

HUMAN CAPITAL AND INCLUSIVE GROWTH IN THE SELECTED DEVELOPING COUNTRIES

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ABSTRACT

This study examines the effects of human capital development on inclusive growth (IG) of developing countries. A surge in human capital (HC) rises the efficiency of workers that have spillover impacts on economic growth over the period 2000-2014. These effects trickle down to the lower segment of the population through job creation that lifts poor people out of poverty. This study uses panel data of 19 developing countries to explore the impacts of human capital on dynamic indicators of IG such as economic growth, employment, income disparity and poverty using the generalized method of moment (GMM) to tackle the problems of serial correlation, endogeneity and excluded variables bias. The outcomes of this study reveal that human capital has increasing effects on economic growth and employment while decreasing effects are observed for income inequality and poverty. Therefore, there is a need to enhance human capital development in developing countries to achieve the target of inclusive growth.

Keywords: Human Capital; Panel Data; Employment; Income Inequality; Inclusive Growth.

INTRODUCTION

Economic growth is an important topic in economic discourse. At a glance, it tells us whether an economy is growing or declining. In the preceding four decades of the twentieth century, economic growth has sought an enormous consideration from policymakers, academicians and the researchers. It has been at the heart of discipline in the late sixties. A plethora of research has been done to figure out the factors that are causing economic growth in the 1980s and 1990s (Barro & Sala-i-Martin, 2003). It is practically the only factor that directly affects the individual level of income. Solow (1957) predicts that the growth process must slow down or even cease in the absence of continuous improvements in the technology. An investment in HC in the form of knowledge is essential to

enhance the growth process as HC is a vital determinant of the long-run sustainable economic growth and development. Similarly, the investment in people through healthcare units, education and R&D raises a stock of HC and hence the productivity as well.

Despite the importance of GDP, economists have observed some serious economic problems that are often associated with the aggregate economic growth (EG), of which income inequality is the most important. Moreover, it may not wipe out poverty and unemployment from the developing world, in particular. The existence of poverty and joblessness is still a challenge for all countries. It is seen that the IG and income inequality (II) are ramping up parallel in the developing countries (Fosu, 2010). Similarly, income inequality, poverty and unemployment remain high in Africa, despite hasty economic growth in the current years (Anyanwu, 2013).

In short, the contribution of economic growth in world development cannot be denied. However, the existence of poverty, unemployment and the rising income inequalities particularly, after the global financial crisis is still a challenge for most of the economies and demands for an alternative growth process. For instance, the economies need such type of a growth process that creates more jobs and reduces poverty (IMF, 2013). Moreover, rapid EG is not an appropriate instrument to eliminate poverty and income disparity (Matilda, 2013).

After a global financial crisis, high unemployment and rising income inequalities have drawn the attention of governments and the international agencies to implement the goal of inclusive growth (Bordo & Meissner, 2012).

For instance, inclusive growth should be reflected in the UN post-2015 agenda and considered as the prerequisite for sustainable development. African development bank has endorsed inclusive growth as an agenda for economic development in Africa (ADB, 2013). Furthermore, the Asian development bank, in its strategy 2020 has declared inclusive growth also promoted regional integration and environmental sustainability.

Despite the significance of inclusive growth, there is no unanimous meaning of this notion. According to Ramos *et al.* (2013), inclusive growth is still an elusive concept. Inclusive growth is an extensive concept that

comprises the labour force of a country and reduces poverty as well (WB, 2009). Inclusive growth is different from pro-poor and broad-based growth. More specifically, the inclusive growth ensures high per capita growth, eradicates poverty and lowers the income inequality (Rauniyar & Kanbur, 2009). It is the growth process that reduces poverty and enables the individuals to join the growth process to share its dividends (Elena & Sushana, 2010). In summary, it is a growth episode that allows the participation of all the strata of society particularly the poor that is the underprivileged groups in the growth process and reduces the income inequality through education, health and nutrition (Klasen, 2010).

It is marked from growth studies that the measurement of IG is still a challenge due to the absence of a commonly agreed definition (Klasen, 2010). However, a study has captured the inclusive growth by using only two indicators that are growth rate of GDP and the distribution of income (Anand *et al.*, 2013). Another empirical study has measured the inclusive growth by employing three proxies that are poverty, income inequality and employment to total population ratio (Ramos *et al.*, 2013). While, the important factors of IG are the openness of trade, HC, and foreign direct investment (FDI) (Anand *et al.*, 2013). Similarly, Alexander (2015) finds high per capita growth, productive employment and investment in HC as the important elements of IG. Despite high growth and trade openness, investment in health and education, progressive taxes and strong institutions are the key contributors to inclusive growth (CAFOD, 2014).

