

---

# **Social Inequality Lab**

## **Working Paper**

**WP-SIL-05**

2024

The Determinants of Household  
Poverty and Expenditure  
Inequality in Pakistan: Evidence  
from the Household Income and  
Expenditure Survey

Authors:

Afsah Khalid

Dr. Qaiser Munir



# **The Determinants of Household Poverty and Expenditure Inequality in Pakistan: Evidence from the Household Income and Expenditure Survey**

Afsah Khalid<sup>1</sup> Dr Qaiser Munir<sup>2</sup>

## **Abstract**

The following study attempts to demonstrate poverty determinants and calculate expenditure inequalities. Secondary household level cross-sectional data is used from the PSLM/HIES 2018-2019 survey. Logit and quantile regressions have been run. Logit regression has been used to find the probability of being poor in relation to certain characteristics of both households and household heads. Quantile regression has been utilized to find regression lines at each quantile and possible significance. To measure inequalities in the country among provincial, regional and gender groups, Gini coefficients, Generalized Entropy Indices, Atkinson Indices and the Foster-Greere Thorbeck measures have all been used. The results indicate that female-headed households in rural areas of Punjab are most likely to face inequalities in consumption distributions. The highest impacting determinants from the regression results are the size of the household, rural regions, access to facilities like internet, garbage collection, toilets, drainage, hand-washing agents and an adequate source of water. The number of rooms in the house were found to be significant as well. These findings indicate that policies to reduce poverty and inequality should be focused in Pakistan. There is a need for integrated policy making.

**Keywords:** household poverty, size of the household, rural, facilities, inequality, Gini coefficients, quantile regression, Generalized Entropy Indices, Atkinson Indices, Foster-Greere-Thorbecke measures, logit regression

## **Introduction**

*“Poverty entails more than the lack of income and productive resources to ensure sustainable livelihoods. Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion, as well as the lack of participation in decision-making.”*

United Nations, “What is Poverty?”

---

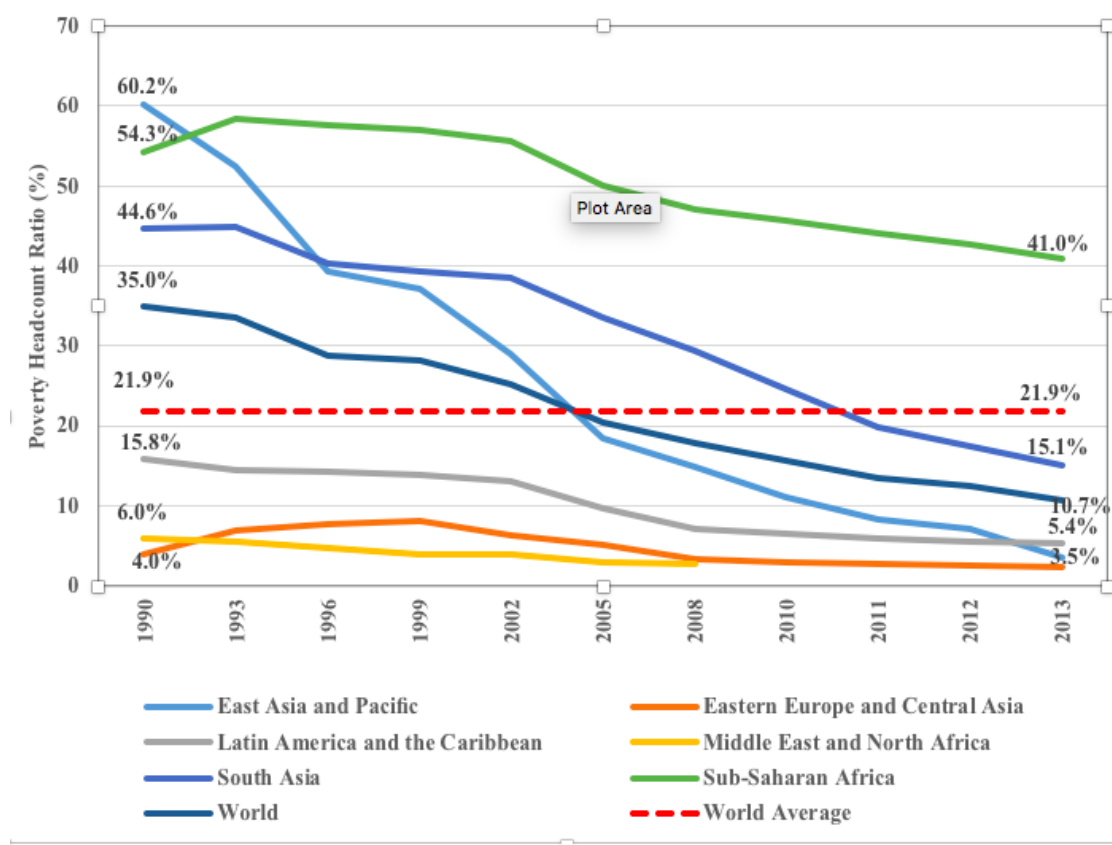
<sup>1</sup> Assistant Director, Economic Policy Review Department, State Bank of Pakistan

<sup>2</sup> Professor, Department of Economics and Finance, College of Business Administration, University of Bahrain

## The Background of the Study

Since the last thirty years, all developing economies have managed to remarkably improve their living standards. This is emulated in their rising incomes, increased rate of primary enrolment, decline in the mortality rates, and a surge in overall life expectancy. The figures on poverty incidence showcase that the number of poor around the globe has fallen.<sup>3</sup> Around 36 percent of the collective global population lived on less than US \$1.90 each day in 1990, whereas in 2015 10 percent of the population lives on the meagre amount. South Asia, particularly, has witnessed a drastic fall in poverty levels: the number of destitute in the region dropped by around 250 million from 1990 to 2013 (Bourguignon & Morrisson, 2002). This is significant because, after sub-Saharan Africa, South Asia accounts for the largest share of a poor population (33.4 percent). This was mostly due to the speedy progress in reducing poverty in both India and China.<sup>4</sup>

Figure 1 Poverty Headcount Ratio in the World



Source: London School of Economics

<sup>3</sup> Poverty – World Bank

<sup>4</sup> United Nations Development Programme, 2009

These advancements in the standards of living are quite encouraging as they show that poverty is an issue that can be reduced and overcome. Nonetheless, poverty is a pervasive, inexcusable and intractable to this day. The United Nations has estimated that one out of four people in developing economies thrive on less than \$1.25 each day. There is also uneven progress in eliminating poverty throughout the globe. On the other side of the picture, sub-Saharan Africa continues to struggle with sluggish growth and surging poverty that is somewhat linked to problems in governance and constant conflicts, along with endemics like HIV/AIDs and Ebola.

In Pakistan’s case, reducing poverty is considered to be a high priority development goal. Although the country has no social protection system, there have been a plethora of organizations aiming to reduce poverty through financial assistance, employment opportunities or training schemes (Ashraf M. A., 2017). The target to decrease poverty to a lower level means a variety of challenges in meeting this target. However, the results are not satisfactory.

Table 1 Poverty Headcount Ratios in Pakistan

<b>Year</b>	<b>Poverty Headcount Ratio at National Poverty Lines</b>	<b>Study</b>
1987-1988	13.0	(Malik, 1992)
1990-1991	17.26	(Anwar, 1996)
1992-1993	22.40	(Amjad & Kemal, 1997)
1994-1997	25.50	(Cheema, 2005) (Government, 2014)
1998-1999	35.2	(Qureshi & Arif, 1999) (Arif & Haq, 2001)
2001-2002	34.5	World Bank Report
2004-2005	23.9	World Bank Report
2005-2006	22.3	(Government, 2014)
2007-2008	17.2	World Bank Report
2010-2015	12.4	Government of Pakistan

As the table above suggests, poverty incidence in Pakistan is not stable. Due to constant military coups, environmental and economic vulnerability, there have been several challenges to development.

On a global level, Pakistan ranks 152 out of 189 countries with respect to Human Development Indices. It has an HDI of 0.56, which caused a fall in its ranking since 2018, despite being a drastic increase since 1990, when it was 0.404.<sup>5</sup> Resultantly, around 24 percent of Pakistan's 46 million people lies under the national poverty line.

The word 'poverty' takes on different meanings to different people in Pakistan. In accordance to their views, their backgrounds (both cultural and social), and their current economic situation, they will understand and comprehend the issue of poverty uniquely. Thus, according to one study, clearly defining poverty is very important as separate definitions of poverty lead to different criteria used in measuring it. This could mean groups labelled as poor will not match and there will be differing ways to solve the issue of rising poverty (Saith, Stewart, & Laderchi, 2003).

Most literature on reducing poverty incidence in developing economies is in support of the perception that health and education are vital parts of any poverty alleviation strategy (Romer, 1990) (Romer, Weil, & Mankiw, 1992) (Tilak, 1994) (Jong, Kimenyi, Mwabu, & Geda, 2005) (Smith & Todaro, 2006) (Ego, Opolot, Okello, & Abuka, 2007). However, not much has been mentioned concerning the effects of health and education, among other factors, on reducing poverty in Pakistan. If such studies exist, some conclude that investing in education boosts the productivity and skills of poorer households, which consequently increases their incomes and their standards of living. Others will be of the opinion that education does not only fulfill fundamental needs such as sanitation and water, utilizing shelters and health facilities, but it also impacts the behavior of females in decisions regarding fertility and planned families.

## **Significance and Objectives of the Study**

With the current backdrop of issues concerning poverty, this research work brings forward the general question of research: how do we define poverty, and how do we measure it? What causes poverty and how can it be mitigated? Where can upcoming policies be targeted to deal with problems in a better manner concerning poverty in Pakistan?

The following objectives direct this study:

1. Identify the poverty determinants that result in the poverty incidence in Pakistan
2. Analyze the household characteristics of staying in poverty, or evaluate the effects of these characteristics on helping people out of conditions of poverty

---

<sup>5</sup> Human Development Reports, UNDP

### 3. Calculating the magnitude of expenditure inequality in households in Pakistan during 2018-2019

These empirical determinations of the research question have great significance for Pakistan. In theory, it will contribute to comprehending how poverty is measured, and how it is defined in the first place. Also, it will help in identifying the characteristics that play a major role in the poverty incidence, and how to approach this with respect to the household survey.

On a practical note, it is expected that this study shall help policy makers, the government of Pakistan, and other interested groups and agencies in improving the approach to poverty: how it is understood and how policies to alleviate it are designed. It is hoped to assist them in creating more effective policies and strategies to ameliorate the effects of poverty by understanding the traits of the poor in Pakistan. For Pakistan, this is important to reduce the overall poverty rate in the economy and move a step closer to its goal of eliminating poverty.

## **Outline of the Paper**

This study contains seven sections. First is a basic introduction to the research. It provides the backdrop, importance and objectives of this study. Second discusses the PSLM/HIES survey of 2018-19 and its main findings related to the current research. Third focuses on the both empirical and theoretical literature on the subject. The methodology and data used in this research is outlined in the fourth section. The fifth will provide empirical results and their significance. Last is a conclusion of the study that summarizes all empirical results. It also provides policy recommendations along with the conclusions for policy makers focused on alleviating poverty in Pakistan. Further areas of research are explored as well.

## **Pakistan's PSLM/HIES: Main Highlights**

The PSLM (Pakistan Social and Living Measurement) survey was carried out during 2018-2019. It is the 11<sup>th</sup> survey since 2004 by the Pakistan Bureau of Statistics (PBS). The present round, which includes the Household Income and Expenditure Survey (HIES), is conducted at a provincial level of around 24,809 households with details and indicators on: population welfare, education, hygiene, water sanitation, IT (Information Technology), expenditures, incomes, and food security. The HIES data is utilized by the Planning Commission to estimate poverty based on consumption/expenditures.

Field surveys were conducted from August 2018 till June 2019. The report on key findings provided data on main social and economic indicators whilst the primary HIES report

gave detailed information on every indicator at both provincial and national levels region-wise. Comparisons were also provided with last rounds from 2013-14 and 2015-16.

The survey contained all rural and urban regions of four Pakistani provinces. Stratification and two-stage sampling design is used. The sampling frame was updated with the 2017 Census of Housing and Population. Every enumeration block consists of an average of 200 to 250 houses. Urban areas' blocks are treated as primary sampling units whilst rural areas are categorized into blocks with properly defined maps and boundaries with each block in each rural area/village considered to be a block.

The plan of stratification for the urban domain is such that every administration division for all provinces is considered as autonomous stratum. Rural domains in Sindh, Punjab and KPK's administrative divisions along with Balochistan's administrative divisions, are sovereign stratum.

Primary sampling units (PSUs) are chosen by selecting the enumeration blocks in rural and urban domains. Sample primary sampling units are chosen with the PPS (probability proportional to size) sampling method. Size measures are taken via the household numbers in enumeration blocks. Secondary sampling units (SSUs) are chosen as households from PSUs.

The United Nations has managed to develop 17 new goals with 169 aims and a total of 232 indicators. These goals are titled the Sustainable Development Goals and the plan is to prevent underdevelopment in various areas, specifically in developing economies. Details of the goals are in the figure below:

The PSLM/HIES collection of data gives twenty four indicators' results. Each goal is very significant in Pakistan's aims and efforts. Examples are as follows.

This SDG goal speaks of ensuring a quality education is attainable to all by 2030. Although Pakistan has not been able to meet this goal in the past, efforts to do so are underway. To attain this aim, the government has appointed the Ministry of Planning, Development and Reform as the main handler. Four particular priorities have been established to work on: reduce the number of out of school children (OOSC) and raise the completed years of schooling; attain a uniform standard of education; raise the education quality; and encourage accessibility and relevance of taught skills. Details on each SDG achievement on education is mentioned in the appendix.

In line with the fifth SDG, Pakistan is attempting to eliminate gender disparities by empowering females. Also, attempts are ongoing to eliminate violence, and also encourage women's participation in economic, social and political matters. Clean energy sources is

another SDG, and there is an Integrated Energy Plan which is trying to achieve a more sustainable energy mix for the country.

Most importantly, achieving zero poverty by 2030 is the number one SDG. It calls to eliminate extreme or absolute poverty in every form through social protection, easily accessible fundamental services, and protection from social, environmental and economic shocks. Fortunately, since independence, Pakistan has managed to reduce poverty levels consistently; however, extreme poverty is still more than 24 percent of the overall population.

## **PSLM Main Findings**

The main findings of the PSLM report are following:

### **Pakistan’s Education Indicators**

Human capital plays a vital role in encouraging development in any economy. In the SDGs, this is goal 4, and it is the hopes of the Pakistan government to meet this goal. In the past, the country did not manage to meet the MDG goal for education. A report from the UNDP places Pakistan at 150<sup>th</sup> with a Human Development Index of 0.56 (1 is the maximum figure). With regards to education indicators, the only country lagging behind Pakistan is Afghanistan in the region. With respect to institutions in the country and enrolment, education during early childhood calls for pre-primary education. There was more than a 7 percent increase in enrolment at this level. In primary schools, enrolment rose by 5.5 percent, whereas middle and high school enrolments rose by 4.3 and 7.4 percent respectively. Higher secondary schools saw a 9.8 percent rise in rates of enrolment; technical institutes, degree institutions and universities witnessed a 26 percent, minus 47.3 percent and 7.7 percent each. Total enrolment in the country rose by more than five percent from the previous year.

Table 2 Percentage of Out of School Children

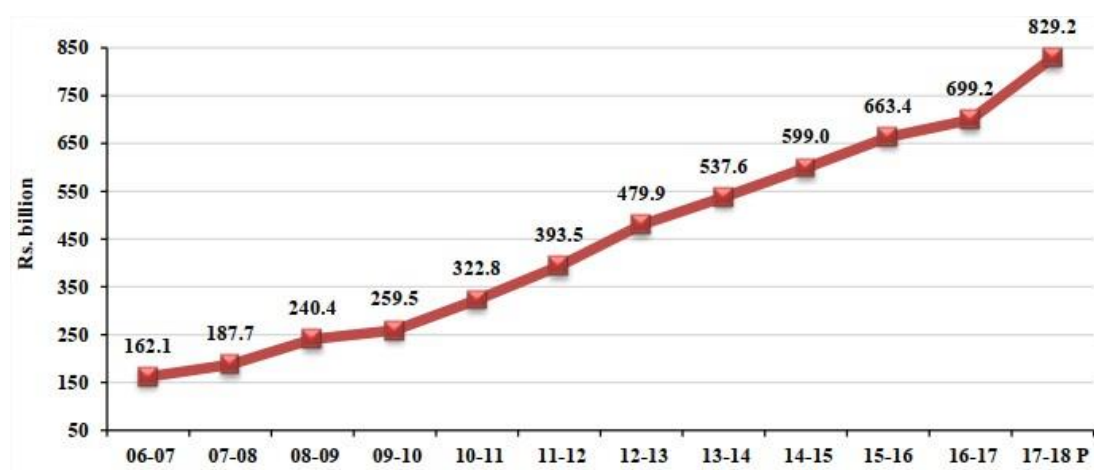
<b>Percentage of Out of School Children (5-16 years)</b>			
	<b>Male</b>	<b>Female</b>	<b>Total</b>
<b>Pakistan</b>	25	36	30
<b>Punjab</b>	19	23	21
<b>Sindh</b>	34	49	42
<b>KPK(W/Merged)</b>	19	39	28
<b>KPK (W/out)</b>	20	43	31
<b>Balochistan</b>	52	67	59

Source: PSLM Key Report 2018-2019



Overall rates of literacy rose to 53 percent in rural areas and 77 percent in urban areas. The gender disparity has also fallen during this time period. All provinces experienced a rise in their literacy rates except Sindh, where there was a decrease at a marginal level. Spending on education was 2.4 percent of GDP in 2018, which was a 0.2 percent increase from the past year. The overall increase in spending on expenditure was more than 18 percent. Provincial governments have also begun focusing on education expenditures: Punjab increased education expenditures to 341 billion rupees, Sindh increased it to 166 billion rupees, KPK increased it 142 billion rupees, and Balochistan increased it to 53 billion rupees.

*Figure 2 Pakistan Education Expenditure*



*Source: PRSP Budgetary Expenditures*

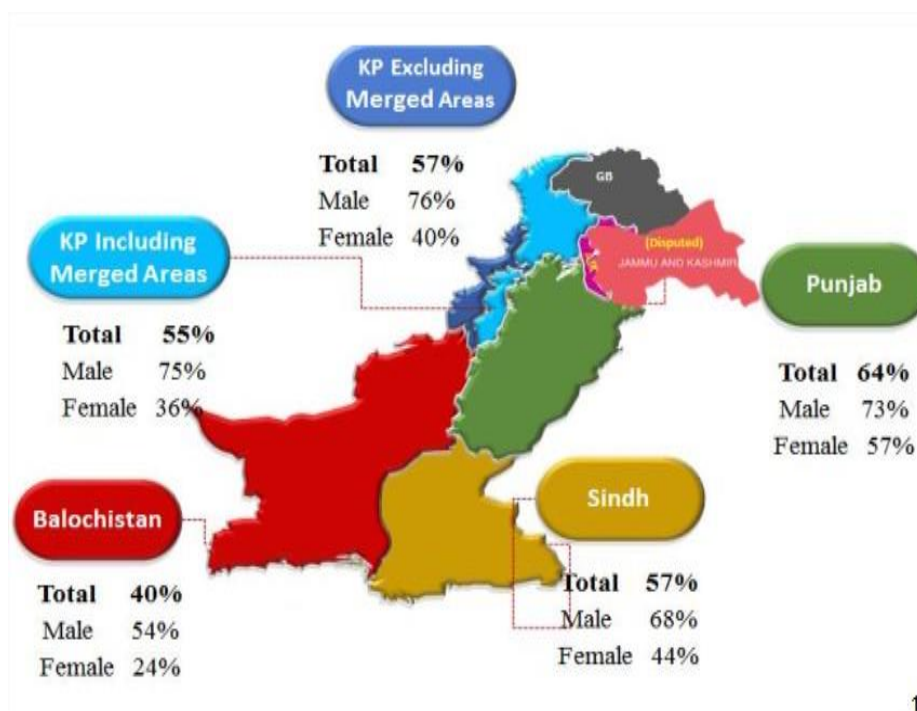
There have been consistent efforts to further develop the education system. For instance, the Federal Public Sector Development Program, or PSDP, has allotted more than 3 billion rupees for current and future projects under the Federal Education and Professional Training ministry. An amount exceeding 2 billion rupees has also been allocated to 15 current projects on education to divisions of the capital and finance administrations. There are also annual development programs, or ADPs, that focuses on providing facilities that were otherwise missing, such as buildings for colleges and schools, and scholarships and stipends to the deserving. Issues faced are prevalent in vocational and technical institutes, where there are ancient laboratories and outdated techniques. However, progress is being made in this matter, such as the forming of a framework of qualification (NVQF)<sup>6</sup>, the managing of workshops,

<sup>6</sup> This is the National Vocational Qualification Framework.

creating excellence centers, and initiatives taken by the Higher Education Commission in Pakistan.

Education should be provided without conditions and in an efficient manner. Presently, the government is dedicated to improving both the coverage and the quality of education. Therefore, the government is emphasizing on use of technology, improved efficiency, uniformity in education, and a decrease in the dropout rates.

