

HUMAN CAPITAL AND HUMAN DEVELOPMENT: AN EMPIRICAL ANALYSIS

Ms. MMF Nismiya

Department of Economics and Statistics, South Eastern University of Sri Lanka,

Sri Lanka

nismiya.7@gmail.com

ABSTRACT

A key underlying factor which boosts rapid Economic Growth is factor productivity and new world trend moves toward value added manufacturing which relies on human resource. Thus as productivity drives Human Development and Human Capital take prime concern in Development Economics and This paper on Human Capital And Human Development: An Empirical Analysis, investigates the interrelationship between Accumulations of Human Capital and Human Development using Simple Regression Analysis by employing Ordinary Least Square method. And Generalized Least Square Method used to resolve autocorrelation problem, raised in the data set. This paper uses Human Capital Index to measure Human Capital accumulation and Human Development Index to measure Human Development. The data has been extracted from Human Development reports, Published by United Nations Development Program and Human Capital Report, published by World Economic Forum. With available data 122 countries are included in the study. This research concludes that there is a strong positive two way relationship between Human Development and Human Capital. In case of Advanced Economies, rather than Human Capital, there are more influential variables which determine the Human Development and vice versa. In case of Emerging Market and Developing Economies, the regression results show that the explanatory variable, Human Capital shows a strong relationship with Human Development and there is no variation among countries with geographical region.

Keywords: Human Capital, Human Development, Regression, OLS, GLS and Explanatory Variable

1.0 INTRODUCTION

1.1. Background of the Study

In the earliest time period of Economic Thought revolution Economist believed that maintaining a standard level increase in Gross Domestic Product is the only source to develop a nation. Some important events recorded in the first half of twentieth century made them realize that it is important to shift from the concept of increasing GDP to some other aspects to develop a country.

The great depression, The Second World War, a global war for power, immediately after these events scholars started to view development in wider objectives rather than Economic Growth and they added social development as a partial measurement of real growth. In other words they started to give priority to Human Development. Several thoughts proposed by economists support this. Dudley Seers' (1961) definition on Economic Development is



one of the widely accepted definitions. According to him Growth of a nation cannot be considered as Development until it reaches Human Development. The arguments of IBRD on Development emphasize this more. In the book on *Beyond the Growth* published by the World Bank, it criticizes the statement “Human Development is the end – Economic Growth a mean” (Human Development Report, 1996). History gives strong example of economic growth being unable to enhance Human Development. Conversely enriching bases of Human Development nourishes the Economic Growth. Onwards scholars started to study about Human Development and they formally started to use the term Human Development with definition after the first Human Development Report published by UNO in 1990. And the report suggests that the Human Development can be measured with three important components of human life, Longevity, knowledge and decent living Standards. Even if the literacy figures used to measure second key element, it suggest that other educational level indicators should be considered in extensive studies.

This leads us to the concept of Human Capital. This concept was raised to fame when Human Capital Theory was advocated by Becker (1964) and Schultz (1961). But this concept is implied in the earliest era of Economic Thought. Adam Smith (1776) in his magnum opus *The Wealth of Nation*, has given important to invest on human and explain its importance by saying that it brings fortune not only for him but also for the society he lives. After the publication of the paper work of T.W. Schultz (1961) on *Investment in Human Capital* and paper work of Gary Becker (1964) on *Human Capital: A theoretical and Empirical Analysis*, the concept of Human Capital is well recognized as a source route for Growth and Development

All these suggest that there is a two way linkage between Human Capital and Human Development. This paper investigates the impact of Human Capital Accumulation on Human Development and impact of Human Development on Human Capital accumulation.

1.2. Research Problem

Investing on Human is how Human Capital can be defined in the simplest form. The investment can be in any form which becomes a source to develop human skill. Here this part is going to analyze the example of investment on education as it makes the pathway to all other. The main benefit can be gain through investing on education is the financial return accompanied by additional education. It increases space for higher per capita income. An individual can have more employment opportunities by adding more to their educational qualification. In other words it expands the choices for individuals. Further, investment on education is kind of investment on R &

D which opens the global opportunities for individuals. The direct and indirect benefits of investment on education continue.

Conversely, less investment on education moves in opposite direction. Low level of educational attainment reduces the individual income (Schultz, 1961). It becomes a source of sustainable poverty. Poverty is the major cause of crime. But Education becomes a booster to break the strong chain of poverty circle. The cost of not investing on education is higher than cost of investing on education.

1.3. Objectives of the Study

Main Objective

The main objective of this research is analyzing the interrelationship between Accumulations of Human Capital and Human Development using simple regression analysis and it is expected to check the two way linkage between Human Capital and Human Development.

Sub Objectives

The sub objectives of this study are comparing the impact of Accumulation of Human Capital in different country regions and analyze the reasons for variation and the countries are divided into Advanced Economies an Emerging Economies and Developing Economies.