Keeping in view the significance of inclusive growth, this research study analyzes the influence of HC development on IG. For this purpose, we have disaggregated human capital development into educated and health human capitals. This study uses secondary school enrollment and life expectancy as the proxies for educated and health human capital respectively. Furthermore, a relatively broader index of inclusive growth has been used by combining all four indicators which are economic growth, poverty, income inequality and decent employment. These indicators encompass three sustainable development goals (SDGs) of the United Nations.

In this study examines the effect of HC on IG. As HC affects the IG through diverse channels. HC development through education enhance both the learning and absorption capacities and capabilities of the workers. It also enables the individuals to better understand, adapt and even produce

sophisticated production techniques. Indeed, the productivity of workers rises, they earn more wage and thus reduces the income disparity to increase the degree of inclusiveness (ADB, 2007). Moreover, education raises the quality of workers and enables them to create productive employment that reduces poverty and promotes inclusive growth (Balakrishnan, 2013; Anand *et al.*, 2014).

This study contributes to the literature in two folds. Firstly, we disaggregate human capital development into education and health. Moreover, we measure education by average secondary school enrollment and health by using life expectancy which is the most appropriate way to capture the human capital development relative to the public expenditures on health and education, exclusively in the developing nations. Secondly, this study uses a relatively broader index for inclusive growth by combining all four indicators e.g. economic growth, poverty, income disparity and employment to population ratio.

The study is planned into five sections; section 2 provides the review of previous literature. Section 3 explains the methodology and data. Section 4 explains the empirical findings. However, the last section 5 concludes the outcome of the study.

REVIEW OF LITERATURE

Recently, several international agencies and donors are emphasizing on the promotion of inclusive growth to tackle the problems of unemployment and income inequality (Bordo & Meissner, 2012). The G20 leaders, in 2013 have committed to addressing the inclusive growth as an agenda for development.

Moreover in some regions, the rapid economic growth is followed by unemployment and characterized as futureless and jobless growth. That is the reason, inclusive growth has become a new mantra of development (Tilak, 2007). Despite significant attention from eminent researcher and policymakers, there is no consensus on the elucidation of this notion. IG ensures high per capita growth, eradicates poverty and lowers the income inequality (Rauniyar & Kanbur, 2009). The inclusive growth is more comprehensive, it concentrates on both the economic output and the distribution of income at the same time (Alexander, 2015). The important determinants of inclusive growth are investment in health and education, school enrollment, literacy rate, infrastructure development, industrial

employment, good governance, financial sector development, institutional soundness, public investments and trade openness (Ali & Zhuang, 2007).

Human Capital (HC) and Inclusive Growth (IG)

Hur (2014) has inspected the association between fiscal policy and IG using the cross country panel data. He has used the panel vector autoregression PVAR for sake of estimations. The results display that the gross fixed capital formation has a stout positive influence on EG. While government spending on health and education significantly affect the IG especially in the developing countries. Moreover, he recommends higher spending on health, public investment and social subsidies to enhance the degree of inclusiveness. Adedeji *et al.* (2013) proclaim that education and health are the vital contributing elements to the IG. Secondary school enrollment and good health rise the +productivity of the workers and improve the distribution of income. Similarly, Haan (2013) indicates that the strong economic growth, HC and quality institutions are the essential contributors to the inclusive growth. Human capital development along with robust economic growth significantly affects the inclusive growth.

Despite education and healthcare, investment in infrastructure and energy, financial sector development and good governance are the important policy tools to achieve the target of inclusive growth (Ali & Zhuang, 2007). Education is a precondition for inclusive growth. It raises the quality of the workforce which in turns enhance the economic growth and lowers the poverty (Anand *et al.*, 2014). Similarly, progressive taxes, greater pension expenditures, increased labour shares in income and social securities are also important factors that enhance the degree of inclusiveness (Lee *et al.*, 2013).

To achieve the target of IG, it is indispensable to spend in HC despite infrastructure development, social protection and progressive taxation (Alexander, 2015). Economies have to spend in basic infrastructure, health services and on both secondary and higher education to achieve the IG and development (Samans *et al.*, 2015). Investment in health and education is among the key sectors that contribute to inclusive growth.

Human Capital (HC) and Economic Growth (EG)

Although, a good number of studies emphasize the development of human capital to achieve the sustained EG. However, the idea of human capital has been implicitly introduced by Arrow (1962) while explaining

the mechanism of learning by doing. Furthermore, HC has been recognized as a significant element of economic growth in the famous work of Romer (1986, 1990) regarding the long determination of EG (Barro & Sala-i-Martin, 2003). Human capital enables individuals to create and absorb contemporary knowledge and ideas. As a result, the economies with more human capital tend to grow faster by easily grasping the contemporary technological methods skills (Nelson & Phelps, 1966).