Figure 3 Literacy Rates (Over 10 Years) in Pakistan



Source: PSLM Key Report 2018-2019

Table 3 Pakistan Enrolment According to Gender, Region and Sector

Province	Public			Private			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
ICT	274,467	282,493	556,960	20,580	13,089	33,669	295,047	295,582	590,629
Punjab	189,821	187,218	377,039	85,705	52,411	138,116	275,526	239,629	515,155
Sindh	107,571	66,878	174,449	58,850	30,322	89,172	166,421	97,200	263,621
KPK	71,418	26,201	97,619	35,574	10,082	45,656	106,992	36,283	143,275
Balochistan	21,837	9,460	31,333	484	108	592	22,357	9,568	31,925
AJ&K	11,368	13,392	24,760	1,021	1,357	2,378	12,389	14,749	27,138
Gilgit-B	2,160	2,184	4,344	0	0	0	2,160	2,184	4,344
<b>Pakistan</b>	<b>678,678</b>	<b>587,826</b>	<b>1,266,504</b>	<b>202,214</b>	<b>107,369</b>	<b>309,583</b>	<b>880,892</b>	<b>695,195</b>	<b>1,576,087</b>

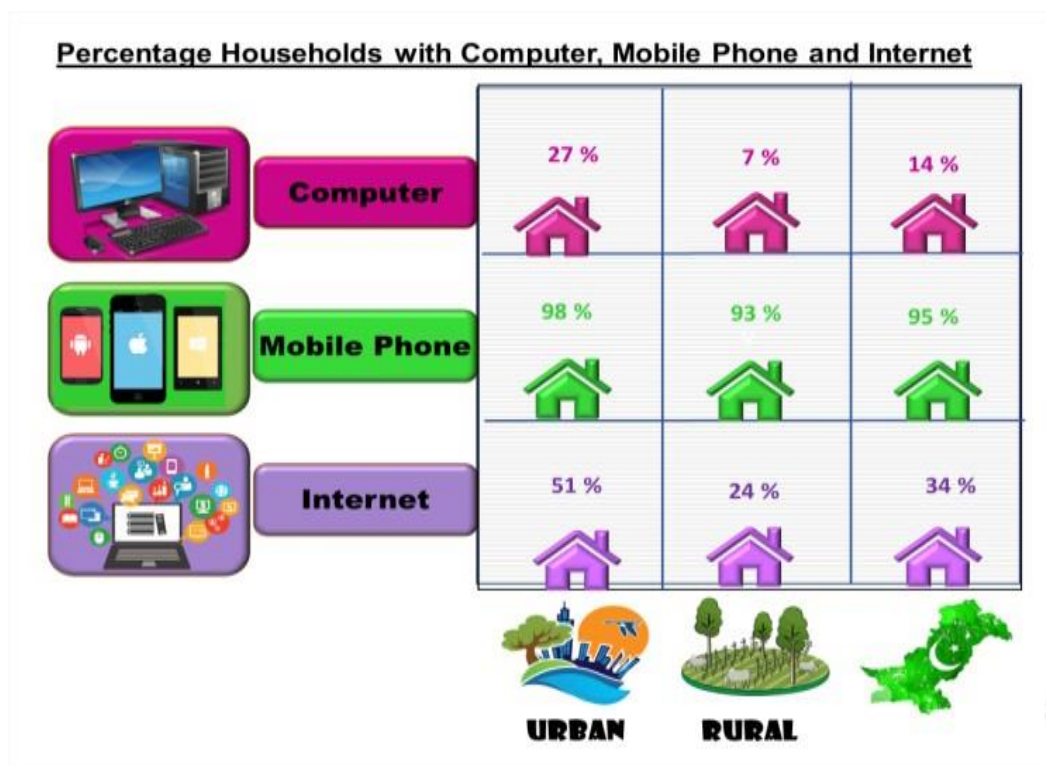
Source: Higher Education Commission

## Utilities and Housing

Pakistan is one of the signatories to the SDG, and Goal 6 of the SDG is for sanitation and clean water. At least 95 percent of the population needs to be given access to clean water and 72 percent should be able to access proper sanitation by the target year of 2030. The base line for these targets is 36 percent access to clean water and 0 percent access to appropriate sanitation. Under 10 percent of the populace has piped water whereas under half of the rural populace have improved sanitary facilities. Water availability is 89 percent for improved water, 77.5 percent for availability through the clock, and 53 percent for a primary service. Washing hands using soap has spread to 60 percent of Pakistan, while improved sanitary is 63 percent.

The PSLM/HIES 2018-19 gathered data on access of households to the internet and laptops/tablets/mobile phones. It was revealed that only 14 percent of households have a phone/tablet/laptop whereas 34 percent have access to the internet. There are large gaps in rural and urban regions.

*Figure 4 Percentage Households with Computers, Mobile Phones and Internet*

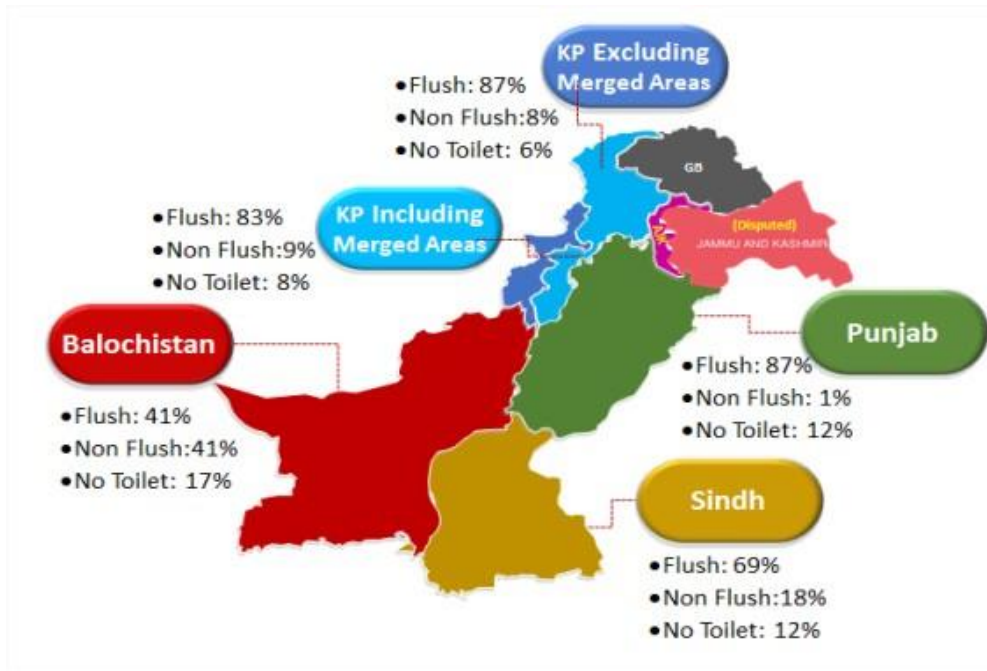


*Source: PSLM Key Report 2018-2019*

Hygiene and sanitation is the appropriate treatment and disposal of human excrement and sewerage systems, along with washing hands with soap. In the survey, information of toilet

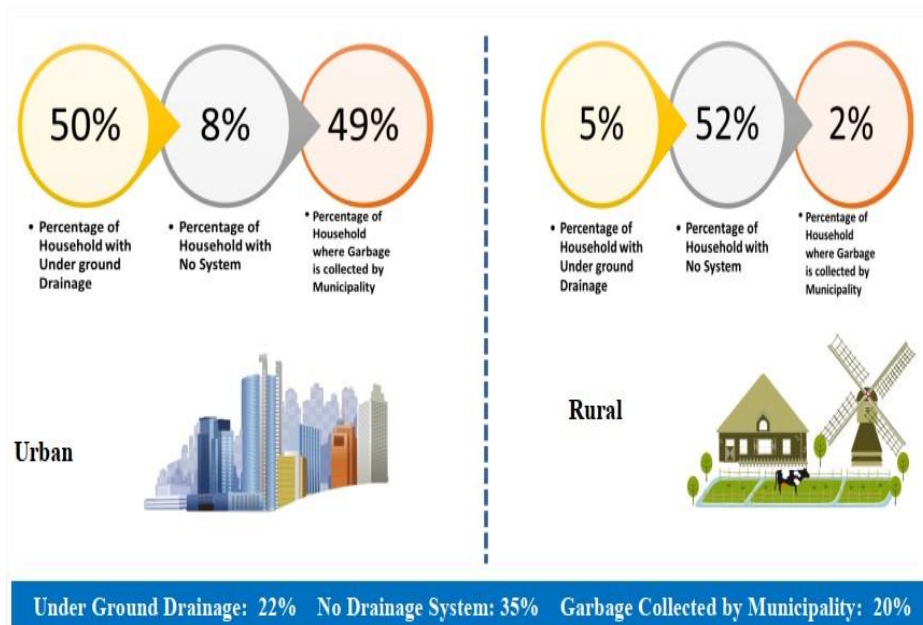
types and availability of agents to wash hands were mentioned. Flush types were also included, along with drainage types and garbage collection facilities.

Figure 5 Flush types Province- Wise



Source: PSLM/HIES 2018-19 Key Findings

Figure 6 Drainage and Garbage Collection Region-wise



Source: PSLM/HIES Key Findings 2018-19

Water is a necessary need. In households, it is required to cook, drink and for hygiene. The 2018-19 PSLM/HIES gathered data on water sources utilized by households for cooking, washing hands and drinking.

Table 4 Pakistan Drinking Water Sources

Drinking	Tap	Hand Pump	Motor Pump	Dug Well	Spring	Bottled Water	Tanks/ Trucks	Filtration Plant	Others	Improved Source	Surface	Making Water Safe
<b>Overall</b>	18	24	35	3	2	2	4	9	0	95	2	7
<b>Urban</b>	31	6	30	1	0	6	7	18	0	99	0	13
<b>Rur</b>	11	34	38	4	3	0	2	4	0	93	2	4
<b>Punj</b>	12	23	44	0	0	1	4	15	0	99	0	5
<b>Sindh</b>	31	36	13	3	0	8	4	2	1	95	2	13
<b>KPK</b>	24	12	35	11	12	0	1	0	0	81	4	4
<b>KPK2</b>	25	14	35	8	12	0	1	0	0	83	4	4
<b>Baloch</b>	28	6	25	8	4	2	15	0	0	84	9	18

Source: PSLM Key Findings Report

### Income and Expenditures

The present HIES round covers around 24,809 households. It gives vital information on incomes, liabilities, savings, expenditures and consumption. It also gathers consumption information of items in accordance with the COICOP (Classification of Individual Consumption of Purpose).

Table 5 Average Household Size

Province/Region	2015-16	2018-19
Total	6.31	6.24
Urban	6.03	5.97
Rural	6.47	6.40
Punjab	6.04	5.78
Sindh	6.22	6.23
KP(With)	7.34	7.41
KP(W/Out)	N/A	7.52
Balochistan	7.84	8.12

Source: PSLM Key Report 2018-2019

The average household size has increased for Balochistan, KPK, and Sindh whereas the rest have experienced falls in their sizes.

*Table 6 Percentage Distributions of Earners by Employment Status*

<b>Employment</b>	<b>2015-16</b>	<b>2018-19</b>
<b>Employer</b>	0.90	0.88
<b>Self-employed</b>	23.74	24.70
<b>Contributing Family Worker</b>	19.50	17.39
<b>Employee</b>	33.85	54.80
<b>Not Economically Active</b>	2.00	2.23

Source: PSLM/HIES 2018-19 Key Findings

The average monthly earnings and incomes in households is on an increasing trend. Quantile wise, there are conspicuous differences between rural and urban patterns of consumption, with larger gaps between the fifth and first quintiles by regions.

*Table 7 Average Monthly Income Per Household (Rupees)*

<b>Average Monthly Income (Rupees) Per Household</b>						
<b>2015-16</b>				<b>2018-19</b>		
<b>Q</b>	<b>U</b>	<b>R</b>	<b>T</b>	<b>U</b>	<b>R</b>	<b>T</b>
1 <sup>st</sup>	20441	19625	19742	24365	22819	23192
2 <sup>nd</sup>	25292	23392	23826	30210	29743	29049
3 <sup>rd</sup>	28940	27613	28020	34789	31705	31373
4 <sup>th</sup>	34407	33170	33668	41084	38094	37643
5 <sup>th</sup>	65950	52008	60451	75194	56244	63544
<b>T</b>	<b>45283</b>	<b>30110</b>	<b>35662</b>	<b>53010</b>	<b>34520</b>	<b>41545</b>

Q=Quintiles; T=Total; U=Urban; R=Rural

Source: PSLM Key Report 2018-2019

Average consumption on a monthly basis has risen to 37159 rupees (2018-19) from 32578 rupees in 2015-16. A comparison of quintiles shows large gaps between average

expenditures between the lowest and highest quintiles. There are also large gaps between regions and provinces.

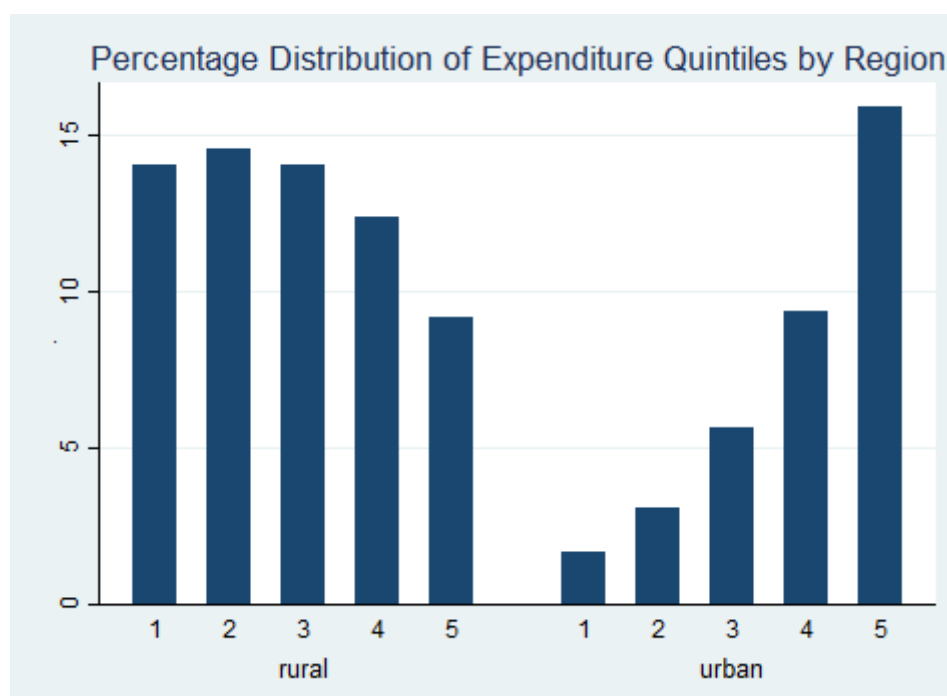
Table 8 Average Monthly Consumption Expenditure Per Household (Rupees)

Average Monthly Consumption Expenditure (Rs) Per Household						
2015-16				2018-19		
Q	U	R	T	U	R	T
1 <sup>st</sup>	19542	18321	18496	23515	21430	21726
2 <sup>nd</sup>	24255	22465	22874	29130	26587	27138
3 <sup>rd</sup>	28326	25988	26705	32931	29389	30475
4 <sup>th</sup>	33100	30150	31337	38689	34491	36338
5 <sup>th</sup>	58584	44189	52907	64681	47236	58206
<b>T</b>	<b>41529</b>	<b>27414</b>	<b>32578</b>	<b>47362</b>	<b>30908</b>	<b>37159</b>

Q=Quintiles; T=Total; U=Urban; R=Rural

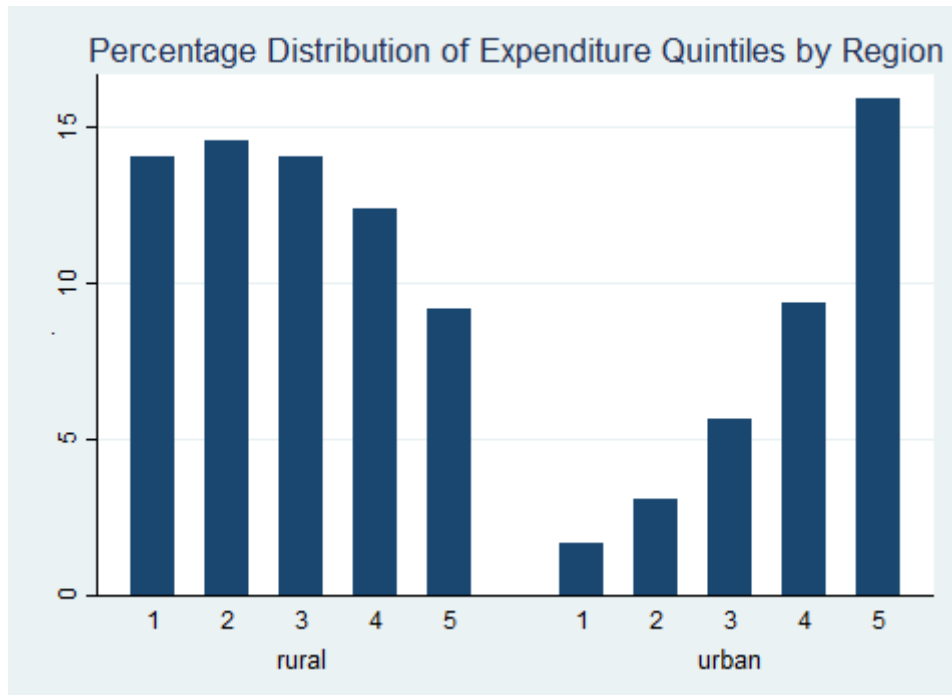
Source: PSLM Key Report 2018-2019

Figure 7 Percentage Distribution of Expenditures Quintiles by Region



Source: Author's Own Calculations

Figure 8 Percentage Distribution of Expenditure Quintiles by Region



Source: Author's Own Calculations

Twenty main items of food constitute more than 86 percent of the total expenditures on food in Pakistan.



Table 9 Percentage of Monthly Expenditures on Major Food Items by Quintiles

<b>Percentage of Monthly Expenditures on Major Food Items By Quintiles</b>						
<b>Food Items</b>	<b>Quintiles</b>					<b>Total</b>
	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>	<b>5th</b>	
<b>Wheat &amp; Flour</b>	18.3	15.0	12.7	10.3	6.8	11.2
<b>Rice &amp; Flour</b>	4.3	4.3	4.3	3.9	3.3	3.9
<b>Pulses</b>	2.4	2.3	2.2	2.0	1.5	2.0
<b>Bread (Etc.)</b>	1.9	2.0	2.0	2.1	2.4	2.2
<b>Vegetable Ghee</b>	7.7	6.6	5.5	4.3	2.3	4.6
<b>Tea</b>	3.6	3.3	3.0	2.7	2.3	2.8
<b>Milk Fresh &amp; Boiled</b>	19.6	22.2	23.4	24.5	22.8	22.8
<b>Milk Tetra</b>	0.7	0.8	0.8	0.8	1.3	0.9
<b>Mutton</b>	0.5	0.8	1.3	1.8	4.2	2.2
<b>Beef</b>	1.8	2.7	3.2	3.6	3.5	3.2
<b>Chicken</b>	3.4	3.5	3.6	3.7	3.6	3.6
<b>Fish</b>	0.5	0.5	0.6	0.7	0.9	0.7
<b>Fruit</b>	2.5	3.3	3.9	4.9	6.7	4.8
<b>Vegetables</b>	10.8	10.1	9.3	8.6	7.0	8.7
<b>Salt</b>	0.2	0.2	0.2	0.2	0.1	0.2
<b>Spices</b>	1.6	1.7	1.7	1.8	1.9	1.8
<b>Sugar Mill/Desi</b>	5.0	4.2	3.7	3.2	2.2	3.3
<b>Gur, Shakkar</b>	0.4	0.4	0.3	0.2	0.2	0.2
<b>Mineral Water/Drinks</b>	0.9	1.1	1.4	1.7	2.5	1.7
<b>Hotel, Restaurants</b>	3.7	3.9	4.5	5.4	9.5	6.2
<b>Total</b>	89.6	88.7	87.5	86.3	84.9	86.8

Source: PSLM Key Report 2018-2019

Table 10 Per Capita Monthly Consumption of Major Food Items by Quintiles

<b>Per Capita Monthly Consumption of Quantities of Major Food Items by Quintiles</b>							
<b>Major Items</b>	<b>Units</b>	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>4th</b>	<b>5th</b>	<b>Total</b>
<b>Average No. of Members per HH</b>		8.11	7.27	6.42	5.78	4.72	6.24
<b>Wheat &amp; Flour</b>	Kg	6.71	7.21	7.29	7.07	6.72	7.00
<b>Biscuits</b>	Gm	17.48	25.67	33.46	36.36	51.91	32.98
<b>Milk</b>	Ltr	3.76	5.39	6.58	8.01	10.51	6.85
<b>Milk Dry</b>	Gm	1.50	2.08	2.76	4.31	5.53	3.24
<b>Milk(Children)</b>	Gm	1.49	3.60	6.04	13.19	26.44	10.16
<b>Butter</b>	Gm	0.68	2.13	3.15	4.07	10.01	4.01
<b>Veg. Ghee</b>	Kg	0.70	0.77	0.77	0.70	0.53	0.69
<b>Cooking Oil</b>	Ltr	0.11	0.17	0.25	0.39	0.69	0.32
<b>Mutton</b>	Kg	0.01	0.02	0.03	0.06	0.19	0.06
<b>Beef</b>	Kg	0.07	0.13	0.18	0.24	0.32	0.19
<b>Fish</b>	Kg	0.03	0.04	0.05	0.06	0.12	0.06
<b>Chicken</b>	Kg	0.19	0.26	0.33	0.41	0.59	0.36
<b>Eggs</b>	No	1.32	1.92	2.60	3.62	5.74	3.04
<b>Banana</b>	No	2.39	3.02	3.97	5.32	8.21	4.58
<b>Citrus Fruit</b>	No	0.70	1.26	1.57	2.14	3.22	1.78
<b>Dry Fruit</b>	Gm	5.21	12.09	15.95	27.13	56.99	23.48
<b>Other Veggies</b>	Kg	1.60	2.01	2.20	2.45	2.85	2.22
<b>Sugar</b>	Kg	1.13	1.24	1.30	1.35	1.41	1.28
<b>Honey</b>	Gm	0.55	0.61	1.09	1.91	7.20	2.27
<b>Tea</b>	Gm	67.33	79.58	85.80	91.67	110.33	86.95

Source: PSLM Key Report 2018-2019

## Literature Review: Empirical and Theoretical

Economic growth is a strategy used to reduce poverty besides improving general standards of living. Investing more in physical capital is perceived as the fundamental element of activities concerning development to attain economic growth. But in some cases, this economic growth is known to fail in reducing poverty levels in an economy; thus, investment is shifted from physical capital to education, nutrition and health. This becomes a necessary part of public policies in developing or less developed economies. The notion behind this is that improved educational, nutritional and health facilities are not just rights of the poorer class, but are also a means to raise incomes (throughout the economy and within the poorest population) (World Bank, 1990) (World Bank, 2001) (Saith, Stewart, & Laderchi, 2003).

Eliminating poverty is a vital part of developing countries' agendas, coupled with their efforts to achieve the Sustainable Development Goals of the United Nations. Around 190 countries have resolved to try and meet the number one target of ending conditions of extreme poverty (people surviving on less than \$1.25 each day) by 2030. Also, large humanitarian organizations such as the United Nations Development Programme (UNDP) and the World Bank design their policies with regards to their effects on poverty; this includes relief from debts, security enhancements, encouraging empowerment, and stabilization on a macroeconomic level. Due to these constant efforts, global poverty has dropped from up to 80 percent of the population to around 20 percent in 2015. To this day, a significant portion of the population lives in conditions of extreme poverty, or on the brink of extreme poverty (World Bank, 2001) (World Bank, 1990) (United Nations, 2009).

