

**IMPACT OF MAJOR STOCK MARKET INDICES ON ECONOMIC GROWTH:  
A STUDY OF SELECTED MARKETS IN DEVELOPED, EMERGING  
AND DEVELOPING ECONOMIES**

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**SEPTEMBER, 2013.**

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**BEING A DOCTORAL DISSERTATION PRESENTED TO  
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**DEDICATION**

Dedicated to the Almighty God.

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## ABSTRACT

*The study empirically probed the impact of major stock market indices on economic growth of developed, emerging and developing economies. The specific objectives of this study are two-fold, validating empirically if the stage of economic development in developed, emerging and developing economies has any impact on the stock market size and economic growth and whether the stock market liquidity in developed, emerging and developing economies has any effect on economic growth. The variables used in the analysis were subjected to two types of unit root tests, Im, Persaran and Shin test and Levin, Lin and Chu test, to determine whether they are stationary series or non-stationary series. Correlation analysis of the employed variables was examined. Two panel regression analyses were carried out (Fixed and Random-Effect) and Hausman test was used to decide which of the result to abide by. It was observed that in developed economies, stock market size measured in terms of market capitalisation ratio (MCR) was found to have significant positive effect on economic growth. The experience was the same in emerging and developing economies but while the coefficient was significant for emerging economies, it was not significant in developing economies. More so, interest rate channel was found to be relevant in developed, emerging and developing economies, especially when the impact of stock market size was considered on economic growth. However, while interest rate exerted positive impact on economic growth in developed economies, it was the reverse in emerging and developing economies. Furthermore, stock market liquidity measured in terms of value traded ratio (VTR) and turnover ratio (TOR) were found to have mixed impact on economic growth of developed, emerging and developing economies. In a more specific term, VTR was found to exert significant positive effect on economic growth of developed and emerging economies while its effect on developing economies was inverse, though insignificant. Similarly, TOR was estimated to affect economic growth inversely in developed and emerging economies, but the effect was significant in developed economies; it was not in emerging economies. The positive effect of TOR in developing economies was not significant. It was only in emerging economies that the interest rates channel had significant impact on the relationship between stock market liquidity and economic growth. It is therefore imperative for the government to factor in the stage of economic development when formulating policies that are meant to stimulate economic growth through stock market size and stock market liquidity.*

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 BACKGROUND OF THE STUDY

The integration of Emerging Market Economies (EMEs) into the global financial markets has been progressively growing. Since the early 1970s, the emerging economies have been persistently contributing to financial globalization of the world economy, (Das, 2010). This group of economies adopted financial globalization most successfully and actually benefited from it. In 1988, Morgan Stanley classification index launched the first comprehensive Emerging Markets Index and since then, the MSCI Emerging Markets (EM) indices have evolved considerably over time (<http://www.MSCI.com/products/indices/country-and-regional/em/>).

The term “emerging market economies” was coined in 1981 by Anthoine W. Van Agtmael of the International Finance Corporation. An EME deliberately builds a transparent and efficient domestic capital market and pays specific attention to its exchange rate regime and ensures a stable currency, (Das, 2010).

In September of 1993, less than ten months into his presidency, U.S President Bill Clinton announced a national export strategy for the United States of America, described as comprehensive plan that upgrades and coordinates the governments export promotion and export finance programs to help American firms compete in the global market place, (U.S Department of Commerce, 1994a). The Commerce Department estimated that the ten big emerging economies would be the largest growing economies on the globe. These economies identified as “BEMs” – Big Emerging Economies - are China, Indonesia, India, South Korea, Mexico, Argentina, Brazil, South Africa, Poland and Turkey. EMEs account for the bulk of global financial integration among the developing economies and after the advanced industrial, economies, this group of economies adopted financial globalization most successfully (DAS, 2006).

Equity markets in EM economies have surged very fast in the last decade and after hovering around 20-25% of GDP for most of the 1990's, EMEs stock market capitalization as a share of collected GDP has strongly increased from 2000 to 2007. The total market capitalization of EM countries has increased approximately over the past fifteen (15) years from less than US\$ 2 trillion in 1995 to about US\$ 5 trillion in 2005 to approximately US\$ 13 trillion by the end of 2011, (Ernst & Young, 2012). Over the same period, total market capitalization in developed markets has only doubled. Even if emerging market capitalization only grows in line with GDP, by 2030 it could account for as much as half of the world total and this could happen as soon as 2020 if the markets develop with greater speed (Ernst & Young, 2012).

These emerging economies with their fast growing economic pattern have jolted the world economies especially the developed economies as economic forecasters' project that China will overtake the United States of America as world's largest economy within a few years, (Das, 2006). The developing economies are also affected by the presence of the emerging markets as their economic growth may have impacted on their stock market growth vis-à-vis economic growth.

The link between stock market and economic growth becomes the field of research more and more explored. Boubakari and Jin, (2010) on the role of stock market development in economic growth: evidence from some Euronext countries asked whether stock market affects European countries economic growth. The five Euronext countries are Belgium, France, Portugal, Netherlands and United Kingdom. The main question is: Does Euronext stock markets affect European countries economic growth? According to the literature, the question is answered by identifying positive correlation between stock market and economic growth measured by GDP and FDI (Rajan and Zingales 1998; Levine, 1997; Bencivenga, 1991; Levine and Zeros, 1998; Spears, 1991; Wachtel, 2002; Trabels, 2002; Roiga and Valev, 2003; Paudel 2005; Demitradis and Hussain, 1996). Levine and Zervos (1998) measure stock market development along various dimensions: aggregate stock market capitalization to GDP and the number of listed firms (size), domestic turnover and value traded (liquidity), integration with world capital markets, and the standard deviation of monthly stock returns (volatility). The results provide a strong and significant relationship between stock market development and economic growth.

Spears (1991) reported that in the early stages of development, financial intermediation induces economic growth. The stock market facilitates higher investments and the allocation of capital, and indirectly the economic growth. Filer et al (1999) examined stock – growth nexus and exhibited positive causal correlation between stock market development and economic activity. Mauro (2000) concluded that stock market is a stable predetermining factor of economic growth in emerging economies.

According to Mala and White, (2006), the level to which stock market contribute to economic growth depends on its level of development. Thus, stock market development has assumed a developmental role in global economics and finance because of their impact (King and Levine, 1993). Other analysts argue that, because not much corporate investment is financed through the issuance of equity, (Mayer 1988) stock markets are unimportant for economic growth. However, Levine (1991) and Bencivenga et al (1996) showed that stock markets can give a boost to economic growth through the creation of liquidity.

The central focus of development economics was the mobilization of resources for national development. Rostow (1960), Malivaud (1979), Soyede (1990), Aigbokan (1995), Demirguc – Kunt and Levine (1996) have one time or the other carried out research giving so much attention to the centrality of savings and investment in economic growth. The stock market enables governments and firms to raise long term capital and if capital resources are not made available to the economic areas like industries, the rate of expansion of the economy suffers.

The role of stock markets has been very significant as Mala and White (2006) hold stock market as an important component of any financial sector of any economy. The stock market is viewed as a complex institution imbued with inherent mechanism through which long-term funds of the major sectors of the economy comprising households, firms and government are mobilized, harnessed and made available to various sectors of the economy (Nyong, 1997). The stock market plays an intermediation function of capital. Studies in Riman et al (2008), Enisan and Olufisayo (2009) and Boubakari and Jin (2010) provide ample evidence of the association between stock market development and economic growth. Stock market development is adjudged to play an important role in economic development, (Atje and Jovanovic, 1989 and 1993; Saint-Paul, 1992; Bekaert and Harvey, 1997; Levine and Zervos, 1998; Levine, 2004; Shahbaz, Ahmed and Ali, 2008; Odliambo, 2009 and Tachiwou, 2010).