1.4. Importance of the Study

Practically all the countries implement several projects related to Human Development. At the same time make huge amount of investment on Human Capital. These investments are made by both private sector and public sector. It is very important to investigate whether these investments make significance influence in promoting Human Capital and Human Development.

On the other hand, countries follow different strategic in determining investment on Human Capital. It is hard to rate those strategies as the nominal return and the implementation varies among them. But the main purpose of these project and investment is developing human resource and achieving growth targets, it can be either in firm level or national level. This study will find how effectives these investment in promoting human capital.

1.5 Research Gap

Most of the research paper constructed based on human Capital and Human Development analyzes the theoretical aspect of these two concepts (Psacharpoulous et al, 2004). Some analyze the inter relationship between

these two concepts and Economic Growth or Development (Becker et al – 2004, Abbas et al – 2002 and Anand et al – 1993). Some analyze the influence of determinants of these two concepts on itself such as FDI, Fertility, Individual Income and School enrollment (Trostel – 2002, Majeed – 2008). To the best of my knowledge no one is attempt to analyze the interaction between Human Capital and Human Development and this research paper will be a prime concern in this stream.

2.0 METHODOLOGY

2.1 Data collection

This paper investigates the two way linkage between Human Capital accumulation and Human Development. To measure Human Capital accumulation it uses Human Capital index and to measure Human Development it uses Human Development index. The data has been extracted from Human Development reports, Published by United Nations Development program and Human Capital Report, published by World Economic Forum. With available data 122 countries are included in the study.

Human Capital Index

Human Capital Index is constructed on four pillars which include three core determinants of Human Capital, Education, Health and Employment (Human Capital Report, 2013).

Human Development Index

Human Development index was introduced by United National Development Project in the Human Development Report, according to the report it uses three mean elements of human life longevity, knowledge and decent living standards. Life expectancy at birth is used as the indicator to measure longevity. For the second key component knowledge, literacy rate is used as the measurement. the third key element, the right on resource to have decent life standard, it uses income indicator even if it require data on access to Land, Credit, Income and other resources (Human Development Report, 1990).

2.2 Data Analysis

This paper investigates the two way linkage between Human Capital and Human Development by employing ordinary least square method. Simple regressing model has been used to achieve the objective. The proposed models are as follows:

$$HD_i = \beta_0 + \beta_1 HC_i + e \quad (1)$$

$$HC_i = \beta_0 + \beta_1 HD_i + e \quad (2)$$



HD = Human Development

HC = Human Capital

β_0, β_1 = Regression Coefficients

e = Error term

Here in the first regression model Human Development is the dependent variable and Human Capital is the explanatory variable and in the second regression model Human Capital is the dependent variable and Human Development is the explanatory variable. Further, to compare the interrelationship in different country regions, the model reapplied on regional data. SPSS and Excel are used to assist data analysis and tables are used to present the results.

3.0 RESULTS AND DISCUSSION

3.1. The two way linkage between Human Capital and Human Development.

This section analyzes the two way linkage of Human Capital and Human Development by employing linear regression analysis. Ordinary least square method is used to estimate the regression coefficients.

The researcher analyzes impact of Human Capital on Human Development using simple linear regression model. To prove the suitability of the model adjusted R^2 value, F value and Durbin Watson 'd' statistics are used. The estimate model is,

$$HD = -0.153 + 0.013 HC \quad (3)$$

The adjusted R^2 value of the model is 0.83 which suggests that Human Capital Index explains about 83 percent of the variance in Human Development Index. The Durbin Watson d statistics (1.818) is in safe region ($du = 1.694$, $4-du = 2.306$) which suggest that there is no (First order) autocorrelation in the data set. With These conclusions, the simple linear regression model is selected as best fitted model to find impact of Human Capital accumulation on Human Development.

The regression result shows a strong positive relationship between Human Capital Index and Human Development Index. When Human Capital Index increases by 1 unit in average, Human Development Index goes up by 0.013 units. When there average Human Capital Index is zero, the Human Development index takes negative value (- 0.153).

The simple regression model was estimated by employing OLS method and Human Development as explanatory variable and Human Capital as dependent variable. The estimate model is

$$HC = 21.24 + 63.66 HD \quad (4)$$

Even if the adjusted R^2 (0.83) and F value (579.6) ensure the suitability of the model, Positive autocorrelation exist as evidenced by Durbin Watson 'd' statistics (1.513). Thus, Generalized Least Square (GLS) method is used to correct this positive autocorrelation and estimated new model is,

$$HC = 20.2 + 56.07 HD \quad (5)$$

The adjusted R^2 Value of the model is 0.73 and it suggest that about 73 percent variance of the Human Capital Index is explained by Human Development index. The Durbin Watson 'd' statistics (1.701) suggest that there is no auto correlation problem ($du = 1.694$, $4-du = 2.306$)

The regression result shows a strong positive relationship between Human Development Index and Human Capital Index. When Human Development index increases by 1 unit on average, Human Capital Index goes up by 56.07 units. When average Human Development Index is zero, Human Capital index is 20.12 units.