Whilst there is rising concern accorded to the reduction of poverty, there are still differing opinions about the meaning of poverty to different groups. According to their socio-economic and political circumstances, people are bound to comprehend poverty in various manners. It has been argued that there is a dire need to clarify the definition of poverty because various definitions entail various measurement criteria. Therefore, different people could be categorized as poor, resulting in different policies to alleviate their situation (Saith, Stewart, & Laderchi, 2003).

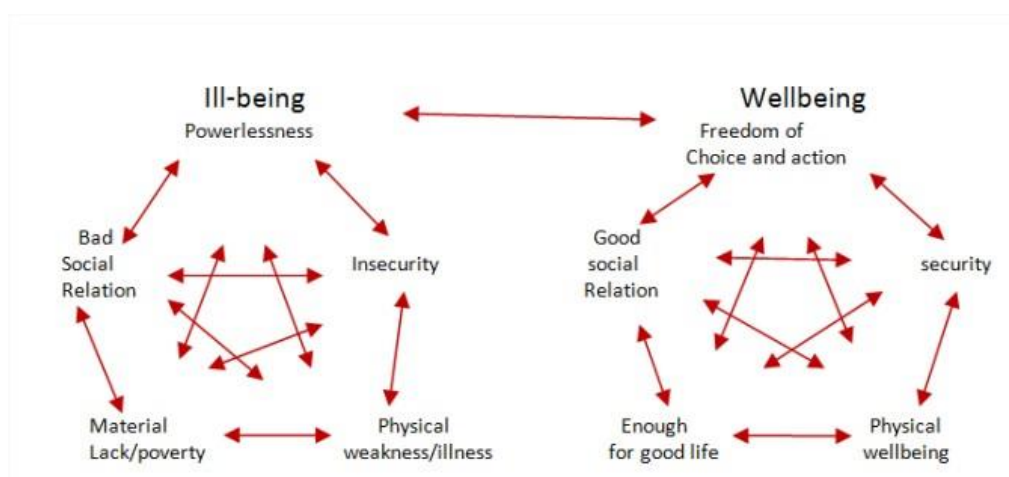
The ensuing chapter shall discuss the definition and measurement of poverty, alongside the determinants. The connection between health, education (and other factors) and reducing poverty will be analyzed through relevant empirical and theoretical literature. This chapter has been divided into sections: the first will look into the meaning of poverty and its measurement, the second will scrutinize the possible causes of conditions of poverty (at national and

household levels), and the third and last section shall investigate the impact of health and education on reducing poverty by featuring the crucial conclusions of the results.

## Poverty: Definition and Measurement

Defining poverty continues to be a reason for debate in studies concerning poverty because it is not easy to implement a universal meaning that satisfies all (Alcock, 1997) (Alkire, 2002) (Stewart, Harris-White, & Saith, 2007) (Sen, Development as Freedom, 1999) (Sen, Commodities and Capabilities, 1985). Focus on the multidimensional aspect of poverty encompasses both economic and non-economic elements of deprivation. Poverty has also been defined as human deprivation that is unacceptable with regards to education, economic opportunity, nutrition and health; it also includes deprivation in security and empowerment (World Bank, 2001).

*Figure 9 Development as change to well-being*



*Source: UNDP*

To comprehend the concepts, the ideas of well-being and deprivation are necessary. Well-being means the sociological perception of the idea of deprivation, which looks at poverty existing as a structural barrier. These structural barriers cause a lack of access by the poor to external assets (examples are land, credit, common property, and infrastructure), as well as internal assets (examples are education, health and nutrition). Deprivation refers to a physiological dimension of said deprivation, which perceives people as poor if these people do not have sufficient income, clothing, shelter or food (World Bank, 2005) (Stewart, Harris-White, & Saith, 2007).

The main approaches to measuring poverty are as follows:

1. Social exclusion approach
2. Participatory approach
3. Basic needs approach
4. Capability approach
5. Monetary approach

The approaches used in this paper are the monetary approach and the basic needs approach. Both are discussed as follows.

### **The Monetary Approach**

Living standards consist of possibilities that are accessible to households and individuals alike in order to complete their needs. Ways of satiating these needs encompass both items: material and non-material. This approach considers every item in monetary terms (through income and consumption). Consequently, any individual is categorized as being poor when he or she resides in a household where consumption and also income are below a specific threshold – a minimal level<sup>7</sup> (Ledarchi, 2007) (Deaton & Case, 2003) (UNDP, 1997).

Poverty is absolute and relative; it may be explained either way. In the framework of welfare economics, a line of poverty is the minimal expense of the utility poverty level (Ravallion, 1998). In other studies, a poverty line is constructed using basic needs that should be completed. On the other hand, there may also be some determinants of the dispersion of the welfare indicator chosen (Ledarchi, 2007). With this in mind, this particular approach is viewed as a target measurement that may be compared to subjective measurement.

According to Alcock, absolute poverty is therefore different from relative poverty. Absolute poverty takes on a subjective nature with a social standard that precisely observes that an aspect of judgment is part of calculating the overall levels of poverty. Judgment is important as poverty defined in a relative manner is based off comparing living standards of the poor and the living standards of society members who do not qualify as being poor – this usually includes measuring the average living standards of the entire society where poverty is being analyzed (Alcock, 1997).

Also, as per the suggestion of the World Bank, the line of poverty must be in sync with social common norms and the normal recognition of the minimal level (World Bank, 2005). For instance, for some economies, it may be more sensible to utilize the minimal wage or any

---

<sup>7</sup> The minimal level is also the poverty line. It is calculated with individual or household income. Care must be taken when constructing a poverty line as these lines can differ from region to region with respect to the social, economic and cultural environment. (Hoeven & Anker, 1994)

benefit's value that is acknowledged in the entire country as a representative of the minimum (World Bank, 2005). When choosing from measuring poverty through monetary indicators, it is important to note that consumption is more detailed than the choice of income. In poorer economies that have agrarian-focused economies, the incomes of rural houses might waver according to the yearly harvest cycle. In economies that are more urban, many people have income from non-permanent sources (such as the informal sector); this implies that their income is also volatile in nature.

In the comparison of income and consumption, another argument arises: consumption is more consistent and is therefore more reliable when contrasted with income with respect to the possibility of fulfilling the most basic of needs (because of short-term fluctuations) (Hemmer & Wilhelm, 2000). When consumption is based off the well-being of any individual, it is able to mirror a household or individual's ability to fulfill basic needs, along with the goods and services that can be acquired by a household with the income it is currently earning. It also reflects whether households are able to utilize markets for credit or even savings when earning sources fall below expectations (even negative at times) as a result of variation in seasons or a failed harvest (Hentschel, Coudouel, & Wodon, 2001).

Various statistical methods are used in this approach when poverty is measured: the poverty gap index, the headcount ratio, and the poverty severity (which is also known as the squared poverty gap). The headcount ratio is oft-reported: it is the population share that falls below the line of poverty<sup>8</sup> (Hentschel, Coudouel, & Wodon, 2001) (Ravallion, 1998) (Ravallion, Issues in measuring and modeling poverty, 1996).

Nonetheless, the headcount ratio has drawbacks which limit its use as a standalone measure (Dessallien, 1998) (Ravallion, Poverty Lines in Theory and Practice, 1998) (World Bank, 2005) (World Bank, 1992). Three of the most significant problems are as follows. Firstly, this ratio will not tell how poor those residing beneath the poverty line are. As in, there will be no details concerning how close they are to the poverty line or how far they are from it, or any such distributions (World Bank, 2005) (World Bank, 1992) (Ravallion, Poverty Lines in Theory and Practice, 1998). The second drawback is that this method does not fulfill the axiom of monotonicity – that is, *ceteris paribus*, a fall in the income of a person who lies below the line of poverty should raise the overall measure of poverty (World Bank, 2005) (Ravallion, Poverty Lines in Theory and Practice, 1998) (Sen, On Economic Inequality, 1973). On a last

---

<sup>8</sup>  $P_0 = \frac{1}{N} \sum_{i=1}^N I(x_i \leq z)$  is the equation. In this equation,  $P_0$  = Headcount ratio;  $N$  = Total population;  $I(\cdot)$  = Indicator function (1 if argument is true, 0 if it is not true);  $x_i$  = People residing at or under the poverty line;  $z$  = Poverty line

note, the headcount ratio also happens to violate the axiom of weak transfer: *ceteris paribus*, a transmit of income from a comparatively less poor individual entity to a comparatively poorer entity should cause a fall in the measure of poverty.

The measure of poverty gap (PG) refers to the poverty depth which is an analysis of the average distance that separates the populace from the line of poverty – the non-poor of the population is given a gap from zero. This poverty gap measures the deficit of poverty that manages to capture the resources needed to help the poor out from the poverty they are stuck in via appropriately aimed transfers of cash.<sup>9</sup>

Next, the squared poverty gap (SPG) considers, along with the gap that separates the poor from the line of poverty, the inequality incidence amongst these poor. The poverty gap only considered the gap that separated the lower incomes from this line of poverty, whereas the SPG accounts for the square of the gap. While applying the SPG, the poverty gap weights itself thus allotting greater weight to the poorest. In this way, the SPG is conscious of poverty severity<sup>10</sup> (World Bank, 2005). For instance, in Madagascar's situation, results show that less skilled labourers have higher poverty incidences (a poverty rate that is the third largest) whilst these very labourers are fifth when it comes to the severity of poverty. This variation clearly shows that this class of people is at more risk of existing in conditions of poverty, even if this poverty has lower severity and/or depth. Various interventions are thus required to assist in determining various dimensions of poverty.

### The Basic Needs Approach

This approach perceives poverty as the destitution of requirements that are material in nature for fulfilling essential human necessities. Deprivation's concept, which is akin to the capability approach, extends beyond a dearth of disposable income. It consists of determinants like access to shelter, food, employment opportunities, participation, water supply and health (Dessallien, 1998) (UNDP, 1997). It speaks of the drawbacks of the income point of view that emphasizes the variation in disposable income, public goods and services, and various other types of non-monetary incomes.

---

<sup>9</sup>  $P_1 = \frac{1}{N} \sum_{i=1}^N \left(1 - \frac{x_i}{z}\right) I(x_i \leq z)$  is the equation. Whilst  $x$  is just below  $z$  (the poverty line), there is little contribution towards poverty.  $P_1$  stays at zero when is equal to or over  $z$  – this means  $I(\cdot)$  will take on a value equal to zero. Also, as suggested by Deaton, the function  $\left(1 - \frac{x}{z}\right) I(x \leq z)$  will be convex in  $x$  (albeit not strictly) so as to keep up the transfer principle (in a weak form, at the very least.)

<sup>10</sup>  $P_2 = \frac{1}{N} \sum_{i=1}^N \left[1 - \frac{x_i}{z}\right]^2 I(x_i \leq z)$  is the Squared Poverty Gap equation.

There have been questions regarding what needs are to basic and which luxurious. It has been suggested that basic needs must at best encompass private and public goods and services<sup>11</sup> (Hemmer & Wilhelm, 2000). While calculating the basic needs approach for reducing poverty, there are two material necessities: food and non-food items. This technique translates well-being as when the cost of items of basic needs (shelter, clothing, or food) increases, this shall decrease welfare for it has direct effects on their wellbeing.<sup>12</sup> Houses shall be categorized as poor if they are under any one of the specified poverty lines. With this backdrop, the approach may be viewed as a monetary approach with all indicators concerted to a monetary value.

It was mentioned in the Capability Approach that basic needs is a relative concept. It does not only limit itself to physical requirements for own survival but also incorporates community service, infrastructure (and other such facilities), and non-material resources. Basic needs has also been explained as a minimal living standard that society should provide to the most vulnerable group of its residents. Satisfying basic needs refers to fulfilling the minimal necessities of a household for own consumption (clothing, housing and food). It also hints easy availability of important services (clean water, transport, education, healthcare, sanitation). It entails satisfying needs that are qualitative as well such as a humane living environment and regular participation in decision making (Macarov & Dixon, 1998).

## **Determinants of Poverty**

Knowledge is an important characteristic as it can trace poverty's roots and design plans for alleviating poverty. As poverty takes on a multidimensional aspect, there are many causes of this phenomenon. Poverty incidence may be a result of an economy's unsatisfactory performance or scant income for a person or household to cover the most basic of needs. Poverty causes are witnessed at two distinct levels: household and country levels. Certain economic traits of the poor population have been discussed (Smith & Todaro, 2006). This encompasses poor women and children, poor indigenous people, poor ethnic minorities and rural poverty. Household and country characteristics are as follows.

---

<sup>11</sup> For instance, private goods' consumption includes clothing, food, basic appliances, furniture, and shelter. The important public products are clean water, education, sanitation, healthcare and transport.

<sup>12</sup> The basic needs approach has been used in past examples. One particular instance is that of Fiji's: Narsey calculated the food poverty line established on a minimal 2100 calories per adult equivalent, and a non-food poverty line established on the patterns of consumption of the 2003 household survey.



## Household Characteristics

There are several household traits that are linked to poverty incidence. For example, employment is a source of income and wages; individuals use this income to purchase goods like clothing and education to achieve and sustain a decent living standard, and to keep them away from poverty. Unfortunately, wherever people are unable to find work due to a dearth of job opportunities, little to no education, and/or insufficient skills, it reduces the individual's ability to procure fundamental needs (such as healthcare or shelter). As a result, this increases the chances of sliding back into poverty. Indicators of poverty, such as age and dependency ratio in households, level of education, the household head's gender, and the labour force participation rate (among other factors) hint at a plethora of problems confronted by households.

When investigating poverty causes using the point of view of an individual or a household, it is vital to find the underlining issue. Therefore, it is appropriate to view poverty from an internal perspective (such as the personality of the individual in question) and try to devise an internal poverty solution. When explaining poverty via an individual's attributes, two approaches can be used: the psychological and genetic techniques (Alcock, 1997). The genetic method describes poverty via the inherited trait. The psychological method speaks of traits that have been developed over time. Both hint at the correlation between a person's features and poverty incidence. It should be noted that other studies suggest otherwise.

In a longitude study of the UK, it has been demonstrated that many children from less fortunate homes managed to avoid the poverty of their communities and households in their adult lives. Meanwhile, most poor people were not raised in such deplorable conditions (Madge & Brown, 1982). There have been similar results in other studies that establish that continuities exist in specific households, mostly as most unfortunate children are well off as adults, and partially because some marry people who have dissimilar backgrounds to their own (Spicker, 1993). This indicates that there are attributes beyond an individual's characteristics that expound poverty's causes (education, household size, household assets, gender, ethnicity, region, employment sector, dependency ratio, age, etc.)

Firstly, poverty's determinants are connected to the education and age of members of the household. Several studies demonstrate that poverty will mostly affect those who are below or over the age of productivity, those who have little to no skills, or those who have inadequate education (Pretesch & Narayan, 2002) (Ahmed & Sikander, 2008) (Adejola, Babatunde, & Olorunsanya, 2008) (Verner, 2008). In a study of Punjab in Pakistan, the age of the household

head is associated strongly with poverty incidence. This rings true in other studies as well of Nigeria and Haiti.

Household members' education attainment is a significant indicator of poverty incidence, according to several empirical research papers. A World Bank assessment discovered Georgia's poverty rate significantly falling as the education level of the head of household rose (World Bank, 2009). Particularly, the research demonstrates that with vocational and technical education, the probability of being in poverty falls by around 21.7 percent. With a degree in undergraduate education, the figure is 12 percent. Nigeria hosts discussion groups of women in Ikot village who state that the acquiring of skills and education has fared well with them (Pretesch & Narayan, 2002). Also, with an undergraduate degree, the probability of being poor falls by around 46 percent in rural areas, and by 36 percent in urbanized areas in Nigeria<sup>13</sup> (Adejola, Babatunde, & Olorunsanya, 2008) (Seleka & Lekobane, 2018).

Another aspect is that the figure of earners in the household will demonstrate poverty as well. It has connections to the liaison of the household members' number and the number of people earning. This is shown in the example of a shift to a cash economy in recent times where money takes on greater importance. Accordingly, poverty may occur in a family where the members are greater than the number of income earners. This relationship is measured by the ratio of members who are not in the labor force to those who are. This ratio is also known as the dependency ratio. It lets us calculate the burden that falls on each member of the household (World Bank, 2005). A higher dependency ratio indicates greater poverty incidence. In Cambodia, the poverty incidence is higher in bigger households (an average size of 6.5 people in the poorest quantile, which contrasts against 5 in richer households) (World Bank, 1999). Similarly, such trends have been uncovered in Pakistan where larger dependency ratios and household sizes were correlated strongly to greater poverty incidence (Ahmed & Sikander, 2008).

Many research studies indicate that the burden of a household is related to the head's gender. For example, in Malawi and Kenya, female-headed households are more inclined

---

<sup>13</sup> Studies such as the one in Albania, Haiti, Brazil, Indonesia, Cambodia, Maldives, Kenya, Malaysia, and Pakistan show how less education is a highly contributive factor in poverty incidence. (Verner & Fiess, *The dynamics of poverty and its determinants*, 2004) (World Bank, 2007) (Verner, *Making poor Haitians count*, 2008) (Quibria & Pernia, 1999) (World Bank, 1999) (Mwabu, Jong, Kimenyi, & Geda, 2005) (Sparrow, Sayed, Saadah, Pradhan, & Lanjow, 2001) (Ruuten & Krujik, 2007) (Sanyal, Gan, & Mok, 2007) (Ahmed & Sikander, 2008) (Bibi, Shahnaz, & Khalid, 2005)

towards poverty<sup>14</sup> (Ellis, 2000). Also, Bangladeshi women are mostly excluded when it comes to activities related to development and are more probably malnourished, have less education, have lower life expectancies, possess less land holdings and assets, generally participate less in making decisions, and have fewer job opportunities than Bangladeshi men (Abdullah, 2003).

A main influence on the level of poverty in households is a paucity of fundamental social services. An important part of reducing poverty is infrastructure (transport, roads, ports' access, and transport by water, clean water, communication, and energy) (Sachs, 2005) (Smith & Todaro, 2006). It is stated that a fragile infrastructure system will restrict income sources and increase vulnerability; remote areas are more prone to natural disasters (World Bank, 2007) (World Bank, 1999) (Verner & Fiess, The dynamics of poverty and its determinants, 2004) (Bibi, Shahnaz, & Khalid, 2005) (Verner, Making poor Haitians count, 2008). On one side of the picture, a quantitative poverty analysis demonstrates a significantly large difference in non-poor and poor households with respect to the access of elemental social services. On the other side of the picture, analyzing poverty with qualitative methods shows that poverty perception is because of limited access to vital services and proper infrastructure (Quibria & Pernia, 1999) (Pretesch & Narayan, 2002) (Sachs, 2005).

To tackle traps of poverty, the poor should be able to access business capital (facilities, agricultural machinery, services and industry), natural capital (biodiversity, arable land, properly functioning ecosystems), and also knowledge capital (technological and scientific knowledge to increase business productivity by encouraging natural and physical capital. (Sachs, 2005) The argument indicates that country and household level characteristics are convoluted and linked. The perceptions emanate from every facet of life. Poverty's determinants encompass a wide variety of factors.

### **Head of Household's Characteristics as Poverty Determinants**

Many factors, both economic and social, contribute towards people being below the line of poverty. The educational attainment and age of the household's head are together considered as significant poverty determinants (Arif & Qureshi, 2001) (Malik, 1996) (Gregory & Meng, 2007) (Bibi, Shahnaz, & Khalid, 2005) (Verner, Making poor Haitians count, 2008) (Sanyal, Gan, & Mok, 2007) (Sanyal, Gan, & Mok, 2007) (Sarwar, Awan, & Malik, 2008) (Adejola, Babatunde, & Olorunsanya, 2008) (Ahmed & Sikander, 2008). In one study, it was found that

---

<sup>14</sup> These results are in line with those conducted by other researchers for Pakistan, Bangladesh, China, and Uganda. (Malik, 1996) (Arif & Qureshi, 2001) (Bibi, Shahnaz, & Khalid, 2005) (Ahmed & Sikander, 2008) (Gregory & Meng, 2007) (Okidi, McKay, & Lawson, 2006) (Abdullah, 2003)

though education is important, the effect is of a smaller magnitude in Punjab, Pakistan (Ahmed & Sikander, 2008). For some, the age of the head is significant; in south west Nigeria, it was found that the older the head of household, the greater the level of poverty (Adejola, Babatunde, & Olorunsanya, 2008). Similar results are in a Haitian study (Verner, Making poor Haitians count, 2008). Other research papers find opposite results: older heads of households means lower poverty (Arif & Qureshi, 2001) (Malik, 1996) (Gregory & Meng, 2007) (Bibi, Shahnaz, & Khalid, 2005). When analyzing the effects of reducing poverty, some researchers state that middle school, matric, intermediate school, a bachelor's degree, and a professional education all reduce the possibility of being poor by up to 99 percent in Pakistan (Sarwar, Awan, & Malik, 2008).

Other relevant factors include the household head's gender and their occupation. Male headed households are less likely to be poor (Ahmed & Sikander, 2008) (Mwabu, Jong, Kimenyi, & Geda, 2005). Also, in Malaysia, migrant-headed households have a higher likelihood of being poor (Sanyal, Gan, & Mok, 2007). Heads who are labeled as skilled professionals have a lower likelihood of remaining in conditions of poverty as compared to the under-skilled in Vietnam (Baulch & Minot, 2005). White collar jobs and employment in the agricultural sector is not conducive to poverty reduction (Litchfield & Justino, 2003). There is found to be a positive correlation among sectors of employment and consumption levels (Jolliffe & Datt, Determinants of Poverty in Egypt, 1999). Even though the sectors of employment classified are those industry types where the head of household is working, empirical findings show employment in specific industries is important for poverty reduction. This consequently raises the consumption per capita, which will raise the food consumed per capita. Also, determinants of the sector of employment have been included in one analysis; this analysis reaches the same conclusion that employment in certain industries is a primary source of reducing poverty (Ahmed & Sikander, 2008).

### **Inequality in Income**

Problems in wealth and income distribution and all related circumstances of poverty and inequality have managed to gather attention on social scientists throughout the globe, varying from problems of factors' distribution to household and individuals' distribution (Srivastav & Chatterjee, 1992). There exist two facets in studying inequality: policy and technical facets (Gini, 1912) (Pigou, 1912) (Dalton, 1920) (Lorenz, 1905). The technical facet is studying inequality as a topic of scientific proportions and focusing on choosing an adequate measure

of inequality in the distribution states. The policy facet questions social justice in certain states of distribution.

