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Measuring Consumption Inequality at Household Level in Pakistan 2005-2019

Sahibzada Asadullah* ·
Asfandyar Khan

Abstract Reducing inequality has been the main focus of every country. This study is an attempt to measure consumption expenditure inequality in Pakistan by focusing on food and non-food components rather than income, as consumption is considered a better approach to measure inequality. Inequality was measured based on income in past but very few studies focused on consumption approach and no such study was conducted for the given time period. The study uses secondary data to cover surveys from 2005-06 till 2018-19 using decomposed data taken from Household integrated expenditure survey of Pakistan. Gini coefficient has been used to measure inequality. The study finds fluctuating trends in inequality. Overall both food and non-food consumption inequality has slightly decreased but overall food consumption expenditure inequality increased in 2018-19 when we compared the results with year 2015-16. Food consumption inequality remain higher in rural areas compared to urban areas of the country. Whereas non-food consumption inequality was high in urban areas compared to rural areas of the country.

Keywords Consumption Inequality, Inequality, Growth, Food inequality, Non-food inequality, expenditure inequality.

1 Introduction

Economic growth is considered to be the primary goal of an economic policy. With increasing growth, the discussion of inequality has gained more importance in Pakistan since the early 1960s. A Country's growth is judged by its economic performance. Real national income is considered an indicator of growth. An

MS Economics from Balochistan University of Information Technology, Engineering and Management Sciences,

Balochistan, Pakistan. E-mail: kakar_asad111@yahoo.com

*Corresponding author

Lecturer, Department of Economics Balochistan University of Information Technology, Engineering and Management Sciences

Balochistan, Pakistan. E-mail: asfand.yar@buitms.edu.pk

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individual will spend his income according to his will and decide goods and services he want to purchase in the market, which will influence his well-being. The increase in income leads to an increase in GDP means an increase in a country's economic growth, however, despite the increase in per capita consumption, many developing countries faced a rapid increase in inequality. Inequality is increasing between the rich and poor. The term inequality means the difference in income or consumption of the households irrespective of their desirability [Rowntree \(1902\)](#). Pakistan has achieved reasonable economic growth since independence, but a gap still exists between poverty and inequality [Idrees and Ahmad \(2010\)](#). In developing countries like Pakistan, inequality is one of the serious barriers to development. Growth in the 1960s caused inequality to increase rapidly but inequality declined in Pakistan in the late 1960s. Whereas in 1970 income inequality increased with a decline in the 1980s. These trends vary with economic growth; with high growth, inequality has declined and increased in a low growth period [Anwar \(2007\)](#). Pakistan in the 1990s as a developing nation adopted a Structural adjustment program in the form of economic reforms. Privatization of state-owned assets, liberalization of trade, financial reforms, and elimination of price control were the economic reforms. The purpose of such economic reforms was to improve society's welfare but it wasn't fruitful for every household in the country. Unfortunately, the fruits of these reforms were all enjoyed by, a lack of transparency in economic policies, poor governance, corruption, debts burden, high-interest rate, poor implication of economic policies, weak law and order situation. As a result, poverty increased, and inequality led to resources deprivation which created further difficulties for people. An economy with issues of poverty and inequality cannot progress if the major portion of society is deprived of its share. In countries with rapid economic growth like China, such growth has caused notable increases in inequality. China is among those countries, which has the highest level of inequality in the world. This analysis indicates that growth is a necessary condition for reducing inequality but not sufficient for poverty [Shahbaz et al \(2007\)](#). There are a number of notable studies conducted on income/ consumption inequalities in Pakistan [Bergan \(1972\)](#); [Haq \(1964\)](#); [Anwar and Bilquees \(2003\)](#). Inequalities in a country can be traced to initial wealth distribution, and only a purposeful policy intervention can be made to understand the sources and dynamics of inequality in a country [Akhtar and Sadiq \(2008\)](#). As discussed above poverty reduction is possible if there is growth but it is important to note that the goal of reducing poverty, can be achieved only when the benefits of growth trickle down to the poor ones. The trickle-down paradigm assumes that the benefits of economic growth would first benefit the upper-income groups and the resultant consumption expenditure of the upper-income households would as result trickled down to relatively lower-income households [Hyder et al \(2015\)](#). Studies show that income inequality is higher than consumption expenditure inequality as the life-cycle hypothesis proposes that people would like to have a smooth consumption over their lifetime, so that if income of people will change significantly over the period of time, then the change in consumption would be lower than income from year to year [Haq \(1964\)](#). Rising inequality in developing countries is expressed in income or the constituents of income like earnings and wages but for economists, a basic util-

ity function of an individual refers to consumption and leisure, not income. In Pakistan, inequality is analyzed using household income but few studies focused on decomposition and consumption approaches.

All the major studies are focused on the role of economic growth and poverty. They use income to measure poverty and inequality which has many problems. The respondents may or do not want to tell the truth about their real earnings. Many respondents during survey do not show their actual income and there is a common practice of tax evasion in developing countries [Anwar \(2007\)](#). For example, a household head may not want to pay the tax as instructed by the

Government, because he wants to consume more and save the amount for future consumption. In order to avoid the tax the household may not report the actual income. Inequality based on income is more likely to be biased due to the business cycle and misreporting of income. To cater this bias, consumption expenditure is considered a better indicator of a person's welfare. It is a more direct and precise measure of long-term earning capacity that provides appropriate value. Consumption expenditure is used as suitable gauge of well-being because the utility is derived from goods and services consumption and it indicates permanent income better.

