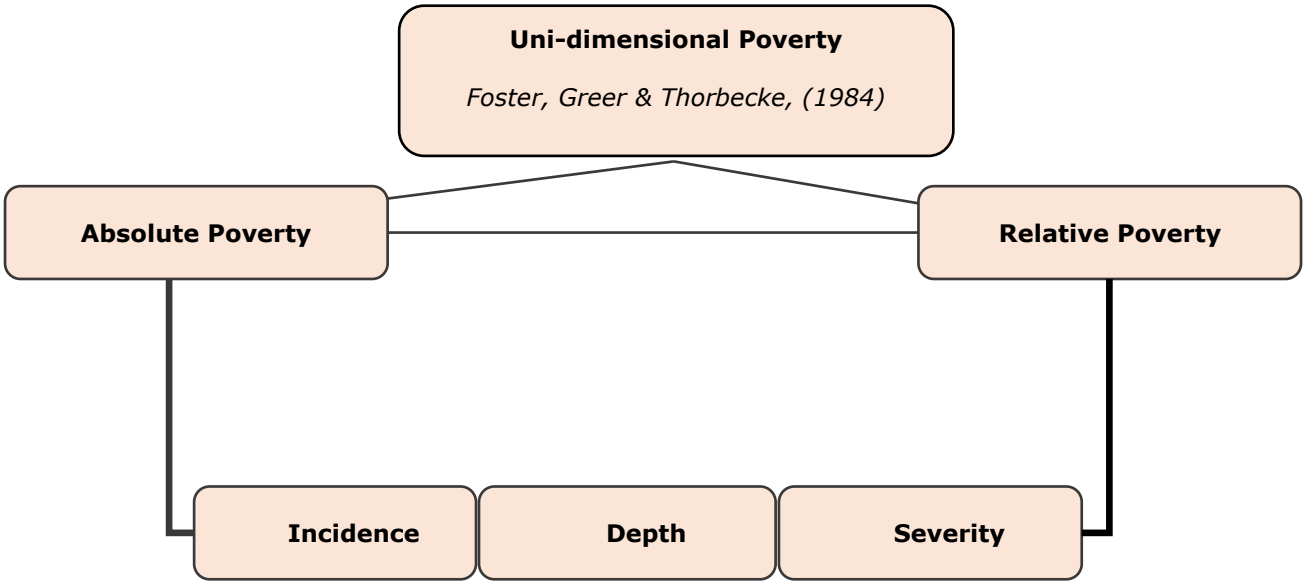

Figure: 1 Theoretical Framework of Uni-Dimensional Poverty (Source: Author's Construction)

Foster et al. (1984) began their seminal work on uni-dimensional poverty in 1984. Their paper was published in the prestigious journal "Econometrica.". Anwar and Siddiqui (2005); Cheema (2005); Haq and Bhatti (2010); Kakwani (2003); (Ravallion, 1998) are examples of studies that used FGT (1984) approach to measure uni-dimensional poverty.

3.1. Problem with Poverty Measurement

Poverty is a problem all over the world, but there isn't a single definition or way to measure it, there are a lot of things that make it hard to come up with a single definition of poverty (Kotler, Roberto, & Leisner, 2006). According to Rank (2004) the definition of poverty is relative and depends on the many experiences of individuals and interest groups because poverty affects diversified groupings. Because it's hard to define and measure poverty, policymakers and researchers often link it to concepts like deprivation, impoverishment, inequality, and the needy (Kotler et al., 2006).

3.2. Criteria for Selection a Poverty Variable

Laderchi, Saith, and Stewart (2003) say that the uni-dimensional or money approach to poverty looks at how much a person's consumption or income falls below a particular income threshold. The Unidimesnional to measuring poverty uses methods that focus on financial indicators and come up with the poverty line in a way that is based on facts. It assumes that all the differences between people and their circumstances can be accounted for by using a single monetary gauge. It is said that a monetary poverty measure needs to choose an indicator, a poverty line, and an analytical unit in order to be useful. The primary justification for the

monetary indicators' dominance on poverty measurement is that they can approximate facets of well-being or poverty that are hard to assess using the same unit. Furthermore, a monetary method provides a standardized homogenous platform for measuring poverty, which reduces the pressure caused by the discrepancy between theoretical complexity and the variety of poverty measurements and definitions. The emphasis of the monetary method is on the selection of an indicator of income or spending as a proxy for income as a proxy for ongoing consumption.

3.3. Absolute and Relative Poverty Line

When trying to quantify poverty, picking the right poverty line is essential. Ravallion (1998) stated that a poverty line can be determined either in relation to a list of essential demands (absolute poverty) or some aspects of how the welfare indicators are distributed (relative poverty). His Food Energy Intake technique emphasises the level of expenditure or income at which one is able to meet their food energy requirements.

3.4. Problem with Poverty Line

Since there isn't an economic theory that can be used to figure out the minimum level of needs, the poverty line is estimated based on political policy goals. Laderchi et al. (2003) acknowledged that due to an absence of economic theory and political influence, the decision of the poverty threshold tends to be difficult and misleading.

3.5. Income Inequality

Economists use a variety of ways to measure income inequality. The most commonly used measures are the Lorenz curve and the Gini coefficient.

3.5.1. Lorenz Curve

The Lorenz curve is the graphical approach for evaluating income inequality, since it illustrates how income or wealth is distributed among individuals. It was created by (Lorenz, 1905) to demonstrate that the distribution of wealth or income was unequal.

3.5.2. Gini Coefficient

The Lorenz curve does not help to quantify income inequality, but on the other hand, we can quantify income inequality with the help of the Gini coefficient. Gini (1997) created the Gini coefficient. Absolute equality is expressed by a Gini value of 0, while absolute inequality is expressed when the Gini value is equal to 1.

3.6. Data Description

The PSLM data includes all urban and rural regions of Pakistan, including districts, the four provinces, the Federally Administered Tribal Areas (FATA),

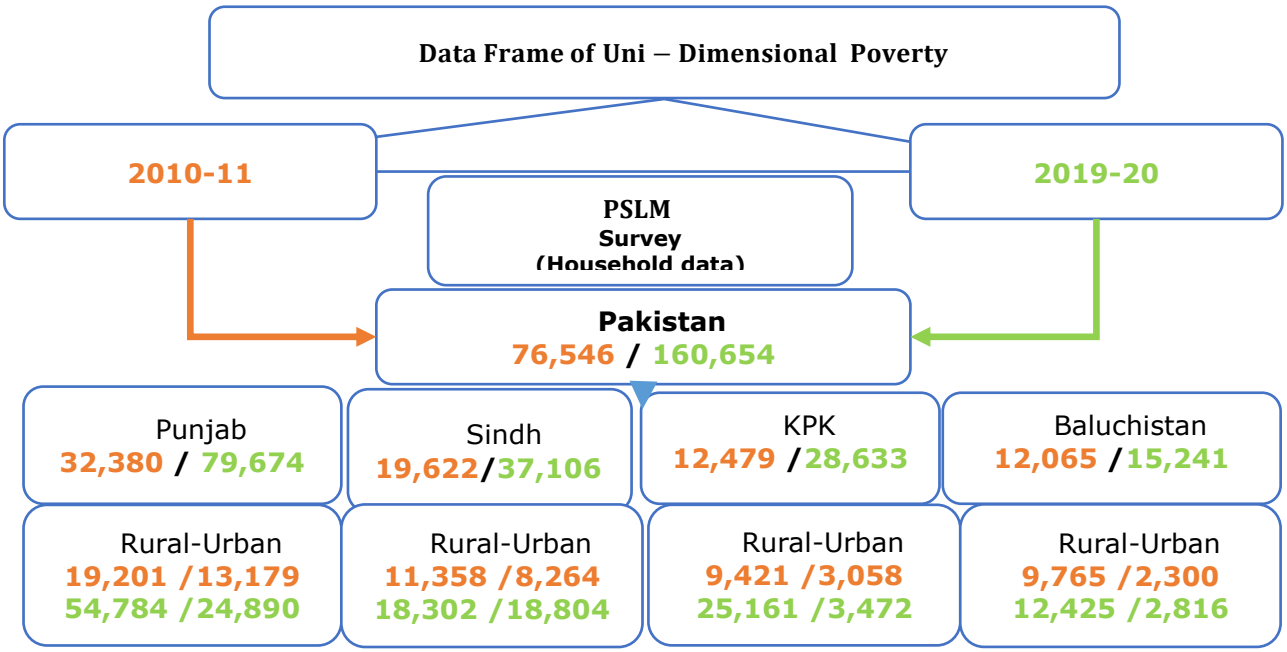

Figure: 1 Data related framework of Uni-dimensional and multidimensional Poverty (Source: author's construction) Data Source: PSLM at *Pakistan Bureau of Statistics (PBS)*