When comprehending causes and levels of poverty, it is vital to make sure that policies aimed at reducing poverty should target the causes at a household and individual level. Knowing these characteristics of the destitute is not important only to tackle the absolute root causes of poverty but to tackle poverty itself via crucial plans to alleviate poverty that remove any expected pitfalls and sliding back into the cycle of poverty. Poverty determinants at the level of the household generally rely on surveys' data. These surveys give a detailed source of reliable data on behavior in the economy and the links to reforms in policies, along with individuals' behavior as to who purchases which services and goods and the amount they spend on them. This data on how these destitute people spend their resources has been utilized time and time again to construe poverty and to facilitate cases for reforms in social features since the past centuries (Deaton, 1997) (World Bank, 2005) (World Bank, 2002).

Several writers have used this data from surveys to analyze poverty. Some have used the data on Punjabi households in Pakistan (Ahmed & Sikander, 2008). Others have utilized it for Malaysian poverty analysis (Sanyal, Gan, & Mok, 2007). Kenyan poverty studies have also used the Kenyan household survey information to analyze their poverty (Mwabu, Jong, Kimenyi, & Geda, 2005). Vietnamese based studies have also used Vietnam's household survey data (Baulch & Minot, 2005). Additionally, panel data has been used from China to study poverty in urban areas (Gregory & Meng, 2007). In Fiji's case, household data was collected to analyze poverty levels (Narsey, 2008). In Pakistan, a study was used where a poverty profile analysis was done for the country (Arif & Qureshi, 2001).

On a similar note, many economy case studies used various models in analyzing poverty's determinants. Some choose to use data models whilst others use ordinary least squares (OLS). Still others will use both methods. For example, one paper uses probit and logit models to determine the responsible factors in poverty at a household level (Ahmed & Sikander, 2008). In analyzing China's urbanized areas, and in Vietnam's example, both OLS and probit models were used (Gregory & Meng, 2007) (Baulch & Minot, 2005).

As far as quantile regression goes, it has been used to study the impact of specific determinants on poverty; for instance, the effect of international remittances has been analyzed on poverty in underdeveloped economies (Kim & Serino, 2011). A Sri Lankan study used both logit regression and quantile regression to study the correlates of consumption per capita at various distribution points (Silva, 2008). In Rwanda, poverty determinants of households are analyzed using quantile regression (Habyarimana, Zewotir, & Ramroop, 2015).

The logit model may be used alone (Sanyal, Gan, & Mok, 2007) or an ordered logit model with a logit model can also be utilized (Arif & Qureshi, 2001). Also, the multinomial logit model has been used (Bibi, Shahnaz, & Khalid, 2005); in one paper, the log linear regression model determines factors that caused the poverty incidence. These examples show that the determinants at a household level can be categorized into two main groups: the traits of the household, and the traits of the household head. Both groups viewed through the traits of the household level mirror disaggregated elements that provide to the poverty determinants of each group. As per the literature, this current research analyzes both groups in a separate manner in Pakistan's case, and by ethnicity and regions. The following literature shall identify those factors that are linked to the head of the household's and head's traits that contribute to keeping them in poverty.

The concept of poverty is multidimensional. It will not be centered on either consumption or income, but also on a myriad of other facets like nutrition, health, vulnerability and education. Thus it necessitates a solution that is all-encompassing as poverty's definition to attain adequate reductions in poverty.

The money approach emphasizes on consumption and income to estimate poverty; it is a dominant literature part and uses a plethora of statistical methods. The capability technique expands consumption and income to other facets like health and education as well as wellbeing to factor in an individual's freedom. Participatory procedures help in reducing poverty as it focuses on the views of the destitute by the destitute themselves. The basic needs method sees poverty as a deprivation of requirements that are material in nature, but moves beyond disposable income only.

Reducing poverty is quickly becoming significant to differences between public goods and services and disposable income, to name a few. Even though social exclusion is convoluted to factor in, analyzing it indicates that characteristics of the structure of society and groups' situations are crucial points to study.

Further research suggests that household and country level have considerable links between health, poverty and education levels. Health and education both have important roles in increasing GDP and technologically advancing an economy when poverty reduction is a goal. Properly educated, trained and healthy populaces allow a country to attain prosperous development at every stage. In households, health and education assist a family in ascending out of poverty conditions either directly (by raised incomes) or indirectly (by raising

productivity and job opportunities). Personal traits (gender, age, education level) and household traits (size, assets) are strongly linked to poverty incidence.

In countries, poverty incidence is higher in countries with lackluster economic growth, unhealthy residents, little to no development of human resources, a deficient governance system, and hostile climates.

When comprehending the causes and incidence of poverty, policies aimed at reducing poverty must target causes at both household and individual levels, as well as from country and structural points of view. This knowledge of the poor's traits is necessary as it is not only important in handling the roots of conditions of poverty but also in combatting such poverty; usage of essential plans of alleviating poverty should also try to eradicate future vulnerability of sliding back into poverty. Problems discussed in this section shall be used in Pakistan's context in following sections.

## **Methodology and Data**

### **Data**

Reducing poverty is one of the most fundamental aims for developing economies since its introduction in the United Nation's Millennium Development Goals (MDGs). By September 2000, the UN finalized the MDGs when 189 signed them with the target of halving poverty by 2015. By 2015, the SDGs were introduced where the goal is to eliminate extreme poverty everywhere; although the MDGs did not manage to reach its target, it did witness a fall from 1.8 billion people in poverty in 1990 to 1.4 billion in poverty by 2005.

South Asian nations, including Pakistan, have also signed the SDGs to reduce poverty. Countries include Pakistan, Sri Lanka, Nepal, Afghanistan, the Maldives, Bhutan and India. Poverty in Pakistan is a consequence of many social, political and economic issues all interacting together, forming depravation and lowering standards of living for people. It is necessary, from both empirical and theoretical points of view, to comprehend said poverty's determinants and the factors that drive it. The ensuing chapter shall discuss the determinants of absolute poverty that are composed of the household and household head's characteristics. Many socio-economic and demographic variables for Pakistan are taken from the PSLM/Household Income and Expenditure Survey 2018-2019 for around 25 thousand households.

The methodology is econometric and it is used to identify the determinants of existing poverty at the household level; the logistic regression approach is utilized to interpret poverty incidence in terms of probability. Quantile regression is used to determine the determinants'

significance at certain quintiles of the population. The following chapter shall first estimate the households' probability with specific characteristics that are under the line of poverty of Pakistan. The sensitivity analysis of the results is also discussed to establish if the results are robust in accordance to the lines of poverty that are benchmarked. This has been mentioned using the cost of basic needs approach and the food poverty line. The remaining chapter is outlined as ensues: 4.2 reviews relevant literature on the topic regarding the poverty determinants (household and household head). The following models include many socio-economic and demographic poverty determinants that mirror several causes and their effects on households with little income and poverty conditions. 4.3 shall discuss data selection, model specification and methodology. 4.4 will finalize the empirical findings, after which the conclusion is presented.

### **Model Specification, Methodology and Data**

The following section shall attempt to examine Pakistan's household and head of household's traits that might be responsible for staying in poverty conditions. The technique, assumptions and connected econometric problems are described with detail, which includes data utilized during the analysis.

#### **Conceptual Framework**

Regression, especially logistic, is the standard approach used to study the possibility of a certain household staying poor, which is how it resembles the OLS regression. Nonetheless, in logit regression, the prediction approach is an outcome that is dichotomous in nature; the explained variable shall take a value of either 0 or 1. The error term shall be dichotomous too. Thus, there are two possible issues that result from using dichotomous variables in place of the actual variables that are continuous in the OLS. Firstly, it may mean losing information in the dependent/explained variable. Secondly, this dichotomous variable is treated as a latent variable though it is not a latent variable; it has actually been detected and should not be utilized in a binary response because the goal is to attain the possibility of being non-poor or poor (Ravallion, Issues in measuring and modeling poverty, 1996) (Gujarati, 1999) (Gujarati, Basic Econometrics, 1995).



### The Logit Regression Model

In the logit regression, a convoluted formula is needed to convert to and fro from the equation of the logit regression to the OLS equation. The logistic regression equation may be written as follows:

$$Prob(y^* < 1|x) \rightarrow y^* = 1 \text{ if } \frac{y}{z} < 1 \text{ or } 0 \text{ otherwise} \quad (4.1)$$

In the equation,  $y$  denotes the dependent variable,  $z$  denotes the threshold level, and  $x$  denotes household characteristics. The needed regression of the logistic model may be replaced with OLS regression via regression of  $x$  on  $y/z$  dependent variables that may be estimated despite the assumptions of the error term being weak. (Ravallion, Issues in measuring and modeling poverty, 1996) Nonetheless, it has been criticized that the OLS regression prevents the provision of results on poverty in terms of probability. (Mwabu, Jong, Kimenyi, & Geda, 2005) In place of this, they use a logit regression to study the possibility of staying poor, dependent on household characteristics in Kenya.

Generally, the equation that follows is said to evaluate the possibility of a household remaining in poverty with certain socioeconomic and demographic variables.

$$Y_i = f(X_{1i}, X_{2i}, \dots, X_{ki}) \quad (4.2)$$

In this equation,  $Y_i$  is the explained variable that is representing the poverty level of the household (non-poor or poor) and has a value of either 0 or 1. The  $X$  represents the several demographic and socioeconomic indicators that estimate the household's poverty level. For instance, if  $y^*$  in (4.1) captivates the actual household status as either non-poor or poor; the estimation may be done as follows:

$$y^* = \alpha + \sum_{j=0}^k \beta_j X_{ij} + u_i \quad (4.3)$$

In (4.3),  $y^*$  is a latent variable that is unobservable. Notwithstanding,  $y$  may take on a value of 1 if  $y^*$  is greater than 0, and 0 if  $y^*$  is less than zero.  $\alpha$  is scalar and  $\beta$  is a parameter vector.  $u$  denotes the terms of error. Despite the terms of error having a normal assumption of a mean of zero in the logistic models, the distribution underlying the terms of error is unique. (Gujarati, Essentials of Econometrics, 1999) (Gujarati, Basic Econometrics, 1995) (Tanis & Hogg, 2001)

In the equation that follows,  $P_i$  denotes the probability that the  $i^{\text{th}}$  household is under the poverty line benchmarked based off the  $X$  predictors. Also, the research assumes  $P_i$  is a variable of Bernoulli distribution, therefore:

$$P_i(X) = \frac{e^{\alpha + \beta X}}{1 + e^{\alpha + \beta X}} \quad (4.4)$$

Because  $\beta$  symbolizes a parameters' row vector and  $\alpha$  takes on a scalar value, therefore the logistic model that is to be estimated is of the following form:

$$\text{Logit}(P_i) = \ln\left(\frac{P_i}{1 - P_i}\right) = \alpha + \sum_{j=0}^k \beta_j X_{ij} + u_i \quad (4.5)$$

In (4.5),  $P_i$  connotes the possibility of a family remaining in poverty whereas  $(1 - P_i)$  connotes the possibility of a family being non-poor. The ratio of  $P_i$  to  $(1 - P_i)$  is the *odds ratio*: this denotes the odds of said household staying poor. Taking the natural log of the odds ratio results in the logit equation, therefore (4.5) is the logit equation. (Gujarati, Basic Econometrics, 1995)  $X_{ij}$  is an independent variable and represents characteristics of the head of household and the households themselves. This encompasses gender, physical status, age, educational attainment and professions. Household traits include size, social networks and dependency ratios.  $\beta_j$  Denotes the estimates of the logistic regression of the independent variables with  $u_i$  representing errors.

(4.5) also shows that taking the log of the odds ratio becomes a linear function of the independent variables which are  $X_{ij}$  along with the slope coefficients (which is what  $\beta_j$  represents) which give the changes in the natural log of said odds ratio for each unit of change in the independent variables. Additionally, the marginal impacts or elasticities at the average values of the independent variables are also estimated to demonstrate the changes in the possibility with unit changes in independent variables. The following formula is utilized to estimate marginal effects:

$$\frac{\delta \log \left[ \frac{P_i}{(1 - P_i)} \right]}{\delta X_j} = -\beta_j \quad (4.6)$$

These mentioned equations are being used to assist in estimating poverty determinants, especially in ensuing sections that mention methodology and data.

### The Quantile Regression Model

Where both logistic and linear regression estimate the relationship between the predictors and the dependent variables' average value, quantile regression shall allow the evaluation of the effect of predictors on various quantiles of the distribution of the response, therefore giving a clear picture of how the response and predictor variables are related to one another. This regression method is robust to the ultimate points in the response spaces, also known as the outliers; however, the goal is not for outliers in covariate spaces (which are the points of leverage). Quantile regression also happens to be a robust technique in the view that it has no assumptions about the error's distribution in said model. This capability of quantile regression (to explain the effect of variables on the entire distribution of the results of interest) provided the motivation for using quantile regression while evaluating poverty determinants of households' poverty in Pakistan. (Bassett & Koenker, 1978)

The formulation of this model is as follows.  $Y$ , which is a random dependent variable, has a probability distribution function:

$$F(y) = \Pr(Y \leq y) \quad (4.7)$$

The  $\theta^{\text{th}}$  quantile in  $Y$  will be defined as the following inverse function:

$$Q(\theta) = \inf\{y: F(y) \geq \theta\} \quad (4.8)$$

In (4.8),  $\theta$  takes on a value between 0 and 1. (Bassett & Koenker, 1978) (Wei & Chen, 2005) For instance, suppose  $X = (x_1, \dots, x_m)$  where  $X$  is a vector of  $m$  length with household traits, environmental traits and the head of household's traits. Suppose  $Y = (y_1, \dots, y_m)$  is  $m$  observed dependent variables. The model of linear quantile regression is suggested in a 2007 paper as:

$$v_\rho = x, b_0 + \varepsilon_\rho \quad (4.9)$$

In (4.9)  $i=1,2,3,\dots,m$  and  $\beta_\theta=(\beta_{1\theta},\dots,\beta_{k\theta})$  is an unknown vector with  $k$  dimensions of parameters  $\varepsilon_i = (\varepsilon_1, \dots, \varepsilon_m)$  is a vector of  $m$  dimensions and an unknown number of errors. The  $\beta_\theta$  is the solution of a minimization problem which is:

$$\min_{\beta_w \in R^k} \left[ \sum_i \varepsilon\{i: y_i \geq x_i \beta_\theta\} |y_i - x_i \beta_\theta| + \sum_i \varepsilon\{i: y_i < x_i \beta_\theta (1 - \theta)\} |y_i - x_i \beta_w| \right] \quad (4.10)$$

Particularly, when  $\theta$  takes on a value of 0.5, the quantile regression boils down to a median regression. If weights are to be established as  $w_i$ , where  $i=1,2,\dots,m$ , the weighted quantile regressions of (4.10) may be scripted as:

$$\min_{b_w \in R^k} \left[ \sum_i \varepsilon\{i: y_i \geq x_i \beta_w w_i \theta\} |y_i - x_i \beta_\theta| + \sum_i \varepsilon\{i: y_i < x_i \beta_w w_i (1 - \theta)\} |y_i - x_i \beta_w| \right] \quad (4.11)$$

### Methodology and Data

To evaluate welfare levels, the income and expenditure data of households are oft used. When selecting from both indicators for measuring poverty, expenditure gives a more holistic source of information as compared to income. In poorer agriculturally oriented economies, the rural houses' incomes might vacillate in accordance with yearly harvest cycles. (World Bank, 2005) In urbanized economies, many people have income sources from the underground economy (also known as the informal economy) which means their incomes might be vacillating too. Therefore, it can be difficult for households and individuals to accurately state their incomes. Because of this, the income data in surveys may be of lower quality than anticipated.

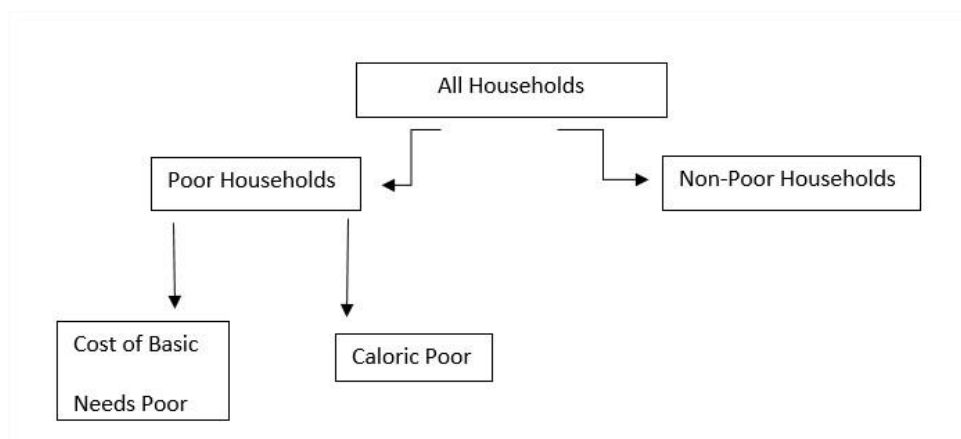
Data on consumption, however, is easily obtainable from the person's daily or monthly expenses. By stating their true consumptions, the probability of receiving accurate data may be increased. (World Bank, 2005) Also, consumption appears to be a trustworthy benchmark when contrasted with income because of the probability of fulfilling primary needs. This is a result of income being more sensitive to fluctuations in the economy than expenses. (Hemmer & Wilhelm, 2000) Additionally, consumption is advantageous in that it arrives nearer to a person's wellbeing and mirrors the ability to fulfill needs more adequately. (Wodon, Hentschel, & Coudouel, 2001) It is also noted that the expenses of a household mirror the services and goods that any household can procure on its present income. This will reflect the household's permanent income.

Using monthly expenditures per capita in place of income will be used in the current research because income is usually understated and is somewhat inaccurate due to its many vacillations. The smallest amount of expenditures needed to keep up a specified well being level is known as the line of poverty, or the threshold level. In Pakistan, this line is measured using the cost of basic needs approach. The exact amount is 3250.28 rupees per adult equivalent per month. This line was constructed as follows: firstly, a food poverty line (FPL) is constructed

where the mean expenditures on food items in the reference group (10<sup>th</sup> to 40<sup>th</sup> quantile of the distribution for expenditures). Next, non-food items' expenses (such as education, clothing and shelter) were considered with a focus on those houses which could meet the FPL completely at present food expense levels. Then the FPL was scaled up in order to mirror total expenditures of households to get the poverty line according to the CBN approach. (Ministry of Planning Development and Reform, 2016)

Pakistan's HIES data for 2019 was disaggregated into poor and non-poor households. The nested framework is shown below. To study poverty incidence, both models are analyzed by estimating food poverty and basic needs poverty. The current research uses the logistic regressions that were discussed in (4.5) with different dichotomous response variables. Households are categorized as non-poor or poor depending on whether the per adult equivalent per month expenditures can fulfill their fundamental needs (Cost of Basic Needs poor) or the least calorie requirement per month (Caloric Poor).

*Figure 10 Nested Framework of Pakistani Households' Status of Poverty*



The goodness of fit test is conducted using the Hosmer Lemeshow (HL) stat which indicates the probable deviations from the fitted distributions underlying the model. The test statistic is estimated with the formula mentioned below:

$$G_{HL}^2 = \sum_{j=1}^{10} \frac{(O_j - E_j)^2}{E_j(1 - E_j)n_j} \quad (4.12)$$

In the equation,  $O_j$  is the number of observed cases in the  $j^{\text{th}}$  section,  $E_j$  is the number of expected cases in the  $j^{\text{th}}$  part, and  $n_j$  is the sum of observations in each  $j^{\text{th}}$  group. A significant amount of HL ( $G_{HL}^2$ ) un (4.12) shows a poor fit of the data, and vice versa. (Lemeshow & Hosmer, 1980)

For the quantile regression, the goodness of fit test is determined through the Wald test. The Wald test may assist in finding whether dependent variables are significant. This test can be utilized for both binary and continuous variables.

The formula for the Wald test is:

$$W_T = \frac{[\hat{\theta} - \theta_0]^2}{1/I_n(\hat{\theta})} = I_n(\hat{\theta})[\hat{\theta} - \theta_0]^2 \quad (4.13)$$

In the formula above,  $\hat{\theta}$  is the maximum likelihood estimator.  $I_n(\hat{\theta})$  is the Fisher information expected and evaluated at the maximum likelihood estimator (MLE). The basic aim for this test is to note the variation between  $\hat{\theta}$  and  $\theta_0$  through first finding the MLE, then finding the Fisher information expected, and finally evaluating the resultant Fisher information at the MLE.

### Descriptive Statistics

The HIES provides complete information on many economic and social factors of households. Around 24,800 households have been covered. The sample number is large enough to provide reliable results at regional and overall levels, as well as at household levels – this is particularly useful in analyzing national poverty incidence.

Table 11 List of Variables used in regression analysis

Variables	Type	Descriptions
<i>Dependent:</i>		
Poor	Dummy	People below poverty threshold. (If Poor=1)
<i>Independent:</i>		

Age	Continuous	Head of household's age
Agesq	Continuous	Square of household head's age
Hhsize	Dummy	Size of household
KP	Dummy	Khyber Pakhtunkhwa Province
Punjab	Dummy	Punjab province
Sindh	Dummy	Sindh province <sup>15</sup>
Rural	Dummy	Rural region <sup>16</sup>
Malehhead	Dummy	Male head of household
Femhhead	Dummy	Female head of household
PrimaryEduc	Dummy	Primary education attainment (If yes=1)
SecondaryEduc	Dummy	Secondary education attainment (If yes=1)
TertiaryEduc	Dummy	Tertiary education attainment (If yes=1)
UniEduc	Dummy	University education attainment (If yes=1)
Dependratio	Continuous	Dependency ratio of household
Freewateravail	Dummy	Whether can avail free water
Drainageavail	Dummy	Whether have drainage facilities
Internetaccess	Dummy	Whether have internet access
Toiletaccess	Dummy	Whether have toilet facilities
Garbagecolavail	Dummy	Whether have garbage collection facilities
stateofshelter	Dummy	Whether have adequate shelter
ReadAbility	Dummy	Whether can read in any language
Agriculture	Dummy	Whether work in agriculture
Totalrooms	Continuous	Number of rooms in the household
Livingspace	Dummy	Dwelling type
Water distance	Continuous	Distance from water source

<sup>15</sup> Balochistan is the reference category.

<sup>16</sup> Urban is the reference category

The dependent variable Poor takes on the value 1 when the person is below the poverty threshold line of 3250.28 rupees per adult equivalent per month. The chosen variables' descriptive statistics are mentioned below.

