Inequality and Economic Growth in Bangladesh- a diversified evidence on Kuznets pattern 'U' hypothesis

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Inequality and economic growth in Bangladesh–a diversified evidence on Kuznets pattern `U` hypothesis

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Abstract

The study of inequality and economic growth to the developing countries are now a days a comprehensive issue since the growth stimulate the standard of living to the poor people and accordingly reduce income inequality. The improvement of inequality and growth may reduce the social movement to the government and may keep the economic and social integrity amongst the different ethnic groups by efficient resource allocation and income redistribution in Bangladesh. The objective of this research is to assess long term relationship between inequality and growth in Bangladesh with a methodology of Kuznets pattern inverted U hypothesis first introduced by Simon Kuznets since 1955. The popular concept of Kuznets hypothesis suggests that as economic growth occurs, income inequality first increase and then decline after a certain turning point. The study of Kuznets hypothesis is popular to the international economic environment rather than domestic, especially to the developing countries where the per capita GDP is below the level of world average. This study found the evidence that the presumption of Kuznets hypothesis has satisfied in the economy of Bangladesh in national level. In low income countries, structural adjustment is necessary to satisfy the Kuznets hypothesis.

Keywords: Kuznets Hypothesis, Inequality, Growth

Introduction

The Government of Bangladesh is well conversant about the sensitivity of economic inequality and income distribution as well as economic disparity due to historical background of the country. Accelerating GDP growth will allow the economy to break through continuing reducing income inequality and increasing income share of the poor people which ultimately improve the level of poverty.

The objective of the study is to assess long term relationship between inequality and economic growth in Bangladesh. The concept of Kuznets hypothesis suggests that as economic growth occurs, income inequality first increase and than decline after a certain turning point which we may have the scope to investigate the stage of economic development and the relationship between inequality and economic growth. This process is popularly known as inverted U hypothesis. The literature of Kuznets hypothesis has been providing the evidence that the concept of Kuznets hypothesis is not workable in low income countries like Bangladesh. The cross section evidence proved that low income countries cannot satisfy the Kuznets hypothesis. The researcher rejected the possibility to satisfy the Kuznets hypothesis in low income countries in cross section evidence. But the researcher in this field did not try to find a new way to satisfy the possibility of Kuznets hypothesis in a low income or a single country. The process of economic development in high income like industrialized country is steady and the structural change has been adjusting through the demand of economic development process. But in low income country, structural adjustment is the process of political decision and most of them have no long term mission and vision. Therefore, various structural adjustments in a short period in low income country normally change the economy some times in a positive trend and some times in a negative trend to the relationship between the improvement of inequality and economic growth. It is not possible to know the impact of structural adjustment in Bangladesh for the improvement of income distribution if we do not try to check the long term relationship between inequality and economic growth. The Kuznets hypothesis is a popular concept for the improvement of inequality and economic growth in long time. The poor low income countries shall never get the benefit of steady economic development process if the model of Kuznets hypothesis could not be possible to satisfy somehow in a low income country. We have tried to find a new diversified way and accordingly tested the structural adjustment process through the model implication to satisfy Kuznets hypothesis in the economy of Bangladesh.

The government has been following disinvestment policy covering banks and financial institutions into holding companies and allowing private sector to open commercial operation since 1982. In fiscal year 1983-84, a new private sector bank has been established in the name of Grameen bank with a view to provide nonfarm and micro credit assistance to the rural people. A real value of financial assets has been growing at a fairly reasonable rate of 5.7 percent during the period of 1971-1984. But from 1983-84, the real value of financial assets rose faster than the net credit of the government in real terms. The private sector has continued to receive real credit at an accelerated rate, while the public enterprises has continued to maintain the credit in real terms which ultimately declined the net credit of the government sector and resulted the private sector pulling resources away from public sector through a process of inflation-induced transfer of resources. In 1984, the debit service payment was US$ 170 million which was remarkably high rather than normal period. A moderate refinancing policy of Bangladesh Bank affects the creation of high powered money and over all money supply. In June 1984, the public sector share accounted for only 19 per cent out of outstanding refinance. This refinancing policy was executed to provide liberal credit to the private sector through the refinance program. It is presumed that one period structural change of the economy may affect the others period simultaneously. In 1994, a series of strikes of political parties drastically affected the overall economy with adverse affects followed the remaining years. To the above facts and economic restructuring, a dummy variable has considered from the period of 1984 –1994 for testing the time series model in this research.

