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Understanding Income Inequality in Rural Bangladesh: Evidence from Household Level Survey Data

Md Mijanur Rahaman*

Abstract

Rising economic inequality through the distribution of income, consumption, wealth or assets is a significant challenge. There is considerable concern in Bangladesh about the growing income inequality. Available household-level information suggests that the distribution of income is considerably more unequal than the distribution of consumption. This paper attempts to understand income inequality among survey households in rural Bangladesh. A purposive sampling technique has been used to collect sample households from three Upazilas in the Kushtia district of Bangladesh. Study findings show that the overall Gini coefficient of income inequality is 0.404, whereas the Gini coefficient of consumption expenditure is 0.32. The study recommends the removal of barriers faced by poor households in assessing better off-farm employment opportunities to have an equalizing effect on income distribution.

Keywords *Income · Consumption · Income Inequality · Gini-coefficient of income · Gini-coefficient of consumption · Rural Bangladesh*

1. Introduction

Income inequality is a pervasive problem around the globe that is rising at an alarming rate nowadays (Alvaredo & Gasparini, 2015). According to new research conducted by Oxfam, the richest 1 percent bagged 82 percent of wealth created last year while the poorest half of humanity got nothing (Oxfam, 2018). Bangladesh has achieved remarkable economic progress in recent decades as a developing country. However, household-level information in Bangladesh suggests that income distribution is much more unequal than the distribution of consumption (Matin,

* M.Phil. Research Scholar, Department of Economics, Islamic University, Kushtia
Email: rahmanmijanur86@gmail.com

2015). A recent report shows that, in Bangladesh, the top 5% of rich people have taken over 95% of total wealth, indicating an uneven distribution of wealth (Byron & Rahman, 2021). While Bangladesh is emerging as one of the most promising economies in the 21st century, the incidence of poverty and income inequality is very high among Asian countries may hinder its way of economic growth.

Poverty and income inequality have a strong relationship, while income inequality leads to poverty (Babatunde, Olorunsanya, & Adejola, 2008). As an exceptional case, economic growth causes a reduction in income inequality, reducing poverty. However, if income inequality exists despite economic growth undoubtedly induces the incidence of poverty (UNU/WIDER, 2000). On the other hand, the trickle-down economic theory claims that the benefits of wealth or growth trickle down to everyone else. However, the growing income inequality in Bangladesh poses a considerable challenge to development agencies and policymakers. Furthermore, in designing poverty reduction, expert mainly stresses only income growth while redistribution of income and inequality remains untouched (Babatunde et al., 2008).

Extant literature suggests that income inequality has risen in recent decades in developing countries (Babatunde et al., 2008; Sehrawat & Giri, 2018). In Bangladesh, the upward trend in income inequality at all levels has also been observed since independence which is a significant policy concern for Bangladesh Government (Mahedi, 2018). For instance, the Household Income and Expenditure Surveys 2011 conducted by the Bangladesh Bureau of Statistics (BBS) shows that in 1973-74 the national level Gini coefficient was found to have 0.36, whereas, in 2010, it was 0.46. The annual increase over that period was almost 1% per year. Rural inequality increased from 0.35 (Gini coefficient) in 1973-74 to 0.43 (Gini coefficient) in 2010. Likewise, in the urban area, the value of the Gini coefficient increased from 0.38 in 1973-74 to 0.45 in 2010. From these results, we can say that more income inequality and its impact exist in urban areas than in rural areas.

Moreover, the income share of the bottom 40% of the households decreased from 18.30 per cent in 1973/74 to 14.32 per cent in 2010. The overall decrease in income share for the period has been 3.98 percentage points, and the annual average rate of decrease has been 0.60 per cent. Therefore, the growing inequality is a primary concern for Bangladesh and needs to be appropriately addressed.

Scholars have identified several reasons behind the poverty and income inequality in Bangladesh. The most significant causes of income inequality and poverty are identified as low and negative net farm income from agriculture (Mahedi, 2018), food inflation (Hossain & Mujeri, 2020), lack of financial access (Aziz & Naima, 2021), alternative income opportunities (Ali, 2019), environmental stress (Omar & Hasanujzaman, 2021), and climate change effect (Alamgir et al., 2021). Although these studies have attempted to show the causes of income inequality and poverty, limited studies have been conducted to understand the income distribution and income inequality of households and the composition of their income sources (Matin, 2015;

Mahedi, 2018). To fill this research gap, the present study used the Gini coefficient to measure income and consumption inequality to provide an in-depth scenario of inequality among rural households in Southwestern Bangladesh. A popular measure of income inequality is the GINI coefficient, which has been substantially used in the last few decades. The study intends to achieve mainly an objective, i.e., to provide a descriptive analysis of the composition of household income from different sources and estimate the overall income and consumption inequality.