Table 12 Descriptive Statistics of Chosen Variables

Variable	Obs	Mean	Std.Dev.	Min	Max
Poor	24809	.63	.483	0	1
hhsiz	24809	6.447	3.225	1	55
age	24809	23.993	19.303	0	99
agesq	24809	948.258	1336.621	0	9801
Rural	24809	.642	.479	0	1
KP	24809	.181	.385	0	1
Punjab	24809	.475	.499	0	1
Sindh	24809	.251	.433	0	1
agriculture	24809	.018	.132	0	1
internetac~s	24809	.324	.468	0	1
garbagecol~l	24809	.216	.411	0	1
drainageav~l	24809	.6	.49	0	1
toiletaccess	24809	.875	.331	0	1
watersource	24809	.677	.468	0	1
handwashso~e	24809	.882	.322	0	1
waterdista~e	7515	1.612	.978	1	5
totalrooms	24809	2.365	1.384	1	15
livingspace	24809	.787	.409	0	1
dependratio	24809	.431	.237	0	1
malehhead	24809	.14	.347	0	1
stateofshe~r	24809	.95	.218	0	1
PrimaryEdu	24809	.105	.307	0	1
SecondaryEdu	24809	.132	.339	0	1
TertiaryEdu	24809	.047	.211	0	1
UniEdu	24809	.026	.16	0	1
ReadAbility	19534	.591	.492	0	1

This section studies the household factors that may be responsible for poverty incidences in Pakistan. These probable determinants are categorized into socioeconomic and demographic variables. With the household income and expenditure survey data for 2018/2019, the results indicate that the size of the household is negatively associated with the possibility of being poor.



The household head's gender is important when determining the poverty probability because of the long run impacts it may have. Results indicate that female headed households are more likely to be poor in both rural and urban areas. Also, higher dependency ratios mean a higher possibility of being poor. A smaller size of the household may mean lower chances of being poor and remaining in poverty because the income earner can participate in economic activities and raise incomes in the household over a length of time. This shall ultimately cause exits from poverty traps.

Access to basic facilities like garbage collection, an adequate water source, adequate living conditions, toilet systems, and drainage systems are all bound to reduce poverty. They are all significant determinants of the probability of being poor in Pakistan.

According to the most recent report on poverty in Pakistan, poverty has declined from 2001 to 2015, but the decline is slower following 2015 because of constant macroeconomic jolts and slow economic growth.

The quantile regressions show that facilities like garbage collection, toilets, drainage systems and internet access are all significant. However some other determinants are significant at certain quintiles only, such as being in the province of Punjab is significant at the 95<sup>th</sup> quantile; distance from the source of water and secondary education attainment. Living space (that is, whether the person lives in an independent place or a shared compound) is significant in the 40<sup>th</sup> and 60<sup>th</sup> quintiles whereas being a male household head is important in the 80<sup>th</sup> quantile only.

## **Empirical Results**

Inequality has mostly been described as the quality of being unequal or as a disparity in opportunity or distribution. Economically, inequality is analyzed through the lens of welfare or poverty, measuring the disparity in a populace and the resource allocation; that is, consumption, income, or other indicators of welfare or population's attribute. (Sen, On Economic Inequality, 1973) (Atkinson, 1983) (Atkinson, On the measurement of inequality, 1970)

The problems of wealth and income distribution and all related phenomena regarding poverty and inequality have gathered massive attention of social scientists, from the problems of distribution between factors of a country's income and output to the problems of an individual's or household's distribution. (Srivastav & Chatterjee, 1992) Research carried out

by Lorenz, Gini, Dalton and Pigou are among the earliest studies that analyze inequality issues, along with their measurements. Two primary dimensions when studying inequality include policy and technical dimensions. The policy dimension is related to social justice that is inherent in specific states of distribution, and the technical dimension is regarded as a topic of scientific studies and choosing adequate measures of inequality in distributional states.

Measuring alterations in inequality also assists in determining the efficiency of economic and social policies targeted at inequality reduction, along with generating necessary data to utilize inequality as a significant explanatory variable when forming such policies of intervention. (Srivastav & Chatterjee, 1992) It is this point of view, the reduction in poverty and welfare increasing impacts of reductions in income inequalities that are to undergo empirical analyzing in the ensuing chapter. Empirical analyses in this chapter include analyzing the inequalities present in household income distributions in Pakistan via the 2019 Household Income and Expenditure Survey.

Statistical methods include the Gini coefficient, Generalized Entropy Indices, and the Atkinson Indices.

### **Logistic Regression Results**

The results in Table 18 show that highly significant factors in determining the probability of being poor are: household size, being in a rural area of Pakistan, having the following facilities: internet access, garbage collection, toilets, drainage, adequate water sources, adequate hand-washing sources, the number of rooms, and the dependency ratios. Other significant factors include: the living space (whether it is in an independent living area or shared) or the state of shelter (whether it is in a self-owned or rented area).

These results will be discussed in detail in later chapters.

Table 13 Logit Regression Results

<b>Poor</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>t</b>	<b>P&gt;  t </b>	<b>[95% Conf. Interval]</b>	
<b>hhsiz</b>	-.3416794	.0164351	-20.79	0.000	-.3738915	-.3094672
<b>age</b>	-.0051922	.0061251	-0.85	0.397	-.0171972	.0068128
<b>agesq</b>	.000038	.0000848	0.45	0.654	-.0001282	.0002043
<b>Rural</b>	-1.609977	.1040991	-10.28	0.000	-1.274008	-.8659469
<b>KP</b>	-.104136	.1357532	-0.77	0.443	-.3702073	.1619353
<b>Punjab</b>	.0148581	.1187618	0.13	0.900	-.2179107	.2476269
<b>Sindh</b>	-.1926191	.1242573	-1.55	0.121	-.436159	.0509208
<b>agriculture</b>	.2115572	.2989836	0.71	0.479	-.3744399	.7975542
<b>internet</b>	1.076563	.0957464	11.24	0.000	.8889039	1.264223
<b>garbagecol.</b>	.515195	.1160134	4.44	0.000	.2878129	.742577
<b>drainage</b>	.4335801	.09866	4.39	0.000	.2402099	.6269502
<b>toilet</b>	1.031242	.1045753	9.86	0.000	.8262778	1.236206
<b>watersource</b>	.5841181	.0853615	6.84	0.000	.4168126	.7514237
<b>handwash</b>	.7025814	.1118912	6.28	0.000	.4832787	.9218841
<b>waterdist.</b>	.0180801	.0389194	0.46	0.642	-.0582006	.0943608
<b>totalrooms</b>	.4107416	.038601	10.64	0.000	.3350849	.4863982
<b>livingspace</b>	-.1733644	.0930246	-1.86	0.062	-.3556892	.0089604
<b>depratio</b>	-2.267938	.1795853	-12.63	0.000	-2.619919	-1.915958
<b>malehhead</b>	-.0095338	.1204193	-0.08	0.937	-.2455512	.2264836
<b>stateshelter</b>	.3055025	.149671	2.04	0.041	.0121528	.5988523
<b>PrimaryEdu</b>	-.0224423	.1223123	-0.18	0.854	-.26217	.2172854
<b>SeconEdu</b>	-.1920208	.1188741	-1.62	0.106	-.4250097	.0409681
<b>TertiaEdu</b>	.2769771	.1732097	1.60	0.110	-.0625077	.6164619
<b>UniEdu</b>	-.1022278	.2067051	-0.49	0.621	-.5073624	.3029067
<b>ReadAble</b>	-.0493226	.0949858	-0.52	0.604	-.2354914	.1368462
<b>_cons</b>	1.250801	.2827724	4.42	0.000	.6965771	1.805024
<b>Observ.</b>	5,900					
<b>LR chi2(25)</b>	3111.07					
<b>Prob&gt;chi2</b>	0.0000					
<b>Pseudo R2</b>	0.3980					

### Quantile Regression Results

The quantile regression has been carried out for the 20<sup>th</sup>, 40<sup>th</sup>, 60<sup>th</sup>, 80<sup>th</sup> and 95<sup>th</sup> quintiles. Here are the results.

At all quintiles, the following are significant as determinants of poverty: household size, being in the rural region, access to internet, garbage, drainage and toilet facilities, an adequate source of water, an adequate source for washing hands, the number of rooms, and the dependency ratio. The distance from the water source and a secondary education are significant at the 20<sup>th</sup> quantile only. The living space is significant at the 40<sup>th</sup> and 60<sup>th</sup> quintiles only. Being a male household head is significant at the 80<sup>th</sup> quantile. Being from the province of Punjab is significant at the 95<sup>th</sup> quantile

All results shall be discussed in greater detail in following chapters.

The Wald test results are as follows:

$$F(19, 5874) = 49.31$$

$$Prob > F = 0.0000$$

*Table 14: Wald Test Results*

Therefore, the null hypothesis that the determinants do not affect expenditure levels can be rejected.

Table 15 Quantile Regression Results

VARIABLE	(1) q20	(2) q40	(3) q60	(4) q80	(5) q95
hhsz	-0.0642*** (0.00362)	-0.0656*** (0.00315)	-0.0690*** (0.00258)	-0.0722*** (0.00322)	-0.0771*** (0.00433)
age	0.000521 (0.00107)	-0.000487 (0.00109)	-0.000106 (0.000898)	-0.000931 (0.00116)	-0.000253 (0.00183)
agesq	-9.93e-06 (1.45e-05)	1.03e-05 (1.52e-05)	5.27e-06 (1.16e-05)	1.57e-05 (1.61e-05)	5.65e-06 (2.77e-05)
Rural	-0.227*** (0.0195)	-0.233*** (0.0178)	-0.223*** (0.0171)	-0.241*** (0.0219)	-0.223*** (0.0331)
KP	-0.0117 (0.0255)	-0.0134 (0.0244)	-0.0188 (0.0226)	0.00375 (0.0311)	0.0903** (0.0377)
Punjab	-0.0178 (0.0219)	-0.00157 (0.0224)	0.00353 (0.0206)	0.0123 (0.0248)	0.114*** (0.0359)
Sindh	-0.0286 (0.0235)	-0.0330 (0.0219)	-0.0233 (0.0198)	-0.0110 (0.0234)	0.0274 (0.0321)
agriculture	0.0630 (0.0511)	0.0966 (0.0589)	0.0154 (0.0428)	0.0815 (0.0719)	0.0933 (0.130)
internetacces	0.224*** (0.0153)	0.262*** (0.0170)	0.302*** (0.0162)	0.322*** (0.0188)	0.368*** (0.0325)
garbagecolav ail	0.121*** (0.0181)	0.142*** (0.0192)	0.161*** (0.0177)	0.213*** (0.0245)	0.297*** (0.0463)
drainageavail	0.0870*** (0.0179)	0.0917*** (0.0178)	0.0891*** (0.0172)	0.0896*** (0.0219)	0.0763** (0.0308)
toiletaccess	0.143*** (0.0225)	0.139*** (0.0175)	0.169*** (0.0161)	0.156*** (0.0216)	0.156*** (0.0302)
watersource	0.0933*** (0.0175)	0.0946*** (0.0155)	0.103*** (0.0155)	0.0791*** (0.0167)	0.0682** (0.0281)
handwashsou rce	0.121*** (0.0216)	0.115*** (0.0180)	0.115*** (0.0180)	0.107*** (0.0247)	0.164*** (0.0298)
waterdistanc e	-0.0173*** (0.00667)	-0.00378 (0.00693)	-0.00671 (0.00631)	-0.0106 (0.00752)	0.0175 (0.0118)
totalrooms	0.0849*** (0.00679)	0.0868*** (0.00765)	0.103*** (0.00720)	0.121*** (0.00823)	0.159*** (0.0161)
livingspace	-0.0225 (0.0175)	-0.0285** (0.0140)	-0.0307** (0.0155)	-0.0192 (0.0178)	-0.0256 (0.0259)
dependratio	-0.444*** (0.0339)	-0.380*** (0.0298)	-0.336*** (0.0291)	-0.323*** (0.0364)	-0.360*** (0.0557)
malehead	-0.0246 (0.0218)	-0.00721 (0.0193)	-0.0206 (0.0199)	-0.0347* (0.0206)	-0.0476 (0.0397)
stateofshelter	0.116*** (0.0338)	0.0440 (0.0371)	-0.00481 (0.0265)	0.0120 (0.0247)	0.0203 (0.0369)
PrimaryEdu	-0.000683 (0.0230)	0.0105 (0.0197)	0.00275 (0.0181)	-0.0101 (0.0251)	0.00140 (0.0440)
SecondaryEd u	-0.0495** (0.0224)	-0.0164 (0.0233)	0.0102 (0.0211)	0.00535 (0.0218)	-0.00535 (0.0326)
TertiaryEdu	0.0329 (0.0299)	0.0372 (0.0297)	0.0339 (0.0290)	0.0294 (0.0356)	-0.00647 (0.0464)
UniEdu	-0.0213 (0.0309)	-0.0451 (0.0322)	-0.0223 (0.0291)	-0.0225 (0.0429)	-0.0196 (0.0580)
ReadAbility	-0.00334 (0.0172)	0.000727 (0.0152)	-0.00191 (0.0157)	-0.0194 (0.0182)	-0.0150 (0.0293)
Constant	8.099*** (0.0604)	8.314*** (0.0563)	8.452*** (0.0479)	8.671*** (0.0527)	8.740*** (0.0781)
Observations	5,900	5,900	5,900	5,900	5,900

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 16 Quantile Regression (20<sup>th</sup> Quantile) of log per capita expenditure on selected variables

<b>Logpercexp</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>t</b>	<b>P&gt;  t </b>	<b>[95% Conf. Interval]</b>	
<b>hhsiz</b>	-.0641629	.0025186	-25.48	0.000	-.0691003	-.0592255
<b>age</b>	.0005214	.0010754	0.48	0.628	-.0015868	.0026295
<b>agesq</b>	-9.93e-06	.0000149	-0.67	0.506	-.0000392	.0000193
<b>Rural</b>	-.2272272	.0181686	-12.51	0.000	-.2628444	-.1916101
<b>KP</b>	-.0116834	.0265002	-0.44	0.659	-.0636335	.0402667
<b>Punjab</b>	-.0177819	.0229422	-0.78	0.438	-.0627572	.0271933
<b>Sindh</b>	.0285666	.0232222	-1.23	0.219	-.0740907	.0169574
<b>agriculture</b>	.063007	.0544271	1.16	0.247	-.0436901	.1697041
<b>internet</b>	.2244276	.0158961	14.12	0.000	.1932655	.2555897
<b>garbagecol.</b>	.1208462	.0181329	6.66	0.000	.0852991	.1563933
<b>drainage</b>	.0869559	.0194787	4.46	0.000	.0487705	.1251413
<b>toilet</b>	.1434108	.0201711	7.11	0.000	.103868	.1829536
<b>watersource</b>	.093254	.0166188	5.61	0.000	.0606751	.1258329
<b>handwash</b>	.1212815	.021542	5.63	0.000	.0790512	.1635118
<b>waterdist.</b>	-.0172959	.0070756	-2.44	0.015	-.0311666	-.0034252
<b>totalrooms</b>	.0849243	.0060316	14.08	0.000	.0731002	.0967484
<b>livingspace</b>	-.0224814	.0163901	-1.37	0.170	-.0546121	.00996493
<b>depratio</b>	-.4444826	.0298347	-14.90	0.000	-.5029695	-.3859956
<b>malehead</b>	-.0245771	.0214869	-1.14	0.253	-.0666994	.0175452
<b>stateshelter</b>	.1161188	.0272888	4.26	0.000	.0626227	.1696149
<b>PrimaryEdu</b>	-.0006832	.0217283	-0.03	0.975	-.0432786	.0419122
<b>SeconEdu</b>	-.0495348	.021124	-2.34	0.019	-.0909457	-.0081239
<b>TertiaEdu</b>	.0328911	.0301368	1.09	0.275	-.0261881	.0919703
<b>UniEdu</b>	-.0212926	.0377283	-0.56	0.573	-.0952539	.0526687
<b>ReadAble</b>	-.0033392	.0168432	-0.20	0.843	-.0363581	.0296797
<b>_cons</b>	8.09921	.0516419	156.83	0.000	7.997973	8.200447
<b>Observ.</b>	5,900					
<b>Pseudo R2</b>	0.3401					

Table 17 Quantile Regression (40<sup>th</sup> Quantile) of log per capita expenditure on selected variables

<b>Logpercexp</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>t</b>	<b>P&gt;  t </b>	<b>[95% Conf. Interval]</b>	
<b>hhsiz</b>	-.0656253	.0024088	-27.24	0.000	-.0703475	-.0609032
<b>age</b>	0.0004872	.0010285	-0.47	0.636	-.0025034	.0015291
<b>agesq</b>	.0000103	.0000143	0.72	0.472	-.0000177	.0000383
<b>Rural</b>	-.2327322	.0173766	-13.39	0.000	-.2667968	-.1986677
<b>KP</b>	-.0134084	.025345	-0.53	0.597	-.0630939	.0362772
<b>Punjab</b>	-.001569	.0219422	-0.07	0.943	-.0445837	.0414458
<b>Sindh</b>	-.0330075	.0222099	-1.49	0.137	-.0765472	.0105321
<b>agriculture</b>	.0966336	.0520545	1.86	0.063	-.0054124	.1986797
<b>internet</b>	.261609	.0152031	17.21	0.000	.2318053	.2914127
<b>garbagecol.</b>	.1421431	.0173424	8.20	0.000	.1081456	.1761407
<b>drainage</b>	.0916668	.0186296	4.92	0.000	.055146	.1281877
<b>toilet</b>	.1391445	.0192918	7.21	0.000	.1013254	.1769636
<b>watersource</b>	.0946306	.0158944	5.95	0.000	.0634718	.1257894
<b>handwash</b>	.1150524	.020603	5.58	0.000	.0746629	.1554418
<b>waterdist.</b>	-.0037809	.0067671	-0.56	0.576	-.0170469	.0094852
<b>totalrooms</b>	.0868365	.0057687	15.05	0.000	.0755278	.0981452
<b>livingspace</b>	-.0285078	.0156757	-1.82	0.069	-.0592379	.0022223
<b>depratio</b>	-.3798106	.285342	-13.31	0.000	-.4357481	-.3238731
<b>malehead</b>	-.007214	.205503	-0.35	0.726	-.0475001	.0330722
<b>stateshelter</b>	.0440108	.0260993	1.69	0.092	-.0071533	.095175
<b>PrimaryEdu</b>	.0105078	.0207811	0.51	0.613	-.0302308	.0512465
<b>SeconEdu</b>	-.0163524	.0202032	-0.81	0.418	-.0559582	.0232533
<b>TertiaEdu</b>	.0372312	.0288231	1.29	0.197	-.0192727	.0937351
<b>UniEdu</b>	-.0451357	.0360837	-1.25	0.211	-.115873	.0256016
<b>ReadAble</b>	.0007271	.01609	0.05	0.964	-.0308525	.0323066
<b>_cons</b>	8.313839	.0493908	168.33	0.000	8.217015	8.410663
<b>Observ.</b>	5,900					
<b>Pseudo R2</b>	0.3763					

Table 18 Quantile Regression (60<sup>th</sup> Quantile) of log per capita expenditure on selected variables

<b>Logpercexp</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>t</b>	<b>P&gt;  t </b>	<b>[95% Conf. Interval]</b>	
<b>hhsiz</b>	-.0690124	.0022262	-31.00	0.000	-.0733765	-.0646482
<b>age</b>	-.0001061	.0009505	-0.11	0.911	-.0019695	.0017573
<b>agesq</b>	5.27e-06	.0000132	0.40	0.690	-.0000206	.0000311
<b>Rural</b>	-.2228827	.0160593	-13.88	0.000	-.2543648	-.1914006
<b>KP</b>	-.0188337	.0234236	-0.80	0.421	-.0647526	.0270852
<b>Punjab</b>	.0035277	.0202787	0.17	0.862	-.0362261	.0432815
<b>Sindh</b>	-.0233119	.0205262	-1.14	0.256	-.0635508	.016927
<b>agriculture</b>	.0153806	.0481083	0.32	0.749	-.0789293	.1096906
<b>internet</b>	.3022556	.0140506	21.51	0.000	.2747113	.3297999
<b>garbagecol.</b>	.1608096	.0160277	10.03	0.000	.1293894	.1922298
<b>drainage</b>	.08907	.0172173	5.17	0.000	.0553177	.1228222
<b>toilet</b>	.1688324	.0178293	9.47	0.000	.1338804	.2037844
<b>watersource</b>	.1026097	.0146894	6.99	0.000	.0738131	.1314064
<b>handwash</b>	.1146657	.0190411	6.02	0.000	.0773382	.1519933
<b>waterdist.</b>	-.006707	.0062541	-1.07	0.284	-.0189674	.0055533
<b>totalrooms</b>	.1034469	.0053313	19.40	0.000	.0929955	.1138983
<b>livingspace</b>	-.030656	.0144873	-2.12	0.034	-.0590564	-.0022555
<b>depratio</b>	-.336142	.026371	-12.75	0.000	-.3878389	-.2844452
<b>malehead</b>	-.0206219	.0189924	-1.09	0.278	-.0578539	.0166102
<b>stateshelter</b>	-.0048097	.0241207	-0.20	0.842	-.0520951	.0424756
<b>PrimaryEdu</b>	.0027547	.0192057	0.14	0.886	-.0348956	.0404049
<b>SeconEdu</b>	.0102485	.0186716	0.55	0.583	-.0263548	.0468517
<b>TertiaEdu</b>	.0339224	.026638	1.27	0.203	-.0182979	.0861427
<b>UniEdu</b>	-.0222595	.0333482	-0.67	0.504	-.0876342	.0431152
<b>ReadAble</b>	-.0019122	.0148878	-0.13	0.898	-.0310978	.0272733
<b>_cons</b>	8.451529	.0456465	185.15	0.000	8.362045	8.541013
<b>Observ.</b>	5,900					
<b>Pseudo R2</b>	0.4042					



Table 19 Quantile Regression (80th Quantile) of log per capita expenditure on selected variables