and the Federally Administered Northern Areas (FANA), both of which were merged into KPK by the 25th Constitution Amendment on May 31, 2018. Due to concerns about privacy, the survey didn't cover all places under the control of the military in 2010–11, especially of FATA, FANA and AJK. This analysis is restricted to the four provinces of Punjab, Sindh, NWFP (which was renamed Khyber Pakhtunkhwa (KPK) in 2010), and Baluchistan due to the constraints of the data. The aggregate of data from these four provinces approximately represents the whole nation.

3.6.1. Estimation of poverty

Sen (1976), while developing the poverty line, noted two key problems:

1. Identification: To identify someone, you have to set up a poverty line, a way to tell who is poor and who isn't.
2. Aggregation: Estimating or measuring poverty, choosing a poverty index.

Traditionally, the headcount ratio and the poverty gap were utilized frequently in poverty study. Sen presented an axiomatic method to measure poverty based on the following poverty axioms to evaluate the precision of different measurement indices:

1. Axiom of Scale invariance; if "X" is derived from "Y" by replicating the population "g" times, the calculation must remain intact. Multiplying all income factors by a positive value has no effect on the measurement of poverty. To put it another way, if the population doubles while being proportionate to everything else, the measure of poverty shouldn't be altered.
2. Axiom of Sub-Group Consistency; the condition of the poor is determined solely by the condition of the poor themselves. Non-poor individuals' income has no effect on the measurement. It means, changes in income for those who are better off have little impact on the actual level of poverty. This axiom says that measures that are based on ideas of relative poverty are not allowed. Instead, the focus should be on absolute poverty, which has a set poverty threshold.
3. Axiom of Symmetry; if the income or wealth distribution of factor "X" is determined by factor "Y" through a recombination of individual income, this has no effect on the poverty metrics.
4. Axiom of Monotonicity; according to the law of similar, poverty grows as poor people's income declines and vice versa.
5. Axiom of Decomposability; the measure of poverty for a group is calculated by taking the weighted average of the individual measurements of poverty for each member of the group, then it can figure out the overall level of poverty by taking the weighted average of the poverty rates in each subgroup. Each of the additive indices can be decomposed into subgroups
6. Axiom of Transfer; if money is transferred from those who are poor to those who are less poor, this must make poverty worse, whereas it must become better when money is transferred from those who are less poor to those who are very poor. This axiom is often referred to as the Pigou-Dalton Principle, after the two scientists who initially utilized it in their analysis.

3.6.2. Poverty line

An essential aspect of the poverty study is defining and quantifying the poverty line. Researchers see poverty in terms of subjective perception, relative resource inequality, and absolute deprivation (absence of opportunity and fundamental requirements). In the eyes of researchers, poverty is subjective (how it is experienced), absolute (lack of fundamental requirements and possibilities), and relative (resource inequality).

3.6.3. Subjective poverty cut-off

The subjective poverty line describes the minimum income at which people report feeling their standard of living is at or below the bare minimum. As a result, a method that is suitable for constructing subjective poverty lines is to base them on questions asked of households to derive the minimum living wage needed to make ends meet, with all households whose income is less than this minimal income being identified or classified as poor. Since people on the same level of welfare may have very different answers to what their minimum income needs to be, this method may not be a good way to figure out who is poor and who is not. Therefore,

subjective poverty lines are susceptible to numerous irregularities in the assessment of poverty levels, as they are affected by the wording of questions, the method utilised in the derivation, and the broad variety of respondents' answers.

3.6.4. Absolute Poverty Cut-off

In order to distinguish between those who are poor and those who are not, the international community has established what is known as the absolute poverty line. Consequently, the poverty line is a dividing line that has remained stable through time and across geographies, defining those living below it as poor and those who are not. Cheema (2005) says that absolute poverty compares two people as either not poor or poor if they have the same level of real consumption, no matter when or where the comparison is made.

Ravallion (2008), on the other hand, talks about the inconsistency of the poverty profile by saying that if one of two people is thought to have the same living standard but he is living in a different place, it is possible that one of them will become poor. Cheema (2005) says that it is possible for rich regions to have more poverty than poor ones. This is because the poverty lines are set at different levels of living in different regions of Pakistan (and at different points in time). As a result, the government's limited resources are not shared fairly, and the rich get more help than the poor. A consistent poverty line is necessary for making valid comparisons across time and space.

3.6.5. Relative Poverty Cut-off

The relative poverty line is a made-up number that is usually set at or around 50% of the median or average standard of living. This number varies from society to society. Therefore, the poverty line will vary over time and space. Another big problem with this strategy is that it increases the poverty rate even if the standard of life for everyone rises, but a disproportionate number of the wealthy. Alternatively, if the rich are hit harder than average, a method that harms everyone will have the desired effect of reducing poverty. On the other hand, Cheema (2005) claims that relative poverty measures are actually measures of inequality and are hence not appropriate for tracking poverty in different time and space. The relative approach, as defined by Bidani, Datt, Lanjouw, and Lanjouw (2001), is not very helpful for tracking poverty over time and space because it does not enable comparisons within and between countries and regions. Hence, this approach does not deliver a sustainable targeted methodology to analyze the government development programmes, since poverty line changes over time. This method is not appropriate for developing countries, these countries should focus on absolute measure of poverty (Kakwani, 2001).

3.7. FGT Index and Estimation of Poverty

There are numerous statistical indices for measuring poverty, but the FGT Foster et al. (1984) class is the most prevalent. A variety of poverty axioms 1–4 (above mentioned) are satisfied by the FGT indices, while individual members also meet transfer and monotonicity axioms.

3.7.1. General Formula of Foster-Greer-Thorbecke (FGT) indices

$$P_\alpha = \frac{1}{N}\sum_{i=1}^{H}\left(\frac{Y_p - Y_i}{Y_p}\right)^\alpha$$

$Y_i = Real\ Per\ Capita\ Income$
$Y_p = Poverty\ line$
$\alpha = 0$ = Headcount Ratio or Incidence
$\alpha = 1$= Poverty Gap or Depth
$\alpha = 2$ = Severity

3.7.2. Headcount Ratio or Incidence P_0 $when\ \alpha = 0$

It displays the incidence of poverty, which is the proportion of the population with consumption or income under the poverty line. When an individual serves as the unit of analysis, the head count ratio is referred to as the Head count Index. Its value ranges between 0 and 1. When $\boldsymbol{\alpha = 0}$ general formula of HCI is produced.