It has been argued that stock market development is an important wheel for economic growth as there is a long-run relationship between stock market development and economic growth, (Tuncer and Alovsat, 2001 as cited in Shahbaz, Ahmed and Ali, 2008).

According to Boubakari and Jin (2010), stock market development does significantly “Granger cause” economic growth in France and United Kingdom. It is found that stock market development does “Granger cause”, but not significantly the economic growth of Netherlands. Their findings are negative for Belgium and Portugal.

According to their findings that changes in economic growth is “Granger caused” by changes in financial stock market proxies is important in the sense that it supports to justify the leading role of the stock market in determining economic activities in developed countries like France and United Kingdom. Arestis et al (2001) find that the contribution of stock market to economic growth is a small fraction of that of the banking system.

Financial markets, especially stock markets have grown considerably in developed, emerging and developing countries over the last two decades. Claessens et al (2004, cited in Koirala, 2009) stated that several factors have aided in their growth such as improved macroeconomic fundamentals like monetary stability and higher economic growth. Thus, following liberalization commitments by emerging and developing economies, the stock market globally have shown unprecedented expansion of which the emerging economies according to Yartey (2008), have accounted for a large amount of this expansion. Also, general economic and specific capital market reforms like privatization and improved institutional framework for investors, have further encouraged capital market development (Rajan and Zingales, 1998). According to Demircuc-Kunt and Levine (1996), between 1990 and 2007, the world stock markets surged and emerging markets accounted for a large amount of this boom.

However, theoretical work shows how stock market development might boost long-run economic growth of which new empirical evidence support. Capital market development translates to economic growth without hindrance. The challenge therein lies on how to attain a sustainable capital market development. For instance, De La Torre and Schmukler (2007)

advocated about four categories of reform that can be pieced together, under a reform scheme for the effective development of the capital market. These are:

- Reforms aimed at creating the enabling environment for capital markets such as the strengthening of macroeconomic stability and the enforcement of property rights;
- Reforms aimed at enhancing efficiency and market discipline in the entire financial system through greater competition such as capital account liberalization;
- Reforms indirectly supportive of capital market development such as pension reforms and privatization programmes and;
- Capital market specific reforms such as the development of regulatory and supervisory frame-work and improvement in securities clearance and settlement systems.

There is an argument among researchers and economists as to the relevance of the financial system in economic growth and development. Robinson (1952), Meier and Seers (1984), Lucas (1988), and Stern (1989) believed that finance plays an inconsequential (if any) role in economic growth and development of nations. A contrary view is however held by another group of economists to the effect that financial system of a country plays an important role in economic growth. Among those that have demonstrated this line of thinking include Schumpeter (1912), Bagehot (1962), Cameron (1967), Goldsmith (1969), McKinnon (1973), Shaw (1973) and Ojo (1984). Building on this line of thinking, Gelb (1989), Ghani (1992), King and Levine (1993 a, 1993 b) and De Grogoro and Guidotti (1995) demonstrated how measures of banking development are strongly correlated with economic growth in a cross section of countries.

Existing literature clearly show that developed economies had explored the two channels through which resource mobilization affect economic growth and development – money and capital markets (Samuel, 1996; Demirguc-Kunt and Levine, 1996). As shown in Riman et al (2008), Enisan and Olufisayo (2009) and Boubakari and Jin (2010), empirical evidence has shown that there is an association between stock market development and economic growth.

One of the most enduring debates in economics is whether financial development causes economic growth or whether it is a consequence of increased economic activity. The possible directions of causality between financial sector development and economic growth were

highlighted by Patrick as cited in Soumya and Jaydeep (2008) in his ‘supply leading’ and ‘demand following’ hypotheses, claims a causal relationship from financial development to economic growth by saying that intentional creation and development of financial institutions and markets would increase the supply of financial services and thus lead to economic growth while the demand following hypothesis claims that it is the growth of the economy which causes increased demand for financial services which in turn leads to development of financial markets (Soumya and Jaydeep, 2008).

Both theoretical and empirical literatures have emerged towards answering the above question. Findings and views have been conflicting anyway. However, the nature and economic significance of the relationship between stock market development and growth vary according to a country’s level of economic development with a larger impact in less developed economies, (Filler, Hanousek and Campos, 1999). This follows that the correlation between stock market development and economic growth is country based, because financial market that provides cheaper fund to growing industries facilitates economic growth, (Rajan and Zingales, 1998). Therefore, higher levels of financial development are positively associated with faster rates of economic growth and that the level of financial development is a good indicator of future growth prospects, (King and Levine, 1993). Developed economies have bi-directional causality between stock market development and economic growth while developing economies find uni-directional causality (where it exists). In Nigeria for example, the only identified causality between stock market and growth is uni-directional (Ogunmuyiwa, 2010). Also in South Africa, Ndako (2009) and Odhiambo found Uni-directional causality between stock market development and economic growth.

The link between stock market performance and economic growth often has generated strong controversy among analysts based on their study of developed, emerging and developing markets, (Samuel, 1996; Demirguc-Kunt and Levine, 1996; Akinifesi, 1987; Levine and Zervos 1996; Obadan 1998; Onosedo 1998; Emenuga, 1998, Osinubi 1998).

As economies develop, more funds are needed to meet the rapid expansion. The stock market serves as a veritable tool in the mobilization and allocation of saving among competing needs. Thus, the determination of the overall growth of an economy depends on how efficiently the

stock market performs its allocative functions. As the stock market mobilizes saving, it concurrently allocates a larger proportion of it to the firms with relatively higher prospects as indicated by its rate of returns and level of risk. The importance of this function is that capital resources are channeled by the mechanism of the forces of demand and supply to those firms with relatively high and increasing productivity thus enhancing economic expansion and growth (Alile, 1997).

There is a boom in the developed stock markets with a substantial part of the growth accounted for by the emerging markets. The proponents of positive relationships between stock market development and economic growth hinged their argument on the fact that market aids economic growth and development through the mobilization and allocation of savings, risk diversification, liquidity creating ability and corporate governance improvement among others. One side of the debate says that stock markets promote long-run growth and the second view casts doubts on the contribution of stock markets to long-run growth.

Among the first to ask if stock markets are just burgeoning casinos or a key to economic growth is Levine and Zervos (1998) who found a positive and significant correlation between stock market development and long run growth. However, the use of cross sectional approach limit the potential robustness of their findings with respect to country specific effects and time related effects. Matos (2003), using a Granger causality test in Brazil between 1980 and 2002 found significant evidences of the bi-directional effect between financial development and economic growth. Teizara (2005), on the other hand posited that economic development is a determinant of the development of the Brazilian stock market and a developed stock market only occurs through the search for a sustainable standard of economic growth.

From various discussions, it would be recalled that bi-directional causation is evident in developed economies while Uni-directional causation exists in developing economies.

Financial markets most especially the stock market has grown tremendously in developing and developed countries in the 1980's and according to Claessens et al (2004), the factors that have aided to this growth are improved macroeconomic background, higher economic growth and monetary stability. In spite of the potentials identified in the stock markets, the traditional theorists believed that stock market and indeed the financial market in general does not spur



economic growth. The studies of Singh, (1997), Ake and Ognaligui (2010), support this view. Singh believed that stock market is an agent that harms economic development due to their susceptibility to market failure.

Gurley and Shaw (1955) in Guglielmo et al (2004) were the first to study the linkage between financial markets and real activity. They argued that one of the differences between developed and developing countries are that the financial system is more developed in the former. Stock market development therefore has been a subject of intensive theoretical and empirical studies.