Inequality deprives one of having an equal amount of shares in a country's resources which gives birth to more problems such as poverty. A country can't progress or achieve economic growth in the long run if inequality exists in it. In the light of prior studies conducted on inequality, consumption inequality exists and differs across the regions and provinces of Pakistan and there has been less focus on measuring consumption expenditure inequality and its comparison with other years. It is important to find out about consumption inequality, because fewer studies have focused on consumption inequality and further decomposing it into food and non-food for the latest micro data available. This study is an attempt to measure the magnitude of food and non-food consumption expenditure inequality among the households in overall Pakistan from the period of 2005 to 2019.

2 Literature Review

2.1 Global Evidence

[Cai et al \(2010\)](#) examined the changes in inequality by considering both income and consumption simultaneously. The study focused on both between group inequality and within group inequality in urban China during the period 1992–2003 by using urban household income and expenditure Survey data. The study was conducted because not many studies had focused on both income and consumption inequality at once. The study finds that there was a rapid increase among urban households from 1992 to 2003 and this increasing trend was also observed in income inequality. The estimated Gini index rose from 0.25 in 1992 to 0.33 in 2003 as for per capita consumption, while it increases increased from 0.24 to 0.33 for per capita income in same period.

[Lise and Seitz \(2011\)](#) explored the link between consumption inequality and Intra-household allocations. To measure inequality at individual-level the study used adult equivalence scale. The studied assumed that there is no inequality

within the household. The main variables of the study were collective model, Consumption inequality, Marital sorting and adult equivalence. As methodology, the study used a combined household model of household behavior to measure consumption inequality in the U.K. from 1968 to 2001 obtained from the U.K. Family Expenditure Survey (FES). The study estimated the reduced-form equation for non-labor income to obtain the residuals. After that, the study obtained estimates of the preference parameters by estimating a mixed Logit model for the separate labor supply choice using the selected sample of men and women who are married. The findings of the study indicated that two-thirds of decline in household inequality and the rise in between household inequality is explained by the increase in marital sorting on wages and number of hours worked.

Yusuf et al (2014) conducted a study to assess the importance the highest ever rise in inequality reported by Badan Pusat Statistik in Indonesia. The study considered a set of indicators of expenditure inequality between 1993-2003 by using Indonesian National socio economic survey data. The study estimated inequality by Gini coefficient, Theil index, decile dispersion ratio. The study also decomposed inequality into inter district and interprovincial and also into regions. The estimated Gini value rose from 0.36 to 0.41 during study period. Prior to the 1997-98 crisis the decile dispersion ratio declined moderately between 1993 and 2013 and fell further due to crisis but increased with a pace up till 2013. The study finds inter- regional inequality was greater in districts than the inequality found in the provinces for each year.

Basole and Basu (2015) conducted a study to check the trend of non-food expenditure and consumption inequality as most of studies conducted previously focused on overall consumption expenditure, however the trend of spending pattern on food and non-food is different. Household level data from five NSS “thick” rounds were used in the study. The study used three measure of inequality, the comparative, absolute and intermediate Gini coefficient. The study finds that as income household increases there is a change in expenditure patterns. Expenditure share of food decreases and share of non-food expenditure increases. The food share in overall country decreased from 60%-70% in 1987-88 to 40%-50% in 2011-12. According to survey data used by Author it was also observed that real food expenditure in rural areas increased by 10% between 1987-88 to 2011-12 while interesting finding was that of non-food expenditure share as it went up by 224 % over the same period. The figures were more striking for urban areas as it went up from 9.8% to 459%. Overall Gini coefficient increased from 0.312 in 1987-88 to 0.342 in 2011-12. The author concluded his study in three phases as from 1987-88 to 1993-94 shows a mild increase in absolute inequality. The second phase from 1993-94 2004-05 shows a rapid increase in inequality in all measures. The third and last phase from 204-05 to 2011-12 shows an increasing trend in inequality.

Warr et al (2018) conducted a study to describe the Declining poverty but increasing consumption inequality within group in Laos. The study used two decades 1992/93-2012/13 survey data collected by Lao expenditure and consumption survey. The study used Gini Coefficient to find consumption inequality at national, within provinces, within rural & urban areas, within four groups of ethnicity, and within all employment sectors and educational attainment lev-

els. The study finds that estimated Gini coefficient rose from 0.311 to 0.364 at national level over the two decades. The study results also showed that Consumption Inequality increased but Absolute Poverty incidence split from 46 percent of population to 23 percent in Laos. In real terms the poor of Laos were better off but the rich also got more share. Overall Within group increase inequality dominated between group changes.

Norris and Pendakur (2015) conducted research to study consumption inequality in Canada from 1997 to 2009 using annual household survey data. The study finds the estimated Gini Coefficient of consumption inequality in Canada rose from 0.251 to 0.275 from 1997 to 2006, Although consumption inequality may have decreased in 2006 but it was flat from 2007-09. Overall Consumption inequality increased moderately during overall period for which the study was conducted to find answer of how to account for households who do not report their shelter expenditure as they all live in owner-occupied housing.

2.2 Inequality in Pakistan

Haq (1964) study was one of the first conducted to measure personal income inequality in high-income quintile group of urban areas in Pakistan. The paper used published tax data available for (1948-49 to 1957-58) to present the pattern of distribution of income in comparative shares of diverse income groups, concentration ratio and Pareto coefficients. The author found that inequality in Personal income distribution was high compared to developed as well as some developing countries. Alauddin (1975) estimated Gini-coefficient of real consumption to check inequality in urban and rural areas of Pakistan. The results of study stated a decline in inequality among rural households over the period over the period 19963-64 to 1969-70. Whereas there was a different trend observed in inequality among urban households. Urban inequality increased in 1966-67 and later on declined in 1969-70.