The methodology has been differing according to the author's objectives. Rati Ram (1989) explained the Kuznets hypothesis by providing a simple empirical model with relation between inequality and growth by taking time series data. He explained Theil`s population weighted average index as a means of measuring inequality against an world average growth rate of GDP from the year 1960 to 1980. G.F. Papanek and Oldrich KYN (1986) also produced the same model with a sample of 83 countries cross section and time series data. He also produced a comparative explanation in accordance with various proposition, especially relating with import and export, government intervention, education as a part of human resource along with classifying the countries like industrialist, socialist and developing countries. Ashwani Saith (1983), Montek S. Ahluwalia (1976), Rati Ram(1988), Sudir Anand and Kanbar (1993) have also been produced papers on inequality and economic growth to satisfy the Kuznets hypothesis. These authors judged the relation between inequality and growth by taking the income shares. All of them considered the same concept with different explanation to study Kuznets hypothesis in international level.

Recently we found relative evidence in domestic level in Kuznets hypothesis produced by Mushinski (2001). This work reflected non-parametric analysis to inform testing of Kuznets hypothesis with parametric models. The non-parametric analysis suggests that fitting a polynomial of degree is greater than two might be more appropriate to test of `U` hypothesis. This study carried out taking the data from 212 Native American reservations in continental USA from the 1990 USA Decennial Census. The regional cost of living difference has been taken into account to produce `U` shape by non-parametric and parametric estimates of Kuznets `U` shape. This study concluded the forth degree of polynomial is statistically significant and estimated coefficients supports the Kuznets hypothesis.

The most remarkable study amongst the researchers have been produced by Ram(1989), Jha (1996), James K.Galbraith, Perdo Conceiao and Hyunsub Kum (2001) with a view to international economic environments. Kuznets concept is also tasted by the countries which have the higher standard of living like Japan, U.S.A, U.K and Germany. David W. Mushinski (2001) and Minami-Ryoshin (1998) have also been published remarkable papers in relation between inequality and growth with the data of U.S.A., Thiland and Japan respectively. Minami-Royshin produced relationship between inequality and growth of Japan. He concluded that Japan can not be explained by Kuznets concept due to relatively equal distribution after post war period.

The literature in context of Bangladesh is very few. Rhaman and Huda (1992), Binayak (1996) served inequality but they did not produce any evidence between long term economic growth and inequality. The most recent work produced by Wooden (1999) regarding survey of growth, inequality and poverty but he did not analyzed the long term relationship between inequality and growth as Kuznets hypothesis suggested.

Higher inequality associated with poverty and government failure may cause a social instability by initiating social movement. Here reducing inequality means to keep social integrity by reducing inequality in an optimum level following by continuous growth prospective. These processes are economically efficient and accordingly welfare augmented to the stage of economic development in the economy of Bangladesh.

Material and Methods

The popular Kuznets hypothesis has been considered to check the relationship between the improvement of income distribution and economic growth in Bangladesh. We have taken dummy variables into the model to test the impact of structural change of the economy. The following empirical model has been considered to test the Kuznets hypothesis.

$Y = f(G)$ --------------------------------------(1)

Where Y : the measurement of income distribution, that is, Gini coefficient. G : Per Capita GDP.

Regression Model:

$Y_t = \alpha_0 + \alpha_1 \ln G_t + \alpha_2 \ln[G^2]_t + U_t - - $-----(2) [Table-1,Estimation-1,2,3]

for $Y : \alpha_0 < 0; \alpha_1 > 0..and..\alpha_2 < 0;$ Where: α_0 = intercept term, G = is the log of per capita GDP,

$[G^2]$ = log of per capita GDP square, U = is the error term.

This model has enhanced by taking dummy variables due to structural change of the economic environment in Bangladesh. As discussed earlier, in 1994, a series of strikes of political parties drastically affected the overall economy with adverse affects followed the remaining years. A series of financial restructuring has been occurred in economy of Bangladesh from the period of 1984 to 1994. These structural changes have described in details into the introduction section. In view of these, a constant dummy variable has considered from the period of 1984 –1994.

$Y_t = \alpha_0 + \alpha_1 \ln G_t + \alpha_2 \ln[G^2]_t + \beta Dum_t + U_t - - $**---**(2.1) [Ref: Table 1, Estimation-4] *for*

$Y : \alpha_0 < 0; \alpha_1 > 0; and..\alpha_2 < 0; \beta \leq 0;$ where β , represents constant dummy variable.