This index is easy to calculate and understand, but it has flaws.

a. It is deceptive to compute the percentage of the poor based solely on a head count.
b. There is no indication of the extent of poverty or of where the poor live in relation to the poverty line.
c. If a person experiences deprivation in a aspect in which he has never experienced deprivation before, but this index continues to be the same, this would be a violation of the transfer and monotonicity axioms. Actually, poverty grows worse.
d. It does not take into account the fluctuation in a person's standard of living while they are living below the poverty line, so it does not accurately portray the severity of their poverty.
e. The index only tells us about one part of poverty, so it doesn't give a good picture of poverty as a whole (Sen, Sen, Foster, Amartya, & Foster, 1997).

3.7.3. Poverty Gap or Depth P_1 $\boldsymbol{when\ \alpha = 1}$

It calculates how much money and other resources are needed to lift every low-income family above the poverty line on average. Its value ranges over the interval $(0, Y_p)$. Often referred to as the "depth of poverty index," P_1 is a higher-order measure of poverty that takes into account the average gap of poor income and reflects the minimum cost needed to lift the poor out of poverty.

In spite of its practicality, it does not come without drawbacks:
a. Regressive transfers to the poor from those who are poorer are inevitable (Sen, 1976).
b. It merely measures the extent to which the average income of the poor deviates from the prescribed poverty line, but does not quantify the severity of the deviation.
c. It disregards inequalities among the poor.

3.7.4. Severity P_2 $\boldsymbol{when\ \alpha = 2}$

It quantifies income inequality amongst the poor and can only be understood ordinally. It not only measures P_1, but also captures the inequality among the poor as a result of the disparity in their incomes. P_2 measures sever poverty and is sensitive to differences in material well-being between the poor. In many contexts, P_2 is used as a proxy for chronic poverty. Although P_1 is a useful indicator of overall poverty, P_2 is a higher-order measure that accounts for shifts in the allocation of resources among the poor. It takes into account how dire a person's financial situation is and also complies with the weak transfer axiom. However, it is not intuitively applicable because it is difficult to interpret.

3.7.5. Construction Variable for Uni-Dimensional Poverty

$$y_i = \frac{Nominal\ household\ Income}{n_{AE} \times Temporal\ CPI}$$

y_i = *Real Per Capita Income* $= (Nominal\ Inocme - Inflation * Nominal\ Income)$
n_{AE}= $Number\ of\ adult$ *equivalence scale*

$$n_{AE} = (n_{males} \times 1) + \left(n_{females15+} \times 0.8\right) + (n_{kids0-14} \times 0.5)$$

3.7.6. Construct poverty line (as world bank befined $1.9) Year 2010-11

$ x ER x Days
Yearly basis (1.90 x 86.34 x 365)

$$\mathbf{y_{p\ 2010-11}} = \mathbf{59879}$$

Year 2019-20

$ x ER x Days
Yearly basis (1.90 x 161.8385 x 365)

$$\mathbf{y_{p\ 2019-20}} = \mathbf{112235}$$

After extracting data from the PSLM survey 2010–11 and 2019–20, annual poverty lines have been constructed. These poverty lines are inflationary adjusted. ER is the exchange rate for respect year.

3.7.7. Gini coefficient

$$G = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|y_i - y_j|}{2\sum_{i=1}^{n}\sum_{j=1}^{n}y_j} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|y_i - y_j|}{2n\sum_{j=1}^{n}y_j} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|y_i - y_j|}{2n^2\bar{y}}$$

(Gini, 1909)
y_i = the wealth or income of person I
y_j = the wealth or income of person j
$\bar{y}$ = *Average income*

4. Trends and Tendencies in Uni-Dimensional Poverty in Pakistan

The first objective of this dissertation is to estimate the trends and tendencies of one-dimensional poverty at the national and provincial levels. The empirical estimation has been done with secondary data from the PSLM survey (2010–11 & 2019–20) conducted by the Pakistan Bureau of Statistics (PBS). The findings of this first objective are presented and discussed below.

4.1. Absolute Poverty

The results of absolute poverty in Pakistan have been shown in figure 2. This graph shows poverty at the national (Pakistan), provincial, and regional levels, as well as its incidence, or headcount, depth, and severity.

4.1.1. Absolute Poverty in Pakistan: Incidence of Poverty

Figure 2 shows the incidence of poverty in Pakistan. The red colour bar shows the incidence of poverty for the year of 2019–20 and the blue for the year of 2010–11.

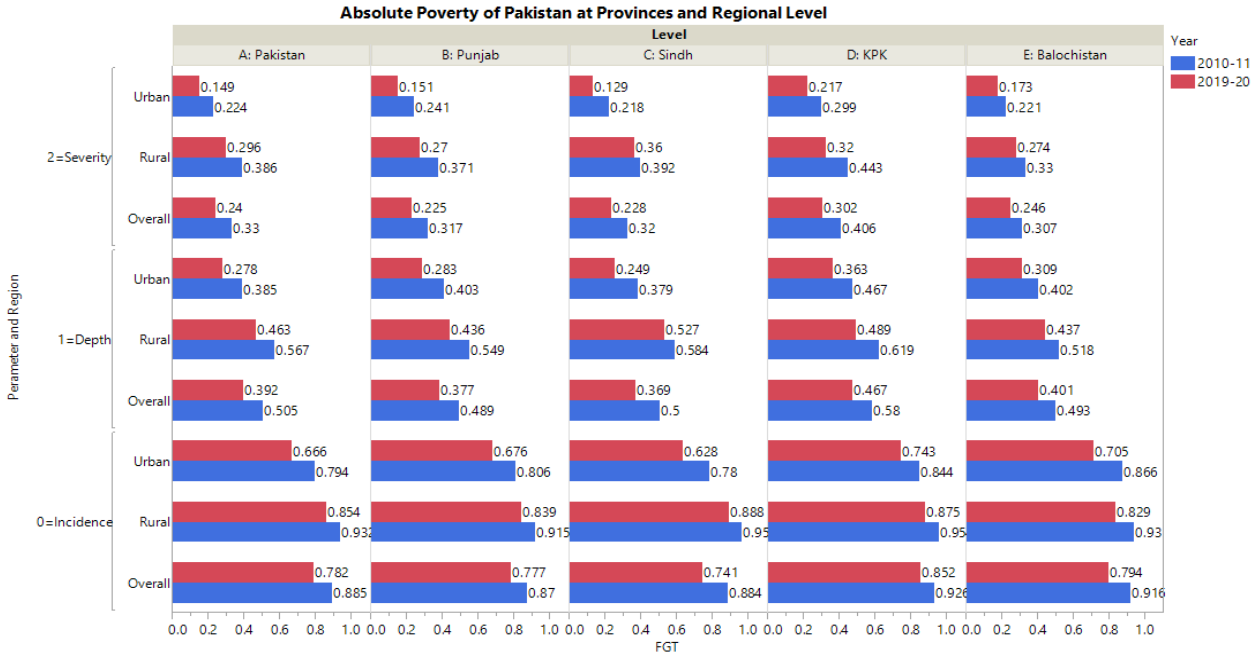

Figure: 2 Results of Absolute Poverty in Pakistan for Year of 2010-11 and 2019-20
Source: Author's Construction by using PSLM Survey (2010-11 and 2019-20) of Pakistan

This visualisation displays that absolute poverty is declining on all levels (overall, rural and urban). Overall, approximately 88 percent of the population was poor in 2010–11, the magnitude of poverty has decreased by 10 percent in 2019–20. The incidence of poverty in rural area is declining on basis of time, but comparatively absolute poverty in rural is greater than urban area. Furthermore, similar to previous findings by Arif (2000) and CPRSPD (2008), poverty is lower in urban regions of Pakistan whereas it is higher in rural areas.

1. Poverty Gap: Depth of Poverty

When Alfa value is equal to 1 it represent the poverty gap, in case of absolute poverty, poverty gap is being decreased in Pakistan. The depth of poverty in rural area is greater than urban area, in 2010-11 the depth of rural area is 0.56, which translates to a 56 percent gap

between what the poor have and what they need on average. This might also be seen as a sign that selective transfers would cost an average of 56 percent of the poverty line per needy person to help them escape poverty. This amount on an average has decreased in 2019-20 from 56 percent to 46 percent.

