A Study On Trend Of The Income Inequality: Evidence From Bangladesh

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INTRODUCTION

Overall in the world, particularly in the developing countries, poverty remains a major concern of the development policy issues (UNECA, 2005: p. 13). So, poverty reduction plays a significant role in the setting of development policy goals of these countries. Considering the importance of poverty reduction, the World Bank (1990: p. 12 & 2001: p. 21) has designed a program called the *'Millennium Development Goals' (MDGs)* focused on reducing poverty. This has been endorsed by 189 countries and is aimed to be achieved by 2015. Bangladesh identifies poverty as one of her major economic, social, and humanitarian problems. So, respective policies, programs and projects have been designed and implemented with the aims of poverty alleviation. The Planning Commission of the country explains, *"The principal goal is to reduce poverty so as to gradually lift the vast majority of the people above the poverty line (Unlocking the potential, 2005: p. 1)."*

In Bangladesh, based on daily calorie intake, poverty has been divided into two categories, *Poverty Line-1* and *Poverty-Line-2*. People taking less than 2122, but more than 1805 kcals (Kilo calories) of food daily are included in the category *'Poverty Line-1'*. The people included in this category are classified as absolute poor. People taking less than 1805 kcals of food daily are included in the category *'Poverty Line-2'*. The people included in this category are called hard-core poor (Bangladesh Economic Review, 1996: p. 81).

Available data shows that in 1984, nearly 62.6% of the total population of Bangladesh were under Poverty Line-1. However, from 1984 to 2005, success in poverty reduction could be recorded. Nationally, the absolute poverty could be reduced during these twenty-one years from 1984 to 2005 from 62.6% to 40.4% (SYB, 2009: pp. 558-561). Though these figures in percentage seem to be encouraging and impressive, however, it must be cautiously mentioned that even in 2005, nationally, not less than 40.4% of the total population remained under absolute poverty.

Including this, a differential development in the poverty between rural and urban Bangladesh is to be noticed. In 1894, nearly 61.9% (51.1 million) of the rural population was absolute poor; in 2005, it was nearly 39.5% (41.2 million) of the rural population. In urban Bangladesh, during this time, the number of absolute poor swelled from 7.3 million to 14.8 million, though in percentage to the total urban population, it sank. The reason was that the urban population grew more quickly than the number of the urban absolute poor (SYB, 2009: pp. 558-561). The trend of the absolute urban poor shows this development distinctly. The trend of the absolute poor in numbers showed a continuous falling tendency; however, in percentage, it showed a continuous rising tendency (Graph-1).

In 1984, nearly 36.8% of the total population were hardcore poor people. From 1984 to 2005, the share of the total hardcore poor people to the total population sank; in 2005, only 19.5% of the total population remained hard core poor people (SYB, 2009: pp. 558-561). However, hardcore poverty developed in rural and urban Bangladesh differently during this period. In 1984, nearly 34.4% of the urban population were hardcore poor people; in 2005, only 24% of the urban population were hard core poor people. It means that the share of hardcore poor people to the total urban population decreased during this time. In number, on the contrary, the urban hardcore poor people doubled during this time (Graph-2). The number of hardcore urban poor people increased from 1984 to 2005 from 3.8 million to 8.3 million (SYB, 2009: pp. 558-561). The reason of this development (Graph -2) was that from 1984 to 2005, the urban population rapidly increased because of the exodus of the rural poor, especially in the big cities. So, the share of the hardcore poor people to the total urban population (i.e. in percentage) decreased.

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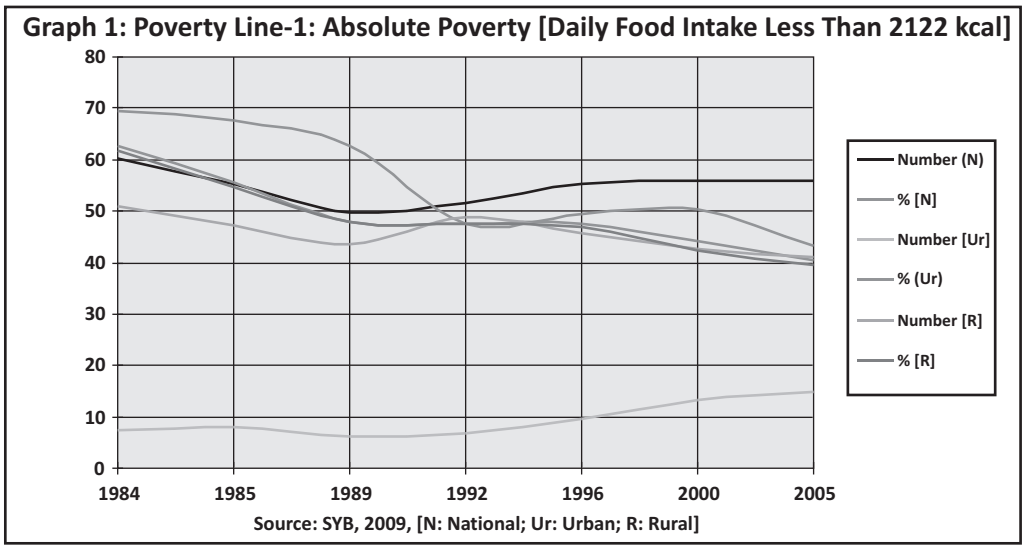
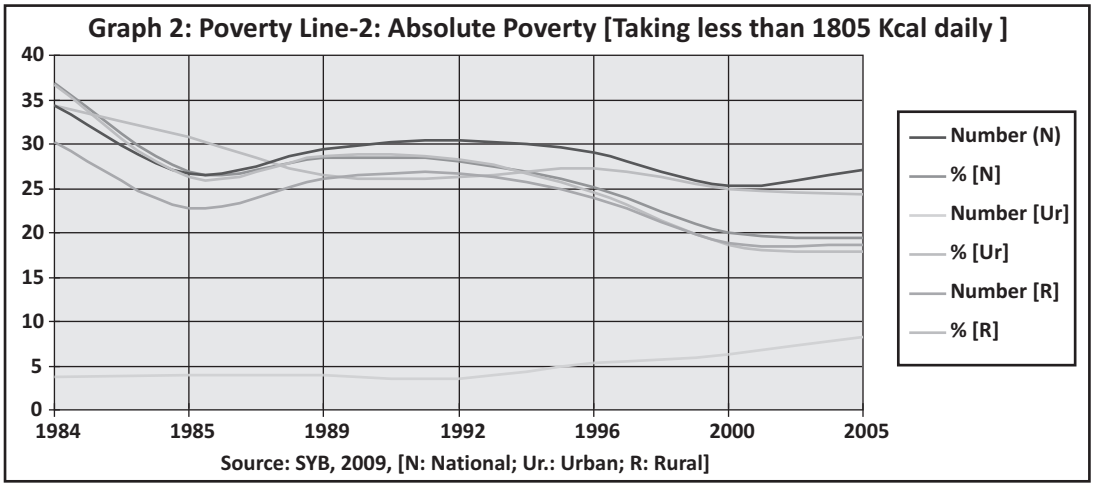


