Role of Natural Resource Abundance, International Trade and Financial Development in the Economic Development of Selected Countries

ABSTRACT: Economic development in a contemporary setting encompasses a broad range of parameters. This balanced panel study of 30 countries uses two single-equation models to investigate the impacts of natural resource abundance, international trade, financial development, trade openness and institutional quality on two proxies for economic development – economic growth and a human development index. The data spans from 1990 to 2016 and the impact is assessed in aggregate as well as the countries' level of development in three groups – Lower-middle, Upper-middle and High Income Countries. Four panel estimation approaches are used: Fixed Effects (FE), Random Effects (RE), Panel Fully Modified Least Squares (FMOLS) and Panel Dynamic Least Squares (DOLS). While natural resource abundance has a significantly positive impact on economic growth, a primarily negative and insignificant effect on human development exists. Interestingly, international trade and broad money have significantly negative impacts on economic development. Trade openness' positive effect exceeds that of institutional quality. The findings suggest that the variables have a stronger influence on economic growth as compared to human development.

Key Words: Natural resource abundance, International trade, Financial development, Trade openness, Institutional quality
JEL Classification: E02, E44, F1, F4, F41, F63, Q01.

1. INTRODUCTION

Economic development has been a highly debated subject through the centuries and the objective of economic development and growth has paramount importance for any nation. Seers' (1969) seminal works stressed the decline in poverty, inequality and unemployment as indicators of development. This three-prong approach differed from the common singular indicator of income per capita used by organisations such as the World Bank since 1978 given its simplicity in evaluating economic capacity and improvement (Vázquez and Sumner, 2013). While Sen (1983) acknowledged economic growth as one component of economic development, Sen (1999) broadened the view focusing on expanding choice and minimising deprivations such as hunger, restricted access to healthcare, unemployment and political freedom violation. Additionally, Vázquez and Sumner formulated a multidimensional taxonomy for developing countries consisting four areas: human development, structural transformation, environmental sustainability, and improved governance and democratic participation. For Lin (2010), economic development involved the organisation of a country's resources and institutions to enable the production and distribution of more products and services as well as facilitating social advancement and expanding prosperity. Similarly, Hillbom (2012) also emphasised societal structural change as part of economic development with reference to Arthur Lewis and Simon Kuznets – first-generation development economists. According to Hillbom, Lewis supported upgrading industries from being less productive non-capitalist to more productive capitalist to structurally change the economy and enhance living standards. Kuznets' interpretation focused on productivity rise, advances in technology and high growth rates in addition to societal, ideological and economic structural transformation. Thus, it can be seen the substantial time taken for the meaning of economic development to evolve and expand.

Considerable research has been undertaken in the areas of natural resource abundance, international trade, financial development, trade openness and institutional quality. Badeeb et al (2017) identified natural resources as natural assets present in nature such as minerals, materials, fertile land, forests and water that can be utilised for economic attainment. Discovery, investment for extraction of resources and acquiring consequent income flow were requirements, according to Venables (2016), to use natural resources for economic development. Bender (1965), in examining international trade and economic development, proposed four ways in which the international sector activated development. These areas covered direct demand for underdeveloped countries' exports of goods and services, contribution to the extent of using a country's prior resources, importation of goods necessary to enlarge an economy's output capacity and provision of an income-increasing regulator to address severe inflationary pressures. According to Muhammad et al (2016), financial development improves the quantity and quality of financial intermediary services. Development of the financial system can be evidenced through improvement in the size, efficiency and stability of financial markets accompanied by better access to the markets (Guru and Yadav, 2019). Five ways in which financial systems can promote long-run growth are acquiring information about investment opportunities, enabling risk management, exercising corporate governance following finance provision, mobilising and pooling savings, and enabling the trade of goods and services (as cited in Hassan et al, 2011, p. 90). These functions therefore facilitate investment which leads to greater economic growth. Nonetheless, considering the importance of the financial sector, financial and economic stability are described as "*two sides of a coin*" (see Nasir et al, 2015). Trade openness, according to Shahbaz (2012), enables easy exchange of services, goods, information, ideas, labour and capital across borders. This facilitates global integration of economies and societies. Gray (2002) described openness as the absence of artificial barriers to four main facets of international economic involvement. These facets were raising institutional quality (socioeconomic infrastructure), international trade in goods and services; FDI bringing about international mobility of financial, physical, knowledge and human capital; and existence and establishment of foreign branches of multinational companies. Three principal features of good institutions were highlighted by Acemoglu (2003): provision of equal opportunities to facilitate investment in human capital for instance, restraint of the actions of influential persons to prevent an unbalanced playing field, and application of property rights for a wide spectrum of society to ensure participation in economic activities. Four critical types of institutions are macroeconomic stabilising institutions, regulatory institutions, social conflict managing institutions and social insurance (as cited in Winters, 2004, p. F14). With its underlying principles of equality and a level playing field, good institutions contribute to economic development (Vázquez and Sumner's democratic participation and improved governance) by helping to reduce inequality prompted by the deprivations highlighted by Sen (1999).

Despite considerable research has been undertaken in the aforementioned areas, much research has not examined a combined effect of natural resource abundance, international trade, financial development, trade openness and institutional quality on the economic development of countries. Further, much of the completed studies have covered periods in the latter part of the twentieth century and focused heavily on economic growth as the proxy for economic development. A research period inclusive of a more contemporary timeframe and broader view of economic development would be invaluable contributions to the literature. This study aims to analyse the effect of international trade on the economic development of countries. The objectives also entail the assessment of the impact of natural resource abundance, international trade, financial development, trade openness and institutional quality on economic development.

A balanced panel of thirty countries during 1990 to 2016 used two single-equation models to investigate the impact of natural resource abundance, international trade, financial development, trade openness and institutional quality on two proxies of economic development – economic growth (Model I) and a human development index (Model II). Four panel estimation approaches were used: Fixed Effects (FE), Random Effects (RE), Panel Fully Modified Least Squares (FMOLS) and Panel Dynamic Least Squares (DOLS). The Models were firstly estimated in aggregate and then in three equal groups of ten countries according to the World Bank Group's classification of Lower-middle Income Countries (LMIC), Upper-middle Income Countries (UMIC) and High Income Countries (HIC). Countries were chosen based on the availability of complete data sets in addition to ensuring equal representation in the three classification groups and extensive geographical coverage. Economic development was positively and negatively impacted in a statistically significant way by all the variables. The nature of some of the relationships between the dependent and independent variables changed from Model I to II. Particularly, international trade and financial development became positive in Model II while natural resource abundance and institutional quality turned negative. Trade openness remained relatively positive in both Models. The magnitude of the variables' influence appeared to be greater on economic growth than human development considering the larger coefficients recorded in Model I when compared to Model II.

This paper proceeds as follows. Section two contains the Literature Review while the Methodology is discussed in section three. Results and Findings are presented in section four whereas section five entails the Conclusion and Policy Implications.

2. LITERATURE REVIEW

Economic development has been predominantly proxied by economic growth (per capita income) in the literature. As such, this literature review covers the relationship between economic growth and each of the five variables of economic development being investigated in this research: natural resource abundance, international trade, financial development, trade openness and institutional quality.

2.1 Natural resource abundance and economic growth

Natural resource abundance seems to have a mixed effect on economic growth; its negative effect will be examined first. Controlling for rule of law, initial income per capita, trade openness and investment rates, Sachs and Warner (1995) found that countries with a high ratio of natural resource exports to GDP had low rates of growth. Using two models on national capital stocks data, Ding and Field (2005) showed that resource dependence had a negative effect on growth rates with a one-equation model while a three-equation model that allowed endogenous human capital and resource dependence showed natural resources' insignificant effect on growth rates. The second model, according to Ding and Field, which allowed endogeneity highlighted the disappearance of natural resources' apparent negative role in growth rates. Gylfason (2001) also noted an inverse relationship between economic growth and natural resource abundance. When natural resource exports, production and reserves were used by Stijns (2005) as measures of natural resource abundance, it affected economic growth through negative and positive channels. Focusing on developing and developed countries Konte (2013) revealed a significantly negative coefficient on natural resources in the standard model that suggested the reduction of growth by natural resources. Gerelmaa and Kotani (2016) obtained similar results to Sachs and Warner that showed resource-intensive countries lagged resource-poor countries in economic growth during the subsequent 20 years. Natural resource abundance negatively affected economic growth in Iran; growth was impeded by 0.47% with a 1% increase in natural resource abundance according to Ahmed et al (2016). There was a similar case for Venezuela; a 10% increase in natural resource abundance declined growth by 0.934% (Satti et al, 2014). Quantifying the impact for 40 developing countries, Kim and Lin (2017) stated that a 10% increase in resource exports reduced income typically by 0.44-0.46%. Such instances of the negative effect of natural resources on economic growth experienced by resource-rich countries as compared to resource-poor countries have been termed the resource curse that was linked to non-renewable resources (Yanikkaya and Turan, 2018; Badeeb et al, 2017 and Gerelmaa and Kotani, 2016). Crowding-out and institutional effects were two streams outlined by Ahmed et al regarding the resource curse hypothesis. In the former, specific factors that contributed to a country's economic growth were crowded out by intense resource dependency while in the latter an economy's prevailing institutional quality accentuated the resource abundance's impact. According to Papyrakis (2017), the resource curse depended on the relative (instead of the absolute) significance of the extractive sector compared to the remainder of the economy as it was explained that the negative effect vanished when mineral wealth was conveyed in per capita terms instead of a portion of the entire economic activity such as total exports or GDP. Sinhaa and Sengupta (2019) observed a negative impact of total natural resources rent on human development in 30 Asia-Pacific countries. However, the effect turned positive when globalisation and rent from the total pool of natural resources interacted. Overall, these studies highlight the negative effect of natural resource abundance on economic growth. Some studies seem to suggest that the way natural resource abundance is measured can be a contributing factor to the negative effect.

Several reasons have been proposed for the apparent negative effects of natural resource abundance on economic growth. Petkov (2018), Badeeb et al (2017), Gerelmaa and Kotani (2016), Venables (2016) and Gylfason (2001) cited different channels that may be responsible for the inverse relationship between natural resource abundance and economic growth. The Dutch disease was cited by Petkov, Badeeb et al, Gerelmaa and Kotani, and Gylfason while Petkov, Badeeb et al and Gylfason referred to governance quality related to the quality of institutions. Petkov, Badeeb et al, Gerelmaa and Kotani, and Venables also referred to fluctuations in natural resource revenues due to supply and demand. Petkov added a deterioration in the terms of trade where primary products prices were reduced as compared to manufactured products whereas Badeeb et al included economic policy failures. Acute dependence on natural resources for revenues and minimal saving were additional features recorded by Venables. Conversely, Badeeb et al, Gerelmaa and Kotani, and Gylfason noted damaging rent-seeking practices such as tariff protection for domestic manufacturers as well as failing to develop human capital through investment in education. Badeeb et al and Stijns (2005) therefore made an astute conclusion: a country's handling of its natural resources was the most important parameter in driving the impact of natural resource abundance on economic growth.