Human capital is an important component and a spur of the research and development sector. Therefore, it boosts the growth of technology and hence the economic growth as well (Romer, 1990). Educated workers can accumulate more capital. They better understand modern technology as compared to the less educated workers (Fernandez & Mauro, 2000). Higher rate of school enrollment is a key to pull off a faster growth rate in the long run. Furthermore, education ramps up the productivity of workers to earn high and to sustain the standard of living (Bils & Klenow, 2000). Better education is strategic to enhance the long-run growth process. It also improves the productivity of the workers (Bosworth & Collins, 2003). Quality education and health care along with physical capital amassing put a strong positive effect on the EG (Amjad, 2005).

Public spending on health and education leads to HC development. It raises the productivity of the workers to increase the pace of EG (Imran *et al.*, 2012). Health is also an important element of HC. It improves the productivity of the workers. So, it necessary to spend more in HC capital to enhance the growth process in both the short and long period (Akram & Khan, 2008). Investment in human capital accompanied by physical capital accumulation is a key to sustain the long-run economic growth (Ashton & Sung, 2005). Good health is an important feature of HC and critical for faster EG. Healthier labours are very much enthusiastic. They are always fruitful enough to earn relatively high salaries because they work for a long time (Bloom *et al.*, 2004; Wilson & Briscoe, 2004).

In short, human capital development is equally important for advance and the developing countries to accelerate the long-run growth process. Quality education along with high school enrollment rate has improved the long-run growth in many developed countries (Hanushek, 2013). Increase in enrollment rates put a strong positive effect on long-run EG in developing countries as well (Baldecci *et al.*, 2008). HC accumulation is an important source of EG in advanced economies (Abbas, 2000;

Fernandez & Mauro, 2000).

Human Growth and Poverty

Despite rapid economic growth in many regions, poverty remains a real threat for several workers in the developing world. Moreover, it is observed that a huge bulk of adults is unable to earn above US dollar two-a-day in most of the developing economies (ILO, 2011). In short, EG is vital to eradicate poverty but it is not a satisfactory condition (Matilda, 2013).

Several economies have achieved the pro-poor growth through the accumulating of human capital. As education and good health improves the quality of the workforce so they create better jobs and earn more wage to reduce the level of poverty at a faster pace (Khan, 2001). Government spending on education is vital to improving HC. Higher levels of education are linked to more wages and the self-employment as well in the rural areas, in particular. Ability to earn a higher wage and the creation of self-employment reduces the level of poverty (Winters & Chiodi, 2008).

Furthermore, it enables the biggest part of the population to accumulate human capital to produce higher levels of output and to earn high incomes (Santos, 2009). Empirics reveal that the decline in income disparity and the secondary school education has considerably condensed the level of poverty in a good number of countries. Moreover, education surges the earning capability of the workers (Janjua & Kamal, 2011). HC development through spending in education is essential to reduce poverty, especially in developing countries. So the governments ought to spend more in education to decrease poverty, particularly in the rural areas (Afzal *et al.*, 2012).

Human Capital and Employment

There occurs a positive connection between EG and employment as predicted by Okun (1962), however, the transformation rate of economic growth into employment generation remains slow in several developing countries (Fosu, 2010). Human capital development through education and health enhance the erudition capacity and the capabilities of the workforce. Similarly, better nutrition positively contributes to the health of workers. Therefore they produce more productive and earn higher incomes (Balakrishnan, 2013).

Human capital accumulation through education allows the participation of the majority of the workforce in the growth process. It ensures the participation of female worker as well and enables them to earn relatively higher age (Winters, 2012). Education of the entrepreneurs contributes positively towards the creation of employment. Furthermore, public investment in health and education also put a significant impact on employment (Ekanem & Emanghe, 2014). Furthermore, education ensures the participation of both male and female labour in output generating activities to raise the living standard of the individuals (Castel *et al.* 2010). Human capital development through primary and secondary school enrollment positively influence the employment outcomes in both rural and the urban regions of the developing countries. However, primary education is insufficient to earn higher incomes (Wanbugu, 2011). Education is positively related to employment. It allows individuals to get jobs. Furthermore, it leads to the re-employment of the unemployed labour force as well (Riddell & Song, 2011).

THEORETICAL BACKGROUND AND METHODOLOGY

Theoretical background

The purpose of this study is to observe the effect of HC on IG. The HC consists of education and health HCs. Firstly, as education and healthcare are the two important constituents of HC and a significant policy instrument to attain sustained long-run EG. Education enhances both the learning and absorption capacities and the capabilities of the labour force. It also enables them to better understand, adapt and even produce sophisticated production techniques. Furthermore, educated workers accumulate more human capital through learning by doing and hence become more productive as compared to ordinary workers. Lastly, it allows individuals to produce new ideas that ultimately lead to technological improvements in the long run.