In rural Bangladesh, the number of hard core poor people sank during 1984 to 2005 from 30.2 million to 18.7 million. In 1984, nearly 36.7% of the rural population were hard core poor people; in 2005, only 17.9% of the rural population were hardcore poor people (SYB, 2009: pp. 558-561). The trend of the national hardcore poor people in Bangladesh from 1984 to 2005 makes a positive impression (Graph -2); however, more has to be done for the reduction of the rural as well as urban poverty.



OBJECTIVES OF THE STUDY

The objective of this study is to review the trend of the income inequality in Bangladesh. In specific, the study intends to:

- Estimate the trend of income inequality in Bangladesh, and
- Make policy suggestions for the reduction of poverty.

LITERATURE REVIEW

The question that how income inequality behaves in the economic, social, political, cultural and humanitarian development process, and whether it is detrimental to growth has been an important topic of research for the economists for a long time. In concrete, the study of the relationship between income inequality and economic growth dates back to the research by Kuznets (Kuznets, 1955: pp. 1-28 & 1963: pp. 1-80). He examined the determinants of the level and trend in income inequality and the link between growth and income inequality. *The key finding of his work is known as the famous inverted U-shaped pattern of income inequality.* It means that income inequality remains high

during the initial stage of development and declines later with the growth of the economies. Kuznets relates income inequality to income level; and assumes a positive relationship between the rate of economic growth and changes in income inequality. According to Kuznets, regarding income inequality, the economies can be divided into two groups **(i)** A low average income group with low income inequality, especially in the rural agricultural region and **(ii)** A high average income group with high-income inequality in the urban region. The developing countries with low average national income should have low income inequality. That means, when the countries are in the developing process, the per capita average national income and the income inequality remain low. In the fast-growing economies, the rich would have to receive proportionally higher gains from growth than the poor. With economic development, the per capita average national income, as well the income inequality grows.

Studies in the 1970s (Adelman and Morris, 1971: p. 112 and Ahluwalia, 1976: pp. 307-342) showed that the pattern of income inequality in industrialized countries followed the *'Kuznets Hypothesis'*. These studies further showed that growth does not consistently affect income inequality (Deninger and Squire, 1998: 10/3; Ravallion and Chen, 1997: pp. 11-12). In the beginning of 1980s, 'Kuznets Hypothesis' again came under scrutiny. Anand and Kanbur (1984: pp. 25-40) concluded in their studies that Kuznets tested his hypothesis on low quality data; and the methodology used by him for the investigation was weak. In the 1990s, Deininger and Squire (1998: 10/3) tested again 'Kuznets Hypothesis' using high-quality data of 108 countries. Surprisingly, neither cross-country nor individual country data supported 'Kuznets Hypothesis'. Deininger and Squire (1998: 10/3) however, found empirical evidence in their studies that in the fast-growing economies, the rich receives proportionally higher gains from growth than the poor. On the other hand, Ravallion and Chen (1997: pp. 11-12) found in their studies the evidence to conclude that with economic growth, the income inequality declines. They found ignorable correlation between the growth in the average household income and the change in the income inequality. Kuznets predicted that the correlation between income inequality and economic growth is not inevitable. A number of East Asian countries like Korea, Taiwan, and Hong Kong have enjoyed high growth rates with low income inequality during the past decades.

The effect of income inequality on growth has been explained in three different approaches: **(i)** Classical **(ii)** Modern; and **(iii)** Unified approach. In the *Classical view*, inequality can have a positive impact on economic growth. It explains, that with the increasing income level, the propensity to save increases, so if the income is redistributed in favour of the rich, more is saved, which promotes capital formation and economic growth. This approach is supported by Kaldor's macroeconomic development model (Kaldor, 1957: pp. 591-624). The economists comprehending modern approach are divided into different groups, but all of them have the same view that income inequality is detrimental to growth. Alesina & Perotti (1996: 40/6) and Benhabib & Rustichini (1996: 1/3), as for instance, explain that income inequality is politically destabilizing. It promotes socio-political unrest and instability, as in the society, there is generally a propensity to populist redistributive policies. Besides, high-income inequality generates higher rate of crimes, corruptions, and social and political turmoil, which disrupt the normal functioning of markets and discourage investment. As a consequence, the economy crumbles and growth declines. Perotti (1996: pp. 149-187) explains that if poverty in a society worsens below a certain level, more children are preferred, because under such circumstances, children are considered as the sources of more family income and insurance of the security of the old age. High growth rate and increased population demands more and more resources to be used for meeting urgent social and human needs for increased population. This eats up resources that could be used for investment, employment and income generation. As a consequence of income inequality, ultimately, investment and economic growth sink (Perotti, 1996: pp. 149-187). Galor (2000: pp. 706-712), and Aghion (1999: p. 37) and other group of economists have the view that high-income inequality is detrimental to growth because the poor are unable to save, which leads to insufficient capital formation and imperfect credit market. The investment not only lags in growth-promoting physical and human capital, but also in general, even if it offers a high rate of return. They emphasize that the greater the income inequality, the lower is the stock of human capital in the economy. They presume that economic growth is primarily enhanced through human capital accumulation, as suggested by the new growth theory, the endogenous growth theory.