We may fit the regression to the entire sample period if there is no structural change. But if there is any structural change, we have to take dummy variables for the period of structural change. In general we do not know the actual period of structural change without drawing the graphs. The tests of CUSUM and CUSUMSQ have been provided evidence that there are existing structural changes in the period of 1984 and1994, respectively. CHOW prediction error test has also been considered to the check the structural change of the model. The dummy for the prediction period from 1984 to 1994 =0 and 1995 to1996 =1 as a null and alternatives hypothesis. As per CHOW test of joint hypothesis, F Statistic for null hypothesis has been rejected at 5% significance level in accordance to the variable deletion test. This means there is a structural change in the period of 1984 and 1994. [Fig-1, Fig-2 and Fig-3].

The data for Gini index has been collected from household expenditure survey, Bangladesh Bureau of Statistics (BBS) from the year 1977 to 1996 to run time series regression. Gini index samples have taken as a proxy from the year 1979-80, 1987, 1990 and 1993-94 respectively.

The data for GDP has been taken from the kea indicators of developing Asia and Pacific countries, ADB, Volume: XXXI and previous. The Bangladesh Bureau of Statistics (BBS) has been producing the data by fiscal year basis from July to June in every year. The sample also characterized by fiscal year basis to get the chronological order and consistency of the work. The proxy data has taken when the data was not available in between the range of fiscal year. The proxy data has been considered here to maintain the consistency.
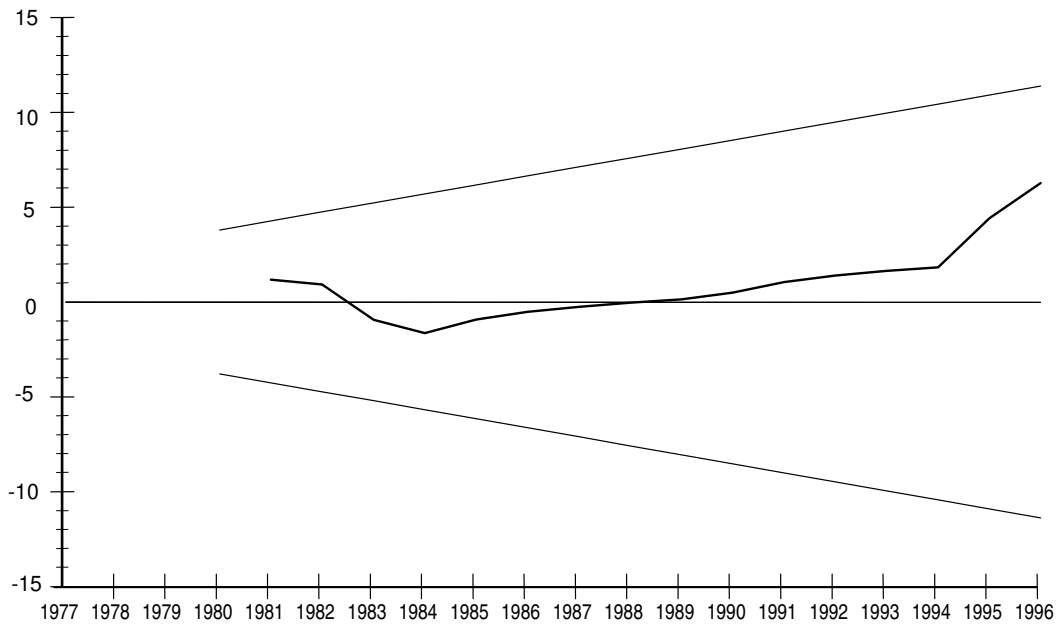
The straight lines represent critical bounds at 5% significance level

Fig 1. Plot of Cumulative Sum of Recursive Residuals
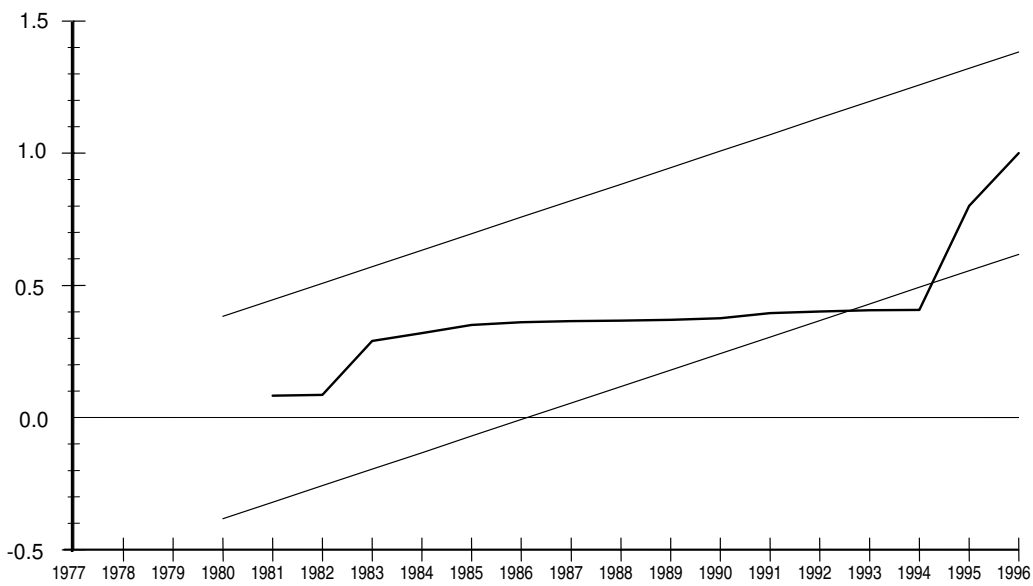
The straight lines represent critical bounds at 5% significance level