Having discussed the negative effects of natural resource abundance, the focus now shifts to the positive effects of natural resource abundance on economic growth. After Gerelmaa and Kotani (2016) controlled for institutional quality and trade openness and followed a quantile regression, natural resource capital had a positive coefficient for 182 countries. Although the positive effect of natural resource capital declined from the 25th to 75th quantile, Gerelmaa and

Kotani argued that their finding contrasted with those of Sachs and Warner (1995) as it demonstrated a statistically positive effect of natural resources on countries with very low economic growth rates (25th quantile). Gerelmaa and Kotani concluded that countries with abundant resources grew faster than countries with less resources. Examining Middle East and North Africa (MENA), Apergis and Payne (2014) discovered that the positive impact of oil abundance occurred after 2003. Enhancement in the quality of institutions and economic reforms implemented in the MENA countries were possible reasons for the change according to Apergis and Payne. Konte (2013), like Ding and Field (2005), also used two models and discovered a positive effect of natural resource abundance on growth using a mixture-of-regressions model; growth was not enhanced in the second case. Konte showed that the democracy level was a crucial determinant for countries being able to benefit from the resources; economic institutions and education had no effect. Alexeev and Conrad's (2009) argument of natural resources improving long-term growth was based on per capita GDP levels and not on the rates of growth. Undoubtedly, such a position would show a positive effect due to the relative increasing contribution of natural resources' revenues to an economy. Natural resources, particularly mineral resources, were found to have a positive direct relationship with GDP growth by Brunnschweiler (2008). Further, Brunnschweiler interestingly observed a decline in the beneficial growth effects with the improvement of institutional quality though still remaining overall positively strong. Resource abundance's direct positive impact on growth was found by Papyrakis and Gerlagh (2004) when independent variables such as investment, terms of trade, openness, schooling and corruption were considered. Papyrakis and Gerlagh inferred that the benefits from natural resource abundance cannot be accrued in the presence of little investment, weakening terms of trade, protectionist actions, low educational levels and corruption. Investment, economic diversification and equitable allocation of rents accumulated were recorded by Papyrakis (2017) as elements of successfully benefitting from natural resource abundance. Meanwhile, Kim and Lin (2017) proffered better sound money, stronger property rights protection, less trade openness and less government intervention and corruption. When Shahbaz et al (2019) investigated the effects of natural resource abundance and dependence in 35 natural resource-abundant countries from 1980 to 2015, natural resource abundance had a significantly positive effect on economic growth in the long run. They added that becoming dependent on natural resources (too much increase in the share of natural resource rents to GDP) and failing to make human capital investments can reverse the positive effect. According to Sinhaa and Sengupta (2019), aggregated natural resource rents was projected to have a positive effect on the human development index due to the transformation of globalisation's presence. Taken together, these studies support the positive effect natural resource abundance plays in economic growth. The studies also highlight some specific conditions that are required for the positive effect to be observed.

Types of resources, whether point-source resources (such as minerals, ores and fuels) or diffuse resources (such as agriculture), also have a variegated effect on economic growth. Rents for oil, natural gas, mineral and coal promoted growth in a positive and significant way while forest rent had a significantly negative effect according to Yanikkaya and Turan (2018). This positive effect of mineral resources was also noted by Brunnschweiler (2008). However, the negative effects of point-source and diffuse resources were registered by Kim and Lin (2017) and Alexeev and Conrad (2009). For Kim and Lin, primary export data was disaggregated into agricultural exports and non-agricultural primary exports such as fuels, metals and ores where agricultural exports had a greater negative and statistically significant effect than non-agricultural primary exports. Using initial GDP values as control variables were shown by Alexeev and Conrad as the primary reason for the negative effect of large endowments of point-source resources on institutions. Meanwhile, fuel, metal ores, and agricultural raw materials and food represented a resource blessing in the first regime of Konte's mixture model. In the second regime, the latter two resources signified a resource curse while fuel had no effect on growth (Konte, 2013). This evidence clearly provides a mixed impact of point-source and diffuse resources on economic growth.

The degree of economic development of countries can also result in a variable impact of natural resource abundance on economic growth. For their differentiation, Yanikkaya and Turan (2018) separated countries into developing and developed. For both developing and developed countries, natural gas, oil and coal rents exerted significantly positive effects on growth while forest rents gave a negative effect according to Yanikkaya and Turan. The 2006 World Bank classification of low, lower-middle and upper-middle income countries was used by Kim and Lin (2017). Upper-middle income countries were found to be most hurt by a resource curse (particularly through reliance on agricultural and non-agricultural primary exports) whereas lower-middle income countries encountered the least damage from a heightened dependency on natural resources (especially agricultural and non-agricultural resources) referring to Kim and Lin, 2017. In contrast to trade openness and institutional quality, this evidence seems to suggest that greater developed countries are more negatively affected by natural resource abundance than developing countries.

2.2 International trade and economic growth

There are several channels of trade. Kim et al (2016), Frankel and Romer (1999) and Lal and Rajapatirana (1987) underscored specialisation through comparative advantage such as increasing returns to scale from greater markets. The diffusion of innovation and knowledge through technology from new goods, travel, communication and investment experience were cited by Kim et al (2016), Zahonogo (2016), Yenokyan et al (2014), Shahbaz et al (2013), Kim and Lin (2012) and Frankel and Romer. Apart from technology spillovers, Yenokyan suggested another possibility for the effect of technology transfer – trade allowed a country to replace more efficient production on their trading partner's land for that of their own less efficient production on their own land. The highlighted channels of trade point out the various mechanisms by which international trade affects economic growth and paves the way for empirical evidence of this.

Exports make a more significant contribution to economic growth than imports. A positive statistical relationship between export and income growth were observed in several studies (as cited in Lal and Rajapatirana (1987, pp. 192-193). These studies, among others, provided evidence for Lal and Rajapatirana to note that the adoption or movement toward an export-promoting strategy (progression toward neutral free trade position) by countries resulted in better per capita income growth and equity as compared to an import-substituting strategy (progression from the neutral free trade position). Lal and Rajapatirana further added that continuous movement to an outward-oriented trade system by developing countries created faster growth in exports and income. Contributing factors to a country's edge in export manufacturing included its domestic market size, extent for labour division and increasing returns, and internal transport costs according to Myint (1977). Conversely, Zahonogo's (2016) result suggested that imports can reduce economic growth in Sub-Saharan African countries and recommended the production of competing domestic products for imported consumption goods where there was dynamic comparative advantage. Such a recommendation should be taken cautiously given the evidence against an import-substitution strategy. In the study of Raza et al (2018), exports and imports respectively exerted a significantly positive and negative effect on economic growth in the United Arab Emirates. The outlined evidence shows that an export-oriented strategy plays a more instrumental part in higher income growth.

International trade also fosters economic growth. In the long run, Kim et al (2016) found that larger international trade generally promoted economic growth and enlarged growth volatility for a sample of 73 developed and developing countries, whereas in the short run larger international trade generally stimulated growth and minimised economic fluctuations. Kim et al thus indicated trade promoted economic growth in the long and short run with a positive long-run relationship between growth and growth volatility and a negative short-run relationship between growth and growth volatility. The division of the countries into developed (Organisation for Economic Cooperation and Economic Development (OECD)) and less developed (non-OECD) countries by Kim et al revealed that OECD countries benefitted more from trade only in the short run while non-OECD countries benefitted more from trade in the long run. Using a trade and growth model void of aggregate scale effects and technology transfer, Yenokyan et al (2014) observed that growth rates can be raised by trade working exclusively through comparative advantage. The type of good imported and not the type exported, according to Yenokyan et al, was critical for trade's effect on a country's growth rate as importation of a factor of production increased the growth rate whereas there was no effect on the growth rate from the importation of consumption good. Yenokyan et al argued that perpetual growth was made possible by the character of the production function regarding the reproducible factors of production. Hence, the growth rate was raised when comparative advantage increased the efficiency of creating reproducible factors of production by obtaining a production factor, through trade, that a country stopped producing (Yenokyan et al, 2014). Although no technology transfer occurred in their model, Yenokyan et al still found a trade in factors of production lead to a world equilibrium that was either alike or similar to the equilibrium that would exist once countries transmitted technology to their partners. These findings show international trade fosters economic growth with benefits accruing to developing and developed countries in the long and short-run respectively. Also, the comparative advantage appears to play a central role in driving a rise in growth rates.

2.3 Financial development and economic growth

To begin with, there seem to be two sets of views on how financial development impacts economic growth. The first view looked at supply-side leading and demand-side following hypotheses (Ibrahim and Alagidede, 2018 and Muhammad et al, 2016). The supply-leading view was hypothesised as the development of a robust financial sector contributing to economic growth while the demand-following view contended that growth of real economic activities increased financial services' demand and in consequence the financial sector's development (as cited in Ibrahim and Alagidede, 2018, p. 1105). Skare and Porada-Rochoń (2019) found evidence of this supply-leading relationship in 17 of their 19 transitional economies study while

8 economies demonstrated the demand-following feedback loop. Structuralists and repressionists were the other viewpoints highlighted by Guru and Yadav (2019). Structuralists believed economic growth was prompted by the composition, structure and quantity of financial factors that mobilised savings which consequently increased capital formation that led to economic growth and poverty reduction (as cited in Guru and Yadav, 2019, p. 118). Repressionists asserted that the driver of economic growth was an appropriate return rate on financial liberalisation's account on real cash balances (as cited in Guru and Yadav, 2019, p. 118). The literature therefore shows the various views on how economic growth can be impacted by financial development. Specific channels of impact are examined next.

Financial development influences economic growth through multiple channels. One of the major channels mentioned in literature was via an increase in the rate of capital accumulation (Ehigiamusoe and Lean, 2018; Shahbaz et al 2013; Shahbaz, 2012; King and Levine, 1993 and Pagano, 1993). According to Ehigiamusoe and Lean and Shahbaz et al, the financial system enabled the mobilisation of savings and directed the same for foreign and domestic capital investments which boosted capital accumulation and eventually growth. While Pagano noted the funnelling of savings to firms as savings were transformed into investment, Bucci and Marsiglio (2019) as well as King and Levine highlighted financial services' ability to improve the efficiency of economies using the accumulated capital. Expounding on this point of capital allocation efficiency, Pagano acknowledged the allocation of resources to projects in which the marginal product of capital was the highest. Financial intermediation increased growth via the collection of information to appraise different investment projects and by risk sharing that induced individuals to invest in higher-risk but more worthwhile technologies (Pagano, 1993). In a similar vein, the productivity channel facilitated efficient credit facilities as well as other financial services which promoted the implementation of modern technologies to enhance technology and knowledge intensive industries (Ehigiamusoe and Lean, 2018). Pagano inferred a dual effect in which financial development altered the saving rate and as such could have increased or decreased growth depending on the sign of the relationship. Moreover, the financial sector was noted for connecting an economy's surplus and deficit sectors together (Raheem et al, 2019). The literature has thus shown the various mechanisms by which financial development is able to affect economic growth.

Several different proxies for financial development have generally proven a positive effect on economic growth. Most of the transitional economies in the previously mentioned research by

Skare and Porada-Rochoń demonstrated a long-run relationship between financial development and economic growth. Using credit provided by the private sector, Raheem et al found financial development as a growth strain in G7 countries. In reviewing the West African region from 1980 to 2014, Ehigiamusoe and Lean (2018) used credit to private sector and liquid liabilities (as an alternate proxy) and both yielded a significantly positive effect on economic growth. No evidence of an effect in the short run was observed (Ehigiamusoe and Lean, 2018). Examining 40 countries, Durusu-Ciftci et al (2017) showed stock market development and credit market development to have positive long-run effects on GDP per capita at a steady-state level for most of the countries. Credit market development contributed markedly more than stock market development in their panel findings (Durusu-Ciftci et al, 2017). Reviewing the progress of Indian economy from 1960 to 2015, Shahbaz et al (2017) highlighted a negative effect on economic growth with a positive shock to financial development in the long term and a positive effect on economic growth with a negative shock to financial development in the short term. A study by Muhammad et al (2016) focusing on the Gulf Cooperation Council (GCC) countries also showed financial sector development, measured as domestic credit as a percentage of GDP or money supply as a percentage of GDP, had a positively significant impact on the economic growth of the GCC region for three of the four estimation approaches used. Using credit as a share of GDP, financial value-added and stock market capitalisation in a study of a large group of OECD and G20 countries, Cournède et al (2015) found economic growth was negatively affected by the first two proxies but positively affected by the last one. In Kenya, Uddin et al (2013) discovered a positive association between financial development and economic growth where a 1% increase in the log of financial development resulted in a 0.039% improvement in real GDP. This was also the case for Venezuela as a 1% rise in financial development improved growth by 0.0861% according to Satti et al. In another single country study of China (1971-2011) by Shahbaz et al (2013), financial development also had a significantly positive effect on economic growth with the latter rising by 0.3594 to 0.3755% with a 1% increase in the former. The positive growth impact in Pakistan over the same 40-year period was slightly less (0.1433 to 0.2209%) when financial development rose by 1% (Shahbaz, 2012). King and Levine (1993) saw a positive correlation between financial development and economic growth, rate of physical capital accumulation and improvements in capital allocation efficiency for 80 countries when the ratios of liquid liabilities to GDP and credit to the private sector to GDP as well as the ratio of commercial banks' credit as a share of bank credit and central bank domestic assets were used. Therefore, this evidence has shown the multiple proxies that have been used to measure financial development which for the most part have positively contributed to economic growth. However, there appears to be a limit to the realisation of the positive effects.

