

EXAMINING THE INTER-LINKAGES BETWEEN TRADE OPENNESS, HUMAN CAPITAL DEVELOPMENT AND GROWTH IN SELECTED EMERGING MARKETS

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ABSTRACT

This paper studied the relationship between trade openness, human capital development and economic growth in three emerging markets using panel approach with data from 1994 to 2014. Panel co-integration tests confirmed the existence of a long run relationship between the three variables, consistent with Rath and Parida (2014). Panel vector error correction model (VECM) results are threefold: (1) Firstly, no causality was observed from trade openness and human capital development to economic growth. The fact that this finding contradicted literature means that there are preconditions that must be present in three emerging markets before trade openness and human capital development influence economic growth, in support of Oluwatoyin and Folasade (2014) who noted that trade openness had a negligible impact on economic growth unless there is a guaranteed presence of high quality institutions and human capital development in sub-Saharan Africa (SSA). The finding resonates with Miller and Upadhyay (1997) who argued that human capital development significantly affects economic growth on condition that trade openness attained a minimum threshold level. Secondly, economic growth and trade openness influenced human capital development in the long run in line with the Dunning's (1973) eclectic paradigm theory of foreign direct investment (FDI) which mentions that economic growth and trade openness attract FDI, which in turn bring benefits such as human capital development to the host country. Thirdly, an insignificant causality running from GDP and human capital development towards trade openness in the long run only was detected.

Keywords: Openness, Growth, Human Capital, Panel, Emerging, Markets.

INTRODUCTION

According to UNCTAD (2016), emerging markets experienced rapid rate of economic growth during the last decade. Although there is absence of consensus on the factors behind this rapid economic growth in emerging markets, economic growth literature provides a wide range of factors that could be responsible for economic growth in the long run. In as far as capital and land according to literature promotes economic growth, trade openness and human capital development acts as a catalyst for speeding up the growth of the economy. Some of them include Miller and Upadhyay (2000) whose study found out that openness, trade orientation and human capital development were instrumental in promoting total factor productivity in the long run whilst the joint positive impact of openness and human capital on total factor productivity was also observed. Chaudhry et al. (2010) also observed that trade openness and human capital development positively and significantly influenced economic growth in Pakistan both in the short and long run.

Although there are several empirical studies on the relationship between trade openness, human capital development and economic growth, no study that the author is aware of has exclusively focused on emerging markets (Colombia, Greece and India) using panel VECM approach. According to International Monetary Fund (2015), India, Greece and Colombia are classified as emerging markets, a justification why the three countries were studied together. These countries deserve a separate study considering that they experienced high levels of market liberalisation, financial market, economic and political reforms over the past two decades (Cavusgil et al., 2013). The current study also differs from previous studies on the same subject matter in that it employs the most recent data ranging from 1994 to 2014 unlike similar prior studies which used much earlier data.

It is the author's view that the extent to which trade openness, human capital development and economic growth in these three emerging markets interrelated needs to be unpacked. This helps these three emerging markets in the formulation of policies that provides a foundation for sustainable long term economic growth. This research contributes to literature on trade openness, human capital development and economic growth by availing additional empirical evidence. This is the first study on the subject matter the author is aware of which used human capital development index, a broad measure of human capital development. Previous studies were narrow focused in their choice of human capital development proxies.

The whole study is arranged into five sections. The second section reviews literature whilst the third section focus on trends of human capital development, trade openness and economic growth in Colombia, India and Greece. Section four explains the research methodology framework and discusses the results of the study. Section five summarises the study.

REVIEW OF RELATED LITERATURE

The question on whether a country requires higher levels of trade openness and human capital development for its economic growth has been investigated for the past decades. For example, Balassa (1978) and Chenery and Strout (1966) are of the view that more export proceeds increase foreign currency inflows which can then be used to pay for imports that enhances domestic production and growth. Hart (1983) and Ben-David and Loewy (1998) suggested that exports allow a country to access technology that is advanced and understand better management practices which in turn promotes technological diffusion into the economy. Esfahani (1991) noted that exports reduce foreign currency shortages in the economy and at the same time enabling more international markets access.

As for the impact of human capital development on economic growth, it is generally agreed in literature that human capital assists less developed countries to catch up in terms of innovation through its ability to facilitate international technology diffusion (Barro, 1991). This was supported by Craigwell (2012) who noted that high human capital development allows domestic firms to benefit from new technology thus promoting technology spill overs linked with FDI in the host country. According to Dunning (1988), high levels of human capital development attract FDI and thereby positively contributing towards economic growth in the host countries.

The findings from empirical research on the link between trade openness, human capital and economic growth can be divided into four categories. The first category says that trade openness and human capital development separately or jointly has a positive influence on economic growth. The second category is that there is a weak or no relationship at all between

human capital development, trade openness and economic growth. The third category is of the view that economic growth improves trade openness of a country whilst the fourth category says that there is a feedback effect between trade openness, human capital development and economic growth.

Miller and Upadhyay (1997) investigated the relationship between trade, human capital development and productivity in both developed and developing countries using the Cobb-Douglas production framework. Their study revealed that productivity levels were positively influenced directly by trade openness. They also observed that human capital development positively and significantly affected productivity on condition that trade openness in both developed and developing countries reach a certain minimum threshold level.