Similarly, good health is necessary for a high-quality brain. It enables the workers to better understand and hence execute the most modern production techniques. Moreover, healthier workers are always more efficient and productive. Because they work for more hours, avail no more sick leaves and serve for a good number of years to acquire relatively better productive skills. In short, they are experienced enough to produce more as compared to the ordinary, inexperienced and unhealthy labour force. Consequently, these improvements in technology along with more productive and efficient labour force leads to high and more sustainable long-run economic growth (Nelson & Phelps, 1966; Romer, 1990;

Fernandez & Mauro, 2000; Bloom *et al.*, 2004).

$$y=f(H,E) \quad 1$$

where $\frac{\partial y}{\partial H} > 0, \frac{\partial y}{\partial E} > 0$

While this high and sustainable long-run EG is the first and the foremost ingredient and even a prerequisite to the inclusive growth. It is also a key to reduce the extreme poverty by producing more prolific and decent occupation opportunities especially in the developing countries (Ali & Zhuang, 2007).

$$P=f(H,E) \quad 2$$

where $\frac{\partial P}{\partial H} > 0, \frac{\partial P}{\partial E} > 0$

Similarly, the eradication of poverty by creating productive and decent employment through human capital development is another way to achieve more inclusive growth. Better access to education and health care enhance the productivity of workers, as discussed earlier. Moreover, better education along with good health allows the workers to get decent jobs. It also enables the individuals to create new businesses and hence more jobs to reduce the poverty that enhances the magnitude of inclusiveness (Tanaka, 2015; Anand *et al.*, 2014; Adedeji, 2013; Bloom *et al.*, 2004). For instance, education raises the quality of workers and enables them to create productive employment that reduces poverty and promotes inclusive growth (Balakrishnan, 2013).

Finally, human capital development through education and health reduces income inequality by enhancing the earning capacity of the workforce. As educated and healthy workers are productive and efficient. As they better understand, absorb and execute the contemporary production techniques. Similarly, educated workers accumulate more human capital through learning by doing. Lastly, the healthy worker serves for a good number of years. So they are skilled, experienced and hence earn more wages to reduce the income inequality that raises the degree of inclusiveness (ADB, 2011; Lee *et al.*, 2013; Tanaka, 2015).

As economic growth is a significant ingredient of inclusive growth along with poverty eradication, employment generation and reduction in income inequality. However, inclusive growth lays a greater emphasis on the participation of all the segments of the population in the growth process. So we first develop a framework for economic growth and hence add up the other

important ingredients of inclusive growth to it to reflect the inclusiveness of the growth process. As economic growth is the first and the foremost and even an inevitable component of inclusive growth (Anand *et al.*, 2013).

We start from the basic growth model of Solow (1956)

$$Y=AF(K,L) \quad 3$$

Where Y is the output produced, A is the exogenous technological change, K is physical capital and L is the labour. The Cobb-Douglas form of the above model is given by;

$$Y=AK^\alpha L^\beta \quad 4$$

Where $A > 0$ is the level of technology and α is the share of capital and it lies between 0 and 1. Similarly, β is also a constant with $0 < \beta < 1$. It is now important to note that Solow (1956) assumes the output, Y is the function of only two-factor inputs that are labour and capital denoted by L and K respectively.

We incorporate the human capital that consists of both education human capital and health human capital into the production function in the functional form, as specified by Bloom *et al.* (2004). Hence the above production function will take the following form;

$$Y=AK^\alpha L^\beta e^{(\varphi_1 S + \varphi_2 h)} \quad 5$$

The human capital consists of two components that are education and health; denoted by S and h respectively. Here S is measured as secondary school enrolment his health which we indicated with life expectancy. While φ_1 and φ_2 are the coefficients. For linearity, we take a log of equation 5

$$\log Y_{it} = \log A_{it} + \alpha \log K_{it} + \beta \log L_{it} + \Phi_1 S_{it} + \Phi_2 h_{it} + \log e_{it} \quad 6$$

$$y_{it} = \alpha_0 + \alpha_1 k_{it} + \beta l_{it} + \varphi_1 s_{it} + \varphi_2 h_{it} + e_{it} \quad 7$$

Where y_{it} , α_0 , k_{it} , l_{it} and e_{it} are the natural logarithm of Y_{it} , A_{it} , K_{it} , L_{it} and e_{it} respectively.

Methodology

As the HC consists of both education and health. Now combining both of the ingredients of human capital and hence generalizing our empirical model as;

$$Y_{it} = \alpha + \beta HC_{it} + \Phi X_{it} + e_{it} \quad 8$$

Where is the GDP per capita. Alternative, we use poverty, income inequality and employment as dependent variables. It is the first ingredient of inclusive growth, HC_{it} is the human capital that is consists of health and education, X_{it} , is the vector of controlled variables such as gross fixed capital formation, labour force, FDI, and trade openness and is the error term.