The last group of economists - those who (Alesina and Rodrik, 1994: 109/2) correlate economic growth with income inequality, link their view with an endogenous growth theory. The idea is that in the case of higher-income inequality, the majority of the voters tend to favour a government policy in the form of public expenditure programmes. This leads to redistributive fiscal policy, higher government expenditure and distorting taxation policy, which cause the growth to decline.

Galor (2000: pp. 706-712) endorsed the unified approach, in which, he attempts to reconcile the conflicting views of

the classical and the modern approaches. He argues that the classical approach is applicable only for the early stage of economic development, which is characterized by low incomes and scarce physical capital. Income inequality in the early stage of development promotes higher savings, increased investments, and hence, greater economic growth. However, later, human capital becomes the main thrust of growth. Wages increase, and as a result, credit constraints disappear and the adverse effect of the income inequality on the economic growth becomes insignificant.

The theoretical discussions presented above reveal contradictory predictions. According to the earlier view, impact of income inequality on growth could be positive, whereas, the recent view predicts a negative effect of income inequality on growth. Current empirical studies, however, do not support the assumption of the positive impact of income inequality on growth. Instead, the investigation of Aghion, Caroli and Garcia-Penalosa (1999: p. 37) exposes a negative impact of income inequality on growth. Furthermore, Barro (2000: pp. 5-32) finds in his study, a negative impact of income inequality on growth for countries with average income less than US$ 2100.

RESEARCH METHODOLOGY

For the study of theories, issues and phenomenon of the social sciences, either qualitative or quantitative, or both of the research methodologies can be used. Qualitative research methodology includes an array of interpretive techniques, which seek to describe, decode, translate, and otherwise, come to terms with the meaning, not the frequency of certain less naturally occurring phenomenon in the social world. It tells how and why things happen as they do. Qualitative research techniques are used in both - data collection and analysis stages. In the data collection stage, the techniques include focus group selection, interviews, case studies, ethnography, grounded theory, action research, and observation (Cooper & Schindler, 2006: pp. 143-144). In the data analysis stage, this technique includes a study of written or recorded materials, behavioural observation, as well as the study of artefacts, and traces evidence from the physical environment. Qualitative research mythology is very often called interpretive methodology, because it seeks to develop an understanding through analysis and builds theory, but rarely tests theories. Quantitative methodology, on the other hand, attempts precise measurement of something. In economics, quantitative research methodology usually measures attitudes, knowledge, opinions, behaviour, etc. It answers questions related to how much, how often, when and who. While a survey is a dominant technique in quantitative research methodology, frequently, secondary data are also used. Quantitative research methodology is often used to test theories and hypothesis.

For the preparation of this research article, secondary literature such as national and international publications, journals, government's policy reports, bulletins, etc. of the relevant field were studied, and websites of different writers from pertinent themes were visited and utilized. For the analysis of the data and information, both qualitative research methodologies, as well as quantitative research methodologies have been used. As for instance, for estimating income inequality and poverty, Gini-Coefficient of inequality was computed using the mathematical model and Computer Program, the SPSS. This is the most commonly used quantitative method to measure inequality (Lerman and Yitzhaki, 1984: pp. 363-368). To incorporate the views of the government's policymakers, and the experts of the Non-Government Organizations about the trends in the income inequality, an opinion survey was done. For the survey, a questionnaire was prepared and the opinion of the respective officials from the ministry of planning, ministry of social welfare and administration of the PKSF (*Palli Karma Sangsthan Foundation*) and micro credit program of the Grameen Bank was surveyed.

❁ **Methods For Computing The Gini Coefficient :** Dr. Max O. Lorenz, a famous economist and statistician, studied distribution of income and wealth to measure economic inequality. He put his findings in a curve known as the Lorenz Curve, which was a graphical method for studying variation. This curve could be used for the study of distribution of income, profit, wages, salaries, etc (Pillai, 1999: p. 285, p. 286 and Gupta and Gupta: 2007: p. 146). It was developed by the Italian statistician Corrado Gini (Sutcliffe, 2007: p. 12, p. 13). To measure inequality, he proposed a Coefficient known after his name - the Gini Coefficient. It is a numerical measure of inequality, which can be derived directly from the Lorenz Curve (Miyamura, Satoshi, 2009) as illustrated below:

❁ The sizes of the items and their frequencies have to be cumulated.

❁ Percentages of the cumulated values (items and frequencies) are to be computed.

❁ The X- and Y-axis has to be divided into 100 units (from 0 to 100).

❁ The percentages of the cumulative values of the items along X-axis, and the frequencies along Y-axis have to be plotted .

- The points are jointed, and a curve is drawn known as the Lorenz Curve (Graph -3).
- A straight line is drawn joining the origin (0, 0) and the point (100, 100) which lies opposite to the origin. This diagonal is known as the line of equal distribution. Any point on this line indicates that the variables are equally distributed (Graph -3).
- Greater the distance between the curve and the line of equal distribution, the greater is the inequality among the items.
- Nearer is the curve to the line of equal distribution, the smaller is the inequality among the items.
- Certainly, the line of actual distribution can never cross the line of equal distribution (Gupta & Gupta, 2007: p. 143).