Financial development, like the other variables being investigated in this research, can have varying effects on economic growth depending on countries' level of development. For Botev and Jawadi (2019) investigating about 100 countries, finance had a stronger positive effect in more developed countries and weaker positive effect in countries with lesser trade openness which suggested access to other sources of external financing by more open countries. Botev and Jawadi further posited that institutional quality may contribute to finance's effect on output since economic development was closely correlated with institutions. This view of Botev and Jawadi was proven by Demetriades and Law (2006). Demetriades and Law's dataset of 72 countries covering 1978 to 2000 revealed greater effects for financial development on long-run economic development when a financial system was rooted in a strong institutional structure. Specifically, Demetriades and Law detected middle income countries gained the most from financial development's potent economic benefits especially in the presence of high institutional quality. The gains were reduced in high income countries though it did also appear larger with high institutional quality (Demetriades and Law, 2006). For low income countries, Demetriades and Law noted that more finance may or may not produce substantial gains once there was low institutional quality. Nguyen et al (2019) sampled 90 countries from 1980 to 2011 and discovered private credit provided by banks to GDP had negatively impacted economic growth in low, middle and high (lowest result observed) income countries. However, stock markets (measured as the stock market turnover) had a positive effect for middle income countries and an insignificant effect in low and high income countries (Nguyen et al, 2019). Using domestic credit provided by the banking sector as a percentage of GDP, Hassan et al (2011) showed finance positively affected low and middle income countries but negatively affected high income OECD countries. Referring to Rioja and Valev (2004), middle and high income countries were positively affected by financial development (stock markets and banking measures) with the former registering stronger results while no major evidence of finance contributing to growth in low income countries was noted. These findings have therefore shown the different effects of financial development on economic growth depending on countries' stage of development. Overall, middle income countries appear to have recorded the positive impact of financial development the most.

2.4 Trade openness and economic growth

Trade openness' impact on economic growth can be explained through different modes. Shahbaz (2012), Kim and Lin (2009), Awokuse (2008), Dowrick and Golley (2004), Karras (2003), Slaughter (1997) and Edwards (1993) underscored the adoption of technological innovations of imports from developed countries being transferred to developing countries through openness and international trade. Thus, imports were easier in more open economies which improved the technology transfer that in turn facilitated higher growth rates (Karras, 2003). However, Zahonogo (2016) noted that developing countries lacking human capital, research and development (R&D), a proper functioning financial system and strong institutions were unlikely to fully capitalise on the technology transfer as these parameters determined the absorptive capacity of countries. Considering new growth theories, Ramzan et al (2019) and Shahbaz highlighted trade openness' ability to improve economic growth through learning by doing actions. Trade openness also increased market size which enabled countries to take advantage of increasing scale returns and economies of specialisation (Roquez-Diaz and Escot, 2018; Zahonogo, 2016; Kim and Lin, 2012 and 2009). Growth can also take place by imports stimulating domestic innovation due to the heightened import competition (Awokuse, 2008). This suggestion by Awokuse can therefore be a counter argument to Zahonogo's point regarding R&D limitations. This literature has thus shown several avenues through which trade openness can positively affect economic growth. Evidence of this positive effect are covered next.

Trade openness positively influences economic growth. In examining the relationship between trade openness and economic growth in Latin American countries, Roquez-Diaz and Escot (2018) found that Chile, Peru, Nicaragua and Uruguay had a causal relationship from trade openness to economic growth. Brueckner and Lederman (2015) discovered positive economic growth in Sub-Saharan Africa (SSA) resulting from greater openness to international trade where a 1% increase in openness increased economic growth by about 0.5% annually in the short-run and about 2% in the long-run. Conversely, Zahonogo (2016) also found a significantly positive effect of trade openness on economic growth in SSA countries but with the occurrence of a Laffer Curve of trade (inverted U) signalling a threshold for the effect. The thresholds beyond which the positive effect declined were: 134.21% of GDP for revealed openness, 355.68% of GDP for openness measured as exports to GDP ratio and 33.16% for openness measured as imports to GDP ratio (Zahonogo, 2016). During 1971 to 2011, Shahbaz found trade openness' significantly positive contribution to economic growth in Pakistan.

Investigation findings of Karras (2003) found that trade openness had a positive, statistically significant, economically sizable and permanent effect on economic growth for two sets of panel data: 56 countries during 1951-1998 and 105 countries during 1960-1997. According to Karras, growing trade as a portion of GDP by 10 percentage points permanently raised the real growth rate of GDP per capita by about 0.25 to 0.3%. Dollar and Kraay (2003b) in their analysis of decadal growth of GDP per capita found a higher annual growth rate of 2.5% when trade integration was doubled. When Edwards (1998) used 18 equations for comparative data for 93 countries, 94% of the equations had the expected sign with 76% of that being indicative of a significantly positive connection between trade openness and productivity growth. However, it must be noted that Rigobon and Rodrik (2005) observed a significantly negative effect of trade openness on income when they split their cross-national dataset into European colonies versus non-colonies as well as continent alignment on an east-west versus north-south axis. Ramzan et al (2019) also observed GDP per capita growth being adversely affected by trade openness when measured as total trade contribution, imports and exports in 82 countries. Notably, the effect became positive when total factor productivity, an intervening variable, was introduced. These findings demonstrate the generally positive, often significant, role played by trade openness in advancing economic growth. In some instances, a limit exists for openness to cause growth to occur beyond which decreases can occur.

Depending on countries' economic development level, trade openness can have a variable impact on the economic growth of countries. With respect to a panel of 61 low-income and high-income countries during 1960 to 1995, Kim and Lin (2012) found significantly negative and significantly positive coefficient estimates for trade share respectively. This indicated that greater trade openness adversely affected the real income of less developed countries and favourably affected the real income of more developed countries (Kim and Lin, 2012). Kim and Lin (2009) demonstrated similar results for 61 countries covering the period 1960 to 2000. Higher trade openness positively impacted the economic growth of high-income countries and negatively impacted the economic growth of low-income countries implying that trade liberalisation's beneficial effects increased as economies developed (Kim and Lin, 2009). Contrarily, Dowrick and Golley (2004) found trade openness' benefits to be greater in less developed countries than more developed countries for the period 1960 to 1979. Dowrick and Golley's findings were reversed to match that of Kim and Lin (2012 and 2009) when the period was over the 1980s and 1990s. One hypothesis put forward by Dowrick and Golley for this reversal was the change in the nature of technology being transferred from developed countries with developing countries being able to adopt the pre-1980 knowledge and capital goods for manufacturing processes and less able to adopt the complex information and communication technologies of post-1980. The other hypothesis was developing countries' failure to introduce apt policies and institutions to support trade liberalisation (Dowrick and Golley, 2004). These findings show that more economically developed countries better reap the benefits of trade openness when compared to less economically developed countries. Further, it also shows that this may be due to the advanced technology and specialisation of developed countries which are difficult to be transferred to developing countries.

2.5 Institutional quality and economic growth

Channels of institutional quality's impact on economic growth can be direct or indirect. Weak institutions can directly affect growth by reducing investment's efficiency (for instance through lower confidence in enforcing property rights) and indirectly through steep bureaucratic costs, rent-seeking and high transaction costs resulting from bribery (as cited in Fabro and Aixalá, 2009, p. 998). Institutional quality can also function as a defence from authoritarian rule, state cover from particular pressures and the possibility of releasing pressures for instantaneous consumption that can disrupt investment and growth (as cited in Decker and Lim, 2008, p. 3). Hence, this evidence suggests that the avenues by which institutional quality affects economic growth can be direct or indirect. Observed instances of institutions' effect on growth will now be outlined.

The quality of institutions contributes significantly to per capita incomes. In their static model comprising 91 countries, Decker and Lim (2008) showed institutional quality's influence on economic growth was positive and statistically significant. In fact, a 1% increase in institutional quality increased per capita income by more than 100%. Kaufmann et al (2002) developed a rule of law index comprising the protection of property rights and robustness of the rule of law to measure institutional quality. The index ranged from -2.5 for weakest institutions to 2.5 for strongest institutions (Kaufmann, 2002). This rule of law index was used by Rodrik et al (2004) and Dollar and Kraay (2003b) in their assessment of institutions. An institutional environment rating, for instance from investors, was another utilised indicator (Rodrik et al, 2004). Using the rule of law index in their preferred sample of 79 countries, Rodrik et al found the dominance of the quality of institutions – once institutions were controlled, integration had no direct effect on incomes while geography had a weak direct effect. This dominance of institutions was also emphasised by Grier and Maldonado (2015) in a panel of 18 Latin American countries and by

Fabro and Aixalá (2009) in a 145-country sample. In contrast to Rodrik et al, Grier and Maldonado also established geography as an essential element of country income. Further, countries with higher income levels had tougher institutions, more open economies and were farther from the equator (Rodrik et al, 2004). A very strong correlation between per capita incomes and institutional quality was discovered by Dollar and Kraay (2003b) in a sample of 168 countries. Like Rodrik et al, Dollar and Kraay (2003b) also recorded the tripartite combination of rapid growth, high trade levels and good institutions. Focusing on European colonies from the 17th to 19th centuries, Acemoglu et al (2001) used a different measure of settler mortality and found a strong relationship between current institutions and settler mortality rates. This meant that colonies with higher European mortality rates were less developed than colonies with healthier Europeans. These findings demonstrate that the quality of institutions can affect per capita incomes with higher-quality institutions contributing to higher per capita incomes.

Institutional quality, like trade openness, can also have a variable impact on economic growth depending on the economic development level of countries. Using a sizeable number of countries (117 for institutions and 111 for income) for the period 1985 to 2015, Kar et al (2019) observed most countries converging to more than one club over time with the club categorised by lower institutional quality or income showing no tendency to converge to the higher club. Kar et al posited that these countries were caught in low level institutional traps and low-income traps and further noted that the low-income traps were caused by the low institutional traps. Other factors such as human capital, investment ratio and land-lockedness also mattered (Kar et al, 2019). Law et al (2013) separated their 60-country panel data set into high, upper-middle, lower-middle and low income countries based on the World Bank classifications. Institutions were found to cause economic development in higher income countries whereas economic development tended to promote institutional quality in lower-middle and low income countries (Law et al, 2013). The level of development was also identified by Alonso (2011) as one of the main factors responsible for conditioning institutional quality. Other factors referenced by Alonso were the level of inequality and the non-fiscal features of the state's main resources (to a lesser degree). For Fabro and Aixalá (2009), 145 countries were separated into three subsamples – low, medium and high income countries where institutional quality was not a robust variable in the low income countries. Institutional quality's positive and significant impact on economic growth was superior in medium income countries as compared to high income countries (Fabro and Aixalá, 2009). Considering the evidence, higher income countries appear more likely to benefit from institutional quality. Perhaps due to the stronger institutional framework likely to exist in those countries. Interestingly, some reverse causation seems to exist as economic development was considered a driver of improving institutional quality in lower income countries.

3. METHODOLOGY

The literature review highlighted theoretical relationships between the determinants and economic development. Globalisation's transformative presence enable aggregated natural resource rents to positively affect the human development index. Technology spillovers primarily through innovation and knowledge diffusion such as the adoption of technological innovations of imports being adopted from developed countries by developing countries contribute to international trade and trade openness' positive effect on economic development. Capital accumulation functions as the primary mechanism of financial development's positive impact on economic development. Strong institutions promote economic development by increasing investment's efficiency. These relationships therefore form the basis for the models investigated.