2. Square Poverty Gap: Severity of Poverty

While the Alfa value is equal to 2, it represents the square poverty gap or severity of poverty. In Pakistan, from 2010–11 to 2019–20, the severity of poverty is also declining. Thus, the severity of poverty is higher in rural areas as compared to urban areas. In 2019-20 the severity of poverty in rural and urban area is 29 percent and 14 percent respectively. A poverty severity score of 29 and 14 percent indicates that the poorest individuals in their respective regions are 29 and 14 percent worse off than the average poor individual. This may also indicate that the poorest individuals in rural and urban regions must raise 29 percent and 14 percent more of the poverty line per individual, respectively, than the average poor.

4.1.2. Absolute Poverty in Punjab

1. Incidence of Poverty

Figure 2's second column depicts the incidence of poverty in Punjab. This visualisation illustrates that absolute poverty in Punjab is decreasing at all levels (overall, rural, and urban). In 2010–11, roughly 87 percent of the population was impoverished. In 2019–20, the poverty rate fell by 10 percent, to 77 percent. Since 2010-11, the number of poor people in rural areas has gone down, but the number of poor people in rural areas is still higher than in urban areas.

2. Poverty Gap: Depth of Poverty

When Alfa equals 1 in the middle of Figure 2, it symbolizes the poverty gap. In terms of absolute poverty, the poverty gap in Punjab is decreasing. In rural areas, poverty is more severe than in metropolitan areas. In 2010-2011, metropolitan areas had a depth of 0.4, which corresponds to a 40 percent disparity between what the poor have and what they require on average. This may also be seen as an indication that selective transfers would cost an average of 40 percent of the poverty line per needy individual in order to assist them leave poverty. This proportion has reduced dramatically in 2019-2020, from 40 percent to 28 percent on average.

3. Square poverty gap: severity of poverty

On the right hand side of Figure 2, if Alfa equals 2, the square poverty gap or severity of poverty is represented. From 2010–11 to 2019–20, the severity of poverty in Punjab is likewise decreasing. Thus, rural areas are more severely affected by poverty than urban areas. In 2019-2020, the intensity of poverty in rural areas was 27 percent, while in urban areas it was 15 percent. A poverty severity score of 27 percent and 15 percent indicates that the poorest people in their respective regions are 27 percent and 15 percent worse off than the typical poor person. This may also imply that the poorest people in rural and urban areas must raise 27 percent and 15 percent more of the poverty line per person than the typical poor individual.

4.1.3. Absolute Poverty in Sindh

1. Incidence of Poverty

The incidence of poverty in Sindh is depicted in Figure 2's third column. This visualisation demonstrates that absolute poverty is decreasing at all levels (global, rural, and urban) in Sindh province. In 2010–11, nearly 88 percent of the population was economically disadvantaged. In 2019–20, the level of poverty has declined by almost 14 percent to 74 percent. The prevalence of poverty in rural areas has decreased over the past decade, although absolute poverty is higher in rural areas than in urban ones.

2. Poverty Gap or Depth of Poverty

In the middle of Figure 2, where Alfa equals 1, it represents the poverty gap; in the case of absolute poverty, the poverty gap in Sindh is also decreasing. The depth of poverty in rural areas is greater than in urban areas; in 2010-2011, the depth of poverty in rural areas was 0.58, which corresponds to a 58 percent disparity between what the poor have and what they require on average. This might also be seen as evidence that selective transfers would cost an average of 58 percent of the poverty line per individual in need in order to assist them leave poverty. In 2019-2020, this amount has been reduced from 58 percent to 52 percent on average.

3. Square Poverty Gap or Severity of Poverty

While the Alfa number on the right side of Figure 2 is equal to 2, it shows the square poverty gap, or level of poverty. Between 2010–11 and 2019–20, Sindh's level of poverty has also decreased. As a result, rural areas experience poverty to a greater extent than urban areas. In urban and rural areas, the severity of poverty in 2019–20 was 37 percent and 12 percent, respectively. The poorest residents in each region are 37 and 12 percent worse off than the typical poor person, according to the poverty severity score of 37 and 12 percent. This could also mean that the poorest people in rural and urban areas would have to make 37 percent and 12 percent more money, respectively, than the average poor person in order to reach the poverty line.

4.1.4. Absolute poverty in KPK

1. Incidence of Poverty

The outcome of the incidence of poverty in KPK is reported in the fourth column of Figure 2, which is located at the bottom. This visualisation made it clear that in the province of KPK, overall, in both rural and urban areas, absolute poverty is also reducing. In 2010–11, 92 percent of the population was considered to be poor overall. In the years 2019–20, the percentage of people living in poverty has decreased from about 7 percent to 85 percent. Even though the number of poor people in rural areas has gone down over the past ten years, the absolute poverty rate in rural areas is still higher than in cities.

2. Poverty Gap: Depth of Poverty

When the Alfa value in Figure 2 is 1, as it is in the middle, it indicates a poverty gap. The gap between the rich and the poor is shrinking as KPK, as well as absolute poverty, declines. Poverty is more pervasive in rural communities than in metropolitan ones. In rural areas, the depth of poverty was 0.61 in 2010–11, meaning that on average, the poor lacked 61 percent of what was considered necessary for survival. This could be seen as evidence that the average cost of providing assistance to a poor person through selective transfers is 61 percent of the poverty line. This quantity has decreased dramatically in 2019–20, from 61 percent to 48 percent on average.

3. Square Poverty Gap: Severity of Poverty

In Figure 2, the right-hand side shows the severity of poverty as measured by the square of the poverty gap when Alfa is equal to 2. Poverty is getting less severe in KPK from 2010-2011 to 2019-2020. Consequently, rural poverty is more severe than urban poverty. In 2019-2020, the poverty rates in rural areas were 32 percent, while in urban areas they were 21 percent. According to the poverty severity index, those in the poorest areas of the world are 32 percent and 21 percent worse off than the poorest people. This could imply that the lowest-income individuals in urban and rural areas need 32 percent and 21 percent higher incomes, respectively, to get rid of the poverty line.

4.1.5. Absolute poverty in Baluchistan

1. Incidence of Poverty

In Baluchistan, this visualisation showed that absolute poverty is also going down on all levels. In 2010–11, about 91% of the population as a whole was poor. The number of people living in poverty has gone down by about 12%, to 79% in 2019–20. In the last 10 years, the rate of poverty in rural areas went from 0.93 to 0.82, but the number of people living in poverty in rural areas is still higher than in urban areas.

2. Poverty Gap or Depth of Poverty

The poverty gap in Baluchistan is also decreasing. In rural areas, poverty is more severe than in urban areas. In 2010-2011, the rural poverty index was 0.51, which corresponds to a 51 percent disparity between what the poor have and what they require on average. This might also be seen as an indication that selective transfers would cost an average of 51 percent of the poverty line per needy individual in order to assist them leave poverty. In 2019–20, this amount has been reduced on average from 51 percent to 43 percent.

3. Square poverty gap: severity of poverty

From 2010–11 to 2019–20, the severity of poverty in Baluchistan is likewise decreasing. Thus, rural areas are more severely affected by poverty than urban areas. In 2019-2020, the intensity of poverty in rural areas was 27 percent, while in urban areas it was 17 percent. A

poverty severity score of 37 and 17 percent indicates that the poorest people in their respective areas are 37 and 17 percent poorer than the average poor person. This could also imply that the poorest people in rural and urban regions must earn 37 percent and 17 percent more than the average poor person in order to achieve the poverty line. Furthermore, similar to previous findings by Arif (2000) and CPRSPD (2008), poverty is lower in urban regions of Pakistan whereas it is higher in rural areas.

