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## Does income converge in SAARC countries?

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### Abstract

*Economic convergence among the countries of different economic blocks has been tested by several researchers. This paper attempts to test the convergence of per capita GDP of the member countries of SAARC. Using World Bank statistics during 1960-2021, Beta convergence and also Sigma convergence are tested graphically. It has been obtained that the per capita GDP diverged among the member countries of SAARC but it is converged when the data during 2002 to 2021 are used.*

**KEYWORDS:** Economic growth, Convergence, Beta convergence, Sigma Convergence, SAARC

### INTRODUCTION

The term 'economic convergence' is used to describe an economic phenomenon which states that countries with relatively lower levels of GDP per capita catch up the other countries having higher levels of GDP per capita. It has also been observed that some low-income and middle-income countries of the World experienced faster economic growth in comparison to the high-income countries resulting to economic convergence. The convergence theory developed by Barro and Sala-i-Martin states that the less developed economies would catch up the developed economies.

The South Asian Association for Regional Cooperation (SAARC) is the regional intergovernmental organization and geopolitical union of states in South Asia. SAARC was founded in Dhaka on 8 December 1985. Its member states are Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. SAARC comprises 3% of the world's land area, 21% of the world's population and 5.21% (USD 4.47 trillion) of the global economy, as of 2021.

This paper believes with Barro and Sala-i-Martin (1992) who have produced clear evidence of convergence of the states of the US. For the case of the European Union Region, Boyrs et al. (2008) found real convergence on its potential determinants primarily capital deepening. Unconditional  $\beta$  convergence was also obtained by Fischer and Stirböck (2004) for Europe during 1995 and 2000. Marelli E.P (2019) et al. too found real convergence for European Union at large.

Here we are enquiring the economic convergence among the member countries of SAARC. For this we will test the convergence of per capita GDP using both Beta and Sigma convergence. The next segment starts with a brief literature review followed by methodology, data and analysis and lastly a brief conclusion.

## LITERATURE REVIEW

Barro (1991) examines the relationship between human capital (measured as years of schooling) and economic growth using cross-country data. The author finds that there is a positive correlation between human capital and economic growth, suggesting that investments in education can promote economic convergence.

Xavier Sala-i-Martin (1996) presents a theoretical model of economic convergence based on the idea that countries can be grouped into "convergence clubs" based on their income levels. The concepts of Beta convergence, both absolute and conditional and Sigma convergence are explained in this paper. The author argues that subsistence economies are likely to remain in low-income clubs, while advanced economies tend to converge to a higher-income club.

Acemoglu et.al, (2001) explore the role of institutions (such as property rights, rule of law, and political stability) in promoting economic growth and convergence. The authors argue that good institutions are a necessary condition for sustained economic development, and that differences in institutional quality can explain the divergence of economic outcomes across countries.

Pomeranz (2000) in his book offers a historical perspective on economic convergence and divergence by examining the factors that contributed to the rise of Western Europe and the decline of China in the early modern period. The author challenges the conventional wisdom that Europe was inherently more innovative and productive than China, and argues that geopolitical and ecological factors played a crucial role in shaping the trajectories of these two regions.

Theo et. al, (1999) debate that much of the convergence has focused solely on output. But technology and capital, may exhibit markedly distinct convergence patterns according to recent evidence. They examine the convergence characteristics of a two-sector model of growth that features population growth and endogenous technology. The model replicates key economic ratios and speeds of convergence with relative ease. Most important, however, is that capital and technology differ strikingly in their convergence paths and speeds.

Rassekh (1998) surveys the history and development of the convergence hypothesis, focusing particularly on its vast literature since the mid-1980s. A summary of empirical analyses, econometric issues, and various tests of the convergence hypothesis are also presented. Moreover, the essay analyzes the implications of the hypothesis for economic growth, especially as it relates to underdeveloped economies.

Philippe Monfort in the working paper "Convergence of EU regions Measures and evolution" examines convergence among EU regions using different approaches and methodologies. This paper conducts an update assessment of regional disparities in the EU using the methods and instruments required for the analysis of convergence and inequalities. The Lorenz curve model and the derived Gini coefficients could be useful to evaluate the intensity of the convergence process in the EU. Lucian Liviu ALBU in the paper "The Convergence Process in The EU Estimated By Gini Coefficient" argues that there is not an unique indicator to evaluate the converge process.

The world economy entered a new age of convergence around 1990, when average per capita incomes in emerging market and developing economies taken as a whole began to grow much faster than in advanced economies. The sharp division between rich and poor countries that characterized the world since the industrial revolution in the early part of the 19th century is now weakening.

The industrial revolution and colonialism brought about great divergence (Maddison, 2007). Between the beginning of the 19th century and the middle of the 20th, the average per capita income gap between the richer, more industrial "North" and the less developed "South" rose from a factor of 3 or 4 to a factor of 20 or more (Milanovic, 2012). This divergence slowed after World War II, with the end of colonialism, but the relative income gap remained stable on average between 1950 and 1990.