The work by Levine and Zervos (1993), Atje and Jovanovic (1993), Levine and Zervos (1998), Rousseau and Wachtel (2000) and Beck and Levine (2005) show that stock market development is strongly correlated with growth rates of real GDP per capita. Global equity market have experienced explosive growth in the past decade. Equity markets of the emerging economies have experienced even more rapid growth, thus taking a larger share of the global boom. It is estimated that the world's stock market capitalization grew from \$4.7 trillion in the mid 1980's to \$15.2 trillion in the 1990's. (Demirguc-Kunt and Levine, 1996); (Arestis and Demetriades, 1997). The total value of shares traded on developing countries stock markets rose over twenty five fold between 1983 and 1992, (Sing, 1977). The total value of shares traded on emerging markets on the other hand jumped from less than 3% of the total \$1.6 trillion world total in 1985 to 17% of the \$9.6 trillion shares traded in all world exchanges in 1994. (Demirguc-Kunt and Levine, 1996). This has attracted the attention of academics and policy makers.

This thus shows that the role of the stock market in economic development could be highly substantial. Kletzer and Pardhan (1987), Beck (2002), hold similar views and made attempt to establish that financial development is much more effective in promoting economic growth in more industrialized economies than in agriculture economies.

Fry (1995) in Soumya and Jaydeep (2008), hold a contrary view as he tried to contradict Fletzer and Pardhan (1987) and Beck (2002) by arguing that countries at their early stage of development benefit more from financial sector development than their older counterparts.

According to Levine and Zervos (1998), certain factors can be used as a measurement of stock market development and as such they have direct relation with the economic growth of the country as well. These factors they identified as liquidity, stock market capitalization, stock market concentration and integration with world capital markets as well as stock market volatility.

Studies in the past attempted to explore the impact of stock market on growth based on panel analysis of regional trade or economic group. This study is different from the rest by the inclusion of developed, developing and emerging markets.

Following from the above disagreements, and varied findings, this work carried out an empirical evidence of the stock-growth nexus in developed, emerging and developing economies. The study used aggregate time series data to examine nexus in other to solidify the existing empirical work in these economies. The study used pooled data for twelve countries from 1988 to 2011. These countries include four countries each in developed, emerging and developing economies picked on the basis of classifications by [www.worldbank.org](http://www.worldbank.org), UNCTAD (2000) and [www.imf.org](http://www.imf.org).

## **1.2. STATEMENT OF THE PROBLEM.**

When the ten “Big Emerging Markets” (BEMs) were identified in the 1980’s /90’s as the location for most of the growth in international trade for the following two to three decades, the emerging economies trade patterns had jolted other economies especially the developed economies. Integration of the EMEs into the global financial markets has been growing steadily as they build transparent and efficient domestic capital market. If EMEs continue to invest in and welcome technology inflows, their large labour forces and expanding skill basis would certainly succeed in creating high productivity potential for the emerging market economies.

Research speculations estimated that the ten Big Emerging Markets (BEMs) would be the largest growing markets on the globe well into the 22nd century. Goldman Sachs prediction was that by 2032, the combined GDP of BRIC economies would be as large as that of G7, (The BRIC economies are Brazil, India, Russia and China). Also the organization for Economic Cooperation and Development (OECD) predicts that China will soon surpass the

United States to become the world's largest economy and will account for 28% of global gross domestic product by 2030, (Shibulal, 2013). Also Bain, in Shibulal (2013) estimates that by 2020, emerging economies will account for two-thirds of global economic growth. Chinese Center for Economic reform in 2011 stated that "assuming that the Chinese and U.S economies grow respectively by 8% and 3% in real terms, and that China's inflation rate is 3.6% and America's is 2%, and that the Chinese currency, the renminbi appreciates against the dollar by 3% per year, China would become the world's largest economy by 2021 and by that time, both countries GDP will be at about \$24 trillion.

Without doubt, emerging countries are showing more resilience and promise than established economies in the America's and the Euro zone. The advanced economies still relied on the strategy that is based on the premise that the growth of a mature, developed economy must be derived from the increasing demand in developing economies and that any significant job growth in the U.S.A would be primarily the result of export growth to emerging market economies. Also, the developing economies were not seen as growing as expected.

Worried by the advanced nations, researchers have identified the capital market as having the potential of inducing economic growth. This has prompted many studies on the emerging economies vis-à-vis developed and developing economies stock market and growth.

The economic downturn of 2008 made it clear that the world must look to the emerging economies of Africa, Asia and Latin America for growth. Despite therefore the multitude of challenges, these regions have not only led the recovery but are also increasingly claiming a greater role for themselves in global economic governance especially the capital market.

With the growing importance of stock markets around the world, a new avenue of research looks into the impact of stock markets on economic growth. Though the studies are inconclusive (Levine and Zervous 1998, Atje and Jovanovic (1993), yet the theory may suggest that well developed stock markets indicate high degree of financial development which facilitates channels between capital accumulation and economic growth.

Filler Hanousek and Campos (1999) posit that the nature and economic significance of the relationship between stock market development and growth vary according to a country's

level of economic development. The link between stock market development and economic growth have been relatively limited in developing countries. The relationship has been a subject of controversy. While some studies maintain that stock market development vigorously drives growth, others are of the view that it retards growth. Example; Singh (1997) is of the view that stock market accelerates economic growth by providing a boost to domestic savings and increasing the quantity and quality of investment. Hicks (1969) emphasizes vehemently that the critical ingredient that ignited growth in the eighteenth century was capital market liquidity, arguing that by creating the mechanisms for easy trading of equity, capital markets facilitate growth. As argued by Hermes (1994), financial liberalization theory and the new growth theories basically assume that financial development leads to economic growth.

There have been growing concerns and controversies on the role of the stock markets on economic growth and development, (Oyejide 1994; Levine and Zervous, 1996). From the above, it is obvious that the debate is far from being settled. It is evident from the literature that no work seen by the researcher has actually compared the stock market indices of Advanced, emerging and developing economies. This study represents an attempt to re-examine the finance growth relationship from the perspective of the stock market in developed, emerging and developing economies. The research challenges remain therefore to take into account, peculiarities and differences in developed, emerging and developing economies.

Following these issues, it becomes pertinent to specifically address the following key issues:

1. Is there a relationship between stock market size and economic growth in developed, emerging and developing economies
2. Is there a relationship between of stock market liquidity and economic growth in developed, emerging and developing economies

### **1.3 OBJECTIVES OF THE STUDY**

The main objective of the study is to investigate the impact of major stock market indices on economic growth of developed, emerging and developing economies. The specific sub-objectives of the study include:

1. To ascertain whether the stage of economic development in developed economies has any relationship on the stock market size and economic growth.
2. To ascertain whether the stage of economic development in emerging economies has any relationship on the stock market size and economic growth.
3. To ascertain whether the stage of economic development in developing economies has any relationship on the stock market size and economic growth.
4. To ascertain whether the stage of economic development in developed economies has any relationship on the stock market liquidity and economic growth.
5. To ascertain whether the stage of economic development in emerging economies has any relationship on the stock market liquidity and economic growth.
6. To ascertain whether the stage of economic development in developing economies has any relationship on the stock market liquidity and economic growth.

#### **1.4 RESEARCH QUESTIONS**

1. Does stock market size influence economic growth of developed economies?
2. Does stock market size influence economic growth of emerging economies?
3. Does stock market size influence economic growth of developing economies?
4. Does stock market liquidity influence economic growth of developed economies?
5. Does stock market liquidity influence economic growth of emerging economies?
6. Does stock market liquidity influence economic growth of developing economies?