4.2. Comparison of Absolute Poverty among the Provinces

Over all, the conclusion for absolute poverty in four provinces is the same: that poverty has declined in the last ten years. On the basis of the incidence of poverty, the performance of Punjab is better than that of Sindh, KPK, and Baluchistan. The situation in KPK and Baluchistan province is deteriorating. In the case of the depth of poverty, again, the condition of Punjab is relatively better than other provinces. In Sindh, the depth of poverty is higher than in KPK and Baluchistan. The value of the severity index is high in KPK and Baluchistan. The severity index is better in Punjab and Sindh. Incidence, depth, and severity are very low in all urban areas of four provinces. It shows that urban areas are growing faster than rural areas. Furthermore, our findings are similar to previous findings by Arif (2000) and CPRSPD (2008) that poverty is lower in urban regions of Pakistan whereas it is higher in rural areas.

4.3. Relative Poverty

Figure 3 illustrates the outcomes of relative poverty in Pakistan. This graph illustrates the incidence, or headcount, depth, and severity of poverty at the national (Pakistan), provincial, and regional levels.

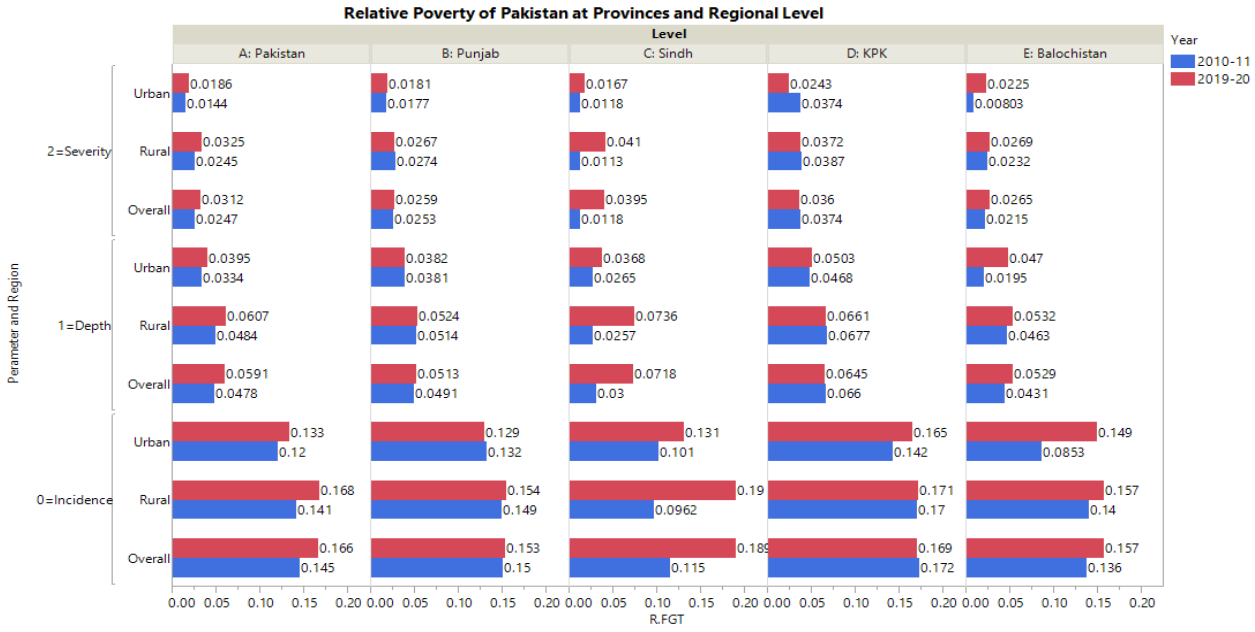

Figure: 3 Results of Relative Poverty in Pakistan for year of 2010-11 and 2019-20
Source: Author's Construction by using PSLM Survey (2010-11 and 2019-20) of Pakistan

4.4. Relative Poverty in Pakistan

1. Incidence of Poverty

In column A of the above, Figure 3 shows the incidence of poverty in Pakistan. This chart shows that relative poverty rates overall are increasing in rural and urban areas. In rural areas, the headcount ratio, or incidence of relative poverty, was 14 percent in 2010–11 and has climbed to nearly 17 percent in 2019–20. In urban areas, the poverty rate was 12 percent in 2010–11 and 13 percent in 2019–20. Poverty increased by 3 percent in rural areas and by 1 percent in urban areas in 2019–20.

1. Poverty Gap or Depth of Poverty

When Alfa value is equal to 1, it represents the poverty gap. In the case of relative poverty, the poverty gap is increasing in Pakistan not only overall, particularly in rural urban areas. The depth of poverty in rural areas in 2010-11 was 4.8 percent and in urban areas it was

3.3 percent. In 2019-20, the depth of relative poverty increased in both areas. It is estimated at 6 percent in rural areas and 3.9 percent in urban areas. Consequently, the depth of relative poverty is higher in rural areas as compared to urban areas. There is a 6 percent depth of poverty in 2019–20 in rural areas, which indicates that there is a 6 percent gap between what the poor have and what they need on average. This could also be seen as a sign that helping a poor person get out of poverty would cost an average of 6 percent of the relative poverty line per person.

1. Square Poverty Gap: Severity of Poverty

The relative square poverty gap, or severity of poverty, is increasing in Pakistan on an overall and regional basis. The severity of poverty in rural areas was 2.4 percent in 2010-11 and 3.2 percent in 2019-20, and on the other hand, in urban areas it is 1.4 percent and 1.8 percent respectively. The severity of poverty is approximately 100 percent greater in rural areas as compared to urban areas.

In 2019-20, the relative severity of poverty in rural and urban areas was 3.2 percent and 1.8 percent, respectively. A poverty severity score of 3.2 or 1.8 percent indicates that the poorest people in each region are 3.2 or 1.8 percent worse off than the average poor person. This could also mean that the poorest people in rural and urban areas must earn 3.2 percent and 1.8 percent more, respectively, to reach the poverty line than the average poor person.

These statistics are not the true reflections of welfare of people in terms of health and education. So is the case of poverty in terms of intellect and talent.

4.4.1. Relative Poverty in Punjab

1. Incidence of poverty

In column B, Figure 3 illustrates the prevalence of poverty in Punjab. This graphic demonstrates that the relative poverty rate appears to have remained unchanged overall, but has increased in rural areas and decreased in urban areas. In rural areas, the headcount ratio, or incidence of relative poverty, was 14.9 percent in 2010–11 and has slightly increased to nearly 15.4 percent in 2019–20. In urban areas, the poverty rate was 13.2 percent in 2010–11 and 12.9 percent in 2019–20. In 2019–20, poverty went up by 0.5 percent in rural areas and down by 0.3 percent in urban areas.

2. Poverty Gap: Depth of Poverty

The poverty gap in Punjab looks to be static, especially in rural urban areas. In 2010-2011, the poverty rate in rural regions was 5.1 percent and in urban areas it was 3.8 percent. In 2019-2020, the rural poverty rate was 5.2 percent and the urban poverty rate was 3.82 percent. Consequently, rural areas have a greater degree of relative poverty than metropolitan areas. In 2019–20, the depth of poverty in rural regions is 5.2 percent, indicating a 5.2 percent disparity between what the poor have and what they need on average. This might also be seen as evidence that helping poor individual escape poverty would cost an average of 5.2 percent of the relative poverty line per individual.

3. Square poverty gap: severity of poverty

Punjab's overall and regional levels of poverty are also remaining stable. In rural areas, the severity of poverty was 2.7 percent in 2010–11 and 2.6 percent in 2019–20; in contrast, it was 1.7 percent and 1.8 percent, respectively, in urban areas. Compared to metropolitan areas, rural communities experience poverty to a greater extent.