Anwar and Bilquees (2003) compared inequality trends in Pakistan between 1998-99 and 2001-02 using Gini coefficient. Household consumption expenditure which includes durables and non-durables were used instead of permanent income for the measurement of inequality. The result shows inequality increased in overall Pakistan between 1998-99 and 2001-02. The result also compared 2001-02 which lies below 1998-99. This result for Pakistan was also confirmed through the Lorenz curve which indicated that the Lorenz curve for the year 2001-02 lied below the 1998-99 curve which stated that the distribution of durables and non-durables in 2001-02 is more unequal than that of 1998-99. Anwar (2007) conducted a study to check inequality in different sectors and differences in inequality related to growth using Gini coefficient with help of two primary household survey data PIHS data for year 2001-02 and PSLM 2004-05. The study finds that head of household who were employed in manufacturing, community services, electricity, and finance seem to be richer than household heads employed in other sectors. Household heads who were employed in Finance sector faced the highest level of unequal distribution of incomes followed by Community services, Manufacturing and Mining. The study results also showed

that in majority of economic sectors, inequality increased between 2001-02 and 2004-05.

Ali and Saboor (2010) examined the dynamics of economics inequality and trends in Pakistan. The study used Gini coefficient to measure the trends and dynamics of inequality in Pakistan. The study used secondary data taken from HIES (Household Integrated Economic Survey) for the periods 1998-99, 2001-02 and 2004-05. The study finds that poverty reduction helps not only to increase the growth rate but also helps to reduce the income inequality across Pakistan. The study also revealed that overall consumption inequality remained unchanged in stationary terms and it slightly increased in dynamic terms and income inequality is higher compared consumption inequality, consumption inequality declined only in Punjab and KPK.

Idrees and Ahmad (2010) conducted a study on measurement and decomposition of consumption inequality with help of Gini Coefficient in Pakistan using consumption expenditure survey data of 14,000 household from 1992/93 to 2004/05. The result shows inequality has declined moderately over 12 year period. The decline in urban areas is greater than rural areas of Pakistan. Gini coefficient decreased at greater pace in last six years of study period than that of initial six years. A Cut on subsidies given to agricultural sector and reduction in government spending on development is attributed to increase in rural inequality. Result also indicates within food expenditures consumption inequality is lower than non-food expenditures inequality. In Pakistan food items contributed 25% while non-food contributed 65% to overall consumption inequality. Urban areas contributed 71% while 52% contribution was from rural areas to overall consumption inequality.

Asad and Ahmad (2011) studied the relationship of growth and inequality in Pakistan and also evaluated consumption inequality by using Gini Coefficient, and Thiel index. HIES data was used for the period of 1990/1 to 2004/05. The study finds there is no stability in consumption inequality, showing wide disparity over the study period. The result shows twenty percent of the poor households and 60 percent of middle income households lost their share in consumption, whereas between 1990-91 to 2004-05 in rural and urban areas of Pakistan the richest Twenty percent of the richest were beneficial as they gained their consumption share. From the past experience in Pakistan's economy it was evident that inequality in consumption has decreased with an increase in growth while it has increased from 1988-89.

Naseer and Ahmed (2016) conducted a study to explore the determinants of income inequality among the earners in Pakistan. The study used HIES Household Integrated Economic Survey data for year 2005-06 and 2010-11 collected by Pakistan Bureau of Statistics and Gini coefficient to estimate income inequality level among the household earners. The study finds that Gini Index decreased from 0.52 in 2005 to 0.44 in 2010 and the share of gender in inequality has been high for both study periods considered followed by occupation and education categories.

Fosu (2017) conducted a study to measure inequality, growth and poverty reduction in developing countries. The study analyzed world bank data for \$1.25 and \$2.50 level poverty headcount ratio for regional and specific countries. The

study found that average income growth had been the main reason for the incline and decline in poverty. The study also find that in countries where economic growth had remained the main cause of poverty-reduction, there would have been further decline in poverty if there was relatively favorable income distribution or less inequality. Over all, high initial inequality level limits the efficiency of economic growth in declining poverty, while growing inequality increases poverty directly for a given level of growth. Strong GDP growth has resulted in substantial poverty reduction in Pakistan since early mid 1990s.

From the above literature, it has been observed that there is a varying trend of inequality in Pakistan and worldwide. Some studies were based on aggregate data, some studies focused on only one-year data and some old studies are considered to be too old. It has been evident from the prior literature that Inequality in Pakistan is analyzed using household income but very few studies focused on decomposition and consumption approach. Income doesn't show the actual amount of inequality that exists in developing or poor countries and many studies only focused on measuring income inequality but consumption is generally considered a more appropriate measure of well-being than income because in developing or poor countries fulfillment of basic needs are the main concerns. The current study is an attempt to measure consumption expenditure inequality by decomposing into food and non-food categories.

There are articles and studies related to income/consumption inequalities in Pakistan but after reviewing most of the studies we understand that only few attempts have been made to quantify the sources and their contribution to inequality. This study attempts to present a consistent and comprehensive picture of consumption inequality in Pakistan, its rural urban regions and all provinces by taking the latest survey data available. This study finds the inequalities from year 2005 onwards till 2018-19, which hasn't been done in terms of decomposing inequalities into food and non-food categories for overall Pakistan, its regions and provinces.

2.3 Measures of Inequality

The literature focused on measuring inequality has provided many methods to measure inequality. In this present study, we have discussed some of the measures of inequality.