Fig. 2. Plot of Cumulative Sum of Squares of Recursive Residuals
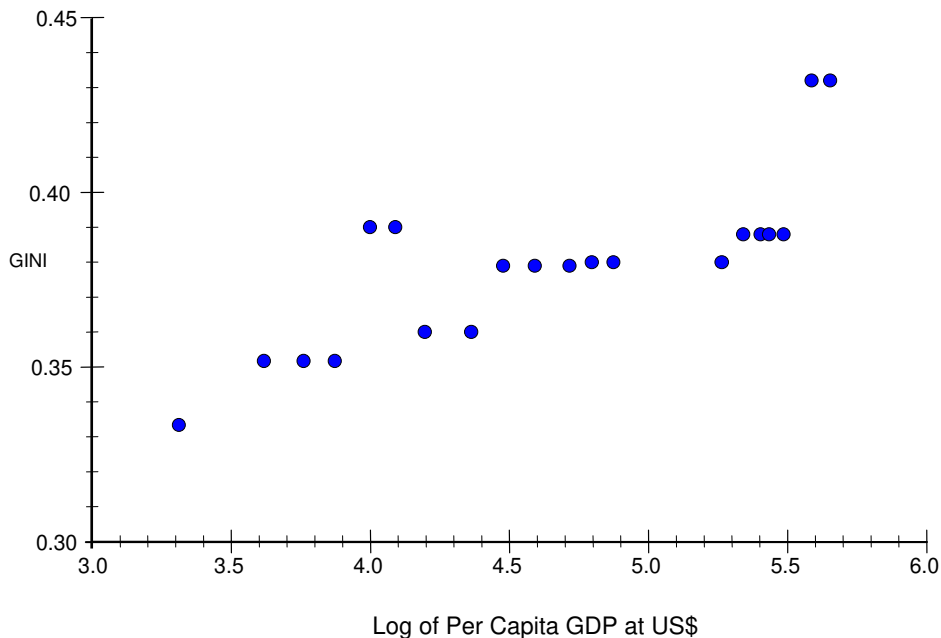
Fig. 3. Scatter plot of Gini Coefficient on Log GDP (1977-1996)

Results and Discussion

The phenomenon to study Kuznets style hypothesis in the economy of Bangladesh is a rare case in aspect of empirical analysis as presumed by Kuznets in a single country. To study Kuznets hypothesis with data and sample in context of the economy of Bangladesh is a comprehensive task and diversified process. A time series model has been considered with various estimation techniques to test the Kuznets hypothesis in economy of Bangladesh. In case of full sample produced in the Table 1, Estimation-1, we found the evidence between inequality and growth relationship is positive in every stage of economic development. In estimation-1, we fond the coefficient of constant, GDP and GDP square is 0.299, 0.007 and .0021, respectively. This continuous positive (+) sign of coefficients can not explain the Kuznets hypothesis in estimation-1.

This structural variability occurs due to changing environment of the economy. The developing economy is not steady like industrialized economies. After independence, from 1971 to 1975, the economy was under the process of socialist economy. In this period, all large scale industries were nationalized and changed into the public management. In 1975, the economy turned in to the environment of military rule and continued upto 1990. In 1975, the development strategy of successive policy includes disinvestment of industries, liberalization of import, greater emphasis on private foreign investment, setting up banks and insurance companies in the private sector turned the economy again into the environment of the market economy. The Bangladesh economy was struggled by the severe flood in 1988 from the period of 1984 to 1994. More than 30 million were homeless and same as in 1991; a powerful cyclone killed 1.2 million people and left millions homeless. In 1994, a series of strikes of political parties drastically affected the economy.