In 2019–20, rural and urban areas experienced relative poverty levels of 2.6 percent and 1.8 percent, respectively. The poorest people in each region are 2.6 or 1.8 percent worse off than the average poor person, based on a poverty severity score of 2.6 or 1.8 percent. This could also mean that the poorest people in cities and the poorest people in rural areas need to make 2.6 percent and 1.8 percent more money, respectively, to get above the poverty line.

4.1.2. Relative poverty in Sindh

1. Incidence of Poverty

The prevalence of poverty in Sindh is depicted in column C of the previous figure, Figure 3. According to this graph, both urban and rural areas are experiencing an increase in relative poverty rates. The headcount ratio, also known as the incidence of relative poverty, was 9.6

percent in rural regions in 2010–11 and has increased to about 19 percent in 2019–20. Urban poverty increased from 10 percent in 2010–11 to 13 percent in 2019–20. In 2019–20, relative poverty went up by 3 percent in cities, and it went up by almost 10 percent in rural areas.

2. Poverty Gap: Depth of Poverty

When the Alfa value is 1, it shows the income disparity between the rich and poor. In terms of relative poverty, the gap between the rich and the poor is widening not only across the entire province of Sindh but also particularly in rural and urban areas. In 2010-2011, the percentage of people living in extreme poverty was 2.5 percent in rural regions and 2.6 percent in urban areas. In the 2019–20, both regions experienced a rise in the severity of relative poverty. It is projected to be 7.3 percent in rural areas, while in urban areas it is only 3.6 percent. As a direct consequence of this, the degree to which people live in relative poverty is significantly more severe in rural areas than in metropolitan areas. Since there is a depth of poverty of 7.3 percent in rural regions in 2019–20, this suggests that there is a gap of 7.3 percent between what the poor have and what they need on average. This could be seen as evidence that the average cost of assisting a poor person rise above the relative poverty line is 7.3 percent of the poverty line. This province seems to be far behind than that of other provinces in terms of poverty gap.

3. Square Poverty Gap: Severity of Poverty

Overall and regionally throughout Sindh province, the degree of poverty is getting worse. This trend can be seen everywhere. When compared to the severity of poverty in urban regions, rural areas have a rate of 1.1 percent in 2010-2011 and 4.0 percent in 2019-2020, while urban areas have a rate of 1.1 percent and 1.6 percent, respectively. When compared to metropolitan areas, the severity of poverty in rural areas is far higher.

In 2019-20, the percentage of people living in extreme poverty was 4% in rural areas and 1.6% in urban areas. If a region has poverty severity score of 4, it means that the poorest persons in that region are 4 or 1.6 percent worse off than the typical poor person. This could also suggest that the poorest persons in rural and urban regions need to earn 4 percent and 1.6 percent more, respectively, than the average poor person in Sindh in order to achieve the poverty line.

4.1.3. Relative Poverty in KPK

1. Incidence of Poverty

Figure 3, located in column D, depicts the extent to which poverty is pervasive in KPK. This chart shows that while the overall and rural poverty rates have stayed about the same, the urban poverty rate has risen. The headcount ratio, a measure of relative poverty, was 17 percent in rural regions in 2010–11 and remains at that level in 2019–20. The urban poverty rate increased from 14.2 percent in 2010-11 to 16.5 percent in 2019-20. In 2019–20, there was no rise in relative poverty in rural areas, but it went up by 2.3 percent in cities.

2. Poverty Gap or Depth of Poverty

In KPK, the poverty gap appears to be unchanged, particularly in rural areas. In 2010-2011, the disparity between rural and urban poverty was 6.7 percent and 4.6 percent, respectively. In 2019-2020, the disparity between rural and urban poverty was 6.6 percent and 5 percent, separately. Subsequently, rural areas have a greater degree of poverty severity than urban places. In 2019–20, the rate of rural poverty is 6.6 percent, suggesting a 6.6 percent difference between what the poor have and what they need on average. This might also be considered proof that helping a poor person escape poverty would cost an average of 6.6 percent of the relative poverty level per person.

3. Square Poverty Gap: Severity of Poverty

The levels of severity of poverty in KPK's regions and as a whole are likewise holding steady. In contrast to urban regions, where poverty rates were 3.7 percent and 2.4 percent, correspondingly, in rural areas during 2010–11 and 2019–20 were 3.8 percent and 3.7 percent, separately. Rural communities are more severely affected by the severity of poverty than urban areas.

In 2019–20, the severity of poverty rates in rural and urban regions was 3.7 percent and 2.4 percent, respectively. The poorest people in each region are 3.7 or 2.4 percent worse off than the average poor person, based on a poverty severity score of 3.7 or 2.4 percent. This could also mean that the poorest people in cities and the countryside would need to earn an extra 3.7 percent and 2.4 percent of income, respectively, to get out of poverty.

4.1.4. Relative Poverty in Baluchistan

1. Incidence of Poverty

The previous figure, Figure 3, column E, which shows the prevalence of poverty in Baluchistan, illustrates this. This graph shows that relative poverty rates are rising in both urban and rural areas. The incidence of relative poverty, also known as the headcount ratio, was 14 percent in rural areas in 2010–11 and has risen to nearly 15 percent in 2019–20. Urban poverty rose from 8.5 percent in 2010–11 to 14.9 percent in 2019–20. In urban areas, relative poverty increased by 6 percent in 2019–20, whereas it increased by approximately 1 percent in rural regions. This is greater than the rate of change in rural poverty is the rate of change in urban poverty. This relative poverty statistics are not truly reflecting the status of poverty in Balochistan.

2. Poverty Gap: Depth of Poverty

The poverty gap between the rich and the poor is widening not only across the entire province of Baluchistan but also particularly in rural and urban areas. In 2010-2011, the percentage of people living in extreme poverty was 4.6 percent in rural regions and 1.9 percent in urban areas. In 2019–20, both regions experienced a rise in the severity of relative poverty. It is estimated to be 5.3 percent in rural areas, while in urban areas it is only 4.7 percent. As a direct consequence of this, the degree to which people live in relative poverty is significantly more severe in rural areas than in metropolitan areas. Since there is a depth of poverty of 4.7 percent in urban regions in 2019–20, this suggests that there is a gap of 4.7 percent between what the poor have and what they need on average. This could be seen as proof that helping a poor person get above the relative poverty line costs an average of 4.7 percent of the poverty line.

Table:1 Trends and tendencies of absolute poverty in Pakistan

Trends and Tendencies of Relative Poverty in the Last Decade					
	FGT	**Overall**	**Rural**	**Urban**	**Tendencies**
	Incidence	↑	↑	↑	R > U
Pakistan	Depth	↑	↑	↑	R > U
	Severity	↑	↑	↑	R > U
	Incidence	↑	↑	↑	R > U
Punjab	Depth	↑	↑	↑	R > U
	Severity	↑	↓ ↑	↑	R > U
	Incidence	↑	↑	↑	R > U
Sindh	Depth	↑	↑	↑	R > U
	Severity	↓	↔ ↑	↑	R > U
	Incidence	↓	↓ ↑	↓	R > U
KPK	Depth	↓	↓ ↑	↓	R > U
	Severity	↑	↑	↑	R > U
	Incidence	↑	↑	↑	R > U
Baluchistan	Depth	↑	↑	↑	R > U
	Severity	↑	↑	↑	R > U

↑ Increase ↓ Decrease ↔ Stagnant or not Significant

3. Square Poverty Gap: Severity of Poverty

Overall and regionally, the severity of poverty in Baluchistan province is growing.Rural regions have a severity rate of 2.3 percent in 2010-2011 and 2.6 percent in 2019-2020, but urban regions have it at 0.8 percent and 2 percent, respectively. Compared to urban areas, the severity of poverty in rural areas is significantly more severe. In 2019-2020, the severity of poverty in rural areas was 2.6 percent, while in urban areas it was 2 percent. If a region's poverty severity score is 2.6 or 2 percent, it indicates that the region's poorest individuals are 2.6 or 2 percent worse off than ordinary poor individuals. This may also imply that the poorest individuals in rural and urban areas must earn 2.6 percent and 2 percent more, respectively, than the average poor person in Baluchistan in order to reach the poverty line.

