

Growth and Multiple forms of Human Capital: A panel data Investigation in BRICS Countries

Abstract

The empirical study in this paper test's the impact of human and health capita based on data of BRICS on economic growth using a fixed panel data approach. We found that Human capital has is positively contributing towards the growth of these counties while as health capital has lesser and negative impact for the period 1991-2014

Introduction and Review of literature

The importance of human capital formation concept in economic growth cannot be over emphasized and have been an important factor for various cross-country studies. Many theoretical models of economic growth, such as those of Nelson and Phelps (1966); Lucas (1988); Becker, Murphy, and Tamura (1990); Rebelo (1992); and Mulligan and Sala-i-Martin (1992), have emphasized the role of human capital in economic growth. Human Capital is complex and consists of more than Knowledge Capital and hence education is an inadequate proxy as a factor in determining growth what suggested by augmented slow model approach. Mankiw et al. (1992) studied the impact of health and education expenditures on economic growth and showed that, human capital is as important as physical capital. MRW while studying the augmented Solow model using OLS in a single cross-section regression framework concluded that augmented Solow model with accumulation of both human and physical capital provides an excellent explanation for income disparities, i.e. about 80 percent of the cross-country variation in income per capita can be explained using just three variables: population growth, and investment rates of physical and human capital. Rebelo (1991) studied physical capital as an additional input in the human capital accumulation function to study the growth model's Capital adds greatly to the productivity of worker and hence of the economy as a whole (Guru Supriya 2013).A study by Mba (2011) absed on Capital Formation and Growth, found that the long run impact of capital formation and on economic growth is larger than their short-run impact.

The concept of human capital remained very broad. For example Nakamura (1981,) defines human capital broadly as 'labor skills, managerial skills, and entrepreneurial and innovative abilities-plus such physical attributes as health and strength'. Newland and San

Segundo (1996) used several measures as indicators of human capital.. Some exceptions to this broad definition of human capital in historical research come's from quantitatively oriented economic historians (Sandberg 1979; Rosés 1998; Van Zanden 2004; Reis 2005). This measure, which includes factors such as on the job training and experience is the same as used by Rosés (1998) while Reis and Sandberg (1979, 225) restrict their definition largely to literacy thus also ignoring for example ability and experience. Thus human capital along with health capital are meaningful in a macroeconomic context (Sen1998) .Hence the present study will try to study the impact of human capital on economic growth in it's multiple form's particularly health and education.

Statement of the problem

Contemporary empirical research has tried to assess the growth dynamic's including work participation, worker productivity, investments in human capital, savings, fertility, and population age structure (Bloom and Canning 2000; Bloom, Canning, and Sevilla 2002a; Bloom, Canning, and Graham 2003) which are mainly the outcome of demographic change's particularly among the developing world who are still in the transitional stage's of demographic change. These studies provide better insight's when studied in panel form's and become vital while explaining the cross country growth analysis. Since demographic dividend due to demographic transition is currently taking place in BRICS countries and is likely to continue for at least another 30 years with an huge impact on their growth process resulting due to changes in health and human capital Therefore the present study will assess the impact of health and human capital through a panel study on the economic growth in the BRICS countries.

Objective

To study the relation between Human capital, Health Capital and Economic Growth in BRICS Countries

Data

Time series data collected from Penn World Table's World Bank and Other Source's Data for the period 1991-2014 based on panel data analysis will be used to assess the relationship between the given variable's among the BRICS countries. We will also study some developed countries to make a comparison of the resulted estimate's

Methodology

Fixed Effect Model will be used to study the objective's as they allow for parameter heterogeneity (Islam 1995). The following dynamic panel data model with two way fixed effect's will be estimated as we will also run a random effect model to compare the result's.

$$y_{it} = \beta_{it} + \sum_{j=1}^t \theta_j x_i^j + \eta_t + \mu_i + v_{it}$$

Where X_{i-j} are population growth rate, Life expectancy at Birth, and Human capital Index and y_{it} is growth rate of GDP per capita measured in PPP as Purchasing Power Parity (PPP) as this approach measuring GDP is often used to compare different economies.

Result's

Variable's	Model 1	Model 2	Model 3
	All Countries	BRICS_Countries	Other_Countries
	Fixed Effect	Fixed Effect	Fixed Effect
Constant	12.33	5.18	26.28
PGR	-0.81	-.122	-1.26
LE	0.31	-.29**	-0.36
HCI	5.02***	6.3**	1.06*
R	0.20	0.14	0.12
*,**&*** mark's the level of significance at 10% 5% and 1% respectively			

The above table provides the result's based on panel estimation we run three separate model's while model one shows the result's for all the eight countries' and the results show that Life expectancy which has been proxied for health capital and human capital as proxied

by human capital index obtained from Penn World table have significant impact on the economic growth of the countries' while making a cross country comparison's. Similar result's where found when we run the model on data of BRICS countries and the impact of human capital was found to be much. Though we find negative but significant of health capital. While running the model on developed countries we found that human capital have positive impact but the coefficient was found to be insignificant. Similarly the results were found to be significant but negative for health capital .This can be attributed to the increasing ageing population of the countries which has affected their health structure that may be the reason of affecting the growth of countries like Japan USA and UK. Over all we found that Human capital has significant and positive impact on economic growth particularly among the BRIC'S Countries where the impact of health was found to negative

Conclusion

The study based on some cross country panel data estimation on BRICS found that human capital have significant impact on economic growth on these countries'. We tried to make an comparison and found that though there is less impact of health capital of on developed countries' but that is mainly because of the Ageing phenomena where as we found positive impact when while studying as whole. The result's reveal that multiple form's of human capital as proxied by human capital index has contributed to the growth of the countries significantly particularly among the BRICS country which are currently going through the stage's of transition and posses huge chunk of population resulting in large amount of working population which is positively leading to the growth of human capital. Though the impact of health capital was found to be negative but overall it has been also positively contributing towards the economic growth of countries over time.

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