Employing panel data analysis using data from 1996 to 2005, Sonmez and Sener (2009) investigated the impact of openness and human capital development on economic growth in both developed and developing countries. Their study confirmed that both human capital development and openness had a significant positive influence on economic growth in both developed and developing countries. However, the study noted that economic growth of developed countries responded better to high levels of openness and human capital development in comparison to in developing countries. Rath and Parida (2014) studied how openness and human capital influence total factor productivity in the South Asian countries using the dynamic ordinary least squares and panel co-integration techniques with data from 1980 to 2011. They found out that human capital development and trade openness had an impact on total factor productivity in the long run in South Asian countries.

Employing panel data analysis framework with data ranging between 1994 and 2006, Xu et al. (2008) studied the inter-relationship between human capital development, openness and total factor productivity in China's 29 provinces. They noted that human capital development, foreign direct investment (FDI) and trade openness were instrumental in influencing total factor productivity across all Chinese provinces. Trade openness was found to have had a significant positive impact on total factor productivity in technologically superior provinces, human capital development had a weak positive influence on total factor productivity in technologically advanced provinces whereas the impact of FDI on total factor productivity was the same in all Chinese provinces. Yasmin (2009) examined the impact of trade openness and human capital development on wage determination in Pakistan using the Mincerian earning function. Trade openness was found to have had no influence at all on wage determination in Pakistan and that openness of the Pakistan economy failed to help labour contribute meaningfully towards productivity.

Jadoon et al. (2015) explored the relationship between trade openness, human capital development and economic growth in selected Asian countries using panel data analysis with data ranging from 1981 to 2012. Their study observed higher impact of trade openness on human capital development in Asian countries which already have higher levels of human capital development. They also found out that trade openness triggered economic growth benefits were insignificant in developing Asian countries due to their low levels of human capital development.

Using autoregressive distributive lag (ARDL) with annual time series data ranging from 1960 to 2011, Umer (2014) studied the impact of trade openness and human capital development on economic growth in Pakistan. The findings were that trade openness and human capital development individually and jointly had a significant positive impact on economic growth in Pakistan in the long run. Mtiraoui (2015) also investigated human capital, openness and economic growth relationships in Middle East and North African (MENA) countries using panel

data analysis (Generalised Methods of Moments) with data ranging between 1994 and 2006. The study revealed the existence of a positive long run relationship between the three variables across all MENA countries. Moreover, human capital development had a more positive and significant influence on economic growth only in the presence of openness and foreign direct investment in the MENA countries.

Oluwatoyin and Folasade (2014) carried out a study on the relationship between institutions, trade openness and economic growth in SSA countries using the GMM approach with data ranging from 1985 to 2012. They noted that trade openness had a weak direct impact on economic growth unless there is a guaranteed presence of high quality institutions. Their study also revealed that human capital development improved the quality of institutions which subsequently led to significant positive economic growth in SSA countries.

The link between human capital, agricultural sector productivity and trade was also investigated in Pakistan by Hye and Jafri (2011) using the ARDL approach with time series annual data from 1971 to 2009. The findings suggest that the three variables under investigation were co-integrated in the long run. Moreover, a uni-directional causality relationship individually running from human capital development and trade openness towards the agricultural sector growth was observed in Pakistan. On the other hand, Daumal and Ozyurt (2011) observed that Brazilian states which had a higher rate of gross domestic product per capita benefited more from trade openness. Moreover, trade openness had a far more influence on economic growth in Brazilian states which were characterised by higher human capital development levels.