The restricted sample has taken to explain the Kuznets presumption in support of full sample in Table 1, Estimation-1, 2, 3. We got evidence of inverted U hypothesis for the period of 1977 to 1994. The period is followed by the coefficient of constant 0.051, GDP and GDP Square 0.126 and –0.012, respectively. We got more accurate evidence for constant –0.149, GDP and GDP square is 0.199 and –0.018 respectively in the estimation-3 for the period of 1984 to 1994. These estimations were explained inverted U shape. But the result is not up to the desired significance level as produced in estimation-4 for full sample.

Table 1. Estimations of Kuznets Hypothesis in National Level (1977 to 1996) by OLS

Dependent Variable	Estimation-1	Estimation-2	Estimation-3	Estimation-4
Constant	0.29909	0.051512	-0.14960	-0.084210
	(1.8221)***	(0.41621)	(-0.44707)	(-0.59988)
G	0.0071003	0.12552	0.19931	0.17372
	(.097568)	(2.2536)**	(1.4688)	(2.8112)**
G^2	.0021338	-0.011783	-0.018514	-0.014795
	(0.26958)	(-1.9119)***	(-1.3536)	(-2.2526)**
Dum:(1984-94)				-0.030759
				(-4.5294)*
Adj. R^2	0.59286	0.62198	0.65625	0.81045
DW	1.1279	1.6199#	1.8453#	1.9215#
F-Test	14.8336	14.9856	10.5453	28.0796
Akike Info. Criteria	53.5737	55.0399	42.0286	60.8251
Number of Observations	20	18 (1977-94)	11 (1984-94)	20

Note: Number of parentheses are t-statistics. The test of hypothesis marked as *,**and *** are   statistically significant at the level of 1%,5% and 10% respectively.` **Dum**` is the constant dummy variable as mentioned. Calculation also made by taking Restricted Sample for 11 and 18 years as mentioned to prove the consistency and theoretical evidence against Full Sample from the year 1977 to 1996.The Durbin-Watson statistic provides the idea of the pattern of residuals with ordering. The lack of serial correlation marked as `#` to the above equation gives the assurance that the quadratic formulation captures the underlying non-linearity reasonably well.

We found evidence that the inequality is worsen in early stage and than increase as the growth increase and after a certain period of time the trend of inequality stated to decrease as the growth increase. This evidence found after taking the dummy variables as presented in Fig. 4, Table 1, estimation-4, in the time series data from the period of 1984 to 1994 with full sample from the period of 1977 to 1996. This presumption is followed by the coefficient of constant is –0.084, and GDP and GDP square is 0.174 and –0.0148 respectively, and a different starting point by taking dummy variable of constant –0.115.
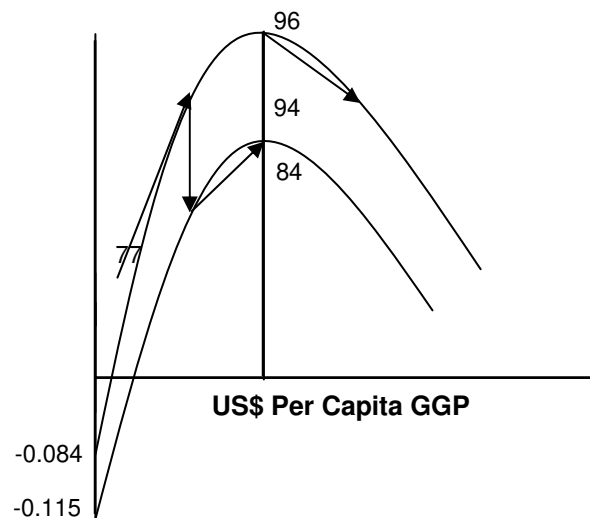

Fig. 4. Inequality and Economic Growth in National Level: (1977-1996)

In the Fig. 4, we found positive relationship between inequality and stage of economic development by taking full sample of Table 1, Estimation-4. In the beginning stage, the inequality was worsen, from 1977 the inequality was gradually increased and than declined in 1984. Again inequality was increase and declined in 1994. And accordingly inequality increased upto 1996 and than started to decline. This changing environment has been occurred due to structural change of economy in Bangladesh.

The structural adjustment process satisfied the concept of Kuznets pattern U hypothesis in the economy of Bangladesh but this finding is not steady like high income industrialized countries. Satisfying Kuznets hypothesis in the economy of Bangladesh by capturing structural change is positive to the economic growth and improvement of economic welfare in the economy of Bangladesh. Improvement of income distribution in long run by the Kuznets pattern economic model will ultimately reduce poverty and accordingly improve social integrity in the economy of Bangladesh. The improvement of inequality is very much desirable in the age of economic globalization in a low income county. This process will sustain equality and integrity amongst the nations.

Acknowledgements

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