Economic development was the dependent variable while natural resource abundance, international trade, financial development, trade openness and institutional quality were the independent variables. Two models were estimated using a similar single-equation approach as Ding and Field (2005). Model I was as follows:

$\Delta ED = f(NRA, IT, FD, TO, IQ)$

Where, ΔED is the change in economic development measured in terms of economic growth represented by GDP per capita based on purchasing power parity (PPP) in constant 2011 international dollars – EGRO

NRA is natural resource abundance measured as the total natural resources (oil, natural gas, coal, mineral and forest) rents as a percentage of GDP – RENT

IT is international trade measured as the balance of trade (total value of exports minus total value of imports) as a percentage of GDP – BTRD

FD is financial development measured as the broad money (liquid liabilities) as a percentage of GDP – BMON and market capitalisation of listed domestic companies as a percentage of GDP – MCAP

TO is trade openness measured as the ratio of exports plus imports to GDP (trade share) – OPEN

IQ is institutional quality measured as the average of the political rights (government functioning, political pluralism and engagement, and electoral system) and civil liberties (rule of law, organisational and associational rights, expression freedom and belief, and individual autonomy and rights) indices, both measured on a scale of 1 (strong rights) to 7 (weak rights) – QUAL

Model I can therefore be rewritten as:

∆EGRO = f(RENT, BTRD, BMON, MCAP, OPEN, QUAL)…………….…………………..(1)

In order to determine the effect of the independent variables on a wider view of economic development, a second equation (Model II) incorporating a human development index as the dependent variable was investigated. EGRO became an independent variable in this equation. The second estimated Model for this research was as follows:

∆HDEV = f(EGRO, RENT, BTRD, BMON, OPEN, QUAL)…………………………………(2)

Where, ∆HDEV is the change in the human development index (quality of life, knowledge and living standards) measured on a scale of 0 (low) to 1 (high)

One of the financial development variables was excluded in the second Model as a test for cointegration (Pedroni test) could have only accommodated seven variables in total. MCAP was therefore excluded in Model II to ensure representation of every indicator being investigated in the research.

Rationales exist for the selection of the indicators used in the Models' variables. Economic growth was used as the proxy for economic development given its ubiquitous presence in literature while the human development index was used to incorporate a wider view of economic development. International trade measured as the balance of trade as a percentage of GDP differentiated from the trade share measure for trade openness. Roquez-Diaz and Escot (2018) identified trade share as empirical literature's most extensively used indicator for trade openness while Kim and Lin (2012) highlighted its ability to measure real exposure to trade interrelations, account for integration's effective level, and clearly stipulated and carefully measured characteristics. However, trade share can be an inadequate representation for institutions or policies related to trade openness according to Kim and Lin. In keeping with Law et al (2013), Decker and Lim (2008) and Dollar and Kraay (2003), the institutional quality variable contained the rule of law, government effectiveness and property rights. Like Yanikkaya and Turan (2018), Stijns (2006) and Atkinson and Hamilton (2003), natural resource rents were used as the proxy for natural resource abundance. Broad money was used as a proxy for financial development since it was a conventional measure of financial depth (Guru and Yadav, 2019; Ehigiamusoe and Lean, 2018; Hassan et al, 2011 and King and Levine, 1993). Market capitalisation, the other financial development proxy, was used by Botev and Jawadi (2019).

3.1 Estimation approaches

Regression analysis was selected due to the relationships being investigated among the variables. Four panel estimation approaches were utilised in conducting the research: FE, RE, FMOLS and DOLS. As underscored by Ehigiamusoe and Lean (2018), using multiple analyses helped to provide reliable, robust and more informative estimates. Two main reasons proposed by Muhammad et al (2016) for using FE and RE were their ability to estimate the static version of the two models and dealing with heterogeneity present in data. Ramzan et al (2019) also reinforced the first advantage. These two approaches do not deal with endogeneity issues according to Muhammad et al. According to Botev and Jawadi (2019), DOLS had the advantage of correcting likely endogeneity of the independent variables. Further, Botev and Jawadi as well as Nasir et al (2019) highlighted the usage of FMOLS and DOLS in the presence of cointegration. These two approaches corrected autocorrelation in the residuals using Newey-West (FMOLS) and incorporation of leads and lags for explanatory variables in first differences (Botev and Jawadi, 2019 and Nasir et al, 2019).

3.2 Data

Data for the variables was sourced from The World Bank Group's Financial Structure Database and World Bank Open Data as well as the United Nations Development Programme (UNDP) and The Freedom House. The period covered for this research was 1990 to 2016 and data was collected on an annual basis for all variables. There was a total of 810 observations. This twenty-seven-year period was chosen as it provided a contemporary and favourable extended period over which the effects of the research's independent variables on the dependent variables in the two Models could have been examined.

The three-category grouping of countries (LMIC, UMIC and HIC) in Table 1 was based on The World Bank Group's classification of countries in terms of their Gross National Income (GNI) per capita in 2018 for the 2020 fiscal year. The World Bank Group placed countries into seven geographical areas: East Asia and Africa (1), Europe and Central Asia (2), Latin America and the Caribbean (3), Middle East and North Africa (4), North America (5), South Asia (6) and Sub-Saharan Africa (7). Table 1 lists the thirty countries that were examined for the research. The geographical area of the selected countries is indicated in brackets in Table 1. All efforts were made to ensure the widest possible geographical representation in the three groups.

Table 1: Countries examined by income group

Lower-middle Income Countries (LMIC)	**Upper-middle Income Countries (UMIC)**	**High Income Countries (HIC)**
1. Côte d'Ivoire (7)	1. Brazil (3)	1. Australia (1)
2. Egypt (4)	2. Colombia (3)	2. Chile (3)
3. India (6)	3. Jordan (4)	3. Israel (4)
4. Indonesia (1)	4. Malaysia (1)	4. Japan (1)
5. Kenya (7)	5. Mexico (3)	5. Korea, Republic (1)
6. Morocco (4)	6. Peru (3)	6. Norway (2)
7. Nigeria (7)	7. South Africa (7)	7. Portugal (2)
8. Pakistan (6)	8. Sri Lanka (6)	8. Singapore (1)
9. Philippines (1)	9. Thailand (1)	9. Switzerland (2)
10. Tunisia (4)	10. Turkey (2)	10. United States (5)

4. RESULTS AND FINDINGS

4.1 Descriptive statistics

Table 2 provides a summary of the descriptive statistics carried out on the aggregated dataset comprising 30 countries. With a standard deviation of 0.14%, HDEV had the smoothest data over the 27-year period while EGRO had the least smooth data with a standard deviation of 17061.53%. Based on the skewness, HDEV was negative while the other seven variables were positive. According to Brooks (2016), the coefficient of kurtosis minus 3 gave the coefficient of excess kurtosis where a normal distribution's excess kurtosis coefficient was equal to 0; a normal distribution had a coefficient of kurtosis equal to 3. Thus, BMON, BTRD, EGRO, MCAP, RENT and OPEN had excess kurtosis greater than 0. This suggested a leptokurtic distribution that has high tail dependence and more peaks at the mean (Brooks, 2016). HDEV and QUAL had excess kurtosis less than 0. This implied a platykurtic distribution that had less tail dependence and peaks at the mean but more distribution in the shoulders (Brooks, 2016). The Jarque-Bera (J-B) test checked for normality (Brooks, 2016) and can thus be a confirmation of the absence of normality given the findings from skewness and kurtosis. Descriptive statistics were also performed on the LMIC, UMIC and HIC. Those results have been concealed to reduce space and are available upon request.

Table 2: Descriptive statistics summary

Variable	Mean	Maximum	Minimum	Std. dev.	Skewness	Kurtosis	Jarque-Bera
BMON	71.64869	243.5323	9.063329	42.67313	1.356140	5.225615	415.4566***
BTRD	-0.495128	31.27032	-40.87452	8.940153	0.018062	5.758544	256.8669***
EGRO	18083.26	84704.28	1886.977	17061.53	1.425984	4.316316	332.9914***
HDEV	0.698099	0.951000	0.386000	0.143772	-0.180260	2.237910	23.98803***
QUAL	3.174691	7.000000	1.000000	1.615565	0.136383	1.814146	49.97197***
MCAP	63.37604	321.6674	0.390000	60.69785	1.691026	5.747504	640.8131***
RENT	4.002563	31.81226	0.000313	4.754986	1.814428	6.968932	976.0841***
OPEN	73.17145	437.3267	15.16176	63.13248	3.271289	15.32886	6574.705***

Note: *** denotes 1% significance level

4.2 Panel unit root tests

Unit root tests check for stationary and nonstationary variables. Roquez-Diaz and Escot (2018) highlighted the importance of these tests as nonstationary variables invalidated the assumptions of a regression analysis and could result in a spurious regression. A common unit root test – Levin, Lin and Chu (2002) and two individual unit root tests – Im, Pesaran and Shin (2003) and Fisher – Augmented Dickey-Fuller were utilised. They are abbreviated as LLC, IPS and F-ADF respectively in Table 3 that provides a unit root tests' summary for the aggregated countries. The null hypothesis (probability greater than 0.05) for these tests was the panel data had a unit root whereas the alternative hypothesis (probability less than 0.05) stated that the panel data had no unit root. The tests indicated that half of the variables were stationary in their respective levels (acceptance of the alternative hypothesis) while the other half were stationary after first differencing (acceptance of the null hypothesis).

Table 3: Unit root tests summary

Variable	Test	Individual Intercept		Individual Intercept and Trend		Conclusion
		Level	1st Difference	Level	1st Difference	
BMON	LLC	(-0.442) 0.329	(-18.908) 0.000***	(-0.453) 0.325	(-15.146) 0.000***	Stationary after 1st difference.
	IPS	(1.318) 0.906	(-19.992) 0.000***	(-1.617) 0.053*	(-17.199) 0.000***	
	F-ADF	(69.301) 0.192	(437.206) 0.000***	(78.742) 0.053*	(347.781) 0.000***	
BTRD	LLC	(-2.867) 0.002***	(-22.342) 0.000***	(-2.213) 0.014**	(-17.507) 0.000***	Stationary at level.
	IPS	(-4.582) 0.000***	(-23.157) 0.000***	(-4.541) 0.000***	(-19.347) 0.000***	
	F-ADF	(124.836) 0.000***	(506.638) 0.000***	(124.231) 0.000***	(390.651) 0.000***	
EGRO	LLC	(6.381) 1.000	(-12.335) 0.000***	(1.613) 0.9466	(-11.311) 0.000***	Stationary after 1st difference.
	IPS	(10.188) 1.000	(-12.193) 0.000***	(2.517) 0.994	(-10.288) 0.000***	
	F-ADF	(23.136) 1.000	(258.058) 0.000***	(48.866) 0.847	(210.336) 0.000***	
HDEV	LLC	(-3.532) 0.000***	(-12.918) 0.000***	(-0.932) 0.176	(-16.596) 0.000***	Stationary after 1st difference.
	IPS	(2.769) 0.997	(-13.060) 0.000***	(1.588) 0.944	(-15.793) 0.000***	
	F-ADF	(74.251) 0.102	(291.424) 0.000***	(60.948) 0.442	(315.751) 0.000***	
QUAL	LLC	(-44.809) 0.000***	(-14.700) 0.000***	(-28.050) 0.000***	(-7.589) 0.000***	Stationary at level.
	IPS	(-12.572) 0.000***	(-18.270) 0.000***	(-9.378) 0.000***	(-16.192) 0.000***	
	F-ADF	(314.377) 0.000***	(365.183) 0.000***	(329.902) 0.000***	(296.484) 0.000***	
MCAP	LLC	(-5.962) 0.000***	(-27.008) 0.000***	(-5.877) 0.000***	(-19.818) 0.000***	Stationary at level.