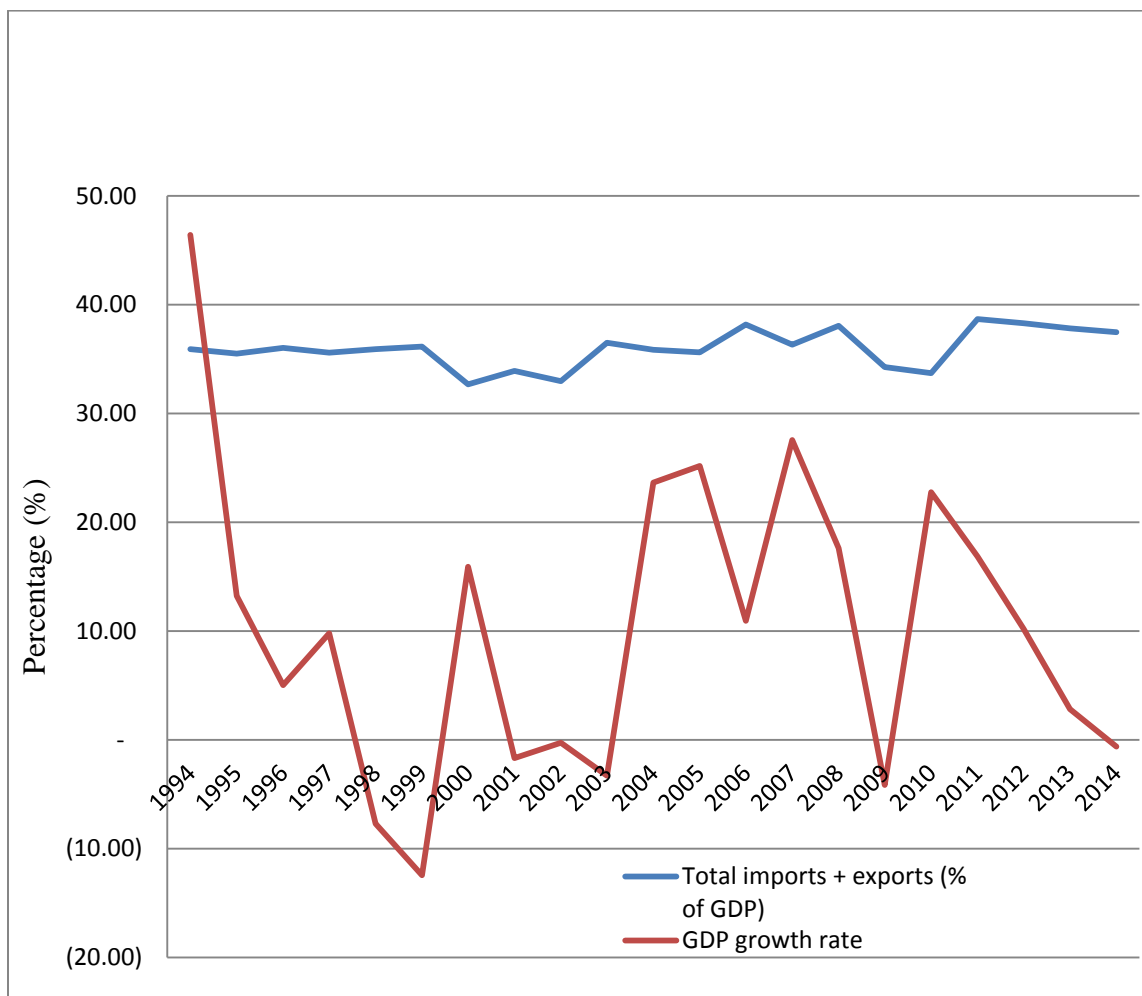
Employing an ARDL approach with annual time series data from 1960 to 2014, Khalid (2016) explored the link between trade openness and economic growth in Turkey. A co-integration relationship between economic growth and trade openness was observed in Turkey. The study failed to find any causality link between trade openness and economic growth in the long run whilst trade openness was found to have had Granger caused economic growth in the short run in Turkey. Razman et al. (2013) also studied the link between trade openness and other macro-economic factors on economic growth of Pakistan using ordinary least squares (OLS) approach. Their study also observed a long run relationship between trade openness, employment rate, FDI, exchange rate and inflation rate and economic growth in Pakistan. Exchange rate and FDI were found to have had a positive and significant impact on economic growth whilst economic growth was negatively influenced by trade openness in Pakistan.

Using the ARDL and error correction model (ECM) to measure the long and short run dynamics, Shahbaz et al. (2008) examined the relationship between openness, economic growth and capital account in Pakistan. They used annual time series data and found out that openness of trade policies and of the capital account positively influenced economic growth in Pakistan in the long run only. Their study also observed that human capital development, financial sector development and investment levels were instrumental in spearheading economic growth in Pakistan both in the short and long run.

Investigating the influence of human capital on economic growth using the growth-accounting approach, Sacerdoti et al. (1998) found out that human capital development had a negligible influence on economic growth in West Africa. Instead, their study observed that economic growth in West Africa was significantly and positively impacted upon by trade openness, terms of trade and government's level of investment in the economy. On the contrary, Fafchamps (2007) explored the link between exports, wages and human capital in Morocco and observed that human capital development and trade openness had no relationship at all.

Using vector auto-regression (VAR) approach with annual time series data from 2000 to 2014, Pilinkiene (2016) studied the impact of trade openness on competition and economic growth in the Central and Easter European countries (CEEs). The study noted that long run relationship between trade openness, economic growth and competition existed in the CEEs countries. In particular, economic growth alongside FDI, human capital and stock market development were found to have had a positive and significant influence on trade openness and that competition positively impacted on economic growth in the CEEs countries. Last but not least, a feedback effect was observed by Rath and Parida (2014) between trade openness and total factor productivity and between human capital development and total factor productivity in the short run in South Asian countries.