The paper is organized as follows. Section 2 represents the objective of the study; section 3 delineates the methodology and the measures of inequality; Section 4 discusses the empirical results, while section 5 concludes with policy implications.

2. Objective of the Study

The main objective of the study is to assess the inequality situation of the rural household based on field data. To attain the main objectives the specific objectives are as follows:

- To measure the income inequality status of the rural household.
- To compute the consumption inequality status of the survey households.
- To make comparison between income inequality and consumption inequality based on study findings.

3. Methodology

The study is based on primary data collected through a field investigation survey of three Upozillas in the Kushtia district. A detailed structured questionnaire was used for the analysis. Mainly descriptive statistics have been used for the study. Lorenz curve and Gini coefficient have been used to measure inequality.

3.1 Measuring Inequality

Inequality is a broader concept than poverty in that it is defined over the entire population and does not only focus on the poor. The most straightforward measurement of inequality sorts the population from poorest to richest. It shows the percentage of expenditure (or income) attributable to each fifth (quintile) or tenth (decile) of the population. The poorest quintile typically accounts for 6-10% of all expenditure, and the top quintile for 35-50%. Statisticians have long been interested in finding a single numerical measure that adequately expresses the degree of overall inequality in income distribution. The most frequently used measure, the Gini concentration ratio is derived from the Lorenz curve, which sorts the population from poorest to richest, and shows the cumulative proportion of the population on the horizontal axis and the cumulative proportion of expenditure (or income) on the vertical axis. The theoretical range of the Gini ratio is from zero (perfect equality) to one (perfect inequality).

Table 3.1 : Gini Index of Bangladesh from 1973 to 2016

Year	Per Capita Income (Thousand TK)	GINI Index
1973	9.9	0.36
1981	10.3	0.39
1983	10.8	0.36
1985	11.1	0.38
1988	11.7	0.38
1991	12.4	0.39
1995	13.9	0.43
2000	16.6	0.45
2005	20.5	0.47
2010	27.1	0.46
2016	36.8	0.48

Source: *BBS, 2017*

3.2 Gini Coefficient

The Gini coefficient can be considered a better measure than the Hoover index, possibly the country's most known measure of income inequality. Like the Hoover index, it scores 0 when everyone has identical incomes and 1 when all the income is concentrated in only one person. By normalizing the cumulative share of income and the cumulative population, the measure is not very sensitive to how the income is distributed, but rather only to how income varies relative to the other population members. One of its problems is that it cannot tell where the inequality is stronger or weaker in the distribution, which means that two very different distributions can share the same Gini coefficient.

3.3 The Lorenz Curve

The Lorenz Curve is a graphical representation of income and wealth distribution, so it can offer good visualization of where the population inequality lies. On the X axis, we put the cumulative share of people from lowest to highest incomes; on the Y axis, we put the cumulative share of income earned or wealth. The curve always starts at (0,0) and ends at (1,1), which is 100% of both cumulative shares. We compare this curve with the "perfect equality" curve, a 45º straight line that starts and ends touching the Lorenz Curve. From it, we can calculate the Gini coefficient as the ratio of the area between the line of perfect equality and the Lorenz Curve to the area between the line of perfect equality and the line of perfect inequality.

To examine the income inequality among households, we use the Gini coefficient. This coefficient is also defined as a ratio of the areas on the Lorenz curve. If the area between the perfect equality line and the Lorenz curve is ***A***, and the area under the Lorenz curve is ***B***, then the Gini coefficient

is, $G = \frac{A}{A+B}$

For measuring the Gini ratio, we used the following equation;

$$G = \frac{\sum_{i=1}^{n}(2_i - n - 1)x_i}{n^2\mu}$$

where, i = 1, …, n individuals (ascending order),

x_i = income for individuals ($x_1 \leq x_2 \leq \cdots\cdots \leq x_n$),

n = Total number of individuals, and

μ = mean income.

3.4 Data and Household Survey

The study is based on primary data collected through a household survey in the Kushtia district in Bangladesh. Data used in this paper are from household-level income and expenditure surveys in the Southwestern district (Kushita) of Bangladesh. The survey was conducted in October-December 2019. Kushtia district was chosen because of the fact the district was ranked as the richest district, with 96.4 percent of people living above the poverty line according to Poverty Maps of Bangladesh 2010 jointly unveiled by BBS, World Bank and United Nations World Food Programme (WFP). Despite being the richest district of Bangladesh, many people of Kushtia continue to face economic hardship due to river erosion. All possible, solid reasons for choosing the study area were evident during data collection from the sample areas. Three Upazillas of the Kushtia district, namely, Kushtia Sadar Kumarkhali and Mirpur, were chosen to collect final household income and consumption data. After careful screening using inclusion and exclusion criteria, 120 samples seemed useable for the analysis to achieve study objectives.