Variable	Test	Individual Intercept		Individual Intercept and Trend		Conclusion
		Level	1st Difference	Level	1st Difference	
	IPS	(-5.127) 0.000***	(-26.756) 0.000***	(-5.327) 0.000***	(-22.016) 0.000***	
	F-ADF	(120.731) 0.000***	(581.375) 0.000***	(129.613) 0.000***	(449.180) 0.000***	
RENT	LLC	(-4.663) 0.000***	(-21.884) 0.000***	(-2.580) 0.005***	(-18.454) 0.000***	Stationary at level.
	IPS	(-4.297) 0.000***	(-22.774) 0.000***	(-2.937) 0.002***	(-18.770) 0.000***	
	F-ADF	(105.786) 0.000***	(506.043) 0.0000***	(97.754) 0.002***	(384.046) 0.000***	
OPEN	LLC	(-1.690) 0.046**	(-23.845) 0.000***	(-1.002) 0.158	(-20.331) 0.000***	Stationary after 1st difference.
	IPS	(-0.423) 0.336	(-21.452) 0.000***	(-0.748) 0.227	(-18.718) 0.000***	
	F-ADF	(60.327) 0.464	(466.331) 0.000***	(76.243) 0.077	(373.240) 0.000***	

Note: Statistic is in brackets; *, ** and *** denote 10%, 5% and 1% significance levels respectively.

There was also a mixture of stationarity at level and after first differencing for the LMIC, UMIC and HIC. These results which have been concealed to conserve space are available upon request.

4.3 Panel cointegration tests

Tests for cointegration determine whether it exists or not among the variables in the two Models. Pedroni (2004) proposed several tests for cointegration that catered for heterogeneity in panel data. Kao's (1999) test for cointegration in panel data was based on the Augmented Dickey-Fuller (ADF) approach. Tables 4 and 5 provide a summary of the respective results of the Kao and Pedroni residual cointegration tests for Models I and II in the aggregated countries. In both tests, the null hypothesis was no cointegration. Kao's test rejected the null hypothesis at the 1% significance level indicating the presence of cointegration among the variables in Models I and II. A little more than half (55%) of Pedroni's Test-Statistics also rejected the null hypothesis and further confirmed the presence of cointegration among the variables in Models I and II at the 1% significance level. The presence of cointegration therefore meant that there was a long-run relationship among the variables. The results for the LMIC, UMIC and HIC also revealed the presence of cointegration. Those results have been concealed to save space and are available upon request.

Table 4: Kao residual cointegration test

Test-Statistic	Model I	Model II
ADF	(-7.434)	(-5.848)
	0.000***	0.000***

Note: Statistic is in brackets; *** denotes 1% significance level.

Table 5: Pedroni residual cointegration test

	Model I			Model II		
Test-Statistics	**I.I.**	**I.I. and I.T.**	**No I or T**	**I.I.**	**I.I. and I.T.**	**No I or T**
Panel v-	(-0.407)	(-0.084)	(-0.909)	(1.213)	(0.254)	(-0.910)
Statistic	0.657	0.534	0.818	0.113	0.400	0.819
Panel rho-	(1.575)	(3.753)	(0.649)	(1.615)	(3.066)	(1.166)
Statistic	0.942	1.000	0.742	0.947	0.999	0.878
Panel PP-	(-5.762)	(-6.652)	(-5.786)	(-7.435)	(-8.538)	(-4.796)
Statistic	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Panel ADF-	(-5.529)	(-6.002)	(-6.008)	(-8.010)	(-8.402)	(-5.062)
Statistic	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Panel v-	(-1.179)^{w}	(-2.055)^{w}	(-1.393)^{w}	(-1.061)^{w}	(-2.421)	(-1.894)^{w}
Statistic	0.881	0.980	0.918	0.856	0.992	0.971
Panel rho-	(1.751)^{w}	(3.886)^{w}	(1.284)^{w}	(2.560)^{w}	(3.985)	(1.505)^{w}
Statistic	0.960	1.000	0.901	0.995	1.000	0.934
Panel PP-	(-5.169)^{w}	(-5.011)^{w}	(-4.563)^{w}	(-4.376)^{w}	(-4.658)	(-3.600)^{w}
Statistic	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Panel ADF-	(-5.805)^{w}	(-5.504)^{w}	(-4.995)^{w}	(-6.253)^{w}	(-5.694)	(-4.403)^{w}
Statistic	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Group rho-	(3.556)	(5.362)	(2.966)	(4.023)	(4.984)	(2.847)
Statistic	1.000	1.000	0.999	1.000	1.000	0.998
Group PP-	(-5.488)	(-8.171)	(-5.146)	(-7.198)	(-10.278)	(-5.838)
Statistic	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Group ADF-	(-6.787)	(-5.676)	(-5.792)	(-7.550)	(-7.580)	(-6.401)
Statistic	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Note: Statistic is in brackets; w represents Weighted Statistic; *** denotes 1% significance level; I.I.: Individual Intercept; I.I. and I.T.: Individual Intercept and Individual Trend; No I or T: No Intercept or Trend.

4.4 Correlation analysis

The extent of correlation among the independent variables was checked. It was generally determined not to be a concern given that all the correlations between two different variables in Table 6 were less than 0.6 (60%). The signs on the correlation coefficients reveal the nature of the correlations as positive or negative. This was also the case for the LMIC, UMIC and HIC. These results have been suppressed and are available upon request.

Table 6: Correlation analysis

	BMON	BTRD	EGRO	QUAL	MCAP	RENT	OPEN
BMON	1.000000						
BTRD	0.081516	1.000000					
EGRO	0.483323	0.457130	1.000000				
QUAL	-0.279526	-0.102056	-0.557364	1.000000			
MCAP	0.513169	0.288175	0.523523	-0.283759	1.000000		
RENT	-0.250619	0.285106	-0.192269	0.182527	-0.027625	1.000000	
OPEN	0.312718	0.422983	0.386750	0.219327	0.492277	-0.067740	1.000000

4.5 Estimation of models for aggregated countries

The four panel estimation approaches were applied following the first differencing of all variables in order to ensure consistency in stationarity and reliability of results. Table 7 gives a summary of the panel estimations for the aggregated countries for Model I where EGRO was the dependent variable and Model II where the dependent variable was HDEV. The bottom half of Tables 7, 8 and 9 provide a summary of the diagnostic tests that were conducted for autocorrelation and heteroscedasticity. The Durbin-Watson (D-W) test for autocorrelation was only offered as part of the model estimation results for the FE and RE estimations. Thus, the Lagrange Multiplier (LM) test for heteroscedasticity and Breusch-Godfrey serial correlation LM test for autocorrelation were manually calculated. Test statistics for heteroscedasticity, autocorrelation and D-W in Tables 7, 8 and 9 confirmed the presence of these data characteristics in most of the estimations. In order to address the data issues, the models were re-estimated with the period weights (PCSE) being applied in the coefficient covariance method for the FE and RE. Overall, the re-estimations were consistent (statistical significance and signs of coefficients) with the original estimations that were performed. As previously outlined, the FMOLS and DOLS estimations were able to respectively correct for autocorrelation with Newey-West and leads and lags for independent variables in first differences.

Table 7: Models I and II panel estimations

Variable	Model I				Model II			
	FE	RE	FMOLS	DOLS	FE	RE	FMOLS	DOLS
BMON	(-28.086) 0.000***	(-27.598) 0.000***	(-29.492) 0.000***	(-38.075) 0.000***	(-3.2E-05) 0.188	(-3.1E-05) 0.191	(0.177) 0.000***	(0.000) 0.026**
BTRD	(-30.564) 0.000***	(-30.068) 0.000***	(-30.504) 0.000***	(-57.793) 0.000***	(-8.3E-05) 0.067*	(-8.2E-05) 0.069*	(0.049) 0.374	(-0.000) 0.613
EGRO	-	-	-	-	(1.7E-06) 0.000***	(1.7E-06) 0.000***	(0.636) 0.000***	(7.5E-06) 0.000***
QUAL	(37.624) 0.4821	(39.627) 0.459	(35.179) 0.000***	(-222.491) 0.000***	(-0.000) 0.509	(-0.000) 0.547	(-0.084) 0.060*	(-0.005) 0.170
MCAP	(2.433) 0.003***	(2.449) 0.003***	(2.766) 0.000***	(2.718) 0.174	-	-	-	-
RENT	(26.155) 0.047**	(26.391) 0.045**	(23.285) 0.000***	(125.974) 0.000***	(-2.6E-05) 0.765	(-2.4E-05) 0.782	(-0.130) 0.002***	(0.000) 0.701
OPEN	(14.345) 0.000***	(14.250) 0.000***	(16.000) 0.000***	(12.310) 0.058*	(5.7E-06) 0.761	(6.7E-06) 0.721	(0.322) 0.000***	(-0.000) 0.285
R-squared	0.385	0.135	0.447	0.986	0.241	0.090	-1301333 8537.042	0.190
F-statistic	13.296 0.000***	20.028 0.000***	-	-	6.738 0.000***	12.712 0.000***	-	-
D-W statistic	1.760	1.669	-	-	1.384	1.337	-	-
A. test statistic	43.592	128.916	71.952	-	94.033	170.688	335.543	-
H. test statistic	153.123	21.553	189.412	492.595	118.555	5.176**	292.880	189.980

Note: Coefficients are in brackets; *, ** and *** denote 10%, 5% and 1% significance levels respectively; D-W statistic: Durbin Watson statistic; A. test statistic: Autocorrelation test statistic where Chi-square Distribution at 5% significance level is 14.07; H. test statistic: Heteroscedasticity test statistic where Chi-square Distribution at 5% significance is 11.07.

From Table 7, BMON, BTRD, RENT and OPEN were statistically significant in all four panel estimation techniques for Model I. The former two interestingly had a negative impact on EGRO while the latter two had a positive impact. This negative effect of BMON was opposite to the positive effect that liquid liabilities had on economic growth in the studies of Ehigiamusoe and Lean (2018) as well as King and Levine (1993). International trade's negative effect could have been due to the balance of trade as a percentage of GDP proxy that was used. Some of the countries had trade deficits. Zahonogo (2016) suggested imports could reduce economic growth while Yenokyan (2014) stressed the importation of a factor of production instead of consumption goods can increase the growth rate. Thus, the presence of the trade deficits coupled with imports of consumption goods could have played a part in the negative contribution of international trade in the countries. The positive influence of natural resources was also noted by Shahbaz et al (2019), Gerelmaa and Kotani (2016), Konte (2013), Alexeev and Conrad (2009) and Papyrakis and Gerlagh (2004). This research's findings thus provided additional support for the literature that argued natural resource abundance positively rather than negatively affected economic growth. It also highlighted the absence of any possible resource curse (as contended by Yanikkaya and Turan, 2018; Badeeb et al, 2017; Ahmed et al, 2016 and Gerelmaa and Kotani, 2016) and implied that the countries most likely had systems in place to ensure proper management of the natural resources to mitigate any negative effects. Trade openness' significantly positive effect was aligned with the findings of Brueckner and Lederman (2015), Zahonogo (2016), Karras (2003) and Edwards (1998). This reinforced the endogenous growth theories referenced by Roquez-Diaz and Escot (2018) which predicted a positive relationship between trade openness and economic growth as advanced technologies were accessed and acquired. The other two variables are discussed next.

According to Table 7, MCAP had a positive statistically significant (1%) effect on economic growth in all the panel estimations except DOLS while QUAL had a mixture of a positive and negative effect under FMOLS and DOLS respectively. The positive effect of market capitalisation was also observed by Durusu-Ciftci et al (2017) and Cournède et al (2015). This suggested that market capitalisation supported capital accumulation which Ehigiamusoe and Lean (2018), King and Levine (1993) and Pagano (1993) noted as one of the main ways through which financial development affected economic growth. Grier and Maldonado (2015), Fabro and Aixalá (2009), Decker and Lim (2008), Rodrik et al (2004) and Dollar and Kraay (2003b) also observed a strong positive influence of institutional quality on economic growth. The negative effect of QUAL which was also recorded thus contradicted some literature that emphasised the dominance of institutions. QUAL had positive insignificant effects with FE and RE; MCAP's positive insignificant effect was in DOLS. Thus, MCAP and QUAL yielded a mixture of results.