The patterns and tendencies of relative poverty in Pakistan are illustrated in Table 1. The red ascending arrow indicates that relative poverty is increasing overall and regionally.

Compared to urban regions, the severity of poverty in rural parts of Punjab is increasing; nevertheless, from 2010-2011 to 2019-2020, the severity of poverty in rural areas dropped marginally. The severity in rural areas of Sindh has stagnated over the past ten years. However, it has increased in urban regions. The relative poverty trend and rural relative poverty tendencies are on the rise. Our study's findings support prior research by Anwar and Siddiqui (2005) and the Word Bank (2002).

4.2. Income Inequality in Pakistan

According to Sustainable Development Goals (SDGs) agenda that all the member countries of United Nations has to reduce income inequality up to 2030. Therefore in this sub section we are estimating decade wise income inequality at national, provincial and regional (rural, urban). The empirical findings are discussed in below section.

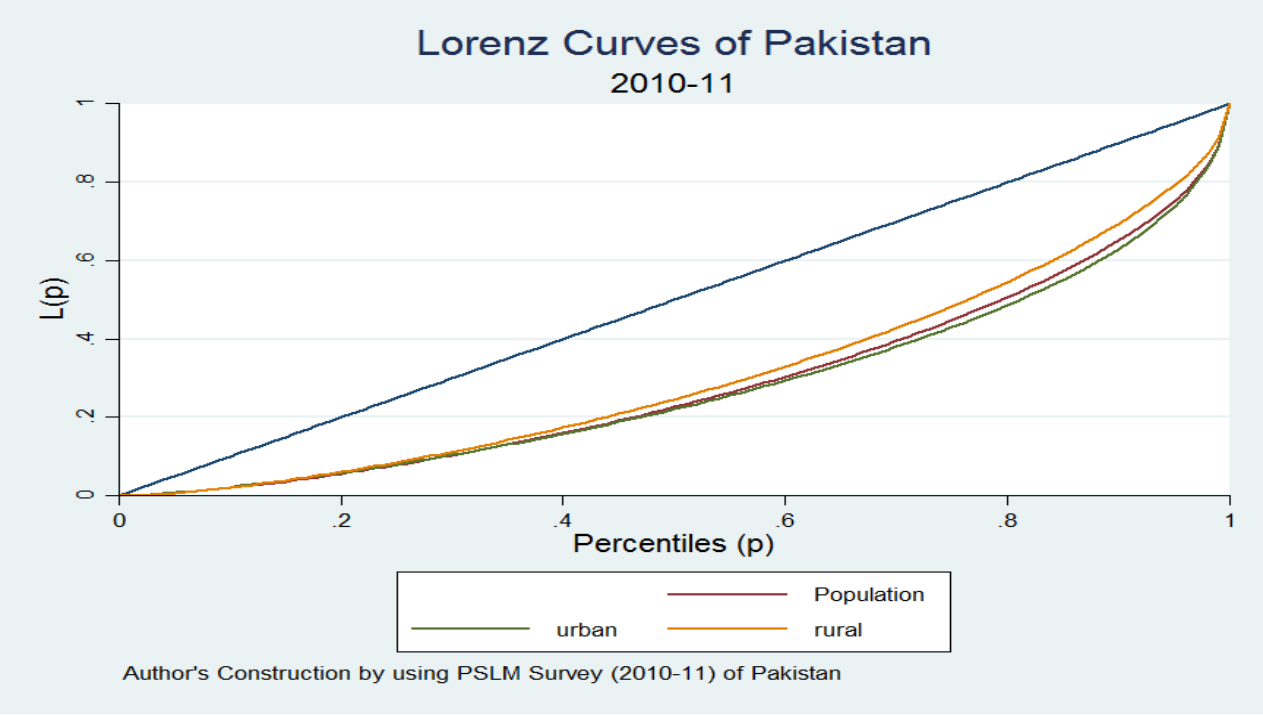

Figure 4: Lorenz Curve of Pakistan for year of 2010-11

The income inequality between Pakistan's rural and urban areas is depicted in Figure 4. Rural income inequality is shown by the yellow line, whereas urban income inequality is represented by the green line. The vertical line shows the value of the Gini coefficient and the horizontal line represents the population percentile. The gap between the 45-degree line and the rural and urban lines grew after the 50 percentile in 2010–2011. The population is classified on the basis of percentile. Classification cut-offs are subjective phenomena. Generally, the first 20 percentile represent the very poor people, 20 to 40 represent low income, and from 40 to 60 represent the middle class, and above 60 are classified as upper middle class and rich class. If we look at the yellow and green lines after 50 percentile value, it shows that the gap between

the 45 degree line and the yellow and green lines is widening. It means that income inequality in the middle class and upper middle class is greater than in the lower class and poor people. The yellow line is relatively close to the 45 degree line as compared to the green line, which means inequality is greater in urban regions than in rural regions.

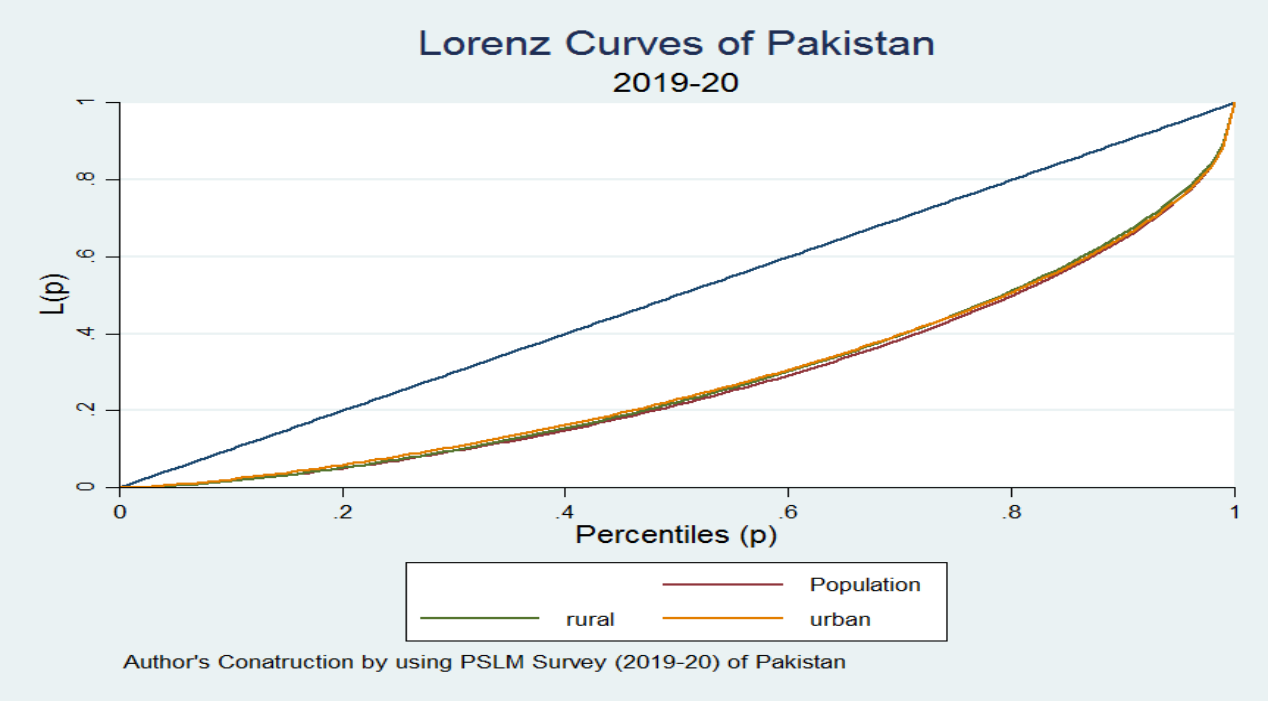

Figure: 5 Lorenz Curve of Pakistan for year of 2019-20

Figure 5 visualizes the Lorenz curve, which again indicates the income inequality of Pakistan in 2019–20. A close examination of both graphs reveals that (in figure 5), the distance between the 45-degree line and the lines dividing rural and urban areas has grown. Due to the way they are displayed, it is difficult to determine how significant this change is when comparing the two graphs (4 and 5), this difference will be quantified by the Gini coefficient. One distinction, however, stands out: the inequality gap between rural and urban areas has shrunk (i.e., the distance between the yellow and green lines). It indicates that rural inequality has grown to a point where it is comparable to urban disparity over the past ten years.