3.2 Inter connection between Human Capital and Human Development in advanced Economics.

This part of the paper studies the two way linkage between Human Capital and Human Development in advanced economics by employing simple regression model to country data.

In the estimated model even if the hypothesis test shows a significance relationship between Human Capital Index and Human Development Index. The R^2 value (0.29) is very low and Durbin Watson d statistic is in indecision area. It suggests that estimate a Human Development model with Human Capital as the only explanatory variable is not represent the data set. In this model impact of explanatory variable on total variation of Human Development is lower than error variation.

When analyzing the impact of Human Development Index on Human Capital Index, hypothesis test shows a significant relationship between the explanatory variable and dependant variable. Still the adjusted R^2 value is 0.29 which ensures that the model with Human Development as the only explanatory variable is not suitable to use in policy making.

3.3 The two way linkage between Human Development and Human Capital in Emerging Market and Developing Economics

Under this title the researcher analyze the two way linkage between Human Development and Human Capital in Emerging Market and Developing Economics by employing simple linear regression.

The estimated model is,

$$HD = 0.132 + 0.013HC \quad (6)$$



The adjusted R^2 value of the model is 0.7 which suggest that Human Capital explains about 70 percent of the variance in Human Development. the Durbin Watson d statistic (1.783) ensure that there is no autocorrelation in the data set and this model is found as best fitted model to analyze the impact of Human Capital on Human Development in Emerging Market and Developing Economics.

The regression result shows a strong positive relationship between Human Capital Index and Human Development index. When Human Capital index increases by 1 unit on average, Human Development Index goes up by 0.013 units. When average Human Capital is zero, the Human Development index takes negative value (- 0.132).

The estimated linear simple regression model, derived through employing OLS method is,

$$HC = 25.93 + 55.66 HD \quad (7)$$

Even if all the other requirements fulfilled by the model, The Durbin Watson d statistic shows that there is positive autocorrelation in the data set. Generalized Least Square method is used to resolve this problem and still it shows positive auto correlation problem and it suggest that auto correlation is emerged due to misspecification. Regression through origin was tried on data set and the estimated linear model is,

$$HC = 93.54 HD \quad (8)$$

Adjusted R^2 value is 0.99 and it suggests about 99 percent variation of the Human Capital Index is explained by Human Development index and the Durban Watson “d” statistic shows that there is no autocorrelation in the estimated model. This model is identified as best fitted model to analyze the impact of Human Development on Human Capital in Emerging Market and Developing Economics.

The model suggests that when Human Development increases by one unit, Human Capital goes up by 93.54 units.

3.4 Recommendation

When countries in emerging status Human Capital plays an important role in promoting Human Development and vice versa. Increasing the investment in Education, Health and Training can be strategic elements to promote Human Development. It will open the pathway to all the other Human Development aspects. Government can increase their investment in public services which promote Human Capital such as Free Education System, Free Health system and Scholarship Programs for higher studies. Some studies prove that promoting public services has more significance influence on Human Development than Direct money transfers.

Prf. Schultz suggests that internal migration expected by employers to promote their employment opportunity and expansion made on this is kind of investment in Human Capital. When Human Security is ensured, employers will intend to migrant and it will accumulate the Human Capital. At the same time, Investment on infrastructure development too expands the space for this kind of investment in Human Capital as it reduces the most barriers.

The study shows the role of Human capital in promoting Human Development is not considerable in Advanced Economies. Practicability of this answer can be questioned still there are some justification. With the empirical evidence of Human Capital Index we can ensure that these Advanced Economies already achieved very high level in Accumulation of Human Capital. Thus the challenge or the strategy to promote Human Development cannot be promoting Human Capital. If it is so they would have succeed.

The researcher expects that this research paper will help to open the pathway to further researchers based on Human Capital and Human Development. The impact of Human Capital on Human Development can be measured with the sub components of Human Capital and vice versa. Regression analysis with more explanatory variable will give a clearer picture about the interaction between Human Capital and Human Development.

4.0 CONCLUSIONS

This research concludes that there is a strong positive two way relationship between Human Development and Human Capital. In case of advanced economies, even if the result shows a significance relationship between variables, the R^2 value suggests that the estimated model is not sufficient to policy making. In other words, rather than Human Capital there are more influential variables which determine the Human Development and vice versa.

In case of Emerging Market and Developing Economies, the regression results show that the explanatory variable, Human Capital shows a strong relationship with Human Development. When it comes to the impact of Human Development on Human capital, the results shows if there is no Human Developments, there will be no Human Capital in Emerging Markets and Developing Economies.

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