#### **1.5 RESEARCH HYPOTHESES**

The null hypotheses that guided this work are:

- Ho1<sub>a</sub>: There is no significant relationship between stock market size and economic growth of developed economies
- Ho1<sub>b</sub>: There is no significant relationship between stock market size and economic growth of emerging economies.
- Ho1<sub>c</sub>: There is no significant relationship between stock market size and economic growth of developing economies.
- Ho2<sub>a</sub>: There is no significant relationship between stock market liquidity and economic growth of developed economies.

Ho2<sub>b</sub>: There is no significant relationship between stock market liquidity and economic growth of emerging economies.

Ho2<sub>c</sub>: There is no significant relationship between stock market liquidity and economic growth of developing economies.

## 1.6 SCOPE OF THE STUDY

There are other factors that can influence economic growth. This study may not therefore be able to study all the possible factors that can influence economic growth. The study will look at four countries from each of the various economies of developed, emerging and developing markets classified according to FTSE i.e. financial times and stock exchange Global Equity indices and Morgan Stanley Capital International (MSCI).

<b>Developed Economies</b>	<b>Emerging Economies</b>	<b>Developing Economies</b>
U.S.A	China	Nigeria
Canada	India	Ghana
Japan	Brazil	Cote d'Ivoire
	South Africa	Kenya

The work employed yearly data spanning from 1988 - 2011. The time frame planned for use is influenced by availability of data. The variable of Stock Market development considered in this study are the traditional Stock Market development indices, viz; stock market size and liquidity proxied by market cap, value traded ratios and turnover ratio. Interest rates will be included as control variable that captures the reactions of the investors in the stock market.

## 1.7 SIGNIFICANCE OF THE STUDY

This research effort is expected to close a knowledge gap on the effect of stock market development on economic growth at various stages of economic development. Thus, the study is of immense benefit to the following:

### **Government and Policy Makers**

The study will assist policy makers in formulating policies that will improve economic growth in the selected economies. This study is designed to classified countries into three main stage of economic development. The criterion will enable some governments and policy makers to

identify their stage/state in economic development. This study will thus be an eye opener to some countries that have not purposefully made efforts to do self assessment of its economic developments.

Again, the general effects of the stage of development on stock market development and attendant impact on growth will be exposed to the policy makers in various economies. It is therefore, expected that this study when used by any government/policy maker will assist them in making better and more purposeful policy towards their economy specific progress.

#### **Researchers/Scholars and the Academic Community:**

This research is expected to close a knowledge gap on the effect of stock market development on economic growth at various stages of economic development. The theoretical foundation on finance-growth nexus was also reinvestigated, and extant empirical literatures were critiqued, hence, this study sufficiently explored the gap in stock-development literature among countries in the various stages of development.

Thus, this study has added some principles in the study of stock-growth nexus for the developed, emerging and developing economies. For example, this study revealed that country-specific factors influence the relationship between stock market development and economic growth in developed economies. This could be worthwhile input in principle for stock-growth analysis for various stages of economies. This may inform researchers and scholars alike to first identify the stage of development of a country before investigating the effect of stock market on its economic growth.

Furthermore, this study has brought together some body of knowledge that can be used as a spring board for further research for students of banking and finance in many tertiary institutions cross these countries selected for the study and beyond.

### **1.8 DEFINITION OF TERMS**

- a) **Emerging Market Economy:** Emerging economies are somewhere between developed and developing economies and are characterized by fast economic growth evidenced by rising gross domestic product, trade volumes and foreign reserves. Emerging Market Economies (EME's) have not achieved a level of development at

par with advanced economies. EME's are largely considered developing countries that hold the promise of exponential growth in the best of cases.

- b) **Developed Economy:** A developed country is one with relatively high level of economic growth, high level of industrialization, high standard of living and wide spread infrastructure. It is characterized by modern technology, efficient transportation and communication systems.
- c). **Developing Economy:** This is an imprecise term for the less developed countries with growing economies. Major characteristics are low standard of living, poor health, inadequate education standards, low levels of output and standard of living, high levels of unemployment.
- d). **Economic growth:** Increase in the total amount of production and wealth in an economy.
- e). **Time series data:** A sequence of data points, measured typically at successive times spaced at uniform time intervals.
- f). **Granger-causality:** The Granger causality test is a technique for determining whether one time series is useful in forecasting another. A time series X is said to Granger-cause Y if it can be shown, usually through a series of F-tests on lagged values of X.
- g). **Co-integration:** Co-integration is a statistical property of time series variables. Two or more time series are co-integrated if they each share a common type of behaviour in terms of their long-term fluctuations, but they do not necessarily move together and may be unrelated.
- h) **OECD:** Organization for economic co-operation and development.
- i) **BEMS:** Big Emerging Markets.
- J) **NIES:** Newly Industrialized Economies.
- K) **Random effects Model:** This is where the explanatory variables are treated as if they arise from random causes. It is a kind of hierarchical linear model.
- L) **Fixed effect model:** This is a statistical model that represents the observed quantities in terms of explanatory variables that are treated as if the quantities were non-random.
- M) **Time Invariant Values:** Where the values of the variables does not change across time e.g. Gender, race and education.
- N) **Hausman Test:** This test can be used to differentiate fixed effect model and random effects model in panel data.



- O) **Frontier markets:** These are countries that are less established than those in the emerging markets. Frontier market is also known as pre-emerging.
- P) **Demutualization:** Where a mutual coy owned by its owners or members converts into a coy owned by shareholders, thereby exchanging their rights of use for shares in the demutualized coy.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

Relevant literature on stock market development, economic growth/development and their relationships are reviewed here. The chapter therefore includes; theoretical views (theories explaining the stock-growth nexus); conceptual framework, measures of stock market development effect on growth, background of relevant stock markets and review of empirical works.

#### **2.1 THEORETICAL VIEWS**

The explanations to the links between economic growth and stock market development indices are mixed. Many scholars have posited that stock market has positive impact on economic growth and the opposing groups explained how stock market can negatively affect economic growth.

The proponents of positive stock-growth nexus posit that stock market development facilitates economic growth. This can be possible through the specific services it performs either directly or indirectly (Sylvester & Enabulu, 2011). Notable among the functions of the stock market are mobilization of savings, creation of liquidity, risk diversification, improved dissemination and acquisition of information, and enhanced incentive for corporate control. Improving the efficiency and effectiveness of these functions, through prompt delivery of their services can augment the rate of economic growth.

At any stage of a nation's development, both the government and the private sectors would require long-term capital. For instance, companies would need to build new factories, expand existing ones, or buy new machinery. Government would also require funds for the provision of infrastructures. All these activities require long-term capital, which is provided by a well functioning stock market (Sylvester & Enabulu, 2011).

The explanations to how stock market can improve growth of an economy through their liquidity function are most renowned. Bencivenga, Smith and Starr (1996) and Levine (1991) argue that stock market liquidity (the ability to trade equity easily) is more important for

growth. Levine (1991) argued that developed stock market reduces both liquidity shock and productivity shock of businesses. This in turn increases the access of businessmen to investment funds as well as enhancing the production capacity of the economy, thereby leading to higher economic growth. As asserted by Bencivenga, Smith and Starr (1996), without liquid capital market there would be no industrial revolution. This is because savers would be less willing to invest in large, long-term projects that characterized the early phase of industrial revolution.

Although many profitable investments require a long-run commitment of capital, savers do not like to relinquish control of their savings for long periods. Liquid equity markets ease this tension by proving an asset to savers that they can quickly and inexpensively sell. Simultaneously, firms have permanent access to capital raised through equity issue. Additionally, Holmstrom and Tirole (1993) argue that liquid stock market can increase incentives for investors to get information about firms and improve corporate governance.