## **METHODOLOGY**

Beta convergence is a concept used in economics and refers to the idea that poorer countries will grow at a faster rate than richer countries, and that the income gap between the two will decrease over time. The term "beta" refers to the coefficient in a statistical regression model that measures the speed of convergence. Beta convergence is one of the several theories that attempt to explain how countries catch up with each other economically. Other theories include absolute convergence, which suggests that poorer countries will eventually catch up with richer ones, and conditional convergence, which argues that countries will only converge if they have similar economic policies and institutions. It depends on factors such as the level of

development, the quality of institutions, and the degree of trade openness in the countries being compared. The concept of Beta-convergence is directly related to neo-classical growth theory (Solow, 1956) where one key assumption is that factors of production, in particular capital, are subject to diminishing return. When all economies are assumed to converge towards the same steady-state (in terms of GDP per head and growth rate), Beta convergence is said to be absolute. However, the steady-state may depend on features specific to each economy, in which case convergence will still take place, but not necessarily at the same long-run levels. This will be the case when GDP per head is supposed to depend on a series of determinants such as factor endowment or institutions, which can vary from one economy to the other even in the long-run. Beta-convergence is then said to be conditional.

Sigma convergence refers to the tendency for the variability or dispersion of economic indicators, such as GDP per capita or income levels, to decrease over time among different countries or regions. In other words, sigma convergence is the narrowing of the gap between the highest and lowest levels of economic performance. Unlike beta convergence, which focuses on the rate of growth, sigma convergence looks at the dispersion or inequality of income levels among countries or regions. Sigma convergence can occur even if the overall income gap between rich and poor countries does not necessarily decrease.

The methodology used to measure Beta-convergence generally involves estimating a growth equation in the following form:

$$\ln\Delta Y_{it} = \beta_0 + \beta_1 \ln Y_{i,t-1} + \varepsilon_{it}$$

where  $Y_{it}$  and  $\Delta Y_{it}$  are respectively the level and the growth rate of GDP per head in region  $i$  at time  $t$ ,  $\beta_0$  is the intercept term,  $\beta_1$  is the coefficient on initial income  $Y_{i,t-1}$  and  $\varepsilon_{it}$  is the error term.

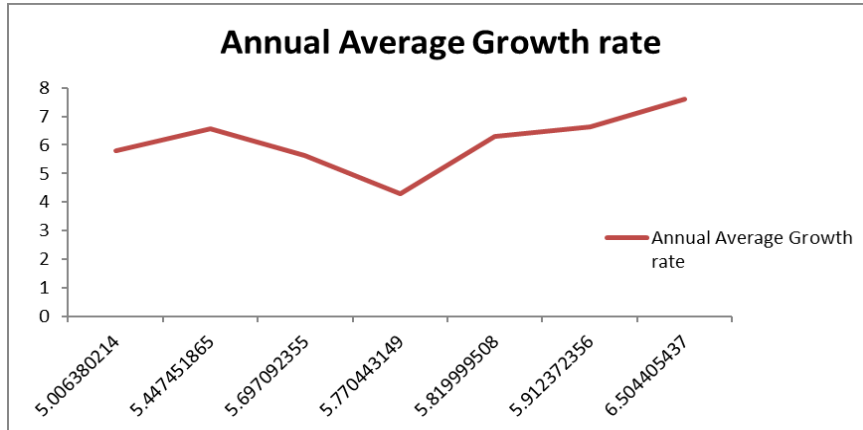
If  $\beta_1$  is negative and statistically significant, this suggests that countries or regions with lower initial income levels tend to grow faster than those with higher initial levels, indicating convergence. On the other hand, if  $\beta_1$  is positive, this suggests divergence, with richer countries or regions growing faster than poorer ones. The estimated value of  $\beta_1$  also indicates the rate at which regions approach their steady state and hence the speed of convergence.

The most frequently used summary measures of Sigma convergence are the standard deviation or the coefficient of variation of regional GDP per head. The coefficient of variation is a normalised measure of dispersion of a probability distribution. It is defined as the ratio of the standard deviation to the mean.

**DATA AND ANALYSIS**

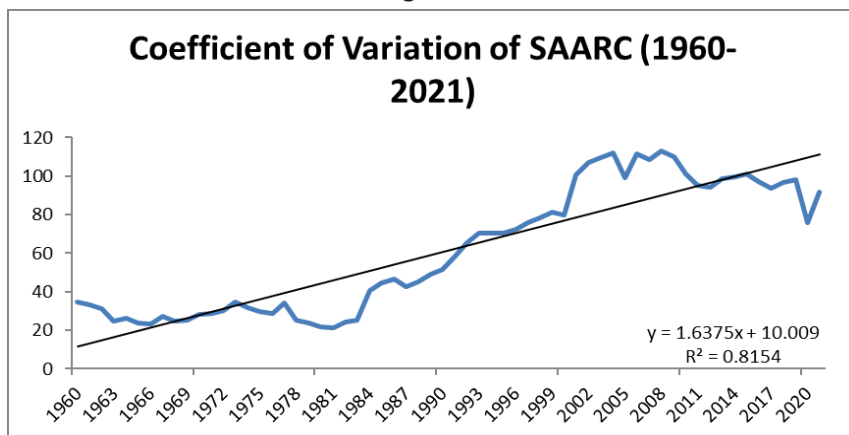
In this paper the convergence of per capita GDP among the SAARC countries is examined. For this the data during 1960 to 2021 from World Bank is collected and sorted. In the first stage we use the Beta convergence test graphically measuring log of per capita GDP of the initial year 1985 in the horizontal axis and the annual average growth rate in the vertical axis. The following graph does not show any kind of convergence.