The Hausman test enabled a choice to be made between the FE and RE approaches (Asteriou and Hall, 2016). The Hausman test result yielded a Chi-Square Statistic of 18.285 and probability of 0.006. This meant that the alternative hypothesis of the FE estimation should be accepted. General similarities among the variables' coefficients of the four estimation approaches can be seen in Table 7 implying that a one-unit increase in the six variables will generally result in a corresponding increase (for positive coefficients) or decrease (for negative coefficients) in economic growth measured in GDP per capita (international dollars). Therefore, under the FE a 1% increase in the market capitalisation as a percentage of GDP, total natural resources rents as a percentage of GDP and trade share will generally result in a respective increase in GDP per capita by 2.4, 26.2 and 14.3 international dollars. The GDP per capita will decrease by 28.1 and 30.6 international dollars respectively when broad money and the balance of trade as percentages of GDP were to be increased by 1%.

Table 7 also outlines a summary of the four panel estimations of Model II. One major difference between the estimations for Models I and II can be seen in the extremely smaller coefficients for the variables in Model II suggesting less influence of the independent variables on the dependent variable HDEV. This contrasted with the larger coefficients observed for the Model I estimations where the independent variables had more influence on the dependent variable EGRO. Surprisingly, the results in Table 7 highlighted EGRO (now an independent variable in Model II) as the only variable with a significantly statistical (1%) positive relationship on HDEV for all four panel estimations. In a reversal to Model I, BMON now had a positive statistically significant effect on HDEV with the FMOLS, RENT now had a negative statistically significant impact on HDEV using DOLS and QUAL now had a negative influence on HDEV under FMOLS. The negative impact of RENT opposed the finding of Sinhaa and Sengupta (2019). The signs of the coefficients remained the same for BTRD (FE and RE) and OPEN (FMOLS) which had respective negative and positive statistically significant impacts on HDEV. The Chi-Square Statistic and probability for the Hausman test were 3.588 and 0.732 respectively. Thus, the null hypothesis of the RE method being appropriate should be accepted. Statistical insignificant relationships are also evident in Table 7: negative for BMON (FE and RE), positive (FMOLS) and negative (DOLS) for BTRD, negative for QUAL (FE, RE and DOLS), negative (FE and RE) and positive (DOLS) for RENT, and negative (DOLS) and positive (FE and RE) for OPEN.

4.6 Estimation of models for LMIC, UMIC and HIC

The findings of the LMIC in Table 8 are discussed first. BTRD was the only variable where a statistically significant (5% and 1%) relationship with EGRO was present in all four panel estimation methods. The relationship was negative in all four cases. As previously elucidated, the balance of trade proxy for international trade could have been responsible for this negative relationship. Three of the four estimations (DOLS excluded) yielded statistically significant results for QUAL and OPEN where the effect on EGRO was positive and negative respectively. This positive relationship for institutional quality contradicted the findings of Fabro and Aixalá (2009) who noted institutional quality was not a robust variable in low income countries. A possible reason for this positive influence was offered by Law et al (2013) in that economic development could promote institutional quality. Thus, stronger institutional quality would have become necessary as the LMIC strived for development which would have required better institutional frameworks to be put in place. Kim and Lin (2012 and 2009) and Dowrick and Golley (2004) also showed that less developed countries were adversely affected by greater trade openness. The negative effect observed in the LMIC suggested that the expected transfer of technological advances from developed to developing countries (Awokuse, 2008; Karras, 2003; Slaughter, 1997 and Edwards, 1993) probably did not meaningfully affect the developing countries in this research. This could have been due to a deficiency of the absorptive capacity in these countries (Zahonogo, 2016) or the change to more complex and harder to adopt information and communication technologies in developed countries following the 1980s (Dowrick and Golley, 2004). RENT positively impacted EGRO with statistical significance (5%) under FMOLS and DOLS. A positive impact of natural resources rents in developing countries was also discovered by Yanikkaya and Turan (2018). Single positive statistically significant (1%) estimations can be seen for the financial development variables BMON and MCAP with only FMOLS. Positive effects of financial development (particularly stock markets) in middle income countries were recorded by Nguyen et al (2019) and Rioja and Valev (2004) as well. Thus, the findings can be contrasted against the existing empirical evidence.

Table 8: Model I panel estimations for LMIC, UMIC and HIC

Variable	Lower-middle Income Countries (LMIC)				Upper-middle Income Countries (UMIC)				High Income Countries (HIC)			
	FE	RE	FMOLS	DOLS	FE	RE	FMOLS	DOLS	FE	RE	FMOLS	DOLS
BMON	(-4.001)	(-3.805)	(6.566)	(-0.837)	(-8.003)	(-7.601)	(1.487)	(1.719)	(-42.721)	(-42.596)	(-42.512)	(-39.272)
	0.170	0.186	0.000***	0.931	0.016**	0.021**	0.000***	0.883	0.000***	0.000***	0.000***	0.118
BTRD	(-7.593)	(-7.383)	(-6.766)	(-42.657)	(-60.920)	(-60.356)	(-55.837)	(-88.161)	(-42.970)	(-39.363)	(-44.548)	(-117.99)
	0.006***	0.007***	0.000***	0.022**	0.000***	0.000***	0.000***	0.000***	0.073*	0.099*	0.000***	0.076*
QUAL	(48.205)	(47.250)	(30.731)	(-92.704)	(17.477)	(21.176)	(12.854)	(131.449)	(252.332)	(274.250)	(422.555)	(-8793.08)
	0.017**	0.019**	0.000***	0.274	0.707	0.648	0.000***	0.376	0.495	0.457	0.000***	0.000***
MCAP	(-0.099)	(-0.082)	(0.691)	(-3.129)	(-0.066)	(-0.151)	(0.145)	(0.684)	(6.093)	(6.063)	(6.692)	(-15.832)
	0.882	0.902	0.000***	0.329	0.931	0.843	0.116	0.849	0.002***	0.002***	0.000***	0.066*
RENT	(6.425)	(5.754)	(0.184)	(74.526)	(70.002)	(66.396)	(38.387)	(108.430)	(89.838)	(87.763)	(81.133)	(-506.64)
	0.156	0.203	0.028**	0.050**	0.000***	0.000***	0.000***	0.044**	0.063*	0.069*	0.000***	0.012**

OPEN	(-4.200) 0.003***	(-4.115) 0.004***	(-4.376) 0.000***	(-0.134) 0.989	(-8.417) 0.020**	(-8.060) 0.025**	(-4.176) 0.000***	(32.790) 0.008***	(32.298) 0.000***	(31.367) 0.000***	(35.073) 0.000***	(36.054) 0.009***
R-squared	0.281	0.083	-0.504	0.940	0.400	0.282	-0.234	0.952	0.393	0.221	0.467	0.999
F-statistic	6.348 0.000***	3.813 0.001***	-	-	10.835 0.000***	16.558 0.000***	-	-	10.539 0.000***	11.957 0.000***	-	-
D-W statistic	1.360	1.209	-	-	1.528	1.444	-	-	1.762	1.570	-	-
A. test statistic	30.493	65.867	30.161	-	15.982	43.032	5.294**	-	16.992	30.507	20.677	-
H. test statistic	40.702	25.979	-91.98**	188.224	55.704	9.909**	-117.6**	143.168	48.639	5.296**	38.870	98.128

Note: Coefficients are in brackets; *, ** and *** denote 10%, 5% and 1% significance levels respectively; D-W statistic: Durbin Watson statistic; A. test statistic: Autocorrelation test statistic where Chi-square Distribution at 5% significance level is 14.07; H. test statistic: Heteroscedasticity test statistic where Chi-square Distribution at 5% significance is 11.07.

Based on the Hausman test, the alternative hypothesis of the FE was appropriate given the Chi-Square Statistic of 27.651 and probability of 0.000. This suggested that a 1% increase in BTRD and OPEN would generally reduce EGRO by 7.6 and 4.2 international dollars respectively while a 1% increase in QUAL would increase EGRO by 48.2 international dollars. FMOLS was the only estimation where all variables had a statistically significant relationship with EGRO while the largest positive coefficient of 74.526 was present for RENT using the DOLS method. Negative statistically insignificant relationships were evident for BMON (FE, RE and DOLS), QUAL (DOLS), MCAP (FE, RE and DOLS) and OPEN (DOLS). RENT had a positive statistically insignificant effect on EGRO with FE and RE.

The discussion now turns to Model I in the UMIC as illustrated in Table 8. Statistically significant (5% and 1%) interactions in all four panel estimations were present for BTRD, RENT and OPEN. In BTRD, there was a negative contribution on EGRO which could have been due to the proxy used as pointed out for the LMIC. In RENT, the impact on EGRO was positive. A positive impact of natural resources rents in developing countries was observed by Yanikkaya and Turan (2018) as well. Contrary to the findings of Kim and Lin (2017), UMIC appeared to be most consistently impacted by a positive relationship of natural resource abundance on economic growth. OPEN negatively affected EGRO in three of the four estimations; it positively affected EGRO in only DOLS. Like the LMIC, trade openness had an unexpected negative effect on economic growth in most of the estimations. The positive effect of trade openness on economic growth through technological transfer as expressed by Awokuse (2008), Karras (2003), Slaughter (1997) and Edwards (1993) can thus be inferred for the DOLS estimation in the UMIC. BMON had a negative (FE and RE) and positive (FMOLS) statistically significant effect on EGRO. A positive effect of financial development on economic growth in middle income countries was also noted by Nguyen et al (2019), Demetriades and Law (2006) and Rioja and Valev (2004). The other financial development variable, MCAP, had a mixed effect as well though statistically insignificant. QUAL's influence on EGRO was statistically significant and positive using the FMOLS. Fabro and Aixalá (2009) likewise confirmed a positive impact of institutional quality on economic growth in medium income countries. Thus, there was some evidence to augment and oppose the existing evidence.

Comparing the FE and RE, the null hypothesis for the Hausman test (RE was appropriate) was accepted given the Chi-Square Statistic of 12.068 and probability of 0.061. This implied that a 1% increase in RENT would generally increase EGRO by 66.4 international dollars while a corresponding 1% increase in BMON, BTRD and OPEN would decrease EGRO by 7.6, 60.4 and 8.1 international dollars respectively.

Shifting attention to the HIC in Table 8, four (BTRD, MCAP, RENT and OPEN) of the six variables had statistically significant (10%, 5% and 1%) relations with EGRO in Model I while one variable each, BMON and QUAL, had significant (1%) interactions in three and two estimation approaches respectively. As with the LMIC and UMIC, BTRD made a negative contribution to EGRO in the HIC probably due to the proxy that was used. MCAP and RENT had a mostly positive effect on EGRO via FE, RE and FMOLS but negative effect with DOLS. The positive effect matched those of Rioja and Valev (2004) where high income countries were positively affected by stock markets. Natural resources rents exerted a positive effect on economic growth for developed countries (such as some of this research's HIC) in the study of Yanikkaya and Turan (2018). The positive impact of trade openness on the economic growth of HIC was also registered by Kim and Lin (2012 and 2009) and Dowrick and Golley (2004). This matched theory as more developed countries were predicted to benefit from technology spillovers when compared to less developed countries (Kim and Lin, 2012) through avenues such as specialisation and innovation investment (Zahonogo, 2016). EGRO was negatively affected by BMON in FE, RE and FMOLS. QUAL had a positive (FMOLS) and negative (DOLS) influence on EGRO. A positive significant relationship between institutional quality and economic growth for HIC was also found by Law et al (2013) and Fabro and Aixalá (2009). However, there was a slight difference in comparison to the findings of Fabro and Aixalá where this research showed institutional quality had a greater positive effect in the HIC and not the medium income countries when the size of the coefficient was considered. FMOLS, as in the LMIC, was the only estimation approach that registered statistical significance for all six variables in the HIC. Hence, some of the findings supported expected theory.

The alternative hypothesis of the Hausman test (FE appropriate) was acceptable considering the Chi-Square Statistic of 26.744 and probability of 0.000. Thus, it suggested that an increase in 1% of MCAP, RENT and OPEN would normally increase EGRO by 6.1, 89.8 and 32.3 international dollars respectively. Conversely, EGRO would decrease by 42.7 and 43 international dollars respectively if BMON and BTRD were increased by 1%.