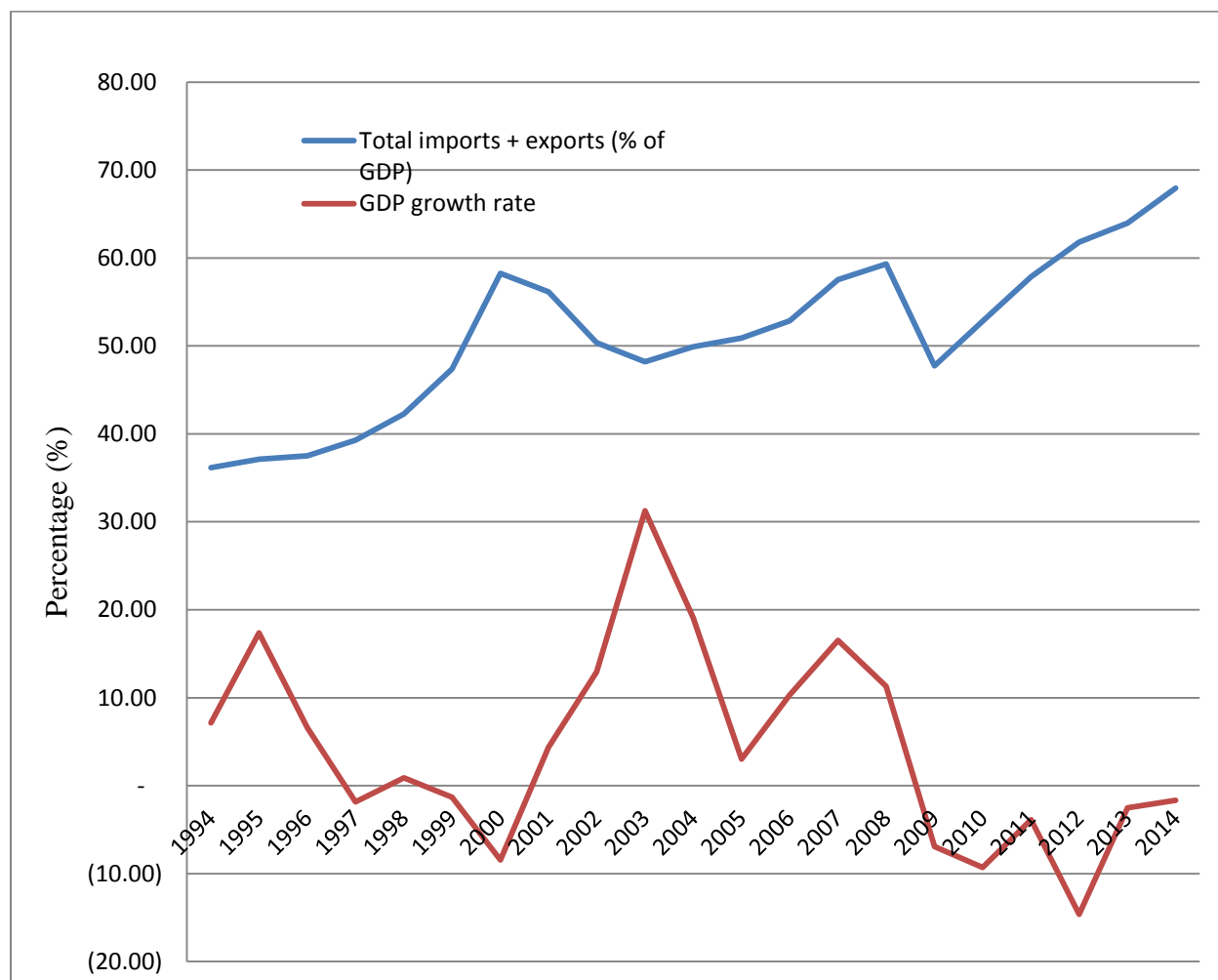
HUMAN CAPITAL DEVELOPMENT, OPENNESS AND GDP TRENDS IN THREE EMERGING MARKETS



Source: World Bank (2015)

**FIGURE 1
TRADE OPENNESS AND ECONOMIC GROWTH FOR COLOMBIA (1994-2014)**

Using World Bank (2015) data, this section discusses the trends of human capital development, trade openness and economic growth in three emerging markets (Colombia, Greece and India). Trade openness declined in Colombia by 1.17% between 1994 and 1995 before further decreasing by 7.97% between 1995 and 2000 (from 35.50% of GDP in 1995 to 32.67% of GDP in 2000. Meanwhile, GDP growth rate was 13.22% between 1994 and 1995 before recording another 15.90% positive growth between 1995 and 2000 in Colombia (Figure 1). Trade openness in Colombia increased by 9.08%, from 32.67% of GDP in 2000 to 35.63% of GDP in 2005 whilst GDP grew by 25.19% during the same time frame. GDP further grew by 22.75% during the five-year period between 2005 and 2010 before marginally declining by 0.61% between 2010 and 2014. On the other hand, trade openness went down by 5.43%, from 35.63% of GDP in 2005 to 33.70% of GDP in 2010 before recording a positive growth of 11.20% between year 2010 and 2014 (Figure 2).