Figure: 1



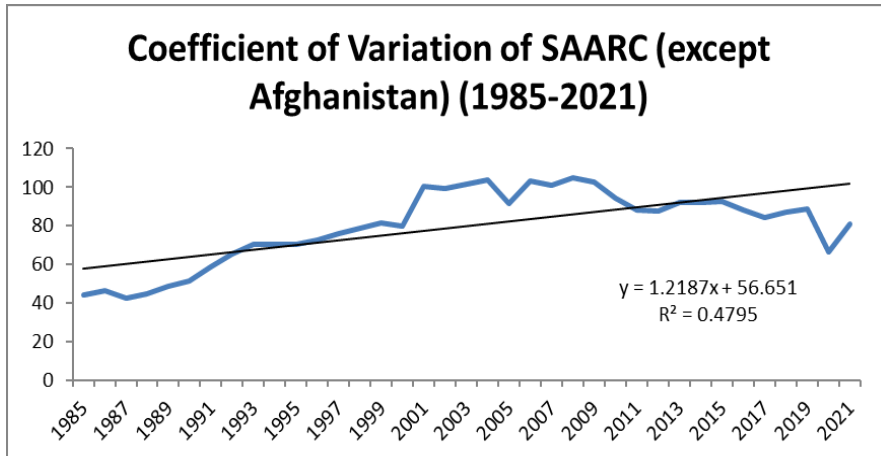
To make the above conclusion more stronger, coefficient of variations (CV) are measured and are plotted graphically. In the figure:2, the CV of the per capita GDP during 1960 to 2021 of all the eight countries who will be the member of SAARC in future is plotted and it has been seen that there will be divergence as the CVs are increasing over time.

Figure: 2



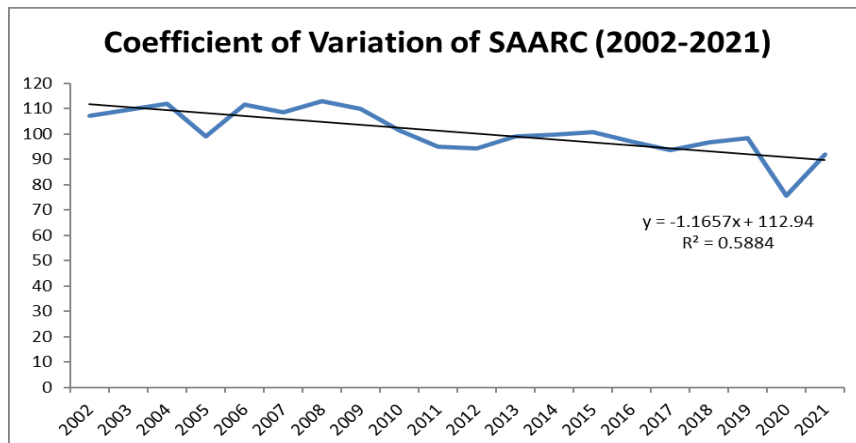
In the figure:3, the CV of the per capita GDP during 1985 to 2021 of the member countries of SAARC except Afghanistan (as no data is available for Afghanistan) is plotted and it has been seen that there will also be divergence as the CVs are increasing over time. So it can be said that even after the formation of SAARC the per capita GDP is not converged over time.

Figure: 3



But the following figure where CV of the member countries of SAARC during the period 2002 to 2021 is shown supports the convergence of the per capita GDP. It may be argued that though SAARC is formed in 1985, the economic cooperation among the member countries has begun in the new millennium by signing treaty.

Figure: 4



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## CONCLUSION

Economic convergence is a phenomenon that describes the higher growth rate of less developed economies compared to that of more developed economies. Several economists make significant contribution in support of this concept. However, there are also evidences that the convergence is not observed in many economies. In today's globalized world there are several economic blocks with free trade agreements helping each other in gaining momentum in economic growth projections. SAARC is one such group in this sub-continent of Asia. The convergence of per capita GDP of the member countries of SAARC since its formation in 1985 has been tested graphically. The data were collected from the World Bank statistics. But the data of Afghanistan are not continuous from 1982 to 2001 and data for Bhutan from 1960 to 1979 are also not available. We test the convergence from 1960 to 2021 and find strong divergence. A strong divergence of per capita GDP of the member countries (excluding Afghanistan) is also seen during 1985 to 2021 but a convergence is shown when we use the data during 2002 to 2021. A possible explanation may be due to enhance rate of openness and free trade agreements among the countries. Academicians may do further research for finding the factors responsible for this kind of divergence-convergence contradictory results of the SAARC countries.

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