This study investigates the influence of HC on inclusive growth. While EG is one of the central ingredients of inclusive growth along with poverty eradication, employment generation and reduction in income inequality.

Economic growth is the first and foremost component of IG (Anand *et al.*, 2013). In literature, several proxies have been used to capture economic growth. However, we have used GDP per capita, measured at current US dollars as a proxy for economic growth (Aoyagi & Ganelli, 2015; Anand *et al.*, 2013). Income inequality is also another important ingredient of inclusive growth. In this study, we have used Gini net as a proxy for inclusive growth following Aoyagi and Ganelli (2015) and Hur (2014). Gini net excludes both taxes and transfers (Hur, 2014).

Poverty is another proxy of inclusive growth. Eradication of poverty is essential to more achieve inclusive growth (Osmani, 2008; ILO, 2011; Alexander, 2015). Headcount index/ratio is the most commonly used proxy for poverty. However, we have used population undernourishment as a proxy to measure poverty owing to the non-availability of penal data for the developing countries.

Employment is also another measure of inclusive growth (Rauniyar & Kanbur, 2009; ILO, 2011; CAFOD, 2014; Alexander, 2015). We have used employment as a percentage of the population as an indicator for employment following Ramos *et al.* (2013). Our last dependent variable is the index of inclusive growth and this consists of all four indicators of inclusive growth specified above. The index of inclusive growth is formed by using Principal Component Analysis. Human capital is our variable of interest. We have disaggregated human capital into education and health. This study uses secondary school enrollment (% gross) as a measure for educated HC following Barro (1991), and Hur (2014). Similarly, life expectancy at natal is used as an indicator of health. In literature, a good number of studies having life expectancy at birth (in years) as an indicator to measure the health HC. We have used labour force (total) participation in percentage as a proxy, following Hur (2014). We have constructed the proxy for trade openness by dividing the sum of imports and exports with GDP, following Aoyagi and Ganelli (2015) and Hur (2014). We use gross fixed capital formation (percentage of GDP) as a proxy to measure the physical capital following Hur (2014) and Ali *et al.* (2012). We use total FDI capital stock as a proxy to measure the FDI by following Anand *et al.* (2013). We have taken the data of population growth (rise in population per year/annual per cent) in percentage.

This study uses a panel of nineteen selected developing countries across the world (see details in Appendix-II) for the period 2000-2014. Lastly, we have collected data from different sources. Data for economic growth,

physical capital, labour force, education, health, FDI, trade openness and population growth has been collected from World Development Indicators. While the data for poverty and income equality has been taken from UN Data Set and SWIID respectively. Further details are given in Appendix I.

In this study, we use the panel data to set out the association between HC and IG. For this purpose, we use GMM following Anand *et al.* (2013) and this is supposed to be the most suitable estimation technique to tackle the problem of endogeneity. In GMM estimation, we examine the joint significance of the instruments again by using the Sargan or Hansen test. It tells us whether the instruments are valid.

It is vital to note that Generalized Method of Movements (GMM) has some advantages especially in the empirical estimation of EG. It has been perceived that the researchers usually use the average of output growth to avoid the cyclical dynamics. As a result, the number of periods used in the standard growth literature is generally small. The GMM estimator allows the arbitrarily distributed fixed individual and time effects for the penal analysis (Bond *et al.*, 2001).

RESULTS AND DISCUSSION

The summary statistics of the variables under consideration is provided below in table 1.

Table 1. Descriptive Statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Income Inequality (Gini net)	285	41.303	8.3804	30.12	70.012
Poverty	285	16.218	9.4053	4.90	43.20
GDP Per Capita	285	3.2937	0.3984	2.364	4.053
Employment to population Ratio	285	54.3036	11.72	30.70	81.95
Inclusive Growth Index	285	0.2448	1.0435	-2.240	3.490
Labor Force	285	59.096	10.954	40.26	85.45
Life Expectancy	285	67.305	7.2685	46.60	79.40
Physical Capital	285	23.391	6.0552	7.020	45.90
Secondary School Enrollment	285	66.595	19.371	21.03	95.04
Population Growth	285	1.6884	0.7432	0.142	4.96
Trade Openness	285	4.3022	1.9065	1.90	8.96
FDI	285	3.4567	3.2553	0.10	15.0

Source: Author's calculations

It is vital to mention that we have constructed the index of IG to investigate the association between HC and inclusive growth. This index consists of all four components of inclusive growth that are EG, poverty, income disparity and employment. The first four models inspect the link between HC and all four ingredients of inclusive growth one by one. While the fifth model analyzes the influence of HC on the index of IG.