The analysis moves now to Model II which emphasised a broadened view of economic development by focusing on HDEV as the dependent variable. It must be noted that the smaller coefficients for Model II variables observed in the aggregated countries also existed in the panel estimations for the LMIC, UMIC and HIC shown in Table 9. This underscored the implication that the independent variables in Model II exerted less influence on HDEV when compared to the larger coefficients recorded in Model I's estimations.

Like the aggregated countries, EGRO was the only variable (Table 9) in the LMIC, UMIC and HIC to have a positive statistically significant (5% and 1%) relationship with HDEV. The other observed statistically significant coefficients in the LMIC were all positive for FMOLS – BMON, QUAL and OPEN. Though statistically insignificant, the signs for BMON (FE, RE and DOLS) and BTRD (all except DOLS) were notably reversed to positive in Model II when compared to Model I. A mixture of positive and negative statistically insignificant coefficients was present for QUAL and RENT while OPEN maintained its negatively signed coefficient in the other estimations when compared to Model I but in a statistically insignificant way. The negative result for institutional quality was surprising as it would have been expected to have a greater influence on human development given institutions usually played a part in improving the facets of human development. The Hausman test suggested the acceptance of the null hypothesis (RE appropriate) given the Chi-Square Statistic of 10.528 and probability of 0.104.

With reference to the UMIC in Table 9, the other positive statistically significant (1%) relationship was between BTRD and HDEV (FMOLS) while the negative statistically significant (10% and 5%) relationships were with BMON (FE) and RENT (RE and FMOLS). RENT's relationship changed from positive in Model I. The alternative hypothesis for the

Hausman test (FE appropriate) was accepted in these countries as the Chi-Square Statistic was 17.190 and probability 0.009. In terms of statistical insignificance: all of OPEN's estimations changed to positive while all of QUAL's estimation changed as well to negative when compared to Model I, RENT also changed to negative (FE and DOLS) and BMON and BTRD had a mixture of positive and negative coefficients.

Table 9: Model II panel estimations for LMIC, UMIC and HIC

Variable	Lower-middle Income Countries (LMIC)				Upper-middle Income Countries (UMIC)				High Income Countries (HIC)			
	FE	RE	FMOLS	DOLS	FE	RE	FMOLS	DOLS	FE	RE	FMOLS	DOLS
BMON	(5.1E-05) 0.487	(6.8E-05) 0.351	(0.176) 0.021**	(0.000) 0.330	(-7.2E-05) 0.065*	(-6.2E-05) 0.108	(7.7E-05) 0.310	(-8.4E-06) 0.983	(-6.8E-06) 0.828	(1.4E-05) 0.639	(0.070) 0.548	(0.000) 0.027**
BTRD	(4.7E-05) 0.507	(4.9E-05) 0.480	(0.133) 0.150	(-0.000) 0.653	(-2.3E-05) 0.800	(1.9E-05) 0.834	(0.001) 0.001***	(0.001) 0.342	(-0.000) 0.029**	(-0.000) 0.077*	(0.109) 0.360	(0.002) 0.371
EGRO	(9.2E-06) 0.000***	(9.5E-06) 0.000***	(0.229) 0.000***	(2.6E-05) 0.000***	(2.5E-06) 0.001***	(3.1E-06) 0.000***	(1.1E-05) 0.000***	(1.6E-05) 0.000***	(1.3E-06) 0.000***	(1.6E-06) 0.000***	(0.406) 0.000***	(2.7E-06) 0.015**
QUAL	(-0.000) 0.805	(-0.000) 0.823	(0.118) 0.081*	(0.000) 0.980	(-0.001) 0.231	(-0.000) 0.398	(-0.002) 0.196	(-0.005) 0.322	(-0.000) 0.859	(-0.001) 0.650	(-0.349) 0.004***	(-0.017) 0.376
RENT	(5.8E-05) 0.615	(7.0E-05) 0.538	(-0.024) 0.747	(0.001) 0.455	(-0.000) 0.113	(-0.000) 0.088*	(-0.001) 0.018**	(-0.001) 0.555	(2.4E-05) 0.896	(-1.4E-05) 0.940	(-0.317) 0.000***	(-0.001) 0.759
OPEN	(-4.8E-05) 0.182	(-4.7E-05) 0.194	(0.279) 0.000***	(-0.000) 0.746	(3.2E-05) 0.453	(4.2E-05) 0.320	(0.000) 0.145	(0.000) 0.429	(4.7E-05) 0.050*	(3.9E-05) 0.094*	(0.187) 0.042**	(4.2E-05) 0.866
R-squared	0.309	0.146	-126510381.974	0.542	0.175	0.115	-0.639	0.558	0.357	0.228	-19153061942.890	0.772
F-statistic	7.279 0.000***	7.189 0.000***	-	-	3.453 0.000***	5.460 0.000***	-	-	9.023 0.000***	12.428 0.000***	-	-
D-W statistic	1.150	1.096	-	-	1.259	1.159	-	-	1.874	1.647	-	-
A. test statistic	53.599	77.007	145.851	-	42.164	53.800	39.054	-	2.174**	14.348	-3053134.7**	-
H. test statistic	75.413	14.331	28.984	24.326	31.061	3.132**	-101.4**	99.626	32.728	13.705	75.897	0.751**

Note: Coefficients are in brackets; *, ** and *** denote 10%, 5% and 1% significance levels respectively; D-W statistic: Durbin Watson statistic; A. test statistic: Autocorrelation test statistic where Chi-square Distribution at 5% significance level is 14.07; H. test statistic: Heteroscedasticity test statistic where Chi-square Distribution at 5% significance is 11.07.

The highest presence of statistical significance besides that of EGRO on HDEV in Model II was depicted in the HIC as displayed in Table 9. OPEN maintained its positive coefficient for FE, RE and FMOLS as well as its negative coefficient for BTRD in FE and RE when compared to Model I. BMON had a positive effect on HDEV which was evident in the LMIC in Model II while RENT had a negative impact as also observed in the UMIC for Model II but generally opposite to the positive RENT in Model I. The positive effect of BMON could have resulted from more access to broad money in those countries contributing to raising the quality of life and living standards – components of human development. With a probability of 0.000 and Chi-Square Statistic of 32.623, the alternative hypothesis (FE appropriate) for the Hausman test was acceptable. Conversely, positive statistically insignificant effects were recorded for BMON (RE and FMOLS), BTRD (FMOLS and DOLS), RENT (FE) and OPEN (DOLS). There was negative statistical insignificance for BMON (FE), QUAL (FE, RE and DOLS) and RENT (RE and DOLS).

5. CONCLUSION AND POLICY IMPLICATIONS

In a contemporary setting, economic development encompassed a wide range of parameters. This wider view started to gain momentum in the latter part of the 20th century as more attention was being placed on reducing poverty, improving healthcare access and living standards, ensuring environmental sustainability and minimising political freedom breaches. Economic development was extensively proxied by economic growth in the literature. Generally, the literature indicated that natural resource abundance, international trade, financial development, trade openness and institutional quality positively affected economic growth.

In this research, estimations in both Models for aggregated as well as LMIC, UMIC and HIC proved that economic development was positively and negatively affected by natural resource abundance, international trade, financial development, trade openness and institutional quality. Notably, all four estimations demonstrated natural resource abundance and trade openness positively impacted economic development in Model I for the aggregated countries. This was also evident in Model I for the UMIC and HIC with natural resource abundance and trade openness respectively. Strikingly, there was only one positive statistically significant relationship between international trade and economic development in the UMIC under Model II. Coefficients were noticeably larger in Model I suggestive of the variables having a stronger influence on economic growth than on human development (Model II). Economic growth was the only variable that had a steadily positive and statistically significant effect on human development under all estimations for the aggregated countries and LMIC, UMIC and HIC.

The research findings provide some likely policy implications. Robust institutions that mitigate corruption by ensuring the preservation of the rule of law, effective governance and property rights are required to ensure effective collection of natural resource rents. Monitoring systems should be implemented to minimise trade deficits in an effort to improve the impact of international trade on economic development. Building human capital, R&D as well as improving institutional quality and financial development are approaches that can be taken to enhance absorptive capacities. These will better equip countries to capitalise on the technological advancements from international trade and trade openness. Stock markets within countries should be strengthened as it represented a more effective tool in the contribution of capital accumulation to economic growth. Combined, these initiatives enhance economic growth which in turn improves human development. A judicious approach should therefore be taken to enhance economic development considering the interrelating effects of the variables.

Some contributions to the literature as well as some opportunities for future research also exist. Firstly, a contribution was made by econometrically examining the effects of the five variables on economic development in two single-equation models since many studies tended to focus on two or three variables. The second contribution was the contemporary period of 1990 to 2016. Thirdly, a broader view of economic development was explored by using a human development index to proxy for economic development in addition to the usual economic growth. Fourthly, it can be argued that proxying international trade with the balance of trade as a percentage of GDP was another contribution as the trade share measure was used sometimes to proxy for same. More research can be conducted taking a broader view of economic development into consideration given the principal focus on the economic growth proxy in the literature. Use of the balance of trade as a percentage of GDP to proxy for international trade can be done to determine whether similar or different results would be obtained. Considering the small coefficients observed in the human development model, research involving other variables such as poverty and unemployment levels can be used as regressors to ascertain whether those or other variables may have a greater influence on human development. Lastly, an increase in data availability can also enable future research to incorporate low income countries and an even more current time period.

References

Acemoglu, D. (2003) Root causes: A historical approach to assessing the role of institutions in economic development. Finance and Development, 40 (2), 27-43.

Acemoglu, D. Johnson, S. and Robinson, J.A. (2001) The Colonial Origins of Comparative Development: An Empirical Investigation. American Economic Review, 91 (5), 1369-1401.

Ahmed, K. Mahalik, M.K. and Shahbaz, M. (2016) Dynamics between economic growth, labour, capital and natural resource abundance in Iran: An application of the combined cointegration approach. Resources Policy, 49, 213-221.

Alexeev, M. and Conrad, R. (2009) The Elusive Curse of Oil. Review of Economics and Statistics, 91 (3), 586-598.

Alonso, J. (2011) Colonisation, Institutions and Development: New Evidence. Journal of Development Studies, 47 (7), 937-958.

Apergis, N. and Payne, J. (2014) The oil curse, institutional quality, and growth in MENA countries: Evidence from time-varying cointegration. Energy Economics, 46, 1-9.

Asteriou, D. and Hall, S. (2016) Applied Econometrics. 3rd ed. London: Palgrave.

Atkinson, G. and Hamilton, K. (2003) Savings, growth and the resource curse hypothesis. World Development, 31 (11), 1793-1807.

Awokuse, T. (2008) Trade openness and economic growth: is growth export-led or import-led? Applied Economics, 40 (2), 161-173.

Badeeb, R. Lean, H. and Clark, J. (2017) The evolution of the natural resource curse thesis: A critical literature survey. Resources Policy, 51, 123-134.

Bender, M. (1965) International Trade and Economic Development. The American Economist, 9 (2), 15-24.

Botev, J. and Jawadi, F. (2019) The nonlinear relationship between economic growth and financial development: Evidence from developing, emerging and advanced economies. International Economics, 1-23.

Brooks, C. (2016) Introductory Econometrics for Finance. 3rd ed. Cambridge: Cambridge University Press.

Brueckner, M. and Lederman, D. (2015) Trade Openness and Economic Growth: Panel Data Evidence from Sub-Saharan Africa. Economica, 82 (s1), 1302-1323.

Brunnschweiler, C. (2008) Cursing the Blessings? Natural Resource Abundance, Institutions, and Economic Growth. World Development, 36 (3), 399-419.

Cairncross, A.K. (1961) International Trade and Economic Development. Economica, 28 (111), 235-251.

Cournède, B. Denk, O. and Hoeller, P. (2015) Finance and inclusive growth. OECD Economic Policy Papers, 14, 1-47.

Decker, J. and Lim, J. (2008) What Fundamentally Drives Growth? Revisiting the Institutions and Economic Performance Debate. Journal of International Development, 20 (5), 698-725.

Demetriades, P. and Law, S. (2006) Finance, institutions and economic development. International Journal of Finance and Economics, 11 (3), 245-260.