The Gini Coefficient (G) in the curve (Graph -3) could be expressed mathematically as $G = \frac{A}{A + B}$. The maximum and minimum values of G are 1 and 0 respectively[1]. In terms of B, the Gini Coefficient is $G = 1 - 2B$[2] .In terms of the values of the items (X) and their frequencies (Y), B could be estimated as follows [Graph 3]:

$$B = \frac{1}{2} \text{ x } (X_1 - X_0)(Y_1 + Y_2) + \frac{1}{2} \text{ x } (X_2 - X_1)(Y_2 + Y_1) + \frac{1}{2} \text{ x } (X_3 - X_2)(Y_3 + Y_2) + \ldots\ldots\ldots\ldots \frac{1}{2} \text{ x } (X_k - X_{k-1})(Y_k + Y_{k-1})$$

$$\Rightarrow B = \frac{1}{2} [(X_1 - X_0)(Y_1 + Y_2) + (X_2 - X_1)(Y_2 + Y_1) + (X_3 - X_2)(Y_3 + Y_2) + \ldots\ldots\ldots\ldots \text{ x } (X_k - X_{k-1})(Y_k + Y_{k-1})]$$

$$\Rightarrow B = \frac{1}{2} \Sigma (X_k - X_{k-1})(Y_k + Y_{k-1})$$

Hence, Gini Coefficient could be expressed as follows:

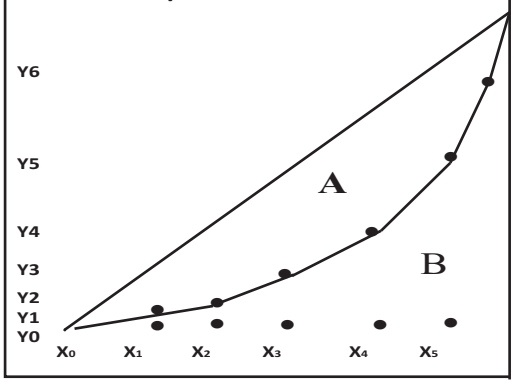
$$\Rightarrow G = 1 - 2B = 1 - 2 \text{ x } \frac{1}{2} \Sigma (X_k - X_{k-1})(Y_k + Y_{k-1}) = 1 - \Sigma (X_k - X_{k-1})(Y_k + Y_{k-1})$$

$$\Rightarrow G = 1 - \Sigma (X_k - X_{k-1})(Y_k + Y_{k-1})$$[3]

For Gini Coefficient of income inequality:

- X_k is the cumulated proportion of the population variable, for k = 0,...,n, with $X_0 = 0$, $X_n = 1$.

Graph 3: Lorenz Curve



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[1] The maximum and minimum value of G can be 1 and 0 respectively. If there is complete equality among the items, Lorenz Curve coincides with the line of equal distribution. In this case, the area of B grows hitherto that *A* disappears (A = 0). The value of the Gini Coefficient, G, becomes 0, because $G = \frac{0}{0 + B} = 0$. If there is an absolute inequality (no income distribution and one household owns the whole income), the area B disappears (i.e. B = 0) in this case $G = \frac{A}{A + 0} = 1$.

[2] $G = \frac{A}{A + B}$, $G = \frac{A + B - B}{A + B}$, $G = \frac{A + B}{A + B} - \frac{B}{A + B}$, $G = 1 - \frac{B}{A + B}$, $G = 1 - \frac{B}{\frac{1}{2}}$, $G = -2B$

[2(A+ B) makes the total square 1, or 2(A+ B) = 1, so A+B = ½.]

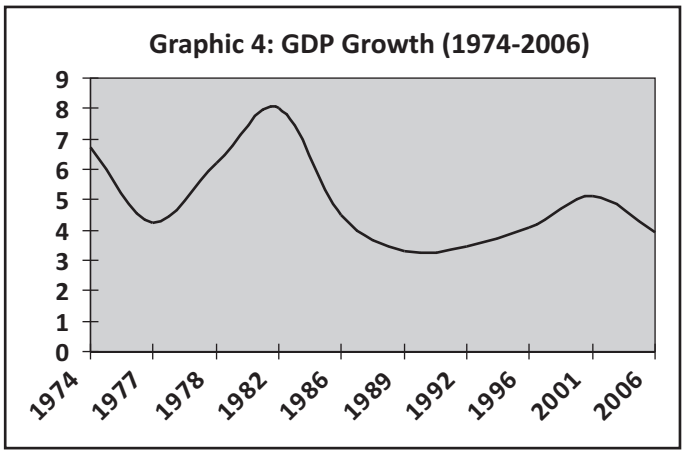
[3] For some distributions, Gini Coefficient is computed by formula $\Rightarrow G = |1 - \Sigma (X_k - X_{k-1(0)}) \text{ x } (Y_k + Y_{k-1})|$