Empirical findings of our first model in which economic growth is our dependent variable are given below (Table 2). The reason behind is that the economic growth is first and the foremost ingredient of inclusive growth. The empirical results show that fundamental determinants of economic growth like physical capital (lnK), education (ln(enrol)), health (LE), labour force participation (Lf), trade openness (TO) and FDI are significant. Furthermore, the instruments used are valid and no autocorrelation is found. Results in table 2 reveal that human capital development through education (secondary school enrolment) increases GDP per capita. This indicates that education enhances the skill and hence the productivity of the workers so they can produce higher levels of output.

Moreover, education improves the quality of the labour force and the most important source of production (Bloom *et al.*, 2004; Ali *et al.*, 2012; Barro, 1991). Similarly, human capital development through health (life expectancy) positively affects the GDP Per Capita and significant as well. This result is analogous with the finding of Bloom *et al.* (2004). However, the contribution of education and health not as strong as it may be. The possible reasons are that the developing nations emphasize less on education and health relative to the developed nations (Hur, 2014).

Table 2. HC and EG (GDP Per Capita).

Variable	GMM
lnGDPp(-1)	0.180** (0.041)
Lf	0.012* (0.062)
lnK	0.613** (0.014)
lnLE	0.012** (0.031)
ln(Enrol)	0.021*** (0.000)
TO	0.007*** (0.000)
FDI	0.091** (0.031)
Constant	0.260*** (0.000)
Number of observations	266
Number of countries	19
Sargan P-value	0.151
AR ₁ (P value)	0.002
AR ₂ (P value)	0.232

Note: P values for t-test are in parenthesis. *, **, and *** show significance at 10, 5 and 1 per cent respectively.

The impacts of trade openness and FDI are also positive and statistically significant. These outcomes are reliable and similar to the findings of Anand *et al.* (2013). The initial level of income, trade openness and FDI are among standard economic growth determinants. Furthermore, trade openness fastens the economy through the efficient allocation of resources (Anand *et al.*, 2013).

Lastly, the impact of physical capital and labour force participation (LFP) on EG is significantly positive. Especially, the impact of physical capital is stronger than labour force participation. These empirical results are akin to the findings of previous studies (Afzal *et al.*, 2012; Bloom *et al.*, 2004; Anand *et al.*, 2014).

Empirical Findings of Model II (Poverty)

Table 3 presents the results of the second model, where poverty is a dependent variable. Empirical results illustrate the negative and significant association between EG and poverty.

Table 3. Dependent Variable: Poverty (Population Undernourishment).

Variable	GMM
lnPopu(-1)	-0.062** (0.042)
lnLE	-0.008* (0.061)
lnenrol	-0.031* (0.063)
TO	-0.007 (0.201)
FDI	-0.012* (0.071)
Constant	0.290** (0.002)
Number of observations	266
Number of countries	19
Sargan P-value	0.35
AR ₁ (P value)	0.002
AR ₂ (P value)	0.861

P values are given in parenthesis. *,**,*** shows significance at 10%, 5% and 1 % respectively.

As 1 percent rise in economic growth (GDP Per Capita) reduces poverty by 6.2 percent. This displays that the economic growth is an effective measure for alleviating poverty in the developing countries. Moreover, it creates employment opportunities and raises the living standard of the

individuals (Matilda, 2013; Fosu, 2010; Auon, 2004). HC development through both education and health has decreasing effects on poverty. The results reveal that one percent surge in education reduces the poverty level by 3.1 per cent. It shows that human capital development through education is important to eradicate poverty. Furthermore, education is amongst the significant policy tools to eradicate poverty by enhancing the earning ability and the quality of the population in many developing countries (Afzal *et al.*, 2012; Janjua, 2011; Auon, 2004; Becker, 1995). Similarly, human capital development through health (life expectancy) is also important to reduce the level of poverty. It enables the labour force to engage in commercial activities and to perform better. As a result, healthy workers not only participate in the production process but earn more wages to get out of poverty (Allahdadi & Aref, 2011; Bloom *et al.*, 2004).

Lastly, trade openness and FDI are also negatively associated with poverty. Nevertheless, the coefficient of trade openness is statistically insignificant. This highlights the need for the transformation of trade benefits towards the eradication of poverty, in the developing countries (Matilda, 2013). While FDI significantly contributes to the eradication of poverty. It lowers the poverty level by creating more employment opportunities (Akmal *et al.*, 2007).