Estimation of Gini Coefficient at National, Provinces and Regional Level

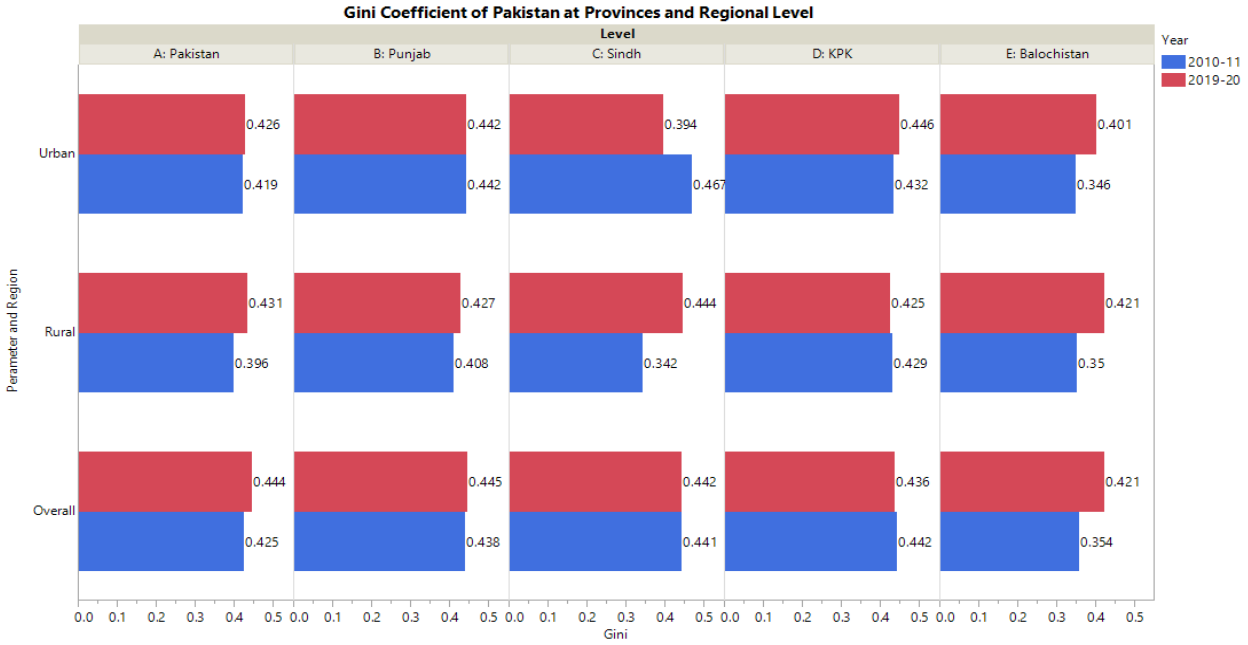

Figure: 6 Results of income inequality of Pakistan for year of 2010-11 and 2019-20 (Source: Author's Construction by using PSLM Survey 2010-11 and 2019-20 of Pakistan)

Figure 6 shows the values of the Gini-coefficient at the overall, rural and urban levels in Pakistan and all four provinces. In Pakistan, overall income inequality has increased. The value of the Gini coefficient in 2010–11 was 0.42 and in 2019–20 it was 0.44. In the rural areas of Pakistan, inequality is greater than in the urban areas of the country.

In Punjab, the value of the income inequality coefficient is static, while in the rural areas of Punjab, income inequality has increased from 0.40 to 0.42. But the interesting thing is that the magnitude of the Gini coefficient in urban areas is greater than in rural areas. That indicates that inequality is a main problem in urban areas as compared to rural areas. In Sindh province, the income inequality has gotten a lot worse, going from 0.342 in 2010–11 to 0.44 in 2019–20. In urban areas, the difference between people's incomes has gotten smaller over the last ten years. Income inequality in KPK is greater than in Punjab and Sindh provinces, particularly in rural areas. But growth has stagnated in the last ten years. The value of the Gini coefficient is greater in urban areas when compared with rural regions. And in Baluchistan, income inequality is getting worse not just in rural areas, but also in cities. But the difference is more noticeable in rural areas than in urban areas. When you look at the results of Figure 6, it's clear that income inequality in Sindh and Baluchistan has grown in the last ten years.

4.4 Trends and tendencies of Gini-coefficient in Pakistan

Table 2: Trends and Tendencies of Gini-Coefficient in Last Decade

	Overall	Rural	Urban	Tendencies
Pakistan	↑	↑	↑	R > U
Punjab	↑	↑	↔	U > R
Sindh	↑	↑	↓	R > U
KPK	↑	↓	↑	U > R
Baluchistan	↑	↑	↑	R > U

↑ Increase ↓ Decrease ↔ Stagnant

Based on the findings in Figure 6, Table 2 displays regional patterns and tendencies for Pakistan and all relevant provinces. Rural areas in Pakistan, Sindh, and Baluchistan are more likely to experience income inequality than urban areas in Punjab and KPK. With the exception of Sindh and KPK's urban and rural areas, economic disparity is primarily rising in the provinces and their surrounding territories. Punjab's urban regions are experiencing stagnant growth (in income inequality).

This study found that the relationship between absolute poverty and income inequality is inverse, which supports the study of the World Bank by Redaelli (2019).

5. Conclusion

The results of this study reveal that estimates of absolute poverty at the national and provincial levels are higher in rural areas than in cities. The incidence of poverty is high in Sindh, KPK, and Baluchistan. The depth of poverty is higher in the Sindh regions than in KPK and Baluchistan. The severity of poverty is high in Sindh and KPK (rural) areas. But in the last ten years, the trend of absolute poverty at national and provincial level has been decreasing. In urban regions, the tendency to reduce absolute poverty is greater than in rural areas. According to relative poverty research, poverty is getting worse with time (in last ten years). In comparison to Punjab, KPK, Sindh, and Baluchistan have greater rates of relative poverty. Additionally, poverty is comparatively worse in rural regions than in metropolitan ones. Hence, the tendency of relative poverty is in rural areas. Absolute poverty and income inequality go in opposite directions because, except in Sindh's urban areas, absolute poverty is going down while income inequality is going up. In urban Punjab and KPK, there is high income inequality, and the same is true in rural areas of Sindh and Baluchistan.

The implications of these findings for the SDGs' (first) aim of ending poverty are far-reaching. By ignoring the multidimensional aspects of poverty, we risk missing the 2030 deadline for ending poverty. In Pakistan, poverty is not a monetary phenomenon; rather, it is an

intellectual one; nevertheless, no studies have been conducted to address and ultimately alleviate the issue of intellectual poverty. Intellectual poverty actually the flip side of poverty.

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