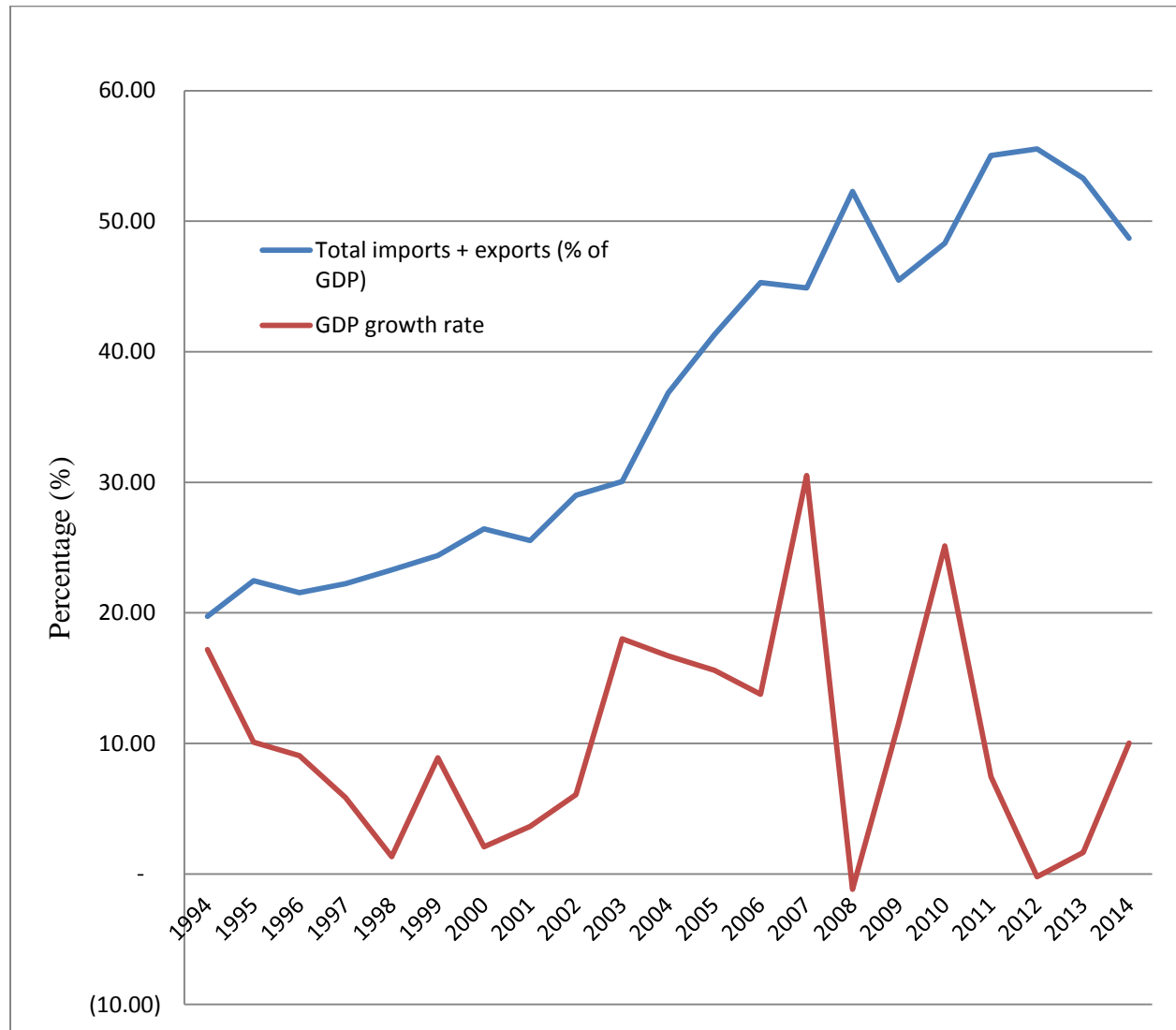


Source: World Bank (2015)

FIGURE 2
TRADE OPENNESS AND ECONOMIC GROWTH FOR GREECE (1994-2014)

World Bank (2015) data shows that trade openness went up in India by 13.89% between 1994 and 1995 before further increasing by 17.64% between 1995 and 2000 (from 22.47% of

GDP in 1995 to 26.44% of GDP in 2000). GDP on the other hand grew by 10.09% between 1994 and 1995 before recording a further positive growth of 2.09% between 1995 and 2000 in India (Figure 3). Trade openness in India increased by 56.24%, from 26.44% of GDP in 2000 to 41.31% of GDP in 2005 whilst GDP grew by 15.61% during the same time frame. GDP further grew by 25.13% during the five-year period between 2005 and 2010 before recording another positive growth of 10.03% between 2010 and 2014. On the other hand, trade openness surged by 16.95%, from 41.31% of GDP in 2005 to 48.31% of GDP in 2010 before recording a marginal growth of 0.82% between year 2010 and 2014 in India.