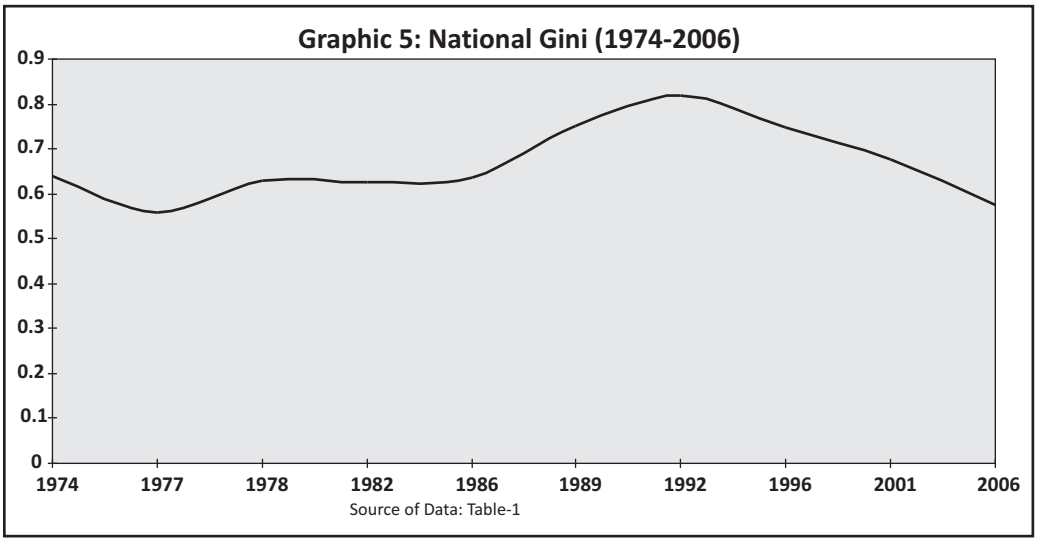
❁ Y_k is the cumulated proportion of the income variable, for k = 0,...,n, with $Y_0 = 0$, $Y_n = 1$.

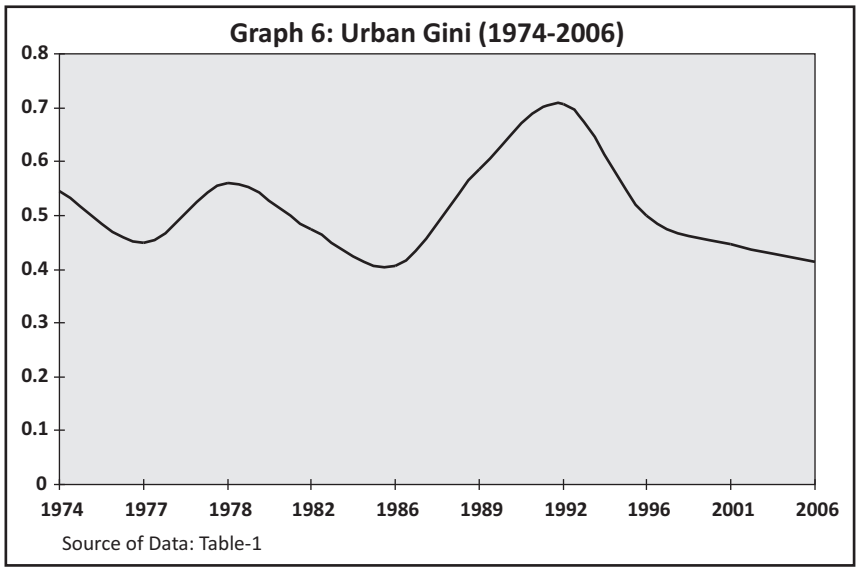
The properties of the Gini Coefficients are a mixture of Pearson's and Spearman's coefficients of correlation (Schechtman and Yitzhaki ,1999: pp. 207-231).

The Gini Coefficient could be used to compare income distributions across different classes of population in a country. Difference between the Gini Coefficient of the urban population of a country and that of the rural population indicates that there is income inequality between the urban and rural population. Change in the Gini Coefficient over time shows how the income has changed among the different sections of the population during this time. If the Gini Coefficient rises with the GDP, poverty may not be improving for the majority of the population (Ray, 1998: p. 188). Gini Coefficient, however, may not give a functional result for a large and economically diverse country. In such cases, a much higher Coefficient may be calculated for the country as a whole, than that for each of its regions. Though the Gini Coefficient is popularly used in economics, it could be applied in any field of science that studies a distribution. For instance, in ecology, the Gini Coefficient is used as a measure of biodiversity, where the cumulative proportion of species is plotted against cumulative proportion of individuals (Wittebolle, 2009: pp. 623-626). In medical science, it is used to measure the inequality in the medical services related to the quality of life. In Chemistry, it is used to express the selectivity of protein kinase inhibitors against a panel of kinases (Asada, 2005: p. 7).

❁ **Computing Gini Coefficient For Bangladesh :** The trends in the *'Gini Coefficients'* in Bangladesh indicate wide income inequality (Table-1 and Graphs 5, 6). In 1974, the national Gini Coefficient was 0.641. In the following years it sank, though not very dramatically. In 1977 and 1978, the Gini Coefficients were 0.5577 and 0.63 respectively (Table-1). From 1974 to 1978, the income inequality fluctuated, but had a trend to remain at a same level.







During the 1970s, Bangladesh's economy grew persistently (Table 1 & Graph 4). From 1974 to 1977, the growth rate of the GDP sank, but it remained relatively high; from 1978 to 1982, the GDP grew faster than before. From 1982, to the beginning of the 1990s, the growth rate slowed down; but during the last decade of the past Millennium, and the first half of the beginning decade of the new Millennium, the growth rate of the economy of Bangladesh showed a rising trend.

Table 1: Development of Gini Coefficient In Bangladesh From 1974 to 2006[4]

Year/Category	1974	1977	1978	1982	1986	1989	1992	1996	2001	2006
GDP Growth	6.70	4.22	6.20	8.01	4.50	3.29	3.49	4.11	5.10	3.93
National Gini	0.6410	0.5577	0.63	0.6264	0.6370	0.7519	0.8187	0.7478	0.6768	0.5768
Urban Gini	0.5446	0.4496	0.56	0.4742	0.4066	0.5861	0.7056	0.4994	0.4469	0.4131
Rural Gini	0.6502	0.5693	0.66	0.7101	0.6691	0.7759	0.8361	0.7964	0.7348	0.6321

Note: NGC: National Gini Coefficient, UGC: Urban Gini Coefficient, RGC: Rural Gini Coefficient

Source: Statistical Yearbook, Ministry of Finance, Government of Bangladesh, People's Republic of Bangladesh, 1975, 1980, 1982, 1984, 1985, 1989, 1993, 1995, 1998, 2000, 2009. Dhaka, Bangladesh.