The stock market is supposed to ensure through the takeover mechanism that past investment are also most efficiently used. Theoretically, the threat of takeover is expected to provide management with an incentive to maximize firm value. The presumption is that, if management does not maximize firm value, another economic agent may take control of the firm, replace management and reap the gains from the more efficient form. Thus, stock market promotes corporate control, by proving financial discipline, which is expected to provide the best guarantee of efficiency in the use of assets. Similarly, the ability to effect changes in the management of listed companies is expected to ensure that managerial resources are used efficiently (Morck, Shleifer & Vishny, 1990)

Another explanation supporting positive stock-growth link posited that stock market size influence the level of activities going on in the Stock Exchange. Singh (1997) asserted that stock market can bring about economic development by providing a boost to domestic savings and increasing the quality of investments. Supporting this notion, Levine and Zervos (1996) explained that the stock market does this by encouraging savings through the provision of individuals with an additional financial instrument that may increase the savings rate. Capasso (2003) argues that companies in countries with developed stock markets are less dependent on bank financing, which can reduce the risk of credit crunch. Stock markets therefore are able to

positively influence economic growth through savings amongst individuals, and providing avenues for firm financing.

Demirguc-Kunt and Levine (1996) observed that there are some channels through which stock market liquidity can deter growth: Firstly, savings rate may be reduced, this happens when there is increasing returns on investment through income and substitution effect. As savings rate falls and with the existence of externality attached to capital accumulation, greater stock market liquidity could slow down economic growth. Secondly, reducing uncertainty associated with investment may impact on savings rate, but the extent and the direction remain ambiguous. This is because it is a function of the degree of risk-averseness of economic agents. Thirdly, effective corporate governance often touted as an advantage of liquidity of stock market may be adversely affected. The ease with which equity can be disposed off may weaken investors' commitment and serves as a disincentive to corporate control and vigilance on the part of investors thereby negating their role of monitoring firm's performance. This often culminates in stalling economic growth.

## 2.2 CONCEPTUAL FRAMEWORK

Capasso (2006) posited some conceptual issues worth exploring in this study. These issues tend to suggest that stock market behaviour has defiled available stock market development theories. Put in a question form, therefore, he asked;

*“Why do stock markets develop later than other financial institutions in the process of capital accumulation? How can the apparent complementarities between the equity market and the banking sector be explained? Why do some countries have overdeveloped stock markets while others have very thin stock markets, notwithstanding their level of economic growth or is it the process of capital accumulation and growth that transform the financial system and cause the development of stock markets”*

To address these questions, one has to understand the vivid role of stock market in the process of real resource allocation and how the financial decisions of firms affect investment. Stock markets, as an arm of capital markets, are central institutions in long-term financial intermediation. For a number of reasons, developed stock markets are important for

promoting the efficiency of investments. First, well-functioning stock markets generate lower cost of equity capital for firms. Second, continuous adjustment of share prices in a developed stock market imposes control on the investment behaviour of firms. Third, in a developed stock market, investors have the opportunity to price and hedge against risk effectively. Finally, stock markets serve as a mechanism for attracting foreign portfolio investment, thereby increasing resources available to the economy for investment (Demirguc-Kunt and Levine, 1993). These theoretical issues so far affirm the belief that finance is an important ingredient for growth. Some theorists posit that the stock market is an indicator of an economy's financial health because it indicates the mood of investors in a country (Tachiwou A. M, 2010).

The stock market is viewed as a complex institution imbued with inherent mechanism through which long-term funds of the major sectors of the economy comprising households, firms, and government are mobilized, harnessed and made available to various sectors of the economy (Nyong 1997). The development of the capital market, and apparently the stock market, provides opportunities for greater funds mobilization, improved efficiency in resource allocation and provision of relevant information for appraisal (Inanga and Emenugu, 1997).

On the contrary, traditional growth theorists believed that there is no correlation between stock market development and economic growth because of level effect not the rate effect. Some studies also agreed with the traditional theorists even up to recent times. (Sing, 1997; Ake and Ognaligui, 2010).

Based on the above, the thesis reiterates the four possibilities concerning the causal relationship between financial development and economic growth stated by Graff (1999) in Brasoveanu, Dragota, Carama and Semenescu (2008):

1. **Financial Development and Economic Growth are not Causally related:**

An example of this type of relation could be found in the development of modern economy, in Europe, in the 17th Century and even in some parts of Africa (see Ake and Ognaligui, 2010). In this case, the economic growth was the result of real factors, while the financial development was the result of financial institutions development.

2. **Financial development follows economic growth:**

In this context, economic growth causes financial institutions to change and to develop so as both the financial and credit market grow.

3. **Financial Development is a cause of economic growth:**

In this case, there could be identified two possibilities respectively: (a) financial development is a precondition for economic growth. (b) Financial development actively encourages economic growth (see e.g. Thornton, 1995). Provided that there are no real impediments to economic growth, mature financial systems can cause high and sustained rates of economic growth (see Rousseau and Sylla, 2001).

4. **Financial Development is an impediment to economic growth.**

Similar to the previous possibility, causality runs from financial development to real development, but the focus lies on potentially destabilizing effects of financial overtrading and crises (see e.g. Stiglitz, 2002) rather than on the efficient functioning of the financial system. This view considers the financial system as inherently unstable.

## **MEASURES OF STOCK MARKET DEVELOPMENT EFFECT ON GROWTH**

Economic growth is a complex process that is influenced by many factors, other than the capital market development. Moreover, capital market development is the result of many influencing factors. There are several interdependencies between these factors, which make it difficult to establish and isolate the causal relation between the economic growth and the capital market development (Capasso, 2006). These factors could include monetary policy indices, market liberalization and external economy effects.

Stock market development can be categorized using three main characteristics: traditional, institutional and asset pricing (Demigruc-Kunt and Levine, 1996).

### **Traditional Characteristics**

Traditional characteristics are concerned with basic growth measures of stock market. These measures include number of listed companies and market capitalization. There are also institutional characteristics measures. These institutional characteristics measures are the regulatory and legal role that may influence the functioning of the market, information

disclosure and transparency requirements as well as market barriers and trading costs. Lastly, the Asset pricing characteristics measures focus on the efficiency of the market especially in relation to the pricing of risk.

The traditional stock market characteristics are mostly used in the measurement of the relationship between stock market development and economic growth. They include: stock market size, liquidity, concentration and volatility. This study concentrated on size and liquidity of the market for the various economies of developed, emerging and developing.

1. **STOCK MARKET SIZE:**

A common index often used as a measure of stock market size is the market capitalization. Market capitalization equals the total value of all listed shares. In terms of economic significance, the assumption is that market size and ability to mobilize capital and diversify risk are positively correlated. Market capitalization ratio equals the value of listed shares divided by GDP. The variable, market capitalization is a proxy measure for the extent that the stock market allocates capital to investment projects and the opportunities for risk diversification that it provides investors. In calculating the market capitalization variable, the stock market capitalization is adjusted for the size of the economy to arrive at a size-adjusted variable.

To measure the effect of market size on growth, it normally uses the market capitalization ratio (MCR), which equals the value of listed shares divided by GDP which is taken as the indicator of market size for stock market development. This ratio measures the stock market size, ability to mobilize capital and helps to diversify risk.

2. **LIQUIDITY:**

Liquidity here is used to refer to the ability of investors to buy and sell securities easily. It is an important indicator of stock market development because it signifies how the market helps in improving the allocation of capital and thus enhancing the prospects of long-term economic growth. This is possibly through the ability of the investors to quickly and cheaply alter their portfolio thereby reducing the riskiness of their investment and facilitating investments in projects that are more profitable though with a long gestation period.

Two main indices are often used in the performance and rating of the stock market: total value traded ratio; and turnover ratio.