Findings of Model III (Income Inequality)

Table 4 presents the effects of human capital development on income disparity. The estimated results reveal that the GDP Per capita, HC development through education and health, trade openness and FDI are inversely correlated to the income inequality. While labour force participation is positively associated with income inequality. Our first explanatory variable that is GDP Per Capita is negatively and significantly connected to income disparity at 5 per cent level of significance. A 1 per cent rise in GDP Per Capita cuts down the income inequality by 5.1 per cent. This indicates that EG is much needed to reduce income inequality in developing countries. It creates decent employment opportunities to absorb workers in the production process (Fosu, 2010). However, the transformation of the growth towards the reduction of income inequality is relatively slow (Fosu, 2010).

The results display that the HC development has a negative and significant influence on income inequality. Secondary school enrollment reduces income inequality in two different ways. Our first explanatory

variable GDP Per Capita has increasing effects on employment and it is statistically significant. A 1 per cent surge in GDP Per Capita raises the employment to population ratio by 3.1 per cent. This shows that economic growth is amongst the fundamental determinants of employment. Furthermore, it creates more employment opportunities to absorb new workers (Bashier & Wahban, 2013). Firstly, it enables the uneducated and the unskilled labour force to participate in the production process. Secondly, it enhances the capabilities and skills of the workers to produce enough to earn more wages (Hur, 2014; Matilda, 2013; Anand *et al.*, 2013).

Table 4. Dependent Variable: Income Inequality (Gini net).

Variable	GMM
lnGINI(-1)	-0.051** (0.031)
LE	-0.014* (0.081)
lnenrol	-0.032* (0.092)
Popg	0.021* (0.063)
TO	-0.122*** (0.001)
FDI	-0.0012* (0.065)
Constant	0.310* (0.091)
Number of observations	266
Number of countries	19
Sargan P-value	0.001
AR ₁ (P value)	0.037
AR ₂ (P value)	0.191

Note: P values are reported in parenthesis. *, **, *** shows significance at 10, 5 and 1 per cent respectively.

Similarly, health (life expectancy) also reduces income inequality significantly. The reason behind is that the healthier workers are productive and efficient enough to earn high incomes to reduce income inequality. Because they can fathom out and execute the latest technology. Furthermore, they work for a good number of years and experienced enough to earn high incomes as compared to unhealthy workers (Hur, 2014; Bloom *et al.*, 2004).

Population proliferation is positively associated with income inequality and significant (Matilda, 2013). Trade openness is negatively connected with income inequality and it is significant. It reduces the income disparity

by expanding the wages of both skilled and unskilled workers. Similarly, FDI is negatively affecting income inequality. It reduces income inequality by increasing the wage rates and the domestic policies in the developing countries (Anand *et al.*, 2013).

Empirical Findings of Model IV (Employment)

Empirical results of our fourth model where employment is our dependent variable are displayed in table 5. Empirical results of our fourth model show that GDP Per capita is positively associated with employment.

Table 5. Dependent Variable: Employment (EPR).

Variable	GMM
Lnepr(-1)	0.031** (0.041)
LE	0.021* (0.071)
lnenrol	0.031* (0.063)
Pop _g	-0.123** (0.000)
TO	0.013** (0.043)
FDI	0.021* (0.074)
Constant	0.260** (0.032)
<hr/>	
Number of observations	266
Number of countries	19
Sargan P-value	0.001
AR ₁ (P value)	0.011
AR ₂ (P value)	0.084

Note: P values are given in parenthesis. *,**,*** shows significance at 10, 5 and 1 per cent respectively.

While the population growth is inversely connected to employment. HC development through education and health positively affects employment and significant. Human capital development through education (secondary school enrollment) enhances the abilities and the capabilities of the workers to contribute to productive activities. Moreover, it enables the unemployed workers to avail jobs with higher earnings (Winters, 2012; Wambugu, 2011; Fosu, 2010). Similarly, human capital through health (life expectancy) positively contributes to employment. Because healthier workers are productive enough to create decent employment (Bloom *et al.*, 2004; Kapsos, 2005; Balakrishnan, 2013).

Population growth is negatively related to employment and significant. This indicates that a rise in population reduces the employment level. Moreover, it is one of the reasons for unemployment in most of the developing countries (Kapsos, 2005). Trade openness is positively associated with employment and this shows that trade openness increases employment as the share of exports rises, as highlighted by Kapsos (2005). Moreover, trade openness promotes employment through efficient resource allocation and dissemination of knowledge (Bashier & Wahban, 2013). Lastly, FDI has a positive and significant effect on employment. This indicates that FDI promotes the level of employment. Furthermore, this relationship is well established in the economic literature (Bashier & Wahban, 2013).

Findings of Model V (IG)

The estimated results of the fifth model, where inclusive growth index is our dependent variable are given in table 6. While physical capital, education, health, population growth, trade openness, and FDI are the explanatory variables.