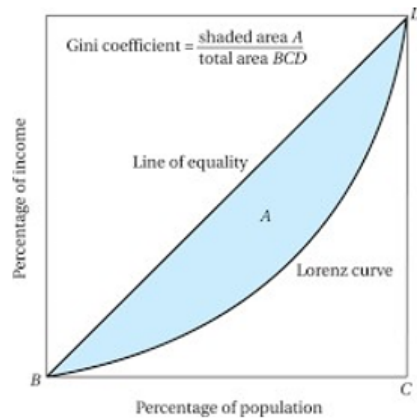
2.3.1 Gini Coefficient

Gini Coefficient invented by Italian Statistician Corrado Gini is a useful measure of inequality. It is the ratio of the area between the diagonal and the Lorenz curve to the total area of the half-square in which the curve lies. The coefficient value ranges from zero to one, which measures the degree of inequality in the distribution of income in society. The Gini coefficient value zero would represent that each member in society received same income and Gini value of 1 would represent that there is extreme inequality and all the income is received by 1 member. The Gini coefficient (or Gini ratio) G can easily be shown by the Lorenz curve that is an effective way of showing inequality within and between countries. The cumulative percentage of population is plotted along the

horizontal axis whilst the cumulative percentage of income is plotted along the vertical axis.

In all developing countries one of the most widely used method to measure inequality is Gini coefficient [Jamal \(2006\)](#).

Figure 1
Gini Coefficient



A number of inequality measures can be used for measuring inequality but Gini coefficient has some properties and it is one of the measures that fulfill all these properties and is the most widely used measure of inequality. In our analysis, we use the Gini coefficient as a measure of inequality because it has a neat statistical and graphical interpretation. The most common approach to define the Gini coefficient is the Geometric approach which states that the Gini coefficient is the ratio of the area between the line of absolute equality and the Lorenz curve to the total area below the line of absolute equality. [Rao \(1969\)](#) provided a formula based on a geometric approach to calculate the Gini coefficient which is also useful for the measurement of consumption inequality.

$$G = \sum_{i=1}^{n-1} (P_i q_{i+1} - P_{i+1} q_i) \quad (1)$$

Here G is the Gini coefficient and the cumulative population share is P_i and the cumulative consumption share is Q_i matching the i th household when all households are organized in rising order of consumption.

[Shorrocks \(1982\)](#) delivers the Gini coefficient of income, source-decomposition formula. The same procedure can be adopted for the allocation-wise decomposition of consumption inequality. According to literature and looking into our requirement of decomposing the inequality into food and non-food items we selected the [Shorrocks \(1982\)](#) model for estimation of inequality which was also used by [Idrees and Ahmad \(2010\)](#).

$$G = \sum_{k=1}^K (S_K(C_K)) \quad (2)$$

Here s_k is part of the consumption of the component k in total consumption and C_k is the concentration ratio of the k th component of consumption. The concentration ratio is equal to the ratio of Gini coefficient, except that the households are classified on the basis of total consumption and not on the basis of k th of consumption.

2.4 Theil Index

Theil index and General Entropy (GE) measures are measures of inequality. The values of the GE class of measures vary between zero (perfect equality) and infinity (or one, if normalized). The most common values for α are 0, 1, and 2. When $\alpha=0$, the index is called “Theil’s L” or the “mean log deviation” measure. When $\alpha=1$, the index is called “Theil’s T” index or, more commonly, “Theil index”. When $\alpha=2$, the index is called “coefficient of variation”.

2.4.1 Coefficient of Variation

It is the measure of inequality in which measure inequality by dividing the standard deviation of income distribution by its mean. It is a ratio of standard deviation to mean.

2.4.2 Decile Dispersion Ratio

It is the ratio of average expenditure of the top richest 10% of households to that the poorest 10%.

2.4.3 Reasons to Choose Gini Coefficient

There are many methods to measure inequality but the main reason to choose Gini coefficient as our model for measuring the consumption inequality in our study are the following properties. (i) Income Scale Independence, (ii) Population Principle, (iii) Decomposability, (iv) Well defined & interpretable limits, (v) Symmetry, (vi) Pigou-Dalton Principle.

(i) Income Scale Independence: The calculation of measure does not depend on how large the economy is, how it is measured, invariant to changes in income, or how wealthy a country is.

(ii) Population principle suggests that the population would keep growing until growth is stopped or reversed. The measure should not depend on the size of the population.

(iii) Decomposability: The measure allows to divide the inequality into components of inequality.

(iv) Well defined & Interpretable limits. The extent to which cause and effect can be observed within a system. Or able to predict a change.

(v) Symmetry: It suggests that an inequality measure should be free from the particular identity of the income unit, it shows the balanced proportions of overall data.

(vi) Pigou-Dalton Principle is a condition where all other things kept constant, a social welfare function should prefer allocations that are more equitable.

3 Methodology

The literature focused on measuring inequality has provided many methods to measure inequality. One of the most widely used method for measuring inequality is the Gini coefficient.

3.1 Data Source

The only data source Household Integrated Expenditure Survey secondary data has been used for this study which is conducted and published by Pakistan Bureau of Statistics (PBS).

3.2 Sampling procedure

The present study covers the period from 2005-06 to 2018-19. For this study, we firstly sorted out the data taken from PBS HIES into food and non-food categories. The variables required for this study were taken from HIES survey data. Firstly, the study selected the household's overall food and non-food items consumption details and the most important thing to assess was the value paid for a specific item and that item has been consumed by the household. We then summed up the values for both food and non-food items for each household separately and then separated the sum of each household's food and non-food items. In the Next step we summed up all the values of "paid & consumed" for food & non-food items for all households separately and then summed up the values of all households in each particular year. Once data was sorted out as desired for measuring inequality, then by using Stata the desired numerical figures of inequality were measured.