A comparison between the growth rate of the GDP and the national Gini Coefficient shows that from 1974 to 1982, both the GDP and the national Gini Coefficient had been showing a growing trend (Graph 4 & Graph 5). During the second half of 1980s, the GDP grew with slower rate than before, but the national Gini Coefficient had a growing trend as before. Only during the last two decades (from 1992 onwards), with the growing economy, the Gini Coefficient had showed a sinking trend.

In brief, from the second half of 1970s to until the beginning of the 1990s, the GDP grew with fluctuation, but the growth of the GDP had no impact on the Gini Coefficient, i.e. income distribution (Graph 4 & Graph 5). From the beginning of 1990s to 2006, however, with the growth of the GDP, the Gini Coefficient had shown a falling trend. It means that with the growth of the economy, the income inequality sank during this time.

From the middle of the 1970s, to the middle of 1980s, the urban Gini Coefficient, compared to the national Gini Coefficient remained not only low, but had a decreasing trend. The urban Gini Coefficient in 1974 was 0.5446; in 1978, it went up a little, but in the subsequent years, it sank. In 1982 and 1986, it was only 0.4742 and 0.4066 respectively. However, the national average Gini Coefficient in 1974, 1982, and 1986 were 0.6610, 0.6264 and 0.6370 respectively (Table 1). From the middle of 1980 to the beginning of the 1990s, the national average Gini Coefficient went up sharply; but after that until 2006, it experienced a falling trend.

[4] This and the following Tables and Graphs have been prepared using the statistical computer program - the SPSS.

Table 2: Pearson Coefficient of Correlation					
		GDP	NGC	UGC	RGC
GDP	Correlation	1	-0.401	-0.163	-0.287
	Sig. (1-tailed)		0.126	0.326	0.211
	N	10	10	10	10
Source of Data: Table-1					

Table 3: The Value of R, R^2, F Change and Sig. F Change							
	R	R Square	Std. E. E.	Change Statistics			
				F Change	df1	df2	Sig. F Change
GDP/NGC	0.401	0.160	0.08035	1.529	1	8	0.251
GDP/UGC	0.163	0.027	0.09669	0.218	1	8	0.653
GDP/RGC	0.287	0.082	- 0.084	0.716	1	8	0.422
Independent Variable (Predictors): GDP Source of data: Table-1.							

From 1974 to 2006, in general, the national Gini Coefficient in Bangladesh remained very high; but the rural Gini Coefficient was much higher than that of the national Gini Coefficient. In 1974, the national and urban Gini Coefficients were 0.641 and 0.5446 respectively; but the rural Gini Coefficients remained above the national and urban Gini Coefficient (Graph 5 and Graph 6). The rural Gini Coefficient in 1974 was 0.6502 . Though as an impact of the growth of the GDP, later, from the beginning of the 1990s to 2006, like the national and urban Gini Coefficients, the rural Gini Coefficient also sank (Graphs 5 and 6). In 1992, the rural Gini Coefficient was 0.8361; in 2006, it sank to 0.6321 (Table-1). This indicates that like the national and urban income inequality, the rural income inequality in Bangladesh from 1974 to 2006 also sank, but it remained much higher than that of the national and urban income inequality.

The Table 2 shows correlations **(i)** between the GDP and national Gini Coefficients, **(ii)** between the GDP and urban Gini Coefficients, and **(iii)** between the GDP and national Gini Coefficients from 1974 to 2006. The Table shows that there is a negative correlation between the GDP and the other three variables, the national, urban and rural Gini Coefficients. It means that with an increase of the GDP, the national the Gini Coefficient sank. It indicates that with the growth of the GDP, the income differences between the different income groups of the population decreased, which has been forecasted by many economists discussed in the literature review. A weak correlation between GDP and national Gini Coefficients of - 0.401 indicates that slow growth of the GDP in Bangladesh was not enough to reduce the income inequality among the different income groups of the population considerably. Higher value of significance (0.126) of the correlation hints that even this weak correlation is reliable.

The value of the R^2 (0.160) for the correlation between GDP and national Gini coefficient shows that 1% increase in the

Table 4 : The values of β, Std. Error, t and Sig.				
	Coefficients		t	Sig.
	B	Std. Error		
Constant	0.773	0.090	8.613	0.000
NGC	-0.021	0.017	-1.236	0.251
Constant	0.557	0.108	5.159	0.001
UGC	-0.010	0.021	-0.467	0.653
Constant	0.780	0.094	8.310	0.000
RGC	-0.015	0.018	-0.846	0.422
Independent Variable: GDP Source of data: Table-1.				

GDP causes only 0.16% decrease in the national income inequality. It means that the growth of the GDP had insignificant correlation with the income inequality, which is supported by relatively large standard error of estimate 0.08035 (Table 3). The 'Sig. F Change' (0.251) expresses that it is not true that there was no correlation between the change of GDP and income inequality, but out of 100 cases, in 25.1 cases, the correlation could be otherwise.