Our first explanatory variable physical capital is positively linked with inclusive growth. This indicates that physical capital promotes growth inclusiveness. The result is similar to the findings of Hur (2014). Furthermore, physical capital is amongst fundamental determinants of economic growth which the first and foremost ingredient of IG (Anand *et al.*, 2013). HC development through education is positively associated with inclusive growth. Our result is akin to the results of Hur (2014), Anand *et al.* (2013) and Adedeji *et al.* (2013). Education enhances the inclusiveness of growth through different channels. Firstly, it improves the quality of labour force that promotes economic growth which is the essential component of IG (Anand *et al.*, 2013). Secondly, it enables the labour force to involve in the growth process that generates employment opportunities and reduces the level of poverty as well (Ali & Zhuang, 2007). Lastly, education raises the capabilities and skills of the worker to produce that higher level of output to earn more wages. This ultimately leads to a reduction in income inequality (Hur, 2014; Matilda, 2013; Anand *et al.*, 2013).

Similarly, HC development through health is positively related to inclusive growth and significant. This indicates that the improved health (life expectancy) is essential to enhance the degree of inclusiveness. Our result is analogous with the results of Hur (2014) and Adedeji *et al.* (2013). As healthier workers are better able to understand and execute the contemporary methods and techniques of production. Because better health is prerequisite for a good brain (Bloom *et al.*, 2004).

Moreover, they work for a good number of years and productive enough to produce higher levels of output. As the result, they not only fasten the growth process to create employment but earn relatively higher wages to reduce the income inequality that leads to more inclusive growth (Hur, 2014; Adedeji *et al.*, 2013).

Table 6. Dependent Variable: Inclusive Growth Index (IG).

Variable	GMM
IG(-1)	0.235 (0.001)
lnK	0.053** (0.022)
LE	0.023* (0.063)
lnenrol	0.037** (0.042)
Pop _g	-0.011** (0.040)
TO	0.027*** (0.000)
FDI	0.019** (0.023)
Constant	0.290** (0.041)
Number of observations	266
Number of countries	19
Sargan P-value	0.201
AR ₁ (P value)	0.001
AR ₂ (P value)	0.191

Note: P values are given in parenthesis. *, **, *** shows significance at 10, 5 and 1 per cent respectively.

Population growth is negatively associated with IG and significant. This shows that the increase in population reduces the degree of inclusiveness. Because a rapid increase in population not only raises unemployment and hence poverty and income disparity, then also minimizes the fruits of economic growth for the lower segments of the population, in particular (Matilda, 2013; Kapsos, 2005). While trade openness increases inclusive growth. It indicates that trade openness helps the countries to achieve more inclusive growth through efficient resource allocation that fosters economic growth (Bashier & Wahban, 2013). Furthermore, it creates employment opportunities to enhance the degree of inclusiveness.

Lastly, FDI is positively related to inclusive growth index and significant. Our result is comparable with the outcomes of Anand *et al.* (2013). FDI

promotes the degree of inclusive growth by creating decent employment opportunities and fostering the growth process that leads towards more inclusive growth by reducing income inequality (Anand *et al.*, 2013).

CONCLUSION

The influence of EG in the world economic development is significant. However, the existence of poverty, unemployment and the rising income inequalities particularly, after the global financial crisis is still a challenge for most of the economies and demands for an alternative growth process. More specifically, the economies need such type of a growth process that creates more jobs to reduce poverty and income inequality. That is why, some researchers, policymakers and international agencies are emphasizing on the promotion of inclusive growth.

Inclusive growth focuses on both the economic output and the distribution of income at the same time. In short, it is considered as the most suitable pathway to distribute the fruits of economic growth among masses and to ensure the participation of the lower segments of the population in the growth and production process.

One of the main objectives of the study is to analyze the influence of HC on inclusive growth. We have disaggregated HC into education and health HC. While inclusive growth consists of four components that are economic growth, poverty, income inequality and employment. Empirical results show that HC through both education and health positively affects the degree of inclusiveness by enhancing EG and employment and by plummeting poverty and income inequality, in the developing countries. Human capital development enhances the productive skills of the workers to reduce poverty by fostering economic growth. Furthermore, it reduces income inequality by creating employment opportunities.

Despite HC, gross fixed capital formation, trade openness and FDI are the significant elements of IG. Physical capital, trade openness and FDI foster inclusive growth. Whereas population growth harms IG.

Enormous attention should be paid to the development of HC through both education and health. Because HC development through education fosters EG that creates decent employment to reduce poverty. Furthermore, it lessens the income inequality by up surging the wages of the labour force.

Steps should be taken to attract FDI and to promote trade openness that is also the important determinants of EG. Because trade openness and FDI not only create decent employment opportunities but reduce income inequality by improving the wage rates in the developing countries.

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