4 Results

Table 1 shows the statistical properties of the data for both food and non-food consumption data. The highest number of observations for both food and non-food data is 24373 in the year 2018-19 and the lowest is 15118 in 2011-12. The highest mean expenditure is 18888 in year 2018-19 while the lowest is 8323 in 2015-16. The minimum amount spend for consumption is as low as 15 rs in year 2015-16 and highest is 182299 in year 2018-19. The maximum mean expenditure for non-food items is 148896 in year 2018-19. The minimum amount paid for consumption of non-food item is 23 rupees while highest spent is 419699.

4.1 Food Consumption Expenditure Inequality

The estimated Gini coefficient values for all 4 Provinces, Regions and overall household food consumption results are shown in Table 1.

Table 1
 Descriptive Statistics

| Food consumption | 2005-06 | 2007-08 | 2010-11 | 2011-12 | 2013-14 | 2015-16 | 2018-19 |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| No. of Observations | 15449 | 15259 | 15319 | 15118 | 14074 | 21390 | 24373 |
| Mean | 9044.42 | 10442.95 | 13660.26 | 17622.06 | 21866.45 | 8323.17 | 18888.01 |
| S.D | 13227.88 | 14333.64 | 18338.13 | 25929.16 | 37128.67 | 5901.489 | 30498.71 |
| Min | 44 | 30 | 50 | 140 | 55 | 15 | 130 |
| Max | 505963 | 532286 | 764346 | 1425804 | 1817900 | 192345 | 1822995 |
| Non-Food Consumption | 2005-06 | 2007-08 | 2010-11 | 2011-12 | 2013-14 | 2015-16 | 2018-19 |
| No. of Observation | 15449 | 15259 | 15319 | 15118 | 14074 | 21390 | 24373 |
| Mean | 25954.57 | 29083.47 | 40003.08 | 55627.7 | 72995.19 | 121144 | 148896.6 |
| S.D | 50035.25 | 55471.08 | 66486.17 | 94040.05 | 122011.5 | 185432.3 | 172183.4 |
| Min | 23 | 115 | 65 | 70 | 190 | 363 | 710 |
| Max | 1706224 | 2592985 | 1901742 | 2369895 | 5449265 | 7675770 | 4196990 |

Table 2
 Food Consumption Inequality Gini Index Values

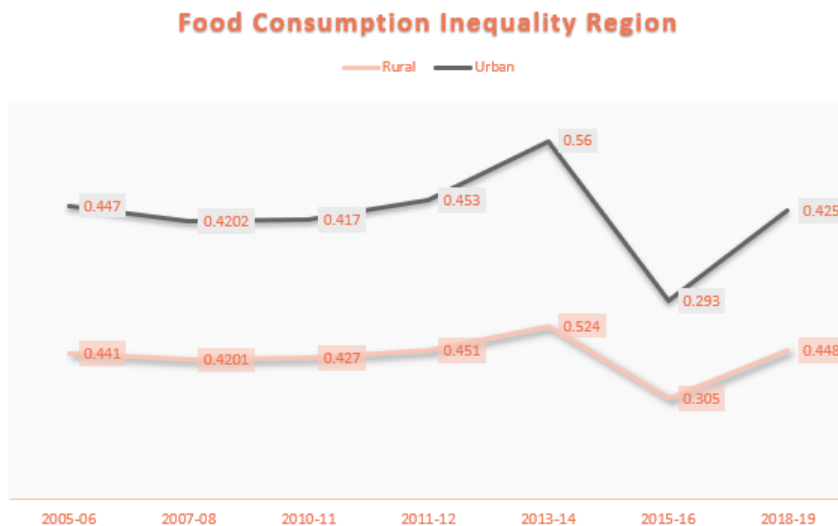
| Province | 2005-06 | 2007-08 | 2010-11 | 2011-12 | 2013-14 | 2015-16 | 2018-19 |
|---------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Balochistan | 0.266 | 0.317 | 0.291 | 0.344 | 0.336 | 0.259 | 0.337 |
| Khyber Pakhtunkhwa | 0.517 | 0.443 | 0.439 | 0.446 | 0.473 | 0.306 | 0.514 |
| Sindh | 0.341 | 0.322 | 0.331 | 0.382 | 0.500 | 0.274 | 0.318 |
| Punjab | 0.495 | 0.475 | 0.481 | 0.513 | 0.498 | 0.315 | 0.481 |
| Region | | | | | | | |
| Rural | 0.441 | 0.4201 | 0.427 | 0.451 | 0.524 | 0.305 | 0.448 |
| Urban | 0.447 | 0.4202 | 0.417 | 0.453 | 0.560 | 0.293 | 0.425 |
| Overall Gini Index | 0.448 | 0.423 | 0.427 | 0.459 | 0.468 | 0.308 | 0.442 |