<b>Logpercexp</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>t</b>	<b>P&gt;  t </b>	<b>[95% Conf. Interval]</b>	
<b>hhsiz</b>	-.072217	.0028114	-25.69	0.000	-.0777284	-.0667056
<b>age</b>	-.0009309	.0012004	-0.78	0.438	-.0032842	.0014223
<b>agesq</b>	.0000157	.0000167	0.94	0.347	-.000017	.0000483
<b>Rural</b>	-.240743	.0202809	-11.87	0.000	-.2805009	-.200985
<b>KP</b>	.0037453	.0295811	0.13	0.899	-.0542445	.0617352
<b>Punjab</b>	.0123055	.0256095	0.48	0.631	-.0378986	.0625095
<b>Sindh</b>	-.0109867	.025922	-0.42	0.672	-.0618033	.03983
<b>agriculture</b>	.08148	.0607547	1.34	0.180	-.0376217	.2005816
<b>internet</b>	.3217698	.0177441	18.13	0.000	.2869848	.3565548
<b>garbagecol.</b>	.2125297	.020241	10.50	0.000	.1728499	.2522095
<b>drainage</b>	.0896419	.0217433	4.12	0.000	.0470171	.1322668
<b>toilet</b>	.1562091	.0225162	6.94	0.000	.112069	.2003491
<b>watersource</b>	.0790621	.0185509	4.26	0.000	.0426956	.1154287
<b>handwash</b>	.1074921	.0240465	4.47	0.000	.0603521	.1546321
<b>waterdist.</b>	-.0106227	.0078982	-1.34	0.179	-.026106	.0048606
<b>totalrooms</b>	.1210785	.0067328	17.98	0.000	.1078797	.1342773
<b>livingspace</b>	-.019246	.0182956	-1.05	0.293	-.0551122	.0166202
<b>depratio</b>	-.3233697	.0333033	-9.71	0.000	-.3886563	-.258083
<b>malehead</b>	-.0346646	.023985	-1.45	0.148	-.081684	.0123548
<b>stateshelter</b>	.0120211	.0304614	0.39	0.693	-.0476945	.0717366
<b>PrimaryEdu</b>	-.0101126	.0242544	-0.42	0.677	-.0576601	.0374349
<b>SeconEdu</b>	.0053544	.0235799	0.23	0.820	-.0408709	.0515797
<b>TertiaEdu</b>	.0293642	.0336405	0.87	0.383	-.0365836	.0953119
<b>UniEdu</b>	-.0225307	.0421146	-0.53	0.593	-.1050908	.0600293
<b>ReadAble</b>	-.0194228	.0188014	-1.03	0.302	-.0562804	.0174349
<b>_cons</b>	8.670658	.0576458	150.41	0.000	8.557651	8.783665
<b>Observ.</b>	5,900					
<b>Pseudo R2</b>	0.4250					

Table 20 Quantile Regression (95th Quantile) of log per capita expenditure on selected variables

<b>Logpercexp</b>	<b>Coefficient</b>	<b>StdError</b>	<b>t</b>	<b>P&gt;  t </b>	<b>[95% Conf. Interval]</b>	
<b>hhsiz</b>	-.0770785	.0045954	-16.77	0.000	-.0860871	-.0680699
<b>age</b>	-.0002527	.0019621	-0.13	0.898	-.0040992	.0035938
<b>agesq</b>	5.65e-06	.0000272	0.21	0.836	-.0000477	.000059
<b>Rural</b>	-.2234465	.03315	-6.74	0.000	-.2884327	-.1584604
<b>KP</b>	.0902608	.0483516	1.87	0.062	-.0045262	.1850478
<b>Punjab</b>	.1138782	.0418599	2.72	0.007	.0318173	.195939
<b>Sindh</b>	.0273788	.0423707	0.65	0.518	-.0556835	.110441
<b>agriculture</b>	.0932677	.0993064	0.94	0.348	-.1014094	.2879448
<b>internet</b>	.368091	.0290036	12.69	0.000	.3112333	.4249487
<b>garbagecol.</b>	.2967368	.0330848	8.97	0.000	.2318784	.3615953
<b>drainage</b>	.0762759	.0355404	2.15	0.032	.0066037	.1459482
<b>toilet</b>	.1557021	.0368038	4.23	0.000	.0835532	.227851
<b>watersource</b>	.068249	.0303223	2.25	0.024	.0088062	.1276917
<b>handwash</b>	.1637199	.0393051	4.17	0.000	.0866674	.2407724
<b>waterdist.</b>	.0174856	.0129099	1.35	0.176	-.0078225	.0427938
<b>totalrooms</b>	.158891	.0110051	14.44	0.000	.137317	.180465
<b>livingspace</b>	-.0255791	.0299051	-0.86	0.392	-.084204	.0330458
<b>depratio</b>	-.3601626	.0544357	-6.62	0.000	-.4668766	-.2534486
<b>malehead</b>	-.0476265	.0392046	-1.21	0.224	-.1244819	.0292289
<b>stateshelter</b>	.0203399	.0497905	0.41	0.683	-.0772678	.1179476
<b>PrimaryEdu</b>	.001398	.0396449	0.04	0.972	-.0763207	.0791166
<b>SeconEdu</b>	-.0053546	.0385425	-0.14	0.890	-.080912	.0702028
<b>TertiaEdu</b>	-.0064671	.0549869	-0.12	0.906	-.1142617	.1013275
<b>UniEdu</b>	-.0195832	.0688382	-0.28	0.776	-.1545313	.115365
<b>ReadAble</b>	-.0149833	.0307317	-0.49	0.626	-.0752288	.0452623
<b>_cons</b>	8.739641	.0942247	92.75	0.000	8.554926	8.924356
<b>Observ.</b>	5,900					
<b>Pseudo R2</b>	0.4503					

## Theoretical Framework in Measuring Inequality

There are several methods of measuring inequality in incomes and expenditures. All have mathematical and intuitive appeals.<sup>17</sup> Generally, as literature suggests, a correct measure must meet all 5 main principles: decomposability, population and size independence, the Pigou Dalton transfer principle, anonymity, and mean or scale independence.

Anonymity means the measure should not be dependent on any individual's traits, except welfare and income/expenditure. (Cowell, 1985) Secondly, the population and size independence refers to the invariance of indices of inequality to multiplications of the populace; for instance, combining two completely identical distributions must not change inequality. Also, an equal change in the households or individuals in every group must keep the indices unchanged. (Dalton, 1920) Thirdly, the mean or scale independence axiom requires that measures of inequality should remain invariant to equally proportional changes. (Anand, 1983) This means that if an individual's income/expenditure changes by equal proportions, the inequality figure should be the same.

Decomposability calls for inequality as a whole to be linked in a consistent manner to distribution's constituent parts; that is, a measure of inequality is decomposable additively if values of both between-group and within-group measures sum up to the same overall calculation. (Srivastav & Chatterjee, 1992) Finally, the Pigou Dalton principle needs the measure of inequality to increase (or not fall at all) as a response to a spread meant to preserve the mean. A transfer of income from a richer person to a poorer person (or group of people) should mean a fall in inequality measures.

It has been suggested that, in given income distributions, the inequality degree can be perceived and calculated through normative and positive measures. Nonetheless, the positive income/expenditure inequality measure means measuring the inequality with no reference to any aspects of social welfare. Contrarily, positive measures provide statistical knowledge on the proportion of income that each proportion of population holds. Therefore, the Gini coefficient is a widely used positive inequality measure. (Srivastav & Chatterjee, 1992) (Cowell F. , 1995) (Jenkins, 1991) Also, the normative measure begins from a social welfare function derived formally with effects on welfare losses and gains which result in changes in inequality. The Atkinson Index is a normative measure that captivates greater equality in income distributions as greater social welfare. (Atkinson, On the measurement of inequality, 1970)

---

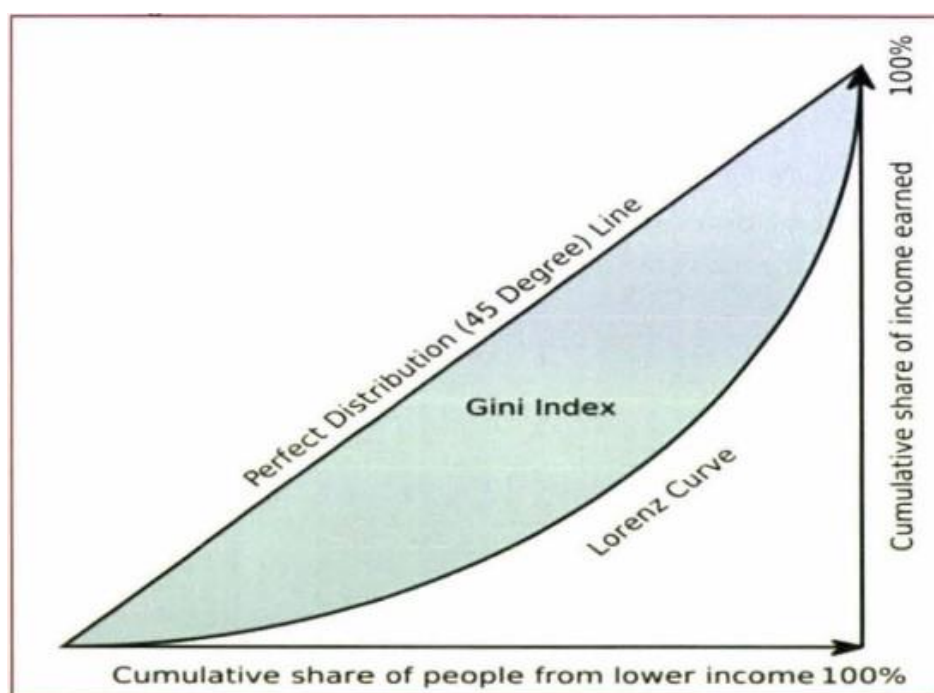
<sup>17</sup> For all twelve inequality measures, refer to Cowell's work. (Cowell, 1995)

The positive measure is the Gini coefficient and the normative measure is the Atkinson Indices. Both will be discussed in the following sections.

### The Gini Coefficient

The most used tool to study income distribution or expenditure is the Lorenz curve. The curve plots the cumulative percentage of population from the poorest proportion to the richest on the x-axis and the cumulative percentage of received income/spent expenditures received/spent by the bottommost 'x' percent of the populace on the y-axis. As demonstrated in the example of a Lorenz curve in the diagram below, a 45 degree line represents the completely equal distribution; the greater the area between the curve and the perfect equality line, the greater the resulting inequality.

*Figure 11 the Lorenz Curve*



The Gini coefficient is derived from the Lorenz curve. It is the shaded area that lies between the Lorenz curve and the line of perfect equality. The curve in question is not impacted by increasing everyone's resource allocation by a positive figure; therefore, it will not tell much about the distribution's mean. Besides this, the entire information present in the distribution is present in the Lorenz curve, given that the mean is known. This makes it possible to recover the distribution function or density from the curve. (Cowell F. , 1995) (Salvatore & Campano, 2006)

The Gini coefficient equals twice the shaded area between the perfect equality line and the Lorenz curve. (Salvatore & Campano, 2006) For instance, wherever there is perfect equality, the Lorenz curve signifies the line of perfect distribution, and the Gini coefficient becomes zero. Nonetheless, when one individual holds 100 percent of the income/expenditures, the Gini coefficient takes on a value of 1.

The Gini coefficient is considered to be the most useful tool in calculating inequality in income/expenditure. This is because the Gini coefficient does not depend on the mean and the size of the populace, and is also decomposable if the partitions don't overlap (that is, population sub-groups don't overlap in the income vectors). (Cowell F. , 1995) The Gini coefficient can also indicate the population proportion that has each proportion of income. (Srivastav & Chatterjee, 1992) (Jenkins, 1991) (Cowell F. , 1995) The coefficient also fulfills the Pigou Dalton principle. (Srivastav & Chatterjee, 1992)

There are various definitions of the Gini coefficient present in relevant literature. The form utilized in this chapter is as follows:

$$G = \sum_{i=1}^n (CP_i * CY_{i+1} - CP_{i+1} * CY_i) \quad (5.1)$$

In equation 20, G is the Gini Coefficient;  $CP_i$  is the cumulative share of population;  $CY_i$  is the cumulative share of income to the  $i$ th interval; and  $i$  represents the households.

Gini coefficients are calculated using numerical integration under the linear approximation piecewise to the Lorenz curve. It is argued widely that these methods may be the cause of underestimated inequality measures. Withal, it has been demonstrated that if the fractile groups utilized in constructing the Lorenz curve are of sufficient size, the downward bias may be smaller. (Gastwirth, 1972) Therefore, for more accurate findings, the present study uses an adequately smooth approximation to underlying functions of distribution then measures a quadratic function across interval pairs.

### **The Atkinson Indices**

Whilst positive inequality measures are needed when determining the qualities of a particular distributional arrangement, the social welfare impacts of such arrangements are of more interest when discussing policies. Atkinson Indices are one of the rare measures of inequality that explicitly include normative perspectives of social welfare. (Atkinson, On the measurement of inequality, 1970) For given incomes/expenditures, the welfare function on which the Atkinson

measure is built captivates more equality in income distribution as greater social welfare. Formulating the Atkinson Index can be written as:

$$A = 1 - \frac{Y_{EDE}}{\mu} \quad (5.2)$$

In equation 21, A is the Atkinson Index of inequality,  $Y_{EDE}$  is the notion of income distributed equally, whilst  $\mu$  is the mean income of each given distribution. Given that the index happens to be independent of mean and that each person has an equal utility function (which is the anonymity assumption at play), the Atkinson Index may also be formed as follows: (Srivastav & Chatterjee, 1992)

$$A_t = 1 - \left[ \sum_{i=1}^n \left( \frac{y_i}{\mu} \right)^{1-\varepsilon} * f_i \right]^{\frac{1}{1-\varepsilon}}, \text{ for } \varepsilon = 1 \quad (5.3)$$

In the equation above,  $A_t$  represents the Atkinson's Index;  $y_i$  is the  $i$ th group's income,  $\mu$  is the mean income of the given distribution,  $f_i$  is the population proportion in the group; and  $\varepsilon$  is the weight given to the preferences of society for equal distribution that can be between zero and infinity. The equation demonstrates that when  $\varepsilon$  is zero, society is indifferent regarding inequality; when it tends towards infinity, the society will place great concern on the inequality levels present. Choosing a representative value for  $\varepsilon$  is quite arbitrary because it mirrors the subjective judgments regarding society's concern towards inequality. (Srivastav & Chatterjee, 1992) Some have chosen values ranging from 1 to 2.5, while others opt for values between 1.5 and 2.5. (Atkinson, On the measurement of inequality, 1970) (Stern, 1977) In analyzing New Zealand's inequalities in income distribution during the year 1984, researchers chose values between 0 and 3. (Srivastav & Chatterjee, 1992) Their claim was that this wider range would allow them to consider the impacts of many states of distribution. The current study employs values between 0.5 and 2.

### **The Generalized Entropy Indices**

*The Generalized Entropy Indices* are a measure of inequality in the economy. The formula for the real  $\alpha$  values is as follows:

$$GE(\alpha) = \begin{cases} \frac{1}{N \alpha (\alpha - 1)} \sum_{i=1}^N \left[ \left( \frac{y_i}{\bar{y}} \right)^\alpha - 1 \right], & \alpha \neq 0, 1 \\ \frac{1}{N} \sum_{i=1}^N \frac{y_i}{\bar{y}} \ln \frac{y_i}{\bar{y}}, & \alpha = 1 \\ -\frac{1}{N} \sum_{i=1}^N \ln \frac{y_i}{\bar{y}}, & \alpha = 0 \end{cases} \quad (5.4)$$

In the formula,  $N$  refers to the sum of cases,  $y_i$  is the income for the  $i^{\text{th}}$  case, and  $\alpha$  is the weight regulator. The larger the  $\alpha$ , the more sensitive the formula is to larger incomes; the smaller the  $\alpha$ , the more sensitive the formula is to smaller incomes.

Where  $\alpha=0$ , the GE formula is a *mean log deviation*. When  $\alpha=1$ , the formula is a Theil index, and when  $\alpha=2$ , it is half of the square of the coefficient of variation.

Particularly, the mean log deviation takes on a value of zero when income distribution is perfectly equal. The greater the inequality, the larger the figure.

$$MLD = \frac{1}{N} \sum_{i=1}^N \ln \frac{\bar{x}}{x_i} \quad (5.5)$$

*The Theil Index* was proposed as a measure of inequality in the economy and even phenomenon like racial segregation. The formula is as follows:

$$T_T = T_{\alpha=1} = \frac{1}{N} \sum_{i=1}^N \frac{x_i}{\mu} \ln \left( \frac{x_i}{\mu} \right) \quad (5.6)$$

If income is perfectly equal in distribution,  $T_T$  will take on a value of 0. If one individual holds 100 percent of the income,  $T_T$  shall equal  $\ln(N)$ , which is the maximum amount of inequality possible in the economy. Basically,  $T_T$  will measure the distance of the populace from the equal distribution state. The *coefficient of variation* is a measure of the probability distribution's dispersion and is often stated as a percentage.

$$c_v = \frac{\sigma}{\mu} \quad (5.7)$$

The coefficient of variation completes all requirements as an inequality measure, which includes anonymity, scale invariance, population independence, and the Pigou-Dalton transfer

principle.<sup>18</sup> It equals zero when there is perfect equality; however, it is not restricted to certain numbers (like the Gini coefficient which can only be between 0 and 1).

The table above shows that, according to the mean log deviation, Punjab has the greatest inequality in income distribution. The mean log deviation, Theil Index and coefficient of variation are highest for Punjab. This is closely followed by the illiterate and female heads of households.

### The Foster-Greere-Thorbecke Indices

Also known as the Foster, Greere and Thorbecke indices, this conceptual framework was first introduced in a journal article titled ‘A Class of Decomposable Poverty Measures’ in *Econometrica* in the year 1984. Basically, it is a family of poverty metrics that revolutionized the measurement of poverty and has since become popular in economic work, especially development economics. All three metrics are a variant of the following formula:

$$FGT_{\alpha} = \frac{1}{N} \sum_{i=1}^H \left( \frac{z - y_i}{z} \right)^{\alpha} \quad (5.8)$$

In this formula:

$z$  = Poverty threshold

$N$  = number of people in the economy

$H$  = number of poor (incomes less than or equal to the poverty threshold)

$y_i$  = income of each person

$\alpha$  = weight placed on poorest individuals

There are *three* common uses of  $\alpha$  in Economics, mainly where:

$\alpha=0$ : This is where the FGT measure is a *headcount ratio*<sup>19</sup>.

$\alpha=1$ : The FGT measure is a *poverty gap index*<sup>20</sup>.

$\alpha = 2$ : The FGT measures income inequality *and* poverty<sup>21</sup>.

<sup>18</sup> Anonymity is the independence of the mean and variance from  $x$ 's ordering. Scale invariance is:  $c_v(x)=c_v(\alpha x)$ . Population independence refers to: if  $\{x,x\}$  is the list that  $x$  has appended to itself, then  $c_v(\{x,x\})=c_v(x)$ . The Pigou Dalton principle is that when wealthier people transfer their riches to the poorer, without alterations in their ranks,  $c_v$  shall decrease (and vice versa).

<sup>19</sup> The headcount ratio is the number of people who are living below the poverty threshold level.

<sup>20</sup> The poverty gap index measures how intense the poverty is; that is, the depth of the poverty.

<sup>21</sup> This measure accounts for the severity of poverty and is the most commonly used amongst poverty measures in development economics.



The most commonly used measure of these three is where  $\alpha = 2$ . This is because this is the lowest parameter to measure not only poverty but also the inequality in income.

### Assumptions and Data

The methods discussed shall be applied to analyze inequalities in household expenditures in Pakistan in 2018-2019. Calculations are based off the Household and Income Expenditure Survey conducted by the Pakistan Bureau of Statistic in 2019.

Around 1820 sample blocks (primary sampling units) and 25,940 households were surveyed. Total household expenditure is considered. Assumptions include the following: the households are classified as Punjab, Khyber Pakhtunkhwa, Sindh and Balochistan. Regions have been classified into rural and urban regions. The total expenditure has been calculated as the total expenditures per adult equivalent per month.

Household	Household Share	Mean Household Expenditures	Income Share
Punjab	0.486	4743.39121	0.52221
KPK	0.149	4264.40053	0.14419
Sindh	0.267	4264.90156	0.35817
Balochistan	0.0977	3445.04502	0.14469
Rural	0.65577	3554.30187	0.52764
Urban	0.34423	6061.76136	0.47236
Male	0.49096	4431.25108	0.49249
Female	0.50904	4404.11889	0.50751

Lastly, the cumulative parts of the population groups by expenditures and their respective shares of total expenditures. The next section shall present the inequalities' magnitudes in income distribution.

### Empirical Results

The empirical results for expenditures' inequality in Pakistan ensue.

### Within-Groups' Inequality

The coefficients mentioned are in the table below:

<b>Group</b>	<b>Gini</b>	<b>A(0.5)</b>	<b>A(1)</b>	<b>A(2)</b>	<b>GE(0)</b>	<b>GE(1)</b>	<b>GE(2)</b>
Punjab	0.33708	0.09328	0.16859	0.28473	0.18463	0.20925	0.31297
KPK	0.30539	0.07730	0.13950	0.23525	0.15024	0.17361	0.25581
Sindh	0.32094	0.08602	0.15411	0.25760	0.16736	0.19583	0.31232
Balochistan	0.23254	0.04484	0.08485	0.15512	0.08866	0.09558	0.11803
Rural	0.27051	0.06053	0.11192	0.19682	0.11869	0.13253	0.18046
Urban	0.32270	0.08622	0.15590	0.26439	0.16949	0.19352	0.28803
Male	0.32098	0.08547	0.15391	0.25907	0.16713	0.19303	0.29735
Female	0.32611	0.08811	0.15836	0.26556	0.17240	0.19908	0.30193

Households with the highest Gini coefficients are in Punjab; similarly for the Atkinson Indices and the Generalized Entropy Indices.