- a. **Total value traded ratio:** This measure equals total value of shares traded on the stock market exchange divided by GDP. The total value traded ratio measures the organized trading of firm equity as a share of national output and therefore should positively reflect liquidity on an economy-wide basis. Total value traded measures the investor's ability to trade economically significant positions on a stock market. The total value traded ratio complements the market capitalization ratio. It measures trading of equities as a share of national output.
- b. **Turnover ratio:** This is the value of total shares divided by capitalization. Though it is not a direct measure of theoretical definitions of liquidity, high turnover is often used as an indicator of low transaction costs. The turnover ratio complements the market capitalization ratio. According to Mohtadi and Agarwal, a large but inactive market will have a large market capitalization ratio but a small turnover ratio. Turnover also complements the total value traded ratio. While the total value traded ratio captures trading relative to the size of the economy, turnover measures trading relative to the size of the stock market. A small liquid market will have a high turnover ratio but a small total value traded ratio. Turnover is an indicator of the liquidity of assets traded within a market.

Demiguc-Kunt and Levine (1996) identified two main reasons why liquidity is important in the characterization of stock market. The first is that liquidity relates to the riskiness of the investment. An investment is deemed to be less risky where investors are able to alter their portfolios quickly and cheaply. While the second, theoretically, allocation of capital is more efficient and as such liquid market enhances long-term economic growth. Added to the above points, Osinubi (1998) pointed out that liquidity of the stock market facilitates profitable interaction between the stock market and the money market in that shares become easily acceptable as collateral for bank lending thereby boosting credit and investment. According to Levine and Zervos (1996), stock market liquidity is a robust predictor of real per capita GDP growth only after controlling for initial income, initial investment in education, political stability, fiscal policy, openness to trade and macroeconomic stability.



3. **CONCENTRATION:** This factor measures the level of domination of the market by a few enterprises. Concentration ratio is measured by dividing market capitalization of first ten largest stocks by total market capitalization. If few companies dominate the market, they can manipulate the price formation process. The significance of concentration as a measure of performance of stock market is because of the adverse effect it may have on the liquidity of the market. Thus, a high concentration ratio is not desirable. Countries with highly concentrated markets have markets that are underdeveloped. So market concentration is hypothesized to be negatively correlated with market size and market liquidity.

## 2.3 LEVELS OF STOCK MARKET DEVELOPMENT

### 2.3.1 MSCI Market Classification Framework

Morgan Stanley Capital International (MSCI) provides a classification for markets which is a key input in the process of index construction. The approach used by MSCI aims to reflect the views and practices of the international investment community by striking a balance between a countries economic development and the accessibility of its markets while preserving index stability. The framework consists of three criteria viz:

- Economic development.
- Size and liquidity and
- Market accessibility.

To be classified in a given investment universe, a country must meet the requirements of all the criteria as shown in table 2.1 below:

**TABLE 2.1: MSCI CRITERIA REQUIREMENT FOR COUNTRIES**

CRITERIA	FRONTIER	EMERGIN G	DEVELOPED
<b>A. Economic Development</b> A.I Sustainability of economic development.	No requirement	No requirement	Country GNI per capital 25% above the world Bank high income threshold for 3 consecutive years.
<b>B. Size and liquidity requirements</b> B1. Number of Coys meeting the following standard index criteria; <ul style="list-style-type: none"> <li>• Company size (Full market cap)x.</li> <li>• Security size (float mK.cap)xx</li> <li>• Security liquidity.</li> </ul>	2  USD 449M USD 33 M 2.5% ATVR	3  USD 898M USD 449M 15% ATVR	5  USD 1796M USD 898M 20% ATVR
<b>C. Market accessibility criteria.</b> C1 openness to foreign ownership C2 Ease of capital inflows /outflows C3 Efficiency of Operational framework. C4 Stability of the institutional framework.	At least some At least partial Modest Modest	Significant Significant Good& Tested Modest	Very high Very high Very high Very high

\*High income threshold for 2010, GNI per capita of USD 12,276 (World Bank, Atlas Method).

\*\* Minimum in use for May 2012 semi-annual index review.

Updated on semi-annual basis.

ATVR = Annualized Traded Value ratio.

**Source:** MSCI Index Research, 2012, MSCI. Com.

The economic development criterion is only used in determining the classification of developed markets while the distinction is not relevant between Emerging and frontier markets given the very wide variety of development levels within each of the two economies.

The size and liquidity requirements are based on the minimum investability requirements for the MSCI Global Standard indices. Emerging markets country indices with fewer than three companies meeting the emerging markets size and liquidity requirements for four consecutive Semi-Annual Index Reviews are classified as frontier markets.

MSCI regularly reviews the market classification of all countries included in the MSCI indices to ensure that they remain reflective of the evolution of the different markets.

### **2.3.2 FTSE Global Indices classification**

Financial Times and Stock Exchange Indices (FTSE) is a major global stock indices that compiles and grades World Stock markets. The indices classify in their 2009 updates, 72 countries of the world into four categories: developed, advanced emerging markets, secondary emerging and frontier markets. The standard used for the evaluation are as follows:

1. Market and regulatory environment.
2. Custody and settlement.
3. Dealing landscape
4. Process of assessment.

Table 2.2 below shows Global Equity Indices for 72 countries as at September 2009.

**Table 2.2: Financial Times and Stock Exchange (FTSE) Global Equity Indices for 72 Countries.**

<b>Developed</b>	<b>Advanced Emerging</b>	<b>Secondary Emerging</b>	<b>Frontier</b>
Australia	Brazil	Argentina	Bahrain
Austria	Hungary	Chile	Bangladesh
Belgium Luxemburg	Mexico	China	Botswana
Canada	Poland	Columbia	Bulgaria
Denmark	South Africa	Czech Republic	Cote d'ivore
Finland	Taiwan	Egypt	Croatia
France		India	Cyprus
Germany		Indonesia	Estonia
Greece		Malaysia	Kenya
Hong Kong		Morocco	Macedonia
Ireland		Pakistan	Malta
Israel		Peru	Mauritius
Italy		Philippines	Nigeria
Japan		Russia	Oman
Netherlands		Thailand	Qatar
New Zealand		Turkey	Romania
Norway		UAE	Serbia
Spain			Slovakia
Sweden			Slovenia
Switzerland			Sri Lanka
United Kingdom			Tunisia
United States			Vietnam
25 countries	6 countries	17 countries	24 countries

**Source:** FTSE Country classification, September, 2009.

The Standard and Poor Global BMI Equity indices measures global stock market performance covering 46 countries in about 10,000 companies. All the 46 countries are classified only between developed or emerging depending on the factors such as;

- Macroeconomic conditions.
- Political stability.

- Legal property rights and procedures.
- Trading and settlement processes and conditions.
- Feedback from institutional investors.

## **2.4 FEATURES OF THE STAGES OF ECONOMIC DEVELOPMENT**

### **2.4.1 FEATURES OF A DEVELOPED ECONOMY**

The countries of the world can be looked at in many ways: physically, culturally, socially and economically. A developed country refers to a country with relatively high level of economic growth and security, high level of industrialization, high standard of living and amount of wide spread infrastructure. A developed country is also one in which a great deal of manufacturing is carried out, coupled with many factories, modern technology, efficient transportation and communication systems, commercial agriculture, urban population, high per capita GNP. The New Webster's Dictionary of the English Language (2000) defined developed Nations as high income countries with a market oriented economy, usually with a per capita annual gross national (domestic) product of at least \$10,000 and consequent higher standards of living. A group of industrialized nations include; Australia, Austria, Canada, France, Germany, Italy, Japan, United States of America and most European countries. Their economic systems are usually based on capitalism, with relatively little government intervention in business. Also they have democratic, multiparty system of government with tremendous purchasing power. Having reached a fairly mature state of industrial development, advanced economies largely transformed from manufacturing economies into service-based economies. The advanced economies account for about half of the world GDP, over half of world trade in products and three-quarters of world trade in services. They have tremendous purchasing power, with few restrictions on international trade and investment. They host the world's largest multinational companies ([www.imf.org](http://www.imf.org))

### **2.4.2 FEATURES OF A DEVELOPING ECONOMY**

A developing nation shows an imprecise term for the less developed countries with growing economies. The major characteristics of a developing economy are:

- (a) Low standard of living that is characterized by low income, poor health, inadequate education and levels of inequality.