4. Results and Discussions

4.1 Profile of the Sample Households

Table 4.1: Selected Household Characteristics

Variable	Description	Mean	Std. Dev	Min	Max
Age	Age of the household head (in years)	46.80	10.81	25	76
Gender	Dummy for the gender of household head (1=male, 0= female)	6.71	1.55	5	10
Family size	Number of households member	0.61	0.49	0	1
Education	Dummy for education (1= have formal education up to 8 years, 0= have no formal education)	0.58	0.54	0	1

Variable	Description	Mean	Std. Dev	Min	Max
Occupation	Dummy for occupation (1= employed, 0= unemployed)	0.54	0.53	0	1
Land ownership	Amount of land	3.67	3.43	0	22
House type	Dummy for house type (1= tin-shade, 0=otherwise)	0.78	0.41	0	1
Total Income	Total household income	11430.82	4104.542	5000	24000

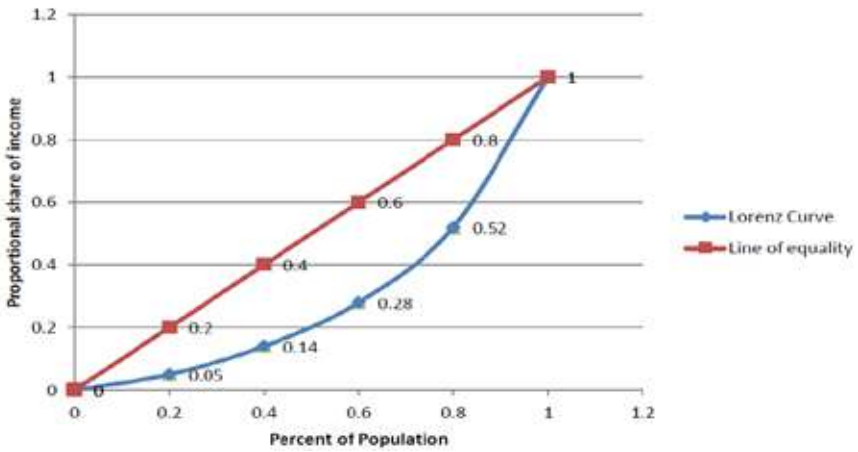
Source: *Field Survey, 2018*

Table 4.1 shows the socio-demographic and economic profile of the households. The mean age was found to have about 47 years. About 55% of the respondents were found to fall in the age group between 25-35, indicating sample populations were young. About half of the respondents were found to have female. Education variable only contains information about whether respondents have formal education, i.e., basic level of education up to 8 years. The table shows that around 60% of respondents have formal education. While looking at the occupation dummy, only 54 per cent of people were found to have engaged in work, whereas more than 45 per cent were found to have no work. Due to income status, most households have low-cost tin-shade houses, representing about 80% of the house type. The average income was about 11500 taka, more than the poverty line income. In the central part of the households, which is almost 40 per cent of the total sample size, monthly income is between 5001 to 15000 taka. The high-income group, which ranges from 25001 to above 30000 taka, comprises 28% of total households.

4.2 Gini-Coefficient of Income

Scholars in academia always show their continuous interest in measuring income inequality besides poverty. A popular measure of inequality is the Gini coefficient. We found income Gini coefficient of the study area is 0.404, which is less than our national Gini coefficient ratio (i.e. 0.46) according to the last BBS survey in 2010. We know from past data that there is a difference between rural and urban inequality. Urban inequality always maintains a higher rate than in rural areas. Since our study area consists of a non-urban community, our findings support past data on BBS. Though the income level of the rural community is much lower than urban people, rural inequality is much less than urban inequality. The Gini coefficient $G = \frac{A}{A+B}$ is derived from the Lorenz curve illustrated in the figure 4.2.