### Between-Groups' Inequalities

First, a table of summary statistics for five quintiles:

<b>Household</b>	<b>Household</b>	<b>Mean</b>	<b>Expenditure</b>
	<b>Share</b>	<b>Expenditure</b>	<b>Share</b>
20 <sup>th</sup> quantile (Q1)	0.2	1912.36115	0.08658
40 <sup>th</sup> quantile (Q2)	0.2	2736.77941	0.12390
60 <sup>th</sup> quantile (Q3)	0.2	3533.01475	0.15999
80 <sup>th</sup> quantile (Q4)	0.2	4757.81015	0.21540
100 <sup>th</sup> quantile (Q5)	0.2	9147.77432	0.41413

The coefficients of the inequality measures for between-group inequalities (five quintiles) is as follows:

<b>Group</b>	<b>Gini</b>	<b>A(0.5)</b>	<b>A(1)</b>	<b>A(2)</b>	<b>GE(0)</b>	<b>GE(1)</b>	<b>GE(2)</b>
Q1	0.09585	0.00836	0.01754	0.03953	0.01770	0.01600	0.01490
Q2	0.04466	0.00150	0.00300	0.00601	0.00301	0.00300	0.00299
Q3	0.04330	0.00141	0.00281	0.00560	0.00281	0.00282	0.00283
Q4	0.05679	0.00242	0.00483	0.00959	0.00484	0.00486	0.00489
Q5	0.22161	0.04521	0.08001	0.12990	0.08339	0.10371	0.15333

Here are Lorenz curves estimated for region, province, gender and quintiles:

Figure 12 Lorenz Curve for Provinces

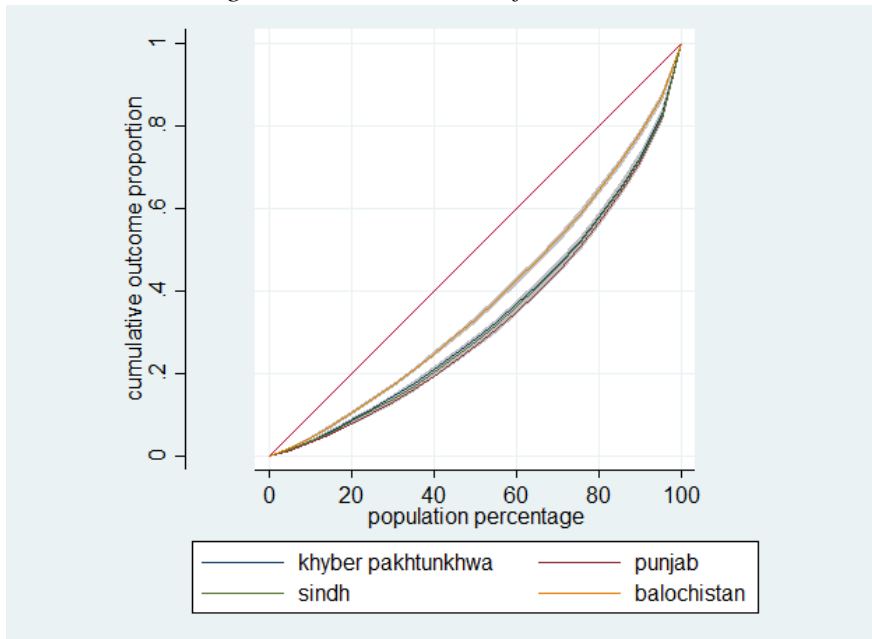


Figure 13 Lorenz Curve for Regions

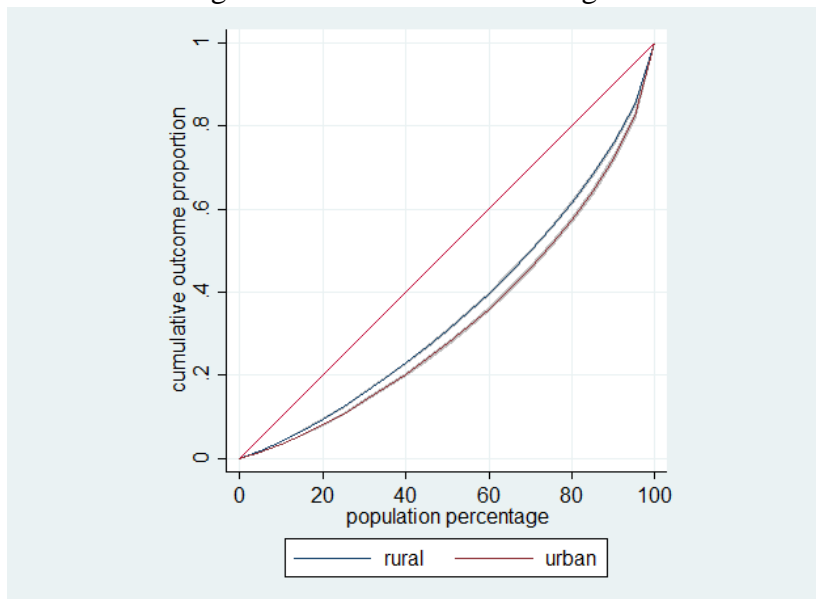


Figure 14 Lorenz Curve for Gender

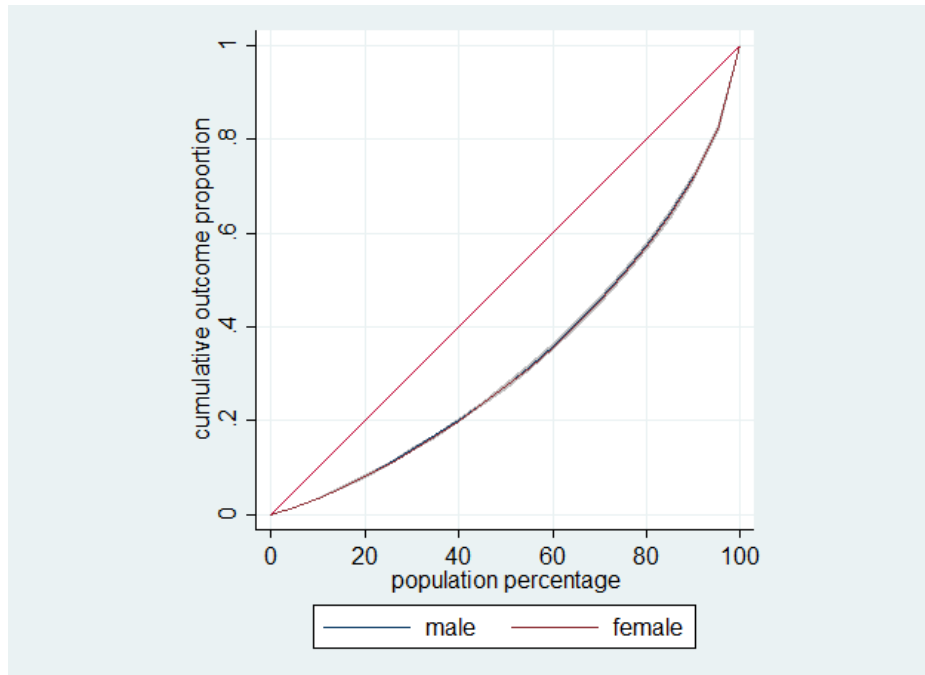
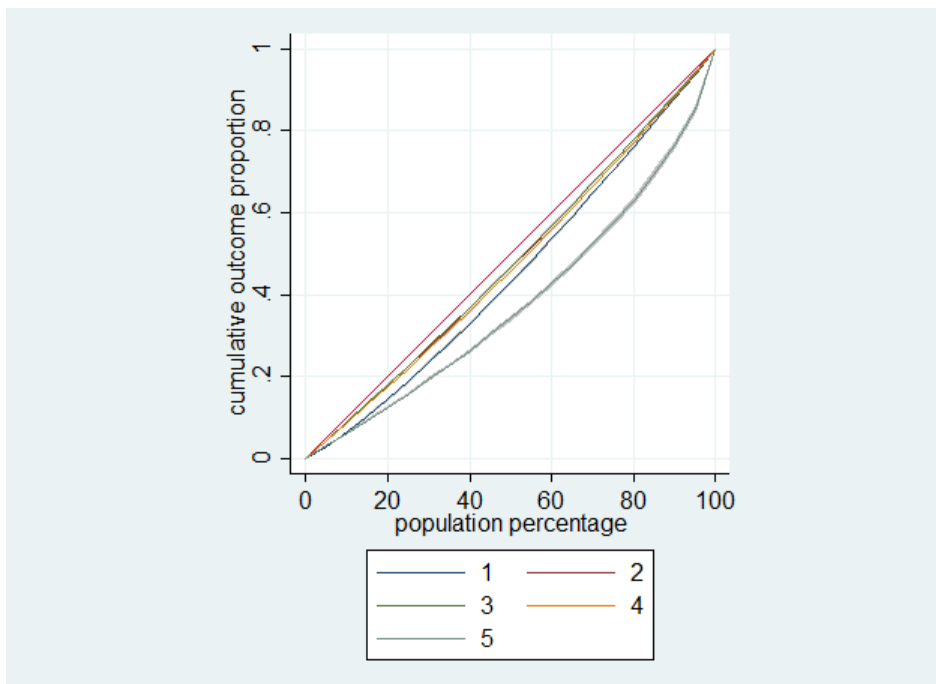


Figure 15 Lorenz Curve for Quintiles



**Foster-Greere-Thorbecke Measures**

Table 21 Foster Greere Thorbecke Measures

<b>Group</b>	<b>P<sub>0</sub></b>	<b>P<sub>1</sub></b>	<b>P<sub>2</sub></b>
Rural	0.4922	0.1285	0.0469
Urban	0.1498	0.0307	0.0097
<i>KPK</i>	0.3909	0.0920	0.0309
Rural KPK	0.4847	0.1156	0.0392
Urban KPK	0.1927	0.0420	0.0134
<i>Punjab</i>	0.3407	0.0874	0.0319
Rural Punjab	0.4486	0.1187	0.0439
Urban Punjab	0.1283	0.0260	0.0084
<i>Sindh</i>	0.3907	0.1015	0.0369
Rural Sindh	0.5728	0.1544	0.0572
Urban Sindh	0.1435	0.0297	0.0094
<i>Balochistan</i>	0.4729	0.1130	0.0390
Rural Balochistan	0.5612	0.1400	0.0497
Urban Balochistan	0.2718	0.0516	0.0146
Male	0.3658	0.0915	0.0327
Female	0.3749	0.0959	0.0346
Rural Male	0.4835	0.1249	0.0456
Urban Male	0.1545	0.0315	0.0097
Rural Female	0.5005	0.1320	0.0482
Urban Female	0.1452	0.0299	0.0096

The previous chapter managed to discuss Pakistan's expenditure distribution in households during the year 2018/2019. Empirically, Pakistan has yet to attain zero gaps between the richest and poorest households in the multiple regions and provinces. The results also indicate that Pakistan has not yet been able to achieve the SDG goal of eliminating poverty completely, but there is still time to attain this goal.

Urban households face larger inequalities in normative and positive terms. The expenditure distribution within quintiles is also highly unequal. Within provinces, Punjab has the highest inequality. The richest 20 percent face the most inequality in expenditures. The Gini coefficient, which is a summary measurement for the whole statistical populace, shows conspicuous differences that are yet to be eliminated. Decomposing the overall indices into factor components of expenditure also shows major inequality sources.

Any future policies must take all these results into consideration when tackling income or expenditure inequalities. The results indicate the inherent weaknesses in the argument that the size of the cake in question matters as compared to how the cake ends up being distributed.

## **Conclusion and Implications on Policy-Making**

The study has managed to empirically investigate the social and economic determinants for reducing poverty, examine the effects of the availability of facilities, the size of the household, and education on reducing poverty, and analyze the inequalities in households' expenditures in Pakistan with the help of the Household and Income Expenditure Survey for 2018-2019. When doing this, many hypotheses have been tested with the dataset. The analysis has many significant areas for Pakistan. In the theoretical view, it lends to understanding how poverty is measured and defined, and the traits that lead to poverty incidence. With a practical view, the empirical results gathered in the research work draw an entire roadmap of ways in which poverty may be ameliorated and where policies of the future can be targeted to deal with poverty in Pakistan in a better manner.

Many economic tests and techniques have been used in the study to analyze the many social and economic hypotheses of inequalities in expenditures and poverty itself. The empirical findings with the underlying problems and implications shall be highlighted in the following sections.

The aim of this study was to analyze the economic and social determinants for reducing poverty and to study the effects of these determinants on reducing poverty and inequalities in income

in Pakistan's context. Chapter 1 provided a background to the motivation behind the research, along with the significance and objectives of the poverty analysis.

Section 2 looked at the measurement, determinant and definition of poverty, and the connection between the determinants and reducing poverty. The review also notes that poverty happens to be multidimensional in nature. To understand the concept, we need to understand wellbeing and deprivation. From the physiological point of view of deprivation, people are poor if they experience a dearth of shelter, clothing and food. However, the sociological point of view notes that poverty exists as barriers in the structure. These barriers prevent access by the poor to external and internal assets (like infrastructure, education and credit).

The study also investigates poverty causes at two primary levels, which is in accordance with the relevant literature. At the national level, poverty incidence is higher in those countries with poorer economic portrayal, poorer government systems, and hostile climates. At household levels, people's characteristics (the age, ethnicity, gender and level of education) and the traits of the household (such as the size, dependency ratio and facilities) are correlated with poverty incidence. The chapter also discovers that empirical and theoretical connections between the determinants and poverty incidence, at both national and household levels, are significant.

With the constant economic hurdles, on both macro and microeconomic levels, section 3 gives a general overview of Pakistan's economy by studying the country's economic and social indicators, and giving an evaluation of Pakistan's participation in the SDGs. The chapter also shows that the social and economic issues developed through the impacts of a series of infamous political disasters, external and internal shocks, and a dearth in economic activities have caused several people to lose their livelihoods and sliding into poverty or on the brink of poverty. Even though there have been several improvements in all sectors, there are still issues for Pakistan in meeting the SDGs.

Section 4 scrutinizes the determinants of poverty in Pakistan at the household level. A group of many social, demographic and economic variables is taken from the 2019 Household and Income Expenditure Survey for more than 24 thousand households. Both the logit and the quantile regression techniques have been chosen given their respective uses to study determinants of household poverty in both probabilistic and quintile terms. Empirically, it is shown that female headed, facility-deficit, high dependency ratio, and lower education levelled households tend to be poorer. The results are necessary for better targeted and effective policies to alleviate poverty.

The education level of the household head is significant at the 20<sup>th</sup> quantile, which is in support of results of studies on determinants of poverty. (Gregory & Meng, 2007) (Bibi, Shahnaz, & Khalid, 2005) (Sarwar, Awan, & Malik, 2008) (Sanyal, Gan, & Mok, 2007) On an overall basis, the determinants mentioned in chapter 4 are mostly found as statistically significant, which makes it important for sound and efficient policy-making for alleviating poverty.

Measuring inequality assists in determining the efficiency of economic and social policies targeted at poverty reduction. Chapter 5 studies the nature of Pakistan's household expenditure distribution in 2018/2019 via application of statistical methods such as: Gini coefficients, Atkinson Indices, Generalized Entropy Indices, and Foster-Greene-Thorbecke measures. Results indicate that Pakistan has a lot to tackle in reducing gaps in expenditures between the various quintiles, provinces, regions and genders. These results' implications mean that, at this rate, Pakistan will not be able to achieve its part of the SDGs.

While Punjabi households experience greater inequalities than other households, urban households also experience more inequality when compared to rural households. Expenditure distribution within households in urban areas is also less equal than those in rural regions. All in all, the results obtained in the research emphasize on the main issues in enabling the forming of many policies to improve and support the poverty amelioration programs.

The empirical findings found in this work emphasize a number of primary ammunitions that may be supplemented in fighting off poverty. This section provides policy implications and recommendations of the research work centered on crucial areas of policies, such as targeting and integration, promoting human capital, avoiding isolation, promoting job creation, and redistributing income.

#### *Targeting and integration*

To completely eliminate poverty prevailing in Pakistan, there is no single panacean policy. Therefore, alleviating poverty should be integrated into both central and provincial policies for development to let the policy truly provide for the poorest. This integration is further encouraged by Pakistan's social and economic difficulties and the poverty incidence in urban and rural sectors all being interconnected. This strategy of integration to alleviate poverty also conform to the approach of the Asian Development Bank (ADB). This approach offered three primary pillars consisting of: social development, good governance, and sustainable economic growth. Particularly, it emphasized that this strategy would fail without proper commitment and the government's own political will (both central and provincial). This view is propagated by others as well that if the government chooses not to commit to reducing



poverty, reduced poverty will happen slowly or not at all. (Racelos, Pernia, Deolalikar, Brilantes, & Gaiha, 2002)

With the important role of the government and proper governance, targeting appears to be the first step towards strategies of alleviating poverty. This happens because it provides the inputs for forming adequate policies to directly impact the poorest group's needs. The primary reason for this policy targeting is to give a safety net for the support of vulnerable households in large communities. The policy also intends to prevent resources' misallocation (financial and others) to provide support to the poorest. Additionally, exceptional attention must be given to those households (which were determined in chapter 4) that are female-headed with little access to proper facilities, limited education, large household sizes, and large dependency ratios.

#### *Promotion of Access to Basic Facilities*

When the most vulnerable and underprivileged people are taken care of in a proper manner by targeted programs, the second important step in ameliorating poverty must be in promoting access to the most basic of facilities. This necessity to encourage facilities is very important to help the poor in raising their living standards. Due to lack of accessibility to such facilities, society becomes marginalized, powerless and voiceless. For instance, access to proper sanitation and toilet facilities can greatly benefit the marginalized women of lesser developed countries. (Reilly, 2016)

Accessing internet facilities can greatly encourage communication and transferring knowledge and information from and to the poorest and most vulnerable in society. (Kenny, 2002) The internet has a potential powerful role in indirectly supporting efforts to alleviate poverty via more effective governance systems and encouragement in export opportunity, for instance. The internet is a strong tool to transfer information; for instance, changing from facsimile to emails may reduce costs of sending over 10 thousand pages from Mozambique to America by over 80 percent. (World Bank, 1998) Also, the internet can be powerful in assisting the poorest when accessing the information available on the internet. In Sri Lanka, for example, a project by UNESCO, the Sri Lanka Broadcasting Corporation, the Ministry of Posts, and the Telecom Regulatory Commission used radio as a medium between the internet and rural residents. A use of this interface for one hour each day was able to overcome language barriers by non-native English speakers. The internet may also be a distribution network amongst various broadcasters.

#### *Household size*

Household size is significant as well; it has long been determined that larger families usually result in more poverty. (Ravallion & Peter, Poverty and Household Size, 1995) It has been noted that for those who are on the brink of poverty are bound to decrease their welfare even further if they have more children or additions to their family. (Musgrove, 1980) This is why the dependency ratio is significant as well. As the number of dependent people increase and the number of income-earners decrease proportionally, there will be a fall in overall welfare. Fewer resources will be spread over more people, eventually causing tightened conditions and inaccessibility to the most basic of facilities.

#### *Hand-washing and sanitation*

There has been evidence of washing hands and reduced poverty through the indirect link of positive effects on health and ultimately on poverty levels. The WASH poverty index has been constructed solely for this purpose. (Foguet & Garriga, 2013) Providing proper sanitation, including hand-washing stations and agents, has become a top global priority in alleviating poverty. Adequate tools for evaluation are required to calculate performances and determine the poorest areas. Many recent policies have been ineffective because they have been too simplistic, not holistic enough, and do not consider inequalities in the provision of these services.

#### *Rural Poverty*

Poverty in rural areas is known to be higher than that in urban areas; it is expected that this trend will continue. (Macours & Swinnen, 2008) Therefore, focusing on the rural region is vital for any good poverty alleviation strategy. Policies that attempt to tackle this gap between urban and rural regions are highly encouraged, along with accounting for structural barriers in rural areas. Additionally, the Punjab region seems to be significant regarding income inequality, therefore it should be especially handled. Rural poverty will most probably not decrease unless there are policies introduced to assist their transition to better living standards. Perhaps there can be improved deliveries, health and education services, and inclusivity (such as encouraging women's participation) in rural areas.

#### *Dependency ratios*

Dependency ratios have known to be highly correlated to poverty status. Households are more likely to be poorer if they have higher dependency ratios. (McCulloch & Baulch, 1998) Also, higher dependency ratios lower the potential of earning related to necessities and thus raising the poverty risks. Especially with larger household sizes, larger dependency ratios appear to be vulnerable to sliding back into poverty; if the person is already in poverty, he will

find it more difficult to escape it. It should be mentioned that though this ratio will increase the stakes of someone becoming poor, it will not significantly impact its chances of appearing from poverty at the current poverty line. In various studies, the dependency ratio is shown to be significant and inversely related to per capita expenditures/incomes. (Udofia & Etim, 2013) (Lipton, 2012) (Hassan, Malik, & Chaudhry, 2009) (Shepherd, Moore, Hulme, & Bird, 2002) (Hossain, Poddar, Sattar, Ara, & Barkat, 2003) (Dava, Mukherjee, Simler, & Datt, 2000)

### *Income Distributions*

Policies regarding income distribution and taxation must be reviewed. As both urban and rural households are significant statistically, there shall be advantages to redistributing incomes. Also, it will be specifically advantageous for urban households as their inequalities are higher than rural households. A major implication of this bias in regions inherently present in the distributions is that policies targeted at attaining more equality would be more successful by making the urban populace a priority.

Conclusively, all policies and strategies mentioned above will be advantageous for the poor. Withal, these policies will not give such impacts if the governance system does not support them. Commitment by the government and political willpower are prerequisites for policy implementation. If these are lacking, policies shall be ineffective and the poor may end up becoming even poorer.

This research work gives quantitative approaches in poverty research in Pakistan. To captivate the qualitative features of poverty, the participation method should be encouraged. This can be done through personal interviews, as compared to questionnaires. This will help get the thoughts and feelings of the interviewee about the subject being researched. It is advantageous because it will give an entire image of poverty for the creation of poverty reduction strategies. Albeit for the appreciation of all dimensions of poverty in researched areas, this type of research can be supported via sufficient resources (money, skills and time).

Combining both quantitative and qualitative methods is important as poverty is multidimensional in nature; it has both material and non-material features. Combining both will depict poverty's effects on human lives wholly. This study has been more focused on the household level, although it would be fascinating to investigate governments and their policies in forming poverty or encouraging poverty impacts for both rural and urban households.

As rural people residing with higher dependency ratios seem to be suffering more from poverty, it is advised to focus future strategies to focus on the specific locations where poverty

is most concentrated by developing quantitative and qualitative methods to allow practical and direct advantages to be gained.

It is requested to conduct follow up researches to look into the policy recommendations. This study has its limitations and it is suggested to continue to cover all aspects of Pakistan's national plans on reducing poverty; more research is vital to observe how poverty-ridden people and areas are benefitting from policies and strategies recommended and implemented.