- (b) Low levels of output per person mainly caused by low education standards, unhealthy work environment, lack of investment in physical capital and lack of access to technology.
- (c) High rates of population growth and dependency burden. Developing countries have a significantly high dependency ratio because they have a large percentage of population below 15 years.
- (d) High levels of unemployment and underemployment with relatively high unemployment between 9% to 16%.
- (e) Low per capital income. Developing countries have lower per-capita income compared to developed countries.
- (f) Low levels of Human Capital. Developing countries are characterized by low human development index HD, score.

Developing countries are also characterized by high levels of poverty and under-nutrition, predominance on agriculture and low levels of industrialization, underdeveloped labour, financial and other markets. The combination of low income and high birth rates tend to perpetuate the poverty characteristics of developing economies. There is lack of adequate health care with some 95% of the worlds AIDS victims found in developing economies, an additional hardship that hampers their development, stagnant productivity with living standard deteriorating.

Approximately, 17% of people in developing economies live on less than \$1 per day. Around 40% live on less than \$2 per day. The combination of low income and high birth rates tend to perpetuate the poverty characteristics of developing economies. Such economy is hindered by high infant mortality, malnutrition, short life expectancy and poor education systems. The proportion of children who finish primary school in most African Countries is less than 50% and because education is strongly correlated with economic development, poverty tends to persist, (imf.org)

### **2.4.3 FEATURES OF EMERGING MARKET:**

It was Jim O'Neil the head of Global Economic Research at Goldman Sachs that coined the acronym "BRIC" to refer to Brazil, Russia, India and China, the emerging market economies (EMEs) he thought would lead world economic growth for the next 50 years. Also Antoine W. Van Agtmael of IFC coined the term emerging market economies in 1981. Other classifications are Brazil, China, India, Mexico and Turkey. Since then, academics and economists have written about the idea of the BRIC either expanding the acronym or even changing it. EMEs are somewhere between developing and advanced economies. EMEs are characterized by fast economic growth, increased foreign investment and increased international political clout. Fast growth is evidenced by strong economic data as in rising gross domestic product (GDP), GDP per capita, trade volumes and foreign reserves. Faster growth generally means higher profits for foreign investors, which encourages more foreign investment in a country which in turn promotes economic growth. The term "emerging" suggests that EMEs have not achieved a level of development at par with advanced economies such as Germany or the United States of America.

The MSCI, emerging market index and a widely accepted standard in the financial industry, currently includes 21 countries on its list of Emerging markets. They are Brazil, Chile, China, Columbia, Czech Republic, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Russia, South Africa, Taiwan and Turkey. Another classification is BRICET i.e. BRIC + Eastern Europe and Turkey. They are broadly defined as nations in the process of rapid growth and industrialization. Most emerging markets are characterized by a young population and a growing middle-class. They also tend to have inadequate commercial infrastructure, evolving legal systems, and a high-risk business environment. EMEs have begun to produce new global challengers, top firms that are fast becoming key contenders in world markets, thus posing competitive challenges to companies from the advanced economies such as in Europe, Japan and North America. These EMEs are also characterized by transitional economy often in the process of moving from a closed economy to an open market economy. The most distinguishing characteristics of EMEs is that those countries are enjoying rapidly improving living standards and a growing middle class with rising economic aspirations.

A subset of former developing economies that have achieved substantial industrialization, modernization, and rapid economic growth since the 1980s. Emerging markets are found in

East and South Asia, Eastern Europe, South Africa, Latin America and the Middle East. Emerging markets are attractive to internationalizing firms as target markets, manufacturing bases and sourcing destinations. Emerging markets have become important for marketing wide variety of products and services. The growing middle class in these countries implies substantial demand for a variety of consumer products such as electronics and services as health care.

EMEs are generally more open to international trade than other economies including advanced economies. This openness is spurred initially by export led growth models, but it functions to diversify the goods countries export. EMEs generally are gaining power and influence internationally especially when compared to other developing countries (worldbank.org).

Developed countries have grown very little over the past 20years. Several developing economies have expanded. Economists have started predicting that in the next decades, global competitive advantage will likely shift from West to East, (Kharas, 2010; Lieberthal, 2010, Morgan Stanley capital international, 2011), Pulling (2010). Of a particular significance is the BRIC thesis formulated by Goldman Sachs (O’Neil, 2001), O’neil and Stupnytska (2009), Wilson & Purushothaman (2003), Wilson and Ahmed, (2010). The thesis advances that by 2032, the combined GDP of BRIC economies would be as large as that of G7. (Seven biggest developed economies, i.e. the US, Japan, Germany, France, UK, Italy and Canada. According to IMF data base, 2012; emerging economies have lower incomes per person as shown below:

**Table 2.3: INCOME PER PERSON IN EMERGING ECONOMIES**

	<b>Population (Million’s)</b>	<b>GDP (billions)</b>	<b>Income Per Person</b>	<b>Share of World Population</b>	<b>Share of World GDP</b>
U.S	312	\$14,527	\$46,900	5%	21%
Canada	34	\$1,737	\$50,436	0%	2%
Japan	128	\$5,869	\$45,920	2%	8%
S. Korea	49	\$1,116	\$22,778	1%	2%
Brazil	195	\$2,493	\$12,789	3%	4%
China	1348	\$7,298	\$5,414	20%	10%
India	1207	\$1,676	\$1,207	18%	2%

**Source:** IMF data base, April 2012.



38% of world's populations were accounted by China and India but only 12% of the world's economic output (GDP). The U.S has 5% of world population and 21% of the world's economic output.

Having x-rayed the features of developed, emerging and developing economies on sections 2.4.1, 2.4.2 and 2.4.3 respectively, Table 2.3 and Table 2.4 have been added to summaries the major features of the three economic groups in a snapshot. Thus, the key differences among the three major economic groups can be shown with the table below:

**TABLE 2.4: THREE MAJOR ECONOMIC GROUPS**

<b>Dimension</b>	<b>Advanced economies</b>	<b>Developing Economies</b>	<b>Emerging Markets</b>
Representative countries	Canada, France, Japan, United States, United Kingdom	Angola, Bolivia, Nigeria, Bangladesh	Brazil, China, India, Indonesia, Turkey
Approximate No of Countries	30	150	27
Population (% of world)	14	24	62
Approximate average per capital Income (U.S. Dollars)	33,750	6,450	13,250
Approximate share of world GDP	48	9	43
Population (millions)	892	1,877	3,775
Telephone lines per 1000 people (Fixed & mobile)	1,369	355	724
Personal computers per 1000 people	517	39	191
Internet users per 1,000 people	533	103	240

**Source:** World Bank at [www.worldbank.com](http://www.worldbank.com). and International Monetary Fund at [www.imf.com](http://www.imf.com). (Retrieved June 15, 2012)

**TABLE 2.5: NATIONAL CHARACTERISTICS OF MAJOR COUNTRY GROUPS**

<b>Characteristics</b>	<b>Advanced economies</b>	<b>Developing economies</b>	<b>Emerging markets</b>
Median Age of Citizens	38 years	24 years	32 years
Major Sector focus	Services, branded products	Agriculture commodities	Manufacturing, some services
Education level	High	Low	Medium
Economic and political freedom	Free or mostly free	Mostly repressed	Moderately free or mostly not free
Economic/ Political System	Capitalist	Authoritarian, socialist or communist	Rapidly transitioning to capitalism
Regulatory environment	Minimal regulations	Highly regulated, burdensome	Achieved much economic liberalization.
Country Risk	Low	Moderate to high	Variable
Intellectual property	Strong	Weak	Moderate and improving
Infrastructure	Well developed	Inadequate	Moderate but improving

**Sources:** www.imf.org, www.worldbank.org and CIA world fact book, 2007

Table 2.3 showed that developed economies have more access to ICT facilities than emerging and developing economies. It also showed that most of the countries of the world are still at their developing stages; nonetheless, the emerging economies are more populated than other countries.