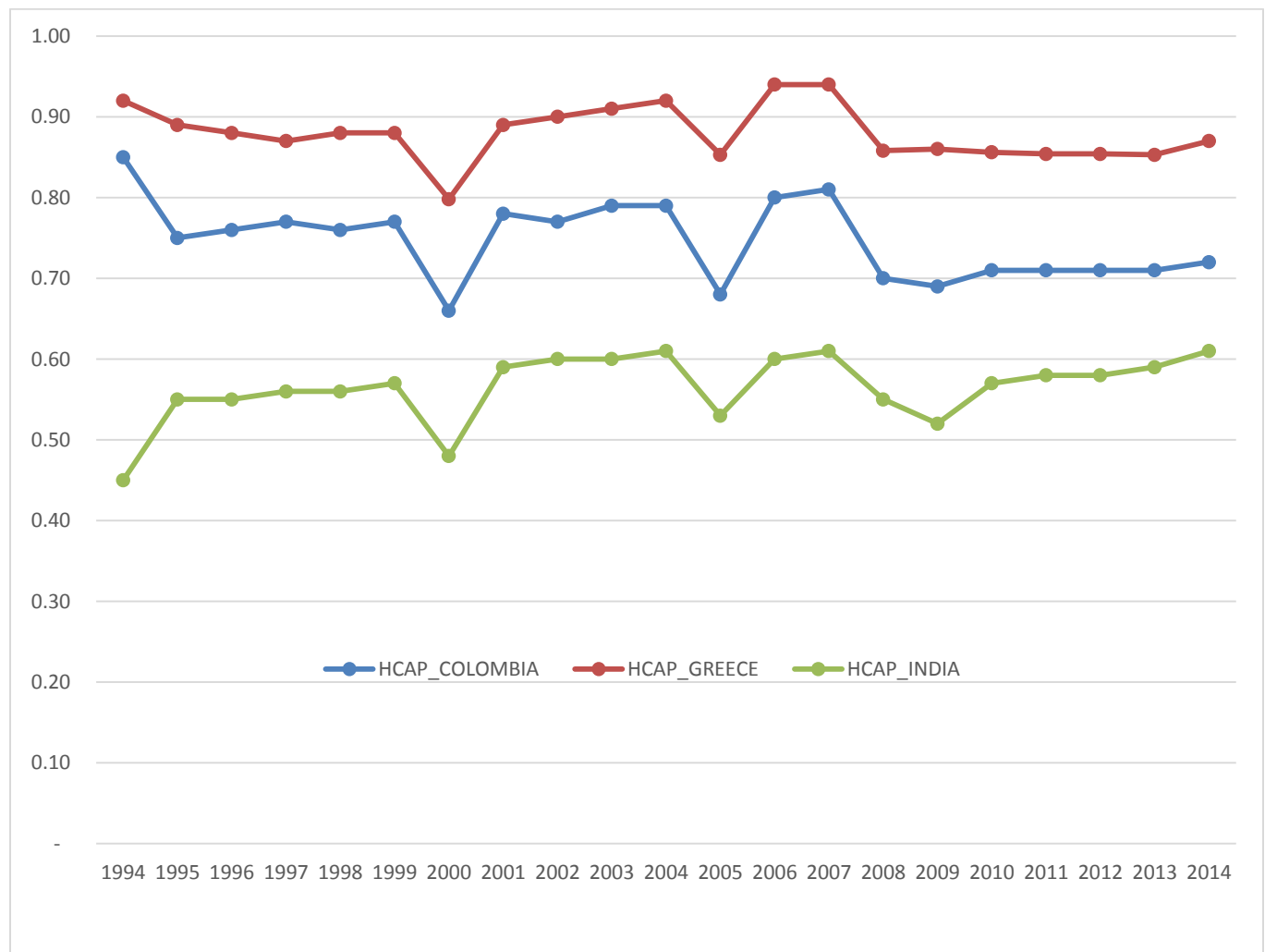


Source: World Bank (2015)

FIGURE 3
TRADE OPENNESS AND ECONOMIC GROWTH FOR INDIA (1994-2014)

Human capital development index in both Colombia and Greece recorded a negative growth from 1994 to 2000 and then positively and consistently grew between 2000 and 2014

(Figure 4). On the other hand, human capital development index increased from 0.45 in 1994 to 0.55 in 1995, representing a 22.22% growth. In Colombia, human capital development index negatively grew by 11.76%, from 0.85 in 1994 to 0.75 in 1995 before recording another 12% decrease between year 1995 and 2000. However, human capital development index increased by 3.03%, from 0.66 in 2000 to 0.68 in 2005 before going up by 4.41% during the subsequent five-year period to end 2010 at 0.71. The human capital development index then recorded a marginal positive growth of 1.41%, from 0.71 in 2010 to 0.72 in 2014 in Colombia.



Source: World Bank (2015)

FIGURE 4
HUMAN CAPITAL DEVELOPMENT TRENDS IN COLOMBIA, GREECE AND INDIA (1994 -2014)

In Greece, human capital development index negatively grew by 3.26% between 1994 and 1995 before recording another huge decline of 10.34%, from 0.89 in 1995 to 0.80 in 2000. However, the subsequent five-year period between 2000 and 2005 saw human capital development index increasing by 6.89% to end the year 2005 at 0.85 before experiencing a

marginal increase of 0.35% between the year 2005 and 2010. Human capital development index for Greece further went up by 1.64%, from 0.86 in 2010 to 0.87 in 2014.

Human capital development index increased by a massive 22.22% in India between 1994 and 1995 before declining by 12.73%, from 0.55 in 1995 to 0.48 in 2000. The five year period between 2000 and 2005 saw human capital development index increasing by 10.42% before recording another increase of 7.55% during the subsequent five year period, from 0.53 in 2005 to 0.57 in 2010. In India, the four year period between 2010 and 2014 was characterised by a 7.02% positive growth in human capital development index (from 0.57 in 2010 to 0.61 in 2014).

METHODOLOGY

This section describes the data and variables used panel root testing, panel co-integration and panel VECM causality tests.

Data Description

The study used annual panel data ranging from 1994 to 2014 obtained from the World Bank Indicators, UNCTAD (2016) and UNDP various reports. GDP per capita was used as a measure of economic growth, human capital development index as a proxy of human development and exports and imports of goods and services as a ratio of GDP represented trade openness. The prior expectation which is backed by literature (Rath and Parida. 2014), among others there is a feedback effect characterized by different levels of significance between the three variables under study. Following Nobakht and Madani (2014), all the data was converted into natural logarithms before being analysed in order to do away with auto-correlation bias, deal with the outliers and abnormal data.