Table 2 shows that there is variation in inequality over the estimated period. Our estimated Gini index food value for the first year of our study is 0.448 while in last years it is 0.442 then these values suggest that the overall consumption inequality has slightly decreased. The estimated Gini coefficient for overall country's food consumption shows inequality has increased and also decreased during the period of study. In year 2005-06 the overall country's food consumption expenditure inequality estimated by Gini coefficient was 0.448 but consumption inequality decreased in 2007-08 as the estimated Gini value declined to 0.423. In 2010-11 consumption inequality increased as estimated Gini value inclined to 0.427. Consumption inequality increased in 2011-12 to 0.459. 2013-14 witnessed the highest level of food consumption inequality in country as estimated Gini increased up to 0.468 but then there was a sharp decline in inequality in 2015-16 as estimated Gini value decreased to 0.308 which is the lowest level of inequality during the whole study period but inequality again increased sharply in 2018-19 as Gini estimated rose up to 0.442. The results suggests that over the years the Gini coefficients for the food consumption inequalities show nearly similar values except for the year 2015-16, in this year we observe an overall decline in the Gini coefficient across all provinces and rural-urban domains. This is an interesting result, comparing the results of 2015-2016 with all other year show that there is a decline in the overall inequalities. This is most likely related to a decline in the inflation. The year 2015-16 recorded one of the lowest inflation rates in the past decade, when inflation was around 2.86 % in Pakistan. This decrease in the inflation rate has contributed in the decline of inequalities and is translated into our results as inflation has a positive important effect on inequality.

4.1.1 Food Consumption Inequality in Regions

Gini coefficient was also estimated to check inequality region wise in the country. In 2005-06 the estimated Gini value of food consumption inequality for rural areas of country was 0.441 and 0.447 for urban areas which later declined to 0.420 later in 2007-08 in both rural and urban areas. In 2010-11 the inequality in rural areas increased again to 0.427 but declined in urban areas to 0.417. In 2011-12 inequality in rural increased as estimated value is 0.451 and it also increased in urban areas to 0.453. In 2013-14 food consumption inequality was the highest for our whole study period as estimated Gini value for rural is 0.524 and 0.560 for urban areas. Inequality declined in year 2015-16 as rural areas estimated Gini value is 0.305 and 0.293 for urban areas whereas it was higher in 2018-19 as Gini index for rural area was 0.448 and 0.425 for urban areas stating that food Consumption Inequality increased in both in rural and urban areas of country. The overall trend shows in some years food consumption inequality in urban areas has dominated inequality in rural areas and in some rural has dominated over urban areas. Though if we compare the estimated Gini index value 0.441 of food for Rural areas and 0.447 for urban areas of year 2005-06 of our study period with estimated Gini index value 0.448 of food for rural areas and 0.425 for urban years with last year 2018-19, the results suggest that over all food consumption inequality in Rural areas has increased whereas overall consumption inequality has decreased in urban areas for food consumption components. This is also supported by the results of study of (Idress & Ahmad,2010) as their study also found improvement in inequality in urban areas.

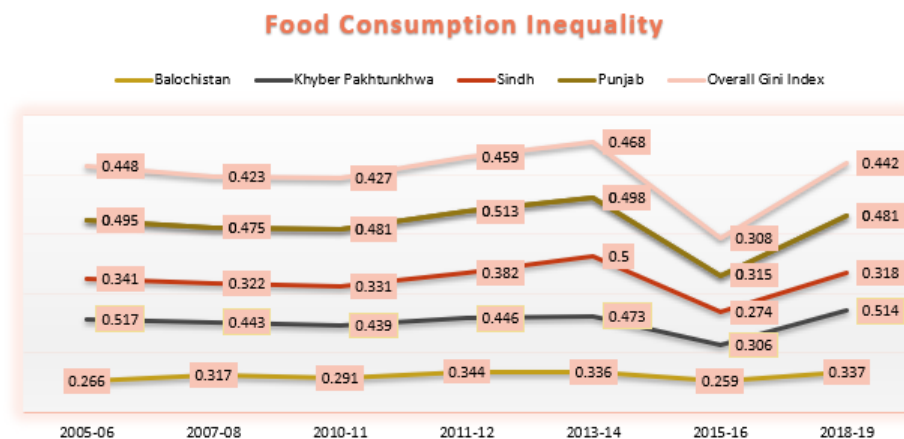
Figure 2
Food Consumption Inequality in Regions



4.1.2 Food Consumption Inequality between Provinces

Gini coefficient was also estimated to measure consumption inequality across all four provinces of Pakistan. This analysis tries to look into the inter-provincial inequalities and from the above table the prevalence of inter-provincial inequalities is evident. The trend in provinces is similar to overall food consumption inequality as for some years it has increased and then declined and then increased again later. The estimated Gini value (0.266) for first year 2005-06 of our study compared with Gini value (0.337) of last year 2018-19 suggests that consumption inequality has increased in Baluchistan. The estimated Gini values for Khyber Pakhtunkhwa, Sindh and Punjab suggests there has been a slight decline in overall consumption inequality in these three provinces. Highest level of consumption inequality estimated by Gini Index 0.337 for Baluchistan was in year 2018-19. Khyber Pakhtunkhwa experienced the highest level of inequality 0.517 in 2005-06. Sindh experienced highest of level of inequality 0.500 in 2013-14 while in 2011-12 Punjab faced the highest level of inequality 0.513 among other years included in our study. Now if we compare these highest levels of consumption inequality of all these provinces our results suggest that Khyber Pakhtunkhwa stands first and had the most unequal distribution of food consumption. The estimated results for the last year of our study 2018-19 and latest survey data available suggests that Khyber Pakhtunkhwa stood first again in consumption inequality with Gini value of 0.514. For instance, in the above case of food inequalities the lowest inequalities on average are recorded in the province of Balochistan and highest in the province of KPK. If population of all four provinces is taken as a parameter for comparing the prevailing inequalities among these provinces, we can comment that around 67% of the population is facing more food inequality as compared to the other 33% residing in Balochistan and Sindh.