The regression coefficient (β) between GDP and national Gini Coefficient is - 0.021, which has to be considered as low. The standard error of estimate of regression coefficient is 0.017. As compared to the regression coefficient, the standard error of estimate is high, which reduces the reliability of the regression coefficient. The value of t (-1.236) and its high value of Sig. (0.251) confirm the unreliability of the regression coefficient further. The value of intercept of the regression line is 0.773, which is estimated with a relatively acceptable std. error of estimate, 0.090. The value of t (8.613) of the intercept and its sig. (0.000) confirm its reliability further (Table 4). The regression between the GDP and the national Gini Coefficient could be expressed by the regression equation :

$$\mathbf{Y = - 0.21X + 0.773}$$

where Y = NGC and X = GDP.

Between the GDP and the urban Gini Coefficient, there is also negative correlation. It means that with the growth of the GDP, the urban Gini Coefficient sank. This indicates that with the growth of the economy, the income inequality in the urban region of Bangladesh decreased. The small value of the coefficient of correlation between the GDP and the urban Gini Coefficient, - 0.163 indicates that the correlation is very weak. High significance value, 0.326, of the coefficient of correlation diminishes its reliability (Table 2). The value of the R^2, 0.027, shows that 1% increase in the GDP causes only 0.027% decrease in the urban income inequality. It means that the growth of the GDP had an insignificant correlation with the urban income inequality, which is strengthened further by relatively large standard error of estimate 0.09669 (Table 3). Large 'Sig. F change' (0.653) expresses that the correlation is very unreliable; out of 100 cases, in 635.3 cases, the correlation may not be true.

The regression coefficient between GDP and the urban Gini Coefficient is - 0.010; and the standard error of estimate of the regression coefficient is 0.021. In comparison to the regression coefficient, the standard error of estimate is too high, which reduces the reliability of the regression coefficient between the GDP and the urban Gini Coefficient. The value of t and its very high value of Sig. (0.653) affirm its unreliability further. The value of intercept of the regression line is 0.557, which is estimated with the standard error of estimate 0.108. The value of t and its sig. (0.001) confirm the reliability of the intercept (Table 4). The regression between the GDP and the urban Gini Coefficient could be expressed by the regression equation :

$$\mathbf{Y = - 0.01X + 0.557}$$

where Y = UGC and X = GDP

The coefficient of correlation between GDP and rural Gini coefficients is larger than the coefficient of correlation between GDP and urban Gini coefficients (Table 2). The small value of R^2, 0.082, and nearly an equal standard error of estimate, 0.084 implies that the impact of the growth of the GDP on rural income inequality is very insignificant and unreliable. It expresses that 1% growth in the GDP causes only 0.082% improvement in the rural Gini Coefficient, i.e. income inequality. Large value of Sig. F Change, 0.422, hints about the high unreliability of the correlation.

The regression coefficient between the GDP and the rural Gini Coefficient is -0.015; and the standard error of estimate of the regression coefficient is 0.018. The standard error of estimate is larger than the regression coefficient, which reduces its reliability. The value of t and high value of its Sig. (0.422) indicate the unreliability of the regression coefficient. The value of intercept of the regression line is 0.780, which is estimated with the standard error of estimate 0.094. The value of t and its sig. (0.000) confirm the reliability of the intercept (Table-4). The regression between the GDP and the urban Gini Coefficient could be expressed by the equation:

$$\mathbf{Y = -0.015X + 0.780}$$

where Y = UGC and X = GDP

The trend of the national, urban and rural Gini Coefficients correlates with the economic reality and trend of the development in Bangladesh. Before the independence of the country in 1971, there was small economic disparity between the urban and rural region of the country. The urban region of the country was small, and underdeveloped. There was a relative economic balance between the urban and rural region, and small income inequality between urban and rural Bangladesh.

With the independence of the country and industrial development, more and more resources were accumulated by the

producing class of people of the country. More and more educated young people migrated from the rural regions of the country into the cities in search of better opportunities for life. Many of these people got employment in the newly established industries, with relatively better wages than in the rural region. However, in the beginning (until 1990s), this opportunity was limited to a small group of people. On the other hand, with industrialization, illiterate workforces also migrated to cities. So, the urban population increased. Some of these got employment in the newly established industries. These people were mostly illiterate and comprised of the unskilled workforce. Their wages were low and had a little impact on income inequality. On the other hand, most of the people immigrating to cities had to live in the slums with very small income. The income of the producing class and rich people, on the contrary, increased with the growth of the economy quickly. So, during this time, though the economy grew, the urban Gini Coefficient, i.e. urban income inequality also grew. During the last decade of the past Millennium and the beginning of the new Millennium, the Gini Coefficient and the income inequality began to decrease. The industrial development stabilized, new industries were established and service sectors developed. The economy was on a growth path as before, and with the growing income of the wealthy people, the income of people that had been integrated in the industrial development also increased. Therefore, during this time, the urban Gini Coefficient and urban income inequality diminished.

From 1974 to the beginning of the 1990s, like the urban region, the rural region also had a similar development scenario. The rural resources and wealth began to be concentrated in the hand of a small group of people. For the small and subsistent farmers, farming became unsustainable. In this process, the small, especially the subsistence farmers, became infeasible. A bigger part of these farmers had to give up their farming and became landless. They got employment, mostly during harvesting. So, the average annual income of these people remained very low, and did not grow like that of the wealthy farmers. A part of them migrated to the cities in search of income and better life; but a considerable part remained behind in the villages as landless poor and daily wage earners. So, the rural Gini Coefficient and income inequality grew during this time. With the advances of the wealthy farmers, from 1974 to the beginning of the1990s; slowly, a kind of modernization marched into the agriculture sector of the country. Modern input factors like tractors, hybrid seeds, chemical fertilizers, pesticides, and irrigation were introduced in the farming process. Farming became slowly independent of the seasons and extended to the whole year. Now, more resources had to be invested, and more labourers were needed, i.e. demand of the agriculture labourers increased. The agricultural yields increased; the prices of the agriculture products went up, and farming became more profitable. The income of the big farmers increased, and they became increasingly bigger and were ready to pay more for the daily wage labourers. With the increased demand of the agricultural labourers, the income of the daily wage labourers increased. So, the rural Gini Coefficient and rural income inequality sank.