Panel Root Testing

Economic time series data needs to be brought to stationarity before any analysis is performed in order to do avoid spurious results (Rajasekar et al., 2014, p. 73). According to Taiwo and Olayemi (2015), common panel unit root tests include Fisher-tests using Augmented Dickey Fuller (ADF) and Philips-Perron (PP), Levin et al (2002), Im et al. (2003) and Breitung (2000). Taiwo and Olayemi (2015, p. 78) noted that panel root tests follow a standardized framework based on the autoregressive model (Equation 1).

$$\gamma_{it} = \mu_i + \Gamma_{it} + \rho_i \gamma_{it-1} + \varepsilon_{it} \quad (1)$$

Γ_i is the individual trend whilst ε_{it} is an error term. $t=1, 2, \dots, T$ (number of periods). $i=1, 2, \dots, N$ (number of countries). ρ_i is the autoregressive coefficient. If $|\rho_i| < 1$, γ_{it} is weakly Stationary whilst if $|\rho_i| = 1$, γ_{it} has a unit root (Jiang and Liu, 2014, p. 1208).

	Variable	LLC	IPS	ADF	PP
Individual intercept	L(GDP)	0.73(0.77)	2.32(0.99)	1.10(0.98)	1.46(0.96)
Individual intercept	(LOPEN)	-1.24(0.11)	-0.57(0.28)	7.73(0.26)	7.66(0.26)
Individual intercept	(LHCAP)	-6.47*(0.00)	-5.28*(0.00)	34.37*(0.00)	35.55*(0.00)
	Variable	LLC	IPS	ADF	PP

Individual and trend	intercept	L(GDP)	0.10(0.54)	0.84(0.80)	2.37(0.88)	1.27(0.97)
Individual and trend	intercept	(LOPEN)	-0.98(0.16)	-0.71(0.24)	8.96(0.18)	7.21(0.30)
Individual and trend	intercept	(LHCAP)	-6.21*(0.00)	-4.70*(0.00)	28.23*(0.00)	331.96*(0.00)

Note: LLC, IPS, ADF and PP stands for Levin, Lin and Chu; Im, Pesaran and Shin; ADF Fisher Chi Square and PP Fisher Chi Square tests respectively. *, ** and *** denote 1%, 5% and 10% levels of significance, respectively

In Table 1 (at level), GDP and trade openness data was not stationary both at individual intercept and trend and individual intercept. On the other hand, human capital development data was found to be stationary at individual intercept and trend and individual intercept. The contradiction triggered the author to test for stationarity at first difference, whose results are shown in Table 2.

Table 2 PANEL ROOT TESTS AT 1 ST DIFFERENCE					
	Variable	LLC	IPS	ADF	PP
Individual intercept	L(GDP)	-3.40*(0.00)	-2.93*(0.00)	19.00*(0.00)	19.04*(0.00)
Individual intercept	(LOPEN)	-7.03*(0.00)	-6.06*(0.00)	39.96*(0.00)	58.75*(0.00)
Individual intercept	(LHCAP)	-5.98*(0.00)	-6.33*(0.00)	42.76*(0.00)	630.93*(0.00)
	Variable	LLC	IPS	ADF	PP
Individual intercept and trend	L(GDP)	-2.54*(0.01)	-1.83*(0.03)	12.62*(0.049)	12.41*(0.054)
Individual intercept and trend	(LOPEN)	-6.24*(0.00)	-4.92*(0.00)	29.47*(0.00)	40.78*(0.00)
Individual intercept and trend	(LHCAP)	-5.05*(0.00)	-4.97*(0.00)	31.45*(0.00)	59.87*(0.00)

Note: LLC, IPS, ADF and PP stands for Levin, Lin and Chu; Im, Pesaran and Shin; ADF Fisher Chi Square and PP Fisher Chi Square tests respectively. *, ** and *** denote 1%, 5% and 10% levels of significance, respectively

Table 2 shows that GDP, trade openness and human capital development data was all stationary at first difference. This means that all the three data sets were integrated of order 1, which is a precondition that must be met before running the panel co-integration model.

Panel Co-integration Test

This study employed Pedroni's (2004) panel co-integration regression model, which according to Jiang and Liu (2014, p. 1208) is a heterogeneous panel co-integration approach which allow for the availability of cross sectional dependence in various individual effects. According to Taiwo and Olayemi (2015), Pedroni's model developed seven statistics based on estimated residuals from the following model (Equation 2).

$$y_{it} = \alpha_i + \sum_{j=1}^m \beta_{ij} x_{ijt} + \mu_t \quad (2)$$

Where, μ_t =panel regression estimated residuals and y_{it} is the dependent variable of country i at time t. x_{ijt} are the exogenous variables in the model such as individual trends and fixed effects. The panel-v, panel rho, panel non-parametric (PP) and panel parametric (ADF) are

the four panel statistics extracted from pooling residuals along within dimension of the panel whilst the group-rho, group-PP and group-ADF panel statistics come from pooling the residuals along between dimensions of the panel (Taiwo and Olayemi, 2015, p. 78; Jiang and Liu, 2014, p. 1209).

H0: There is no co-integration among the three variables.

H1: The three variables are co-integrated.