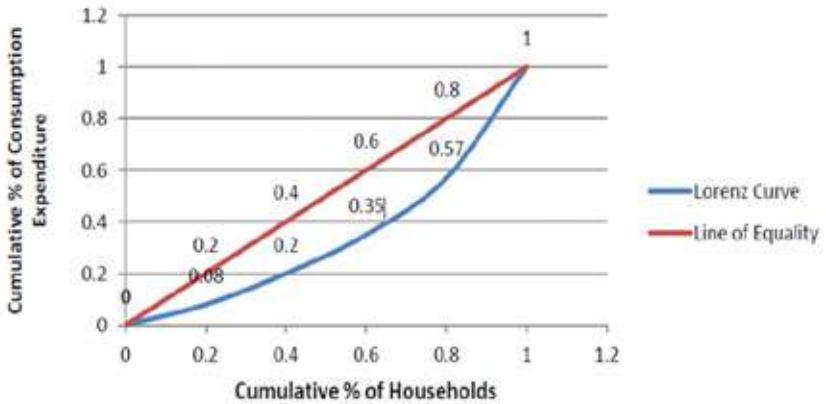
Figure 4.2: Gini-Coefficient of Income



4.3 Gini-Coefficient of Consumption

From our collected field data, we have found that the Gini coefficient of consumption expenditure is 0.32, much higher than the national Gini coefficient of consumption expenditure (i.e. 0.27) according to the last BBS survey in 2010. Moreover, BBS data exposes that the values of the Gini concentration ratio for consumption expenditure are lower than the corresponding values of the Concentration ratio for income in rural and urban areas. This study also reaffirms this truth. From this, it can be said that the analysis provides convincing evidence that there is less consumption expenditure inequality than income inequality. This would compel us to rethink our policymaker since the expenditure Gini ratio increases. From this fact, we can assert that the lower-income group suffers from consumption deficiency. Figure 4.3 shows the Gini concentration ratio for consumption expenditure.

Figure 4.3: Gini-Coefficient of Consumption



The main aim of this study was to assess the inequality situation based on field reality. In order to study the baseline status of the respondents, we used descriptive statistics for our survey data where we can see that the majority percentage of respondents, which is 60%, are middle-aged (i.e., 35 years to 54 years). Most of the income accrued to that group. The housing status of our study area is not so good. 20% of households still possess mud (kutcha) houses, and almost 80% of houses are made of low-cost tin shade. This brings the message that the upper-income class has the exclusive ability to build a structured house. This means that the overall quality of life remains under average level. From the literacy status of the respondents, we measured that illiteracy (58%) having education of up to 8 years of schooling.

In contrast, more than 40 per cent have no education, which might be the main reason for income inequality. Fifty-eight per cent of the respondents are involved in regular work, whereas the rest were found to have temporary work. It does not match our national employment statistics, which may be due to the small sample size. We have found that almost 90 per cent of respondents have less than ten decimals of land ownership in the study area. This outcome expresses the pertinent fact of inequality in our country. We have also explored that 10 per cent of households' income is less than 5000 taka per month in our study area. This pinpoints a bleak picture in our country, where the per capita income of Bangladesh is above 1909 dollars, and already we have reached the lower middle-income group.

Moreover, a significant portion of the households, almost 40 per cent of the total sample size, have a monthly income between 5001 to 15000 taka. It does not carry good news for us, and from this, we can say that the situation of income distribution and inequality remains stagnant. We have computed the Gini ratio to capture the inequality situation in our study area. We found income Gini coefficient of the study area is 0.404, which is less than our national Gini coefficient ratio (i.e. 0.46) according to the last BBS survey in 2010.

Our obtained Gini-coefficient of consumption expenditure is 0.32, which is higher than the national Gini-coefficient of consumption expenditure (i.e. 0.27) according to the last BBS survey in 2010. This study reaffirms that the income Gini coefficient always remains higher than the consumption Gini coefficient. The upsetting picture of the consumption Gini coefficient is that it is increasing, which means that lower-income groups have suffered from consumption deficiency.

5. Conclusion and Recommendation

Based on the study findings, we forward the following recommendations. Bangladesh will need to maintain income growth, which continues to be one of the two key drivers of poverty reduction. This will require public investments to help increase agricultural productivity and promote growth in the demand for salaried

work in manufacturing and services. Critically important for this are immediate investments in improving transport, power and gas, supporting entrepreneurship by reducing business transaction costs and strengthening the transparency and accountability of both the public and private sectors. Bangladesh should cater more aggressively to the skills development of its growing youth population to fully harness the "demographic opportunity". Bangladesh can better use its vast social safety net expenditures through improvements in program design to emphasize human capital accumulation (such as child nutrition and cognitive development, education and skills) and productive employment. Targeting these benefits and services to the poorest people and improving the timing of safety net responses to mitigate the effects of various natural disasters and global shocks will ensure that growth remains inclusive. Redistribution of income and wealth is necessary for the favour of lower-income groups. One way this may be implemented is through a safety net programme. Here we can employ the Marxist view that the only commanding authority is government, and this government will solely act in the best interests of lower-income groups. Political motivation is needed first for these activities. We know major economic indicators of our country are evolving simultaneously; credit market distortions and poor quality education (i.e. education is not need-based) remain major hindrances to our development. This should be adequately tackled. We discovered that illiteracy is still a dominating factor in unequal income distribution. To resolve this problem, government spending on education should be targeted at those classes. It would result in double dividends. In the short run, inequality will decrease, and the prolonged effect will be breaking the poverty trap as more poor children are given a chance at formal education. This would elicit a better future. To increase the income of the bottom class, macrocosmic and structural reforms are needed so that the peripheral classes are given priority to break the existing bottleneck.

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