Figure 3
 Food Consumption Inequality



4.2 Non-Food Consumption Inequality

The data was also used to estimate values for consumption inequality by combining all non- food items consumed by households. The estimated Gini coefficient values of non-food consumption inequality for all 4 Provinces, Regions and overall household non-food consumption results are shown in Table 3.

Table 3
Non-Food Consumption Inequality Gini Index values

| Province | 2005-06 | 2007-08 | 2010-11 | 2011-12 | 2013-14 | 2015-16 | 2018-19 |
|---------------------------|---------|---------|---------|---------|---------|---------|---------|
| Balochistan | 0.474 | 0.381 | 0.362 | 0.434 | 0.484 | 0.426 | 0.391 |
| Khyber | 0.550 | 0.507 | 0.486 | 0.491 | 0.497 | 0.492 | 0.443 |
| Pakhtunkhwa | | | | | | | |
| Sindh | 0.525 | 0.487 | 0.499 | 0.5353 | 0.5356 | 0.500 | 0.459 |
| Punjab | 0.556 | 0.543 | 0.546 | 0.548 | 0.533 | 0.496 | 0.456 |
| Region | | | | | | | |
| Rural | 0.509 | 0.498 | 0.515 | 0.483 | 0.494 | 0.472 | 0.420 |
| Urban | 0.548 | 0.517 | 0.471 | 0.529 | 0.516 | 0.479 | 0.447 |
| Overall Gini Index | 0.550 | 0.528 | 0.518 | 0.535 | 0.529 | 0.499 | 0.453 |

The table shows that there is also variations in inequality for non-food consumption over the last 14 years period. If we compare our estimated Gini index value 0.550 for non-food of the first year of our study 2005-06 with last year's 2018-19 value 0.453 then these values suggest that the overall non-food consumption inequality has decreased.

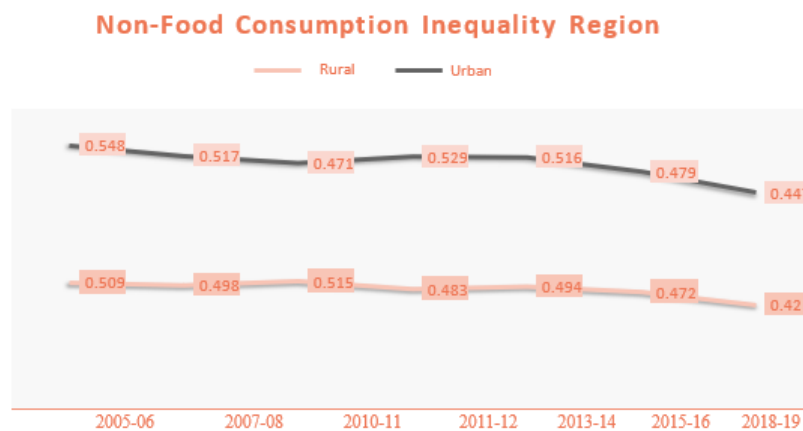
The estimated Gini coefficient for overall country's non-food consumption shows inequality has increased and also decreased during the period of study. In overall period of our study year 2005-06 witnessed the highest level of overall country's non-food consumption inequality as estimated Gini index value of that year was 0.550 but consumption expenditure inequality estimated by Gini coefficient for year 2007-08 declined to 0.528. In 2010-11 consumption inequality further decreased as estimated Gini value declined to 0.518. Consumption inequality increased in 2011-12 to 0.535. Non-food consumption inequality in country as estimated Gini increased again to 0.529 in 2013-14 but then there was a again a decline in inequality in 2015- 16 as estimated Gini value decreased to 0.499 and non-food consumption inequality decreased further as Gini index value declined to the lowest 0.453 in 2018-19 which was recorded the lowest level of inequality in our whole study period of 14 years. By looking at our estimated Gini index values we might say that overall non-food consumption inequality as decreased in the country.

4.2.1 Non-Food consumption Inequality in Region

Gini coefficient was also estimated to check non-food consumption inequality region wise in the country. In 2005-06 the estimated Gini value of food consumption inequality for rural areas of country was 0.509 and 0.548 for urban areas which later declined to 0.498 in rural areas and 0.517 in urban areas later in 2007-08. In 2010-11 the inequality in rural areas increased to 0.515 but declined in urban areas to 0.471. In 2011-12 inequality in rural areas decreased as estimated value is 0.483 and it also increased in urban areas to 0.529. In 2013-14 food consumption inequality was increased as estimated Gini value for rural is

0.494 and declined in urban areas as estimated is value 0.516. Inequality declined in year 2015-16 as rural areas estimated Gini value is 0.472 and 0.479 for urban areas whereas it declined further in 2018-19 as Gini index for rural area was 0.420 and 0.447. The overall trend shows non-food consumption inequality in urban areas has dominated over rural areas. Though if we compare the estimated Gini index value 0.509 of food for Rural areas and 0.548 for urban areas of year 2005-06 of our study period with estimated Gini index value 0.420 of food for rural areas and 0.447 for urban years with last year 2018-19, the results suggest that over all non-food consumption inequality might have decreased in both rural and urban areas of country.

Figure 4
Non-Food Consumption Inequality in Regions



If we compare the estimated Gini values of Food and non-food consumption inequality region wise for our whole time period our study suggests that, Non-food consumption inequality has dominated over food consumption inequality.