The national Gini Coefficient is nothing but a kind of average of the urban and rural Gini Coefficients. So, it remained between them and the rural Gini Coefficient was bigger than the urban Gini Coefficient. As until the beginning of the 1990s, the urban and rural Gini Coefficients increased, the national Gini Coefficients also increased. It sank from the beginning of the 1990s to 2006. It means that till the beginning of the 1990s, the urban, rural and national income inequality grew, but after that till 2006, it sank. The data on poverty shows that from 1974 to 2006, poverty could be reduced continuously. Even from 1974, to the beginning of the 1990s, when the income inequality went up, poverty could be reduced. In 1973, nearly 82.7% of the total population were absolute poor, but in 1991, it was only 47.5% (SYB, 1990 & 2009, p. 553). This shows that with growing income inequality, poverty could be reduced. It means that the income of a section of the poor people increased during this time, so that they climbed out of the poverty line, but the income of rich people increased more rapidly than that of the poor. So, the rate of poverty decreased, but the income inequality grew.

The interviewed experts of the PKSF, Grameen Bank, ASA and government policy makers recognized the findings of the study. The experts of the PKSF, Grameen Bank, and ASA involved in micro credit programs agreed that as compared to 1970s and 1980s, during the last two decades, the income inequality and poverty - both in the rural as well as in urban Bangladesh could be reduced. However, till date, these are major social, economic and humanitarian issues in Bangladesh. The officials of the micro credit program of the Grameen Bank and ASA said that to reduce the poverty to an acceptable level in the short run, parallel to the microcredit programs, the government social welfare program must be introduced and expanded. Like the officials of the Grameen Bank, the officials of the PKSF and ASA said that micro credit programs must be considered only as an additional short-run effort for the reduction of poverty. The conferred government officials observed that particularly, at this stage of development, the growth of the economy in developing countries alone cannot alleviate poverty. Following the experiences of developed countries, for this,

'income distributive steps' must be introduced. However, rapid growth of the economy and *'inclusive development'*[5] of the developing countries is the final solution for the alleviation of the poverty, because only so more and more well paid and sustainable jobs could be created, and full employment achieved. Besides, only growth of the economy enables the states to take appropriate social steps to send the poverty to the museum forever.

SUGGESTIONS

This study shows that income inequality and poverty are related with the creation and distribution of wealth. So, for the solution of these problems, first and foremost, uninterrupted and speedy growth of the economy must be ascertained, because only so, the need of more good paid employment could be generated. To keep the economy on the growth path, and to accelerate the trend of the growth, the economy must the supplied with skilled and educated manpower. So, the capacity for quality education and skill promotion must be created and extended. Only so, the income of the low income-class of people could be increased and shifted upward to that of the upper level. It is a long drawn process if high growth of the economy is to be ascertained. Decades may be required to pull the economy in a development stage that is capable of integrating all low income-classes of people in higher income -class. In the short run, poverty is inevitable. So, to achieve such an affluent development stage with full employment, parallel to quality education and skill building, social measures must be undertaken to lessen the sufferings and misery of the poor.

To ensure high growth of the economy in brief and bold, the followings steps have to be undertaken:

❁ Accelerating savings and Investments; Ensuring law and order and enabling infrastructure facilities (communication, transports, energy and gas services); Improving legal environment; Providing appropriate fiscal incentives; Facilitating entrepreneurship development; Facilitating technological upgradation; Improving business supports services; Expanding and ensuring quality education and skill building capacities; Ensuring macroeconomic stability through proper fiscal and monetary policies; Promoting Foreign Direct Investments; Strengthening external sector policy (export and import); Ensuring competition and free market mechanism.

❁ **Increasing Agricultural Production Through:**

❁ Expanding irrigation; Ensuring modern inputs (hybrid seeds, pesticides, fertilizers and credits); Extension services; Processing and marketing supports; Subsidies and counselling services;

❁ **In brief and bold, to reduce and lessen poverty and its intensity, the following have to be done:**

❁ Expanding and deepening social safety net. For this, programs like Food For Works (FFW), Cash For Works (CFW), Vulnerable Group Feeding (VGF), Gratuitous Relief (GR), etc may be introduced; Ensuring vulnerable group development (VGD).

❁ **For this, education and skill promotion and micro-credit program may be introduced.**

❁ **Providing social services like:**

❁ Old age allowance; Allowances to the widows; Allowances to deserted women; Allowances to destitute women; Allowances to retarded disabled persons.

CONCLUSION

In the end, it has to be stated that the literature review showed the trend in the Gini Coefficients , and income inequality did not correlate with the growth of the economy till the beginning of the 1990s. The growth of the economy during this time was achieved mostly using cheap unskilled workforce. Besides, the growth of the economy could not keep pace with population growth. So, the economy and income inequality grew during this time.

With development of the economy later, with the need of the economy, increasingly more and more semi skilled and skilled manpower was used. At the same time, population growth could be reduced. So, with the growth of the economy, slowly, the Gini Coefficient and the income inequality could be reduced, though they remained relatively high. So, it has to be concluded that to sink the Gini Coefficients and the income inequality, inclusive and continuous expedited growth of the economy over decades must the ensured. To lessen the intensity of the sufferings of the poor, social programs must be initiated and implemented.

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[5] Rapid and sustained poverty reduction requires inclusive growth that allows people to contribute to and benefit from economic growth. Rapid pace of growth is unquestionably necessary for substantial poverty reduction, but for this growth to be sustainable in the long run, it should be broad-based across sectors, and inclusive of the large part of the country's labor force (Ali, Ifzal, 2011).

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