## References

- Abdullah. (2003). Women empowerment and intrahousehold resource allocation through microfinance: Thesis. Birmingham, UK: University of Birmingham.
- Adejola, A. D., Babatunde, R. O., & Olorunsanya, E. O. (2008). Assessment of rural household poverty: Evidence from South-western Nigeria. *American Eurasian Journal of Agricultural and Environment Science*, 3(6), 900-905.
- Ahmed, M., & Sikander, M. U. (2008). Household Determinants of Poverty in Punjab: A Logistic Regression Analysis of MICS (2003-04) Data Set. In *8th Global Conference on Business & Economics* (pp. 1-41).
- Alcock, P. (1997). *Understanding Poverty*: Book. London, UK: Macmillan Press.
- Alkire, S. (2002). *Valuing Freedom: Sen's Capability Approach and Poverty Reduction*. Oxfordshire, England: Oxford University Press.
- Amjad, R., & Kemal, A. (1997). Macroeconomic policies and their impact on poverty alleviation in Pakistan. *The Pakistan Development Review*, (pp. 39-68).
- Anand. (1983). *Inequality and Poverty in Malaysia*. Book. New York, USA: Oxford University Press.
- Anderson, & Bowan. (1963). *Concerning the Role of Education in Development*. Book. New York, USA: Free Press.
- Anwar, T. (1996). Structural adjustment and poverty: The Case of Pakistan. *The Pakistan Development Review*, (pp. 911-926).
- Arif, & Qureshi. (2001). *Profile of Poverty in Pakistan*. Report. Islamabad, Pakistan. *Institute of Development Economics*.
- Arif, G., & Haq, N. H. (2001). *Rural non-agriculture employment and poverty in Pakistan*. Report. Islamabad, Pakistan: *Pakistan Institute of Development Economics*.
- Ashraf, M. A. (2017). *Poverty and its Alleviation: The Case of Pakistan*. Book Section: *Intechopen*, (pp. 49-61).
- Ashraf, M. A. (2017). *Poverty and Its Alleviation: The Case of Pakistan*. Book Section: *INTECH*, (pp. 49-61).
- Asian Development Bank. (2002). *Poverty in Pakistan: Issues, Causes and Institutional Responses*. Report. *Asian Development Bank*.

- Atkinson. (1970). On the measurement of inequality. *Journal of Economic Theory*, (pp. 244-263).
- Atkinson. (1983). *The Economics of Inequality*. Book: Oxford, England: Clarendon Press.
- Barr. (2005). *Making Poverty History: Different approaches to addressing issues of poverty and development*. Book. Suva, Fiji. STAR Printery.
- Bassett, & Koenker. (1978). Regression Quantiles. *Econometrica: Journal of the Econometric Society*, (pp. 33-50).
- Baulch, & McCulloch. (1997). Distinguishing the chronically poor from the transitory poor. Report. Sussex, England: *Institute of Development Studies*.
- Baulch, & Minot. (2005). Poverty mapping with aggregate census data: what is the loss in precision? *Review of Development Economics*, (pp. 5-24).
- Becker. (1975). *Human Capital: A theoretical and empirical analysis, with special reference to education*. New York, USA: National Bureau of Economic Research.
- Bibi, Shahnaz, & Khalid. (2005). Determinants of poverty in Pakistan. *The Lahore Journal of Economics*, (pp. 65-81).
- Bourguignon, & Morrisson. (2002). Inequality among World Citizens: 1820-1992. *The American Economic Review*, (pp. 727-744).
- Chambers. (1994). The origins and practice of PRA. Report. *World Development*.
- Cheema, I. (2005). A profile of poverty in Pakistan. Islamabad, Pakistan. Report. *Centre for Research on Poverty Reduction and Income Distribution Planning Commission*.
- Cowell. (1985). Measures of distributional change. Report. *Review of Economic Studies*, (pp. 135-151).
- Cowell, F. (1995). *Measuring Inequality*. Report. Harvester, Missouri, US: Hemel Hempstead.
- Dalton, H. (1920). The Measurement of the Inequality of Incomes. *Economic Journal*, (pp. 348-361).
- Dava, Mukherjee, Simler, & Datt. (2000). Determinants of Poverty in Mozambique. Report. Washington, USA: *International Food Policy Research Institute*.
- Deaton. (1997). *The Analysis of Household Surveys*. Report. Maryland, USA. The John Hopkins University Press.
- Deaton, A., & Case, C. (2003). Consumption, health, gender and poverty. Report. *World Bank*.
- Denison. (1962). The source of Economic Growth in The US. Report. New York, USA. *Committee for Economic Development*.
- Dessallien. (1998). *Review of Poverty Concepts and Indicators*.
- Durlauf, & Bernard. (1996). Interpreting tests of the convergence hypothesis. *Journal of Econometrics*, (pp. 161-173).
- Ego, Opolot, Okello, & Abuka. (2007). Determinants of poverty vulnerability in Uganda. Report. *Institute for International Integration Studies*.
- Ellis. (2000). *Rural Livelihood and Diversity in Developing Countries*. New York, USA. Oxford University Press.

- European Commission. (2001). Joint inclusion. *EC*.
- Ferebaugh, & Goesling. (2004). The trend in international health inequality. *Population and Development Review*, (pp. 131-146).
- Foguet, & Garriga. (2013). Unravelling the linkages between water, sanitation, hygiene and rural poverty. *Water Resources Management*, (pp. 1501-1515).
- Foster, & Basu. (1998). On Measuring Literacy. *Economic Journal*, (pp. 1733-1749).
- Gastwirth. (1972). The estimation of the Lorenz curve and the Gini index. *Review of Economics and Statistics*, (pp. 306-316).
- Gini, C. (1912). Variability and Mutability. Bologna, Italy.
- Gittleman, & Wolfe. (1993). The role of education in productivity convergence: does higher education matter. Amsterdam, Netherlands. *Elsevier Science Publishers*.
- Gounder. (2005). Neglected dimensions of development. *International Journal of Social Economics*, (pp. 60-76).
- Gounder. (2007). Economic and social sector development for poverty reduction in Fiji. *Fijian Studies*, (pp. 237-261).
- Gounder. (2007). Poverty eradication through livelihood strategies and aid. *Poverty, Poverty Alleviation and Social Disadvantage*, (pp. 1188-1212).
- Gounder. (2007). Strengthening Fiji's national poverty policies in the context of regionalism. *Pacific Economic Bulletin*, (pp. 91-103).
- Government, P. (2014). Economic Survey. Report. Islamabad, Pakistan. *Ministry of Finance*.
- Gregory, & Meng. (2007). Urban poverty in China and its contributing factors. *Review of Income and Wealth*, (pp. 167-189).
- Griliches. (1957). Hybrid Corn: an exploration in the economics of technological change. *Econometrica*, (pp. 501-522).
- Griliches. (1964). Research expenditure, education, and the aggregate agricultural production function. *American Economic Review*, (pp. 961-974).
- Griliches. (1970). Notes on the role of education in production functions and growth accounting. New York, USA: *Columbia University Press*.
- Grootaert. (1997). The determinants of poverty in Cote d'Ivoire in the 1980s. *Center for the Study of African Economies*, (pp. 169-196).
- Gujarati. (1995). Basic Econometrics. Book. New York, USA. *McGraw Hill*.
- Gujarati. (1999). Essentials of Econometrics. Book. New York, New York. *McGraw Hill*.
- Habyarimana, Zewotir, & Ramroop. (2015). Determinants of Poverty of Households in Rwanda: An Application of Quantile Regression. *Journal of Human Ecology*, (pp. 19-30).
- Hassan, Malik, & Chaudhry. (2009). The Impact of Socio-economic and Demographic Variables on Poverty. *The Lahore Journal of Economics*, (pp. 39-68).
- Hemmer, & Wilhelm. (2000). Fighting Poverty in Developing Countries. Berlin, Germany. *Peter Lang*.
- Hentschel, Coudouel, & Wodon. (2001). Well Being Measurement and Analysis. Report. *Poverty Reduction Strategy Sourcebook*.

- Hoeven, & Anker. (1994). Poverty Monitoring. New York, USA. *St Martin's Press*.
- Hossain, Poddar, Sattar, Ara, & Barkat. (2003). Chronic Poverty Among Older People in Bangladesh. Report. *Human Development Research Center*.
- IMF, & IDA. (2001). Interim Poverty Reduction Strategy Paper. Report. *Joint Staff Assessment*.
- Islam, N. u. (1996). Poverty and Human Development: Pakistan. Report. *UNDP*.
- Jenkins. (1991). The measurement of income inequality. In Osberg, Readings on Economic Inequality (pp. 133-150). New York, USA. *Sharpe ME*.
- Jolliffe, & Datt. (1999). Determinants of poverty in Egypt. Washington, USA: *International Food Policy Research Institute*.
- Jong, N. D., Kimenyi, Mwabu, & Geda, A. (2005). Determinants of Poverty in Kenya: a household level analysis. Report. Connecticut, USA. *University of Connecticut*.
- Kenny. (2002). The Costs and Benefits of ICTs for Direct Poverty Alleviation. *World Bank*.
- Kim, & Serino. (2011). How do international remittances affect poverty in developing countries? A quantile regression analysis. *Journal of Economic Development*, (pp. 17-40).
- Krueger. (1968). Factor endowments and per capita income differences among countries. *Economic Journal*, (pp. 641-659).
- Lanjouw, & Lanjouw. (2001). The rural non farm sector: issues and evidence from developing countries. *Agricultural Economics*, (pp. 1-23).
- Ledarchi. (2007). The Monetary Approach to Poverty. In S. e. al., Defining Poverty in the Developing World (pp. 36-54). UK: *Antony Rowe Limited*.
- Lemeshow, & Hosmer. (1980). Goodness of fit tests for the multiple logistic regression model. *Common Statistic Theory Methods*, (pp. 1043-1069).
- Liem. (1986). Policies and priorities in human resources development for Asia and the Pacific. Report. *UN*.
- Lipton. (2012). Labor and Poverty. Report. *The World Bank*.
- Litchfield, & Justino. (2003). Welfare in Vietnam during the 1990s, inequality and poverty dynamics. Sussex, England: *Poverty Research Unit at Sussex*.
- Lorenz, M. O. (1905). Methods of Measuring the Concentration of Wealth. *Publication of the American Statistics Association*, (pp. 209-219).
- Macarov, & Dixon. (1998). *Poverty: A Persistent Global Reality*. New York, USA: Routledge.
- Macours, & Swinnen. (2008). Rural Urban Poverty Differences in Transition Countries. *World Development*, (pp. 2170-2187).
- Madge, & Brown. (1982). *Despite the Welfare State*. London, England: *Heinemann*.
- Malik. (1996). Determinants of rural poverty in Pakistan. *The Pakistan Development Review*, (pp. 171-187).
- Malik, S. (1992). Rural poverty in Pakistan. *The Pakistan Development Review*, (pp. 975-995).

- Martin, S. i. (1996). The classical approach to convergence analysis. *Economic Journal*, (pp. 1019-1036).
- Maxwell, S. (1999, February). The Meaning and Measurement of Poverty. Report. *Overseas Development Institute*
- McClelland. (1966). Theory and the International System. Book. Chicago, US: *Macmillan*.
- McCulloch, & Baulch. (1998). Being Poor and Becoming Poor: Poverty Status and Poverty Transitions in Rural Pakistan. IDS Working Paper. *IDS*.
- Miguel, & Kremer. (2004). Worms: identifying impact on education and health in the presence of treatment externalities. *Econometrica*, (pp. 159-217).
- Mincer. (1974). Schooling, Experience and Earnings. New York, USA: *Columbia University Press*.
- Ministry of Planning Development and Reform. (2016). National Poverty Report. Report. *Ministry of Planning Development and Reform*.
- Musgrove. (1980). Household Size and Composition, Employment and Poverty in Urban Latin America. *Economic Development and Cultrual Change*, (pp. 249-266).
- Mwabu, Jong, Kimenyi, & Geda. (2005). Determinants of poverty in Kenya. Repor. *University of Connecticut*.
- Naidu. (2001). Opening doors to more inclusive societies. Philippines. *ADB*.
- Narsey. (2008). The Quantitative Analysis of Poverty in Fiji. Suva, Fiji: *Vanuavou Publications*.
- Nguyen, & Dowrick. (1989). OECD Comparative Economic Growth 1950-1985. *American Economic Review*, (pp. 1010-1030).
- Okidi, McKay, & Lawson. (2006). Poverty persistence and transitions in Uganda. *Journal of Development Studies*, (pp. 1225-1251).
- Oorschot, & Halman. (1999). Popular perception of poverty in Dutch society. Working Paper. *Tilburg University*.
- Peasle. (1965). Elementary Education as a pre requisite for economic growth. *International Development Review*, (pp. 19-24).
- Peasle. (1967). Primary school enrolment and economic growth. *Comparative Education Review*, (pp. 57-68).
- Pigou, A. C. (1912). Wealth and Welfare. London, England: *Macmillan*.
- Prasad, & Kumar. (2007). Poverty in Fiji: analysis, trends and causes. *Poverty, Poverty Alleviation and Social Disadvantages*, (pp. 1161-1187).
- Pretesch, & Narayan. (2002). Voices of the Poor from Many Lands. New York, USA: *The World Bank*.
- Quibria, & Pernia. (1999). Poverty in developing countries. *Handbook of Regional and Urban Economics*, (pp. 1865-1934).
- Qureshi, S., & Arif, G. (1999). Profile of poverty in Pakistan 1998-9. Islamabad, Pakistan. *Pakistan Institute of Development Economics*.
- Racelos, Pernia, Deolalikar, Brilantes, & Gaiha. (2002). Poverty reduction and the role of institutions in developing Asia. Report. *Asian Development Bank*.



- Rademacher, Narayan, Patel, Schafft, & Schulte. (2000). *Voices of the Poor: Can Anyone hear Us?* Washington, USA: *The World Bank*.
- Ravallion. (1996). Issues in measuring and modeling poverty. Report. *Development Research Group*.
- Ravallion. (1998). Poverty Lines in Theory and Practice. Report. *Policy Research Working Paper*.
- Ravallion, & Peter. (1995). Poverty and Household Size. *The Economic Journal*, (pp. 1415-1434).
- Reilly. (2016). From toilet insecurity to toilet security: creating safe sanitation for women and girls. Report. *Wiley Interdisciplinary Reviews: Water*.
- Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*. Book. England. *John Murray*.
- Romer, D., Weil, D., & Mankiw, G. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, (pp. 407-437).
- Romer, P. (1990). Endogenous Technological Change. *Journal of Political Economy*, (pp. 71-102).
- Rosen. (1992). Distinguished fellow: Mincering labour economics. *Journal of Economic Perspectives*, (pp. 157-170).
- Ruuten, & Kruijck. (2007). *Vulnerability and poverty dynamics in the Maldives*. Netherlands. *IIDE*.
- Sachs. (2005). *The end of poverty: Economic possibilities for our time*. New York, USA: *The Penguin Press*.
- Saith, Stewart, & Laderchi. (2003). Does it Matter that we do not Agree on the Definition of Poverty? A Comparison of Four Approaches. *Oxford Development Studies*, (pp. 243-274).
- Salvatore, & Campano. (2006). *Income Distribution*. New York, USA: *Oxford University Press*.
- Sanyal, Gan, & Mok. (2007). The determinants of urban household poverty in Malaysia. *Journal of Social Sciences*, (pp. 190-196).
- Sarwar, Awan, & Malik. (2008). Impact of Education on Poverty Reduction. Paper. Rothenburg, Germany: *European Applied Business Research*.
- Schultz. (1961). Investment in human capital. *American Economic Review*, (pp. 1-15).
- Seleka, & Lekobane. (2018). Determinants of household welfare and poverty in Botswana. *Journal of Poverty*, (pp. 42-60).
- Sen, A. (1973). *On Economic Inequality*. Oxford, England. *Clarendon Press*.
- Sen, A. (1985). *Commodities and Capabilities*. Amsterdam, Netherlands: *North Holland*.
- Sen, A. (1999). *Development as Freedom*. New Delhi, India: *Oxford University Press*.
- Shah, Chamber, Petesch, & Narayan. (2000). *Voices of the Poor: Crying Out for Change*. Washington: *The World Bank*.
- Shepard, & Max. (1989). Productivity loss to deformity from leprosy in India. *International Journal of Leprosy*, (pp. 476-482).

- Shepherd, Moore, Hulme, & Bird. (2002). Chronic Poverty and Remote Rural Areas. Manchester, England: *CPRC Working Paper*.
- Silva. (2008). Micro-level determinants of poverty reduction in Sri Lanka. *International Journal of Social Economics*, (pp. 140-158).
- Smith, & Todaro. (2006). Economic Development. Book. New York, USA: *Pearson Education Limited*.
- Smith, A. (1776). An Inquiry into the Nature and Causes of the Wealth of Nations. Book. London: *Strahan and Cadell*.
- Solow, R. (1956). A contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, (pp. 65-94).
- Sparrow, Sayed, Saadah, Pradhan, & Lanjow. (2001). Poverty education and health in Indonesia. Report. *World Bank*.
- Spicker. (1993). Poverty and Social Security. New York, USA: *Routledge*.
- Srivastav, & Chatterjee. (1992). In Inequalities in New Zealand's personal income distribution. Report. Massey: *Social Policy Research Centre*.
- Stern. (1977). Welfare Weights and the Elasticity of the Marginal Valuation of Income. In Nobay, & Artis, *Current Economic Problems* (pp. 329-346). Oxford, England: *Basil Blackwell*.
- Stewart, Harris-White, & Saith. (2007). Defining Poverty in the Developing World. In Stewart, Harris-White, & Saith, *Defining Poverty in the Developing World* (pp. 1-35). United Kingdom: *Anthony Rowe*.
- Stryker, J. (2001). Common diagnostic framework for poverty reduction. Book. London, England: *Pluto Press*.
- Tanis, & Hogg. (2001). Probability and Statistical Inference. New Jersey, US: *Prentice Hall*.
- Tansel, & Schultz. (1997). Wage and Labour Supply Effects of Illness in Cote d'Ivoire and Ghana. *Journal of Development Economics*, (pp. 251-286).
- Thomas, & Strauss. (1997). Health wages: evidence on men and women in urban Brazil. *Journal of Econometrics*, (pp. 159-185).
- Tilak. (1986). Education in an unequal world. Book. New Delhi, India: *Concept Publishing*.
- Tilak. (1989). Education and its relation to economic growth, poverty and income distribution. Report. *World Bank*.
- Tilak, J. (1994). Education for Development in Asia. Book. New Delhi, India: *Sage Publications*.
- Townsend. (1979). Poverty in the UK. Harmondsworth, England: *Penguin Press*.
- Udofia, & Etim. (2013). Analysis of poverty among subsistence waterleaf producers in the tropic. *American Journal of Advanced Agricultural Research*, (pp. 62-68).
- UNDP. (1997). Human Development Report. Report. New York, USA: *Oxford University Press*.
- UNDP. (2000). Human Development Report. Report. *UNDP*.
- UNDP. (2018). Human Development Report. Report. *UNDP*.
- United Nations. (2009). Factsheet on Persons with Disabilities. Report. *UNDP*.

- Upadhyay, & Miller. (2000). The effects of openness, trade orientation and human capital on total factor productivity. *Journal of Development Economics*, (pp. 399-423).
- Verner. (2008). Making poor Haitians count. Policy Research Working Paper. Haiti. *World Bank*.
- Verner, & Fiess. (2004). The dynamics of poverty and its determinants. Washington, USA: *The World Bank*.
- Wei, & Chen. (2005). Computational Issues for Quantile Regression. *Sankhya: The Indian Journal of Statistics*, (pp. 399-417).
- Weil, Romer, & Mankiw. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, (pp. 407-437).
- Wheeler. (1980). Human resources development and economic growth in developing countries. Report. *World Bank*.
- WHO. (2000). World Health Report. Report. *WHO*.
- WHO. (2008). World Health Report. Report. *WHO*.
- Wodon, Hentschel, & Coudouel. (2001). Wellbeing Measurement and Analysis. Report. *World Bank*.
- Wolfe, & Haveman. (1984). Education, productivity and wellbeing. Cambridge, UK: *Ballinger*.
- World Bank. (1990). Poverty and World Development Indicators. New York, USA: *Oxford University Press*.
- World Bank. (1992). Poverty Reduction Handbook. Washington, USA: *The World Bank*.
- World Bank. (1993). The East Asian Miracle. New York, USA: *Oxford University Press*.
- World Bank. (1993). World Development Report. New York, USA: *Oxford University Press*.
- World Bank. (1998). Africa Intenet Forum. Report. *World Bank*.
- World Bank. (1999). Cambodian poverty assessment. Report. *World Bank*.
- World Bank. (2001). Attacking Poverty. New York, USA: *Oxford University Press*.
- World Bank. (2002). Understanding Poverty. Report. *World Bank*.
- World Bank. (2005). Poverty Manual. Handbook. *World Bank*.
- World Bank. (2007). Albania urban growth, migration and poverty reduction: a poverty assessment. Report. *World Bank*.
- World Bank. (2009). Georgia Poverty Assessment. Report. *World Bank*.
- Wu, Wolf, & McCarthy. (2000). Malaria and Growth. Report. Washington, USA: *World Bank*.

## APPENDIX A

### *Pakistan Poverty*

Table 22 Poverty in Pakistan

<b>Poverty</b>	Poor (m)	Rate(%)	Period
National Poverty Line	46	24.3	2015
Int'l Poverty Line (\$1.90 per day)	7.9	3.9	2015
Lower Middle Income Class Poverty Line (\$3.20 per day)	69.2	34.7	2015
Upper Middle Income Class Poverty Line (\$5.50 per day)	150.4	75.4	2015
Multidimensional Poverty Measure		N/A	N/A
<b>Shared Prosperity</b>			
Annualized Consumption Growth per capita of the bottom 40 percent		2.72	2010-2015
<b>Inequality</b>			
Gini Index		33.5	2015
Shared Prosperity Premium=Growth of bottom 40-Average Growth		-1.53	2010-2015
<b>Growth</b>			
Annualized GDP per capita growth		1.83	2010-2015
Annualized Consumption Growth per capita from Household Survey		4.25	2010-2015
<b>Median Income</b>			
Growth of the annual median income/consumption per capita		3.19	2010-2015

*(Source: World Bank Report, 2020)*

## APPENDIX B

### Cost of Basic Needs Approach Calculation:

To calculate the CBN line of poverty, the first step was to measure a food poverty line (FPL) which is calculated by averaging the food expenditures in households in respective reference groupings – these groups were the tenth to the fortieth percentiles of the distribution of expenditures. Next, non-food spending was calculated and incorporated into the total measure. Emphasis is placed on households who can fulfill the measured FPL at their prevailing food spending levels. The FPL is measured then scaled to mirror total expenditures of the households to get the overall CBN line of poverty. For this study, the CBN for 2015-2016 was used.

Table 23 CBN Poverty Lines in Pakistan

<b>Year</b>	<b>Poverty Line (Rs)</b>
2005-06	1277.74
2007-08	1543.51
2010-11	2333.35
2011-12	2600.15
2013-14	3030.32
2015-16	3250.28

Source: National Poverty Report