Ding, N. and Field, B. (2005) Natural Resource Abundance and Economic Growth. Land Economics, 81 (4), 496-502.

Dollar, D. and Kraay, A. (2003a) Institutions, Trade and Growth: Revisiting the Evidence. The World Bank, 1-20.

Dollar, D. and Kraay, A. (2003b) Institutions, trade and growth. Journal of Monetary Economics, 50 (1), 133-162.

Dowrick, S. and Golley, J. (2004) Trade Openness and Growth: Who Benefits? Oxford Review of Economic Policy, 20 (1), 38-56.

Durusu-Ciftci, D. Ispir, M. and Yetkiner, H. (2017) Financial development and economic growth: Some theory and more evidence. Journal of Policy Modelling, 39 (2), 290-306.

Edwards, S. (1998) Openness, Productivity and Growth: What Do We Really Know? Economic Journal, 108 (447), 383-398.

Edwards, S. (1993) Openness, Trade Liberalization and Growth in Developing Countries. Journal of Economic Literature, 31 (3), 1358-1393.

Ehigiamusoe, K. and Lean, H. (2018) Finance-Growth Nexus: New Insights from the West African Region. Emerging Markets Finance and Trade, 54 (11), 2596-2613.

Fabro, G. and Aixalá, J. (2009) Economic Growth and Institutional Quality: Global and Income-Level Analyses. Journal of Economic Issues, 43 (4), 997-1023.

Faria, H. Montesinos-Yufa, H. Morales, D. and Navarro, C. (2016) Unbundling the roles of human capital and institutions in economic development. European Journal of Political Economy, 45, 108-128.

Felbermayr, G. (2005) Dynamic Panel Data Evidence on the Trade-Income Relation. Review of World Economics, 141 (4), 583-611.

Frankel, J. and Romer, D. (1999) Does Trade Cause Growth? The American Economic Review, 89 (3), 379-399.

Gerelmaa, L. and Kotani, K. (2016) Further investigation of natural resources and economic growth: Do natural resources depress economic growth? Resources Policy, 50, 312-321.

Gray, H. (2002) International Trade and Economic Development or Growth – A Qualification. The Journal of World Investment, 3 (1), 65-76.

Greenwood, J. and Jovanovic, B. (1990) Financial development, growth and distribution of income. Journal of Political Economy, 98 (5), 1076-1107.

Grier, R. and Maldonado, B. (2015) Electoral Experience, Institutional Quality and Economic Development in Latin America. Oxford Development Studies, 43 (2), 253-280.

Guru, B. and Yadav, I. (2019) Financial development and economic growth: panel evidence from BRICS. Journal of Economics, Finance and Administrative Science, 24 (47), 2019.

Gylfason, T. (2001) Natural resources, education and economic development. European Economic Review, 45, 847-859.

Hassan, M. Sanchez, B. and Yu, J-S. (2011) Financial development and economic growth: New evidence from panel data. The Quarterly Review of Economics and Finance, 51 (1), 88-104.

Hillbom, E. (2012) Botswana: A development-oriented gate-keeping state. African Affairs, 111 (442), 67-89.

Ibrahim, M. and Alagidede, P. (2018) Effect of financial development on economic growth in sub-Saharan Africa. Journal of Policy Modelling, 40 (6), 1104-1125.

Im, K. Pesaran, M. and Shin, Y. (2003) Testing for Unit Roots in Heterogeneous Panels. Journal of Econometrics, 115 (1), 53-74.

Kao, C. (1999) Spurious regression and residual-based tests for cointegration in panel data. Journal of Econometrics, 90 (1), 1-44.

Kar, S. Roy, A. and Sen, K. (2019) The double trap: Institutions and economic development. Economic Modelling, 76, 243-259.

Karras, G. (2003) Trade Openness and Economic Growth: Can We Estimate the Precise Effect? Applied Econometrics and International Development, 3 (1), 7-25.

Kaufmann, D. Kraay, A. and Zoido-Lobatón, P. (2002) Governance Matters II – Updated Indicators for 2000/01. World Bank Policy Research Department Working Paper, 2772.

Kim, D-H. and Lin, S-C. (2017) Natural Resources and Economic Development: New Panel Evidence. Environmental and Resource Economics, 66 (2), 363-391.

Kim, D-H. Lin, S-C. and Suen, Y-B. (2016) Trade, growth and growth volatility: New panel evidence. International Review of Economics and Finance, 45, 384-399.

Kim, D-H. and Lin, S-C. (2012) Trade and income at different stages of economic development. Applied Economics, 44 (4), 409-421.

Kim, D-H. and Lin, S-C. (2009) Trade and Growth at Different Stages of Economic Development. Journal of Development Studies, 45 (8), 1211-1224.

King, R. and Levine, R. (1993) Finance and growth: Schumpeter might be right. The Quarterly Journal of Economics, 108 (3), 717-737.

Konte, M. (2013) A curse or blessing? Natural resources in a multiple growth regimes analysis. Applied Economics, 45 (26), 3760-3769.

Lal, D. and Rajapatirana, S. (1987) Foreign Trade Regimes and Economic Growth in Developing Countries. The World Bank Research Observer, 2 (2), 189-217.

Law, S. Lim, T. and Ismail, N. (2013) Institutions and economic development: A Granger causality analysis of panel data evidence. Economic Systems, 37 (4), 610-624.

Levin, A. Lin, C. and Chu, C. (2002) Unit root tests in panel data: Asymptotic and finite-sample properties. Journal of Econometrics, 108 (1), 1-24.

Lin, J. (2010) New Structural Economics: A Framework for Rethinking Development. The World Bank Policy Research Working Paper, 5197, 1-38.

Muhammad, N. Islam, A. and Marashdeh, H. (2016) Financial development and economic growth: an empirical evidence from the GCC countries using static and dynamic panel data. Journal of Economics and Finance, 40 (4), 773-791.

Myint, H. (1977) Adam Smith's Theory of International Trade in the Perspective of Economic Development. Economica, 44 (175), 231-248.

Nasir, M.A. Ahmad, M., Ahmad, F. and Wu, J. (2015) Financial and economic stability as 'two sides of a coin': Non-crisis regime evidence from the UK based on VECM. Journal of Financial Economic Policy, 7 (4), 327-353.

Nasir, M. Huynh, T. and Tram, H. (2019) Role of financial development, economic growth & foreign direct investment in driving climate change: A case of emerging ASEAN. Journal of Environmental Management, 242, 131-141.

Nguyen, Y. Brown, K. and Skully, M. (2019) Impact of finance on growth: Does it vary with development levels or cyclical conditions? Journal of Policy Modeling.

Pagano, M. (1993) Financial markets and growth: An overview. European Economic Review, 37 (2-3), 613-622.

Papyrakis, E. (2017) The Resource Curse – What Have We Learned from Two Decades of Intensive Research: Introduction to the Special Issue. The Journal of Development Studies, 53 (2), 175-185.

Papyrakis, E. and Gerlagh, R. (2004) The resource curse hypothesis and its transmission channels. Journal of Comparative Economics, 32 (1), 181-193.

Pedroni, P. (2004) Panel cointegration: Asymptotic and finite sample properties of pooled time series with an application to the PPP hypothesis. Econometric Theory, 20 (3), 597-625.

Petkov, B. (2018) Natural Resource Abundance: Is it a blessing or is it a curse. Journal of Economic Development, 43 (3), 25-56.

Raheem, I.D. Tiwari, A.K. and Balsalobre-Lorente, D. (2019) The role of ICT and financial development in CO_2 emissions and economic growth. Environmental Science and Pollution Research, 1-11.

Ramzan, M. Sheng, B. Shahbaz, M. Song, J. and Jiao, Z. (2019) Impact of trade openness on GDP growth: Does TFP matter? The Journal of International Trade & Economic Development, 28 (8), 1-36.

Raza, S.A. Sbia, R. Shahbaz, M. and Rousan, S.A. (2018) Trade-growth nexus and the rolling window analysis in United Arab Emirates. Journal of Asia Business Studies, 12 (4), 469-488.

Rigobon, R. and Rodrik, D. (2005) Rule of law, democracy, openness, and income: Estimating the interrelationships. Economics of Transition, 13 (3), 533-564.

Rioja, F. and Valev, N. (2004) Does one size fit all?: a re-examination of the finance and growth relationship. The Journal of Development Economics, 74 (2), 429-447.

Rodrik, D. Subramanian, A. and Trebbi, F. (2004) Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development. Journal of Economic Growth, 9 (2), 131-165.

Roquez-Diaz, A. and Escot, L. (2018) Relationship between trade openness and economic growth in Latin America: A causality analysis with heterogeneous panel data. Review of Development Economics, 22 (2), 658-684.

Sachs, J. and Warner, A. (1995) Natural Resource Abundance and Economic Growth. National Bureau of Economic Research Working Paper Series, 5398, 1-47.

Satti, S.L. Farooq, A. Loganathan, N. and Shahbaz, M. (2014) Empirical evidence on the resource curse hypothesis in oil abundant economy. Economic Modelling, 42, 421-429.

Seers, D. (1969) The Meaning of Development. International Development Review, 11 (4), 1-28.

Sen, A.K. (1999) Development as Freedom. New York: Alfred A. Knopf.

Sen, A. (1983) Development: Which Way Now? The Economic Journal, 93 (372), 745-762.

Shahbaz, M. Destek, M.A. Okumus, I. and Sinha, A. (2019) An empirical note on comparison between resource abundance and resource dependence in resource abundant countries. Resources Policy, 60, 47-55.

Shahbaz, M. Van Hoang, T.H. Mahalik, M.K. and Roubaud, D. (2017) Energy consumption, financial development and economic growth in India: New evidence from a nonlinear and asymmetric analysis. Energy Economics, 63, 199-212.

Shahbaz, M. Khan, S. and Tahir, M.I. (2013) The dynamic links between energy consumption, economic growth, financial development and trade in China: Fresh evidence from multivariate framework analysis. Energy Economics, 40, 8-21.

Shahbaz, M. (2012) Does trade openness affect long run growth? Cointegration, causality and forecast error variance decomposition tests for Pakistan. Economic Modelling, 29 (6), 2325-2339.

Sinha, A. and Sengupta, T. (2019) Impact of natural resource rents on human development: What is the role of globalization in Asia Pacific countries? Resources Policy, 63, 101413.

Skare, M. and Porada-Rochoń, M. (2019) Financial and economic development link in transitional economies: a spectral Granger causality analysis 1991-2017. Oeconomia Copernicana, 10 (1), 7-35.

Slaughter, M.J. (1997) Per Capita Income Convergence and the Role of International Trade. Economic Development and International Trade, 87 (2), 194-199.

Stijns, J-P. (2006) Natural resource abundance and human capital accumulation. World Development, 34 (6), 1060-1083.

Stijns, J-P. (2005) Natural resource abundance and economic growth revisited. Resources Policy, 30 (2), 107-130.

Uddin, G.S. Sjö, B. and Shahbaz, M. (2013) The causal nexus between financial development and economic growth in Kenya. Economic Modelling, 35, 701-707.

Vázquez, S.T. and Sumner, A. (2013) Revisiting the Meaning of Development: A Multidimensional Taxonomy of Developing Countries. The Journal of Development Studies, 49 (12), 1728-1745.

Venables, A.J. (2016) Using Natural Resources for Development: Why Has It Proven So Difficult? Journal of Economic Perspectives, 30 (1), 161-184.

Winters, L. (2004) Trade Liberalisation and Economic Performance: An overview. The Economic Journal, 114 (493), F4-F21.

Yanikkaya, H. and Turan, T. (2018) Curse or blessing? An empirical re-examination of natural resource-growth nexus. Journal of International Development, 30 (8), 1455-1473.

Yenokyan, K. Seater, J. and Arabshahi, M. (2014) Economic Growth with Trade in Factors of Production. International Economic Review, 55 (1), 223-254.

Zahonogo, P. (2016) Trade and economic growth in developing countries: Evidence from sub-Saharan Africa. Journal of African Trade, 3 (1-2), 41-56.