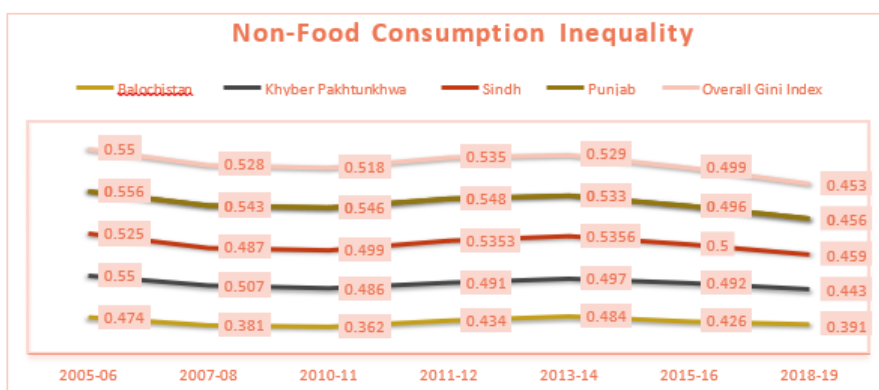
4.3 Non-food Consumption Inequality between Provinces

Gini coefficient was also estimated to measure consumption inequality across all four provinces of Pakistan. This analysis tries to look into the inter-provincial inequalities and from the above table the prevalence of inter-provincial inequalities is evident. The trend in provinces is similar to overall non-food consumption inequality as for some years it has increased and then declined and then increased again later. The estimated Gini value (0.474) for first year 2005-06 of our study compared with Gini value (0.391) of last year 2018-19 suggests that consumption inequality has decreased in Baluchistan. The estimated Gini values for Khyber Pakhtunkhwa (0.550) in 2005-06 compare with (0.443) also suggests a decline in inequality. The estimated Gini index values for both Sindh and Punjab also suggests there has been a decline in overall non-food consumption inequality in these two provinces too. Highest level of non-food consumption inequality estimated by Gini Index 0.484 for Baluchistan was in year 2013-14.

Khyber Pakhtunkhwa experienced the highest level of inequality 0.550 in 2005-06. Sindh experienced highest of level of inequality 0.5356 in 2013-14 while in 2005-06 Punjab faced the highest level of inequality 0.556 among other years included in our study. Now if we compare these highest levels of consumption inequality of all these provinces our results suggest that Punjab stands first and had the most unequal distribution of non-food consumption Khyber Pakhtunkhwa was second, Sindh stood third in unequal non-food distribution respectively and Baluchistan faced least consumption inequality. The estimated results for the last year of our study 2018-19 and latest survey data available suggests that Sindh stood first in non-food consumption inequality with Gini value of 0.459. Punjab has the second high level of consumption inequality with Gini value of 0.456, estimated Gini value 0.443 for Khyber Pakhtunkhwa made it third in overall non-food consumption inequality and the lowest level of inequality was recorded in Balochistan evident by lowest estimated Gini index value 0.391. For instance, in the above case of non-food inequalities the lowest inequalities on average are recorded in the province of Balochistan and highest in the province of Punjab. Although there are variations across years, but we can assert that inequalities in Punjab and Sindh are relatively higher as compared to the Khyber Pakhtunkhwa and Balochistan. If population of these provinces is taken as a parameter for comparing the prevailing inequalities among these provinces, we can comment that around 67% of the population is facing more food inequality as compared to the other 33% residing in Balochistan and Sindh.

Asad and Ahmad (2011) study found that there was no stability in overall consumption inequality from 1990/1 to 2004/05. This study trends support the results of this current study too. The results of this study have also been compared with that of Idrees and Ahmad (2010) which states that Inequality improved moderately from 1992/993 to 2004/05 specially in urban areas. Food consumption inequality has remained less compared to Non-food consumption. It supports our study's result too as we found a similar trend over the next 2 decades.

Figure 5
 Non-Food Consumption Inequality



Naseer and Ahmed (2016)'s study also support our result for the analysis from 2005 to 2010 as the Gini Index estimates found a decrease in gender, occupation and educational inequality which contributes in overall inequality.

5 Conclusion

Inequality is a major issue in developing countries. Inequality exists in Pakistan too and many studies focused on measuring income inequality but few focused on consumption approach. The Present Study measures consumption inequality based on food and non-food components in Pakistan and its region and all four provinces from 2005-06 to 2018-19. The study used Gini coefficient to measure consumption inequalities as it is the most widely used measure and it also fulfills all the properties which a good inequality measure must have. The analysis are based on HIES published data. The estimates of household consumption inequality showed a fluctuating trend through the period of analysis. The main results confirm the existence of inequality in Pakistan overall inequality slightly decreased in both food and non-food consumption when compared starting period of analysis with the last year. It was also observed that inequalities in food consumption expenditure increased in 2018-19 compared to 2015-16 in overall Pakistan across rural urban regions and all four provinces. Consumption expenditure inequalities in non-food components decreased in the country including all four provinces and regions. Same trend was observed when compared 2015-16 with year 2018-19.

5.1 Recommendations

Further decomposition of inequalities can be done/conducted by further dividing each groups in sub-groups like Apparels, Fuel & Lightening house rent etc. One can find consumption inequality by looking at household head's employment sector. We have found vertical inequalities by using this data, further studies can also try to find out horizontal inequalities. Consumption inequality can also be found by looking at highest level or all major level of education which will further help policies makers to introduce new policies to invest more on education sector.

5.2 Implications

To reduce Consumption inequality Government needs to provide subsidies on food items and reduce inflation. The focus shall be on reducing the consumption inequality as consumption expenditure is considered a better measure of inequality. Government need to include more households through Ehsas Program or through the network of utility stores to start new Food programs to support the poor and create more employment opportunities, build training centers to equip youth with digital skills as it will generate a revenue for the household and it will reduce the gap between rich and poor.

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