Table 3				
PANEL CO-INTEGRATION TEST RESULTS				
Pedron Residual Co-integration test (Within dimension) – Individual intercept				
	Statistic	P-value	Weighted statistic	P-value
Panel v-Statistic	-0.55	0.71	-0.98	0.84
Panel rho-Statistic	-0.81	0.21	-1.17	0.12
Panel PP-Statistic	-1.66**	0.048	-2.09**	0.02
Panel ADF-Statistic	-1.67**	0.047	-2.11**	0.02
Pedron Residual Co-integration test (Between dimension) – Individual intercept				
	Statistic	P-value		
Group rho-Statistic	-0.17	0.43		
Group PP-Statistic	-1.65**	0.049		
Group ADF-Statistic	-1.66**	0.048		

** denote 5% significance level

6 out of a total of 11 outcomes are significant, which is a majority outcome. The study therefore rejects the null hypothesis and accepts the alternative hypothesis. The conclusion is that the three variables under study are co-integrated. The finding paved way for panel VECM regression analysis to be performed (Table 3).

Panel Vector Error Correction Model

Following Jiang and Liu (2014), equation 3 shows the panel VECM framework employed by this study in order to find out the direction of causality between trade openness, human capital development and economic growth in the three emerging markets.

$$\Delta Y_{i,t} = \alpha_i + \lambda_i ecm_{i,t-1} + \sum_{k=1}^h \Theta_{1,i,k} \Delta Y_{i,t-k} + \sum_{k=1}^h \Theta_{2,i,k} \Delta X_{1,i,t-k} + \dots + \sum_{k=1}^h \Theta_{n+1,i,k} \Delta X_{n,i,t-k} + \varepsilon_{i,t} \quad (3)$$

Y and X represents dependent and independent variables respectively, $i=1, 2, \dots, N$ (number of countries); $t=1, 2, \dots, T$ (time periods); Δ represents first difference of the variable; h denotes optimal lag length selected; $ecm_{i,t-1}$ =serially uncorrelated error correction term; n =number of exogenous variables in the model; Θ is estimated parameter co-efficient (Jiang and Liu, 2014, p. 1209).

The existence of a long run causal relationship running from independent variables towards the dependent variable is estimated by investigating the significance of the coefficients of the independent variables using the t-statistic (which follow the chi-squared distribution whose degrees of freedom is $k-h$) on the co-efficient, λ_i , of the error correction term ($ecm_{i,t-1}$). Short run causality from independent variables towards the dependent variable only exist if the

co-efficient $\Theta_{n+1,i,k}$ of first differenced X variable(s) shown in equation 3 are not significantly different from 0 (Jiang and Liu. 2014:1209) (Table 4).

Table 4					
PANEL VECM CAUSALITY RESULTS					
Dependent variable	Causality flow	ECT (-1) statistic	P-value	Chi-squared	P-value
GDP	HCAP & OPENNESS → GDP	0.0037	0.68	1.8171	0.77
HCAP	GDP & OPENNESS → HCAP	-2.3283***	0.00	0.7906	0.94
OPENNESS	GDP & HCAP → OPENNESS	-0.0083	0.56	9.1179	0.06

Note: ***/**/* denotes statistical significance at the 1%/5%/10% level respectively

There is no long and short run causality running from both human capital development and trade openness towards GDP. The fact that this finding contradicted literature means that there are preconditions that must be present in the three emerging markets studied before trade openness and human capital development influence economic growth, in support of Oluwatoyin and Folasade (2014) who noted that trade openness had a negligible impact on economic growth unless there is a guaranteed presence of high quality institutions and human capital development in SSA countries. The argument is in line with Miller and Upadhyay (1997) who noted that human capital development positively and significantly affected economic growth and productivity on condition that trade openness in both developed and developing countries reach a certain minimum threshold level.

GDP and trade openness were found to have had a significant long run causal influence on human capital development. The finding resonates with Dunning's (1973) eclectic paradigm theory of foreign direct investment (FDI) which mentions that economic growth and trade openness attract FDI, which in turn bring benefits such as human capital development to the host country. On the other hand, an insignificant causality relationship running from GDP and human capital development towards trade openness in the long run only was also detected in the three emerging markets studied.

CONCLUSION

This paper studied the relationship between GDP, trade openness and human capital development in three emerging markets using panel data analysis (panel unit root tests, panel co-integration and panel VECM tests for causality) with data ranging from 1994 to 2014. Panel root tests established stationarity at first difference whilst panel co-integration observed that there exists a long run relationship between the three variables under study, consistent with Sonmez and Sener (2009), Rath and Parida (2014) and Razman et al. (2013), among others. Panel VECM test results are threefold: (1) Firstly, no causality was observed from trade openness and human capital development to economic growth. Secondly, economic growth and trade openness individually and jointly influenced human capital development in the long run. Thirdly, an insignificant causality relationship running from GDP and human capital development towards trade openness in the long run only was also detected in the three emerging markets studied. This resonate with Pilinkiene (2016) who observed that economic growth, human capital, competition, FDI and stock market development positively influenced trade openness in the Central and Easter European countries (CEEs) countries. In summary, human capital

development and trade openness do not have a direct link with economic growth in the three emerging markets studied. Certain preconditions must be available in the three emerging markets if trade openness and human capital development is to be able to have an impact on economic growth.

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