-More features of the three stages of economies are also identified on Table 2.5. This table revealed that developed economies have strong intellectual property, well developed infrastructure, low country risk and have full political and economic freedom. The emerging economies experience high improvement on infrastructure, education and use of intellectual property unlike the developing economies where agriculture is the mainstay of the economies.

This analogy has equally been useful in the classifications as developed, emerging and developing economies and in the selection of countries for this study.

## **2.5 CLASSIFICATION OF THE THREE ECONOMIES**

The justification for the classification of these economies into developed or advanced, emerging and developing economies in this work is based on the existing literature.

According to Sanusi (2010) on the impact of financial crisis on Nigeria classified countries into either as developed, emerging and developing. Anson Nong and Zianbo Z hou (2011) classified the economies of United States of America and United Kingdom as mature economies or developed economies and China as rapid growing or emerging economy; Japan and Hong-Kong as small but well built economies. Maysami and Sims (2002), Maysami and Koh (2000) examined relationships in countries emerging markets, developed and developing.

According to Pamir (2004), Western Countries such as America and Europe have demographically turned older, while developing countries are becoming younger. Loots (2006) stated that the economic leaders among developing countries are generally seen as the emerging market economies and this group of 24 countries include:- Argentina, Brazil, Chile, China, Columbia, Czech Republic, Egypt, Hong Kong, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia Federation, Singapore, Thailand, Turkey, Venezuela and South Africa.

According to UNCTAD, (2000), almost all the portfolio flows to developing countries are also directed at emerging economies since their financial markets are more developed than those of the remaining developing countries.

International Monetary Fund (IMF) identified major economic groups as advanced countries, developing economies and emerging economies. The world development indicators (2004) categorized market indicators for some selected countries into Africa, other emerging economies and developed markets.

O'Neill (2001), coined the acronym "BRIC" to refer to Brazil, Russia, India and China as the emerging market economies.

## **2.6 BRIEF BACKGROUND OF THE STOCK MARKETS OF SELECTED COUNTRIES.**

### **2.6.1 The Tokyo Stock Exchange (TSE)**

The Tokyo Stock exchange Inc. is the owner of the Japanese stock exchange. It is rated the third largest stock exchange in the world by aggregate market capitalization of its listed companies.

The TSE was established on May 15, 1878 as the Tokyo Kabushiki Torihikijo with trading that began on June 1, 1878. In 1943, the exchange was combined with ten other stock exchanges in major Japanese cities to form a single Japanese Stock Exchange. As at December 2011, the number of listings was 2,292, with a market capitalization of US\$3.3 trillion and a volume traded of US\$3.9 trillion, (<http://www.tse.or.jp/english>).

Stocks listed on the TSE are separated into the first section for large companies, the second section for mid-sized companies and the mothers, i.e. market for the high growth and emerging stocks section. As at 31<sup>st</sup> October 2010, there were 1,675 first section companies, 437 second section companies and 182 mothers companies.

On June 15th, 2007, the TSE paid \$303 million to acquire a 4.99% stake in Singapore Exchange Ltd. Also a planned merger with the Osaka Securities Exchange resulting into an entity, the Japan Exchange Group that was launched in January 2013. The TSE run-up from 1983 to 1990 was unprecedented. In 1990, the exchange accounted for over 60% of the world's stock market capitalization, by far the world's largest.

The exchange switched to electronic trading for all transactions in 1999. A new facility called TSE Arrows opened on May 9, 2000 and in 2010, the TSE launched its Arrow head trading facility. In 2001, the TSE restructured itself as a stock company; before this time, it was structured as an incorporated association with its members as shareholders.

There are alliances between the London Stock Exchange (LSE) and TSE in developing jointly, trade products and share technology, marking the latest cross-border deal among bourses as international competition heats up. In July 2008, the London Stock Exchange and

TSE announced a new joint venture; Tokyo based market, which is based on the LSE's Alternative Investment Market (AIM) (<http://en.wikipedia.org/wiki/Tokyo-Stock-Exchange>).

### **2.6.2 Toronto Stock Exchange (TSX)**

According to Wikipedia.org, the Toronto Stock Exchange likely descended from the association of Brokers, a group formed by Toronto businessmen on July 26, 1852. On October 25, 1861 twenty-four men gathered at the Masonic hall to officially create the Toronto Stock Exchange which was formerly incorporated by an Act of the Legislative Assembly of Ontario in 1878. The TSX grew continuously in size and in shares traded, save for a three month period in 1914 when the exchange was shut down for fear of financial panic due to World War. In 1934, the Toronto Stock Exchange merged with its key competitor, the Standard Stock and Mining Exchange. In 1977, the TSX introduced CATS (Computer Assisted Trading System), an automated trading system that started to be used for the quotation of less liquid equities. On April 23, 1997, the TSX's trading floor closed, making it the second largest stock exchange in North America to choose a floorless electronic or virtual trading environment. (TSX Fact Book, 2004, 2011).

Through a re-alignment plan, Toronto Stock Exchange became Canada's sole exchange for the trading of senior equities. The Montreal Exchange assumed responsibility for the trading of derivatives and the Vancouver Stock Exchange and Alberta Stock Exchange merged to form the Canadian Venture Exchange (CDNX) handling trading in junior securities. In 2000, the Toronto Stock Exchange became a for-profit company and in 2001, its acronym was changed to TSX. The Toronto Stock Exchange acquired the Canadian Venture Exchange in 2001 which was renamed the TSX Venture Exchange in 2002. This resulted in the creation of a parent to the TSX, the TSX Group and thus ended the 123 years of the usage of TSE as a Canadian Stock Exchange.

On February 9, 2011, the London Stock Exchange announced that they had agreed to merge with the TMX Group, hoping to create a combined entity with market capitalization of \$5.9 trillion (£3.7 trillion). The new stock exchange would be the second largest in the world with a market capitalization, 48% greater than Nasdaq. Later the LSEG/TMX deal was terminated after failing to receive the minimum 67% voter approval from shareholders of TMX group. As

of August 2012, Toronto Stock Exchange had 1,577 listed Companies with a combined market capitalization of \$1,989,562,971,807 (TSX Fact Book).

### **2.6.3 New York Stock Exchange (NYSE)**

The origin of the NYSE can be traced to May 1792 when the Buttonwood agreement was signed by 24 stock brokers outside of 68 Wall Street in New York under a buttonwood tree on Wall Street. In 1817, the organization drafted a constitution and renamed itself the “New York Stock and Exchange Board.

In the early 19th Century, many new enterprises sprang up in the railroad and construction industries. The New York Exchange Board had then mandated an organization to have a minimum of 100 stocks in order to trade in their exchange since they could not meet the requirements to be listed on the board. A group of non-member brokers catered to the needs of these companies as they traded their stocks outside the registered exchange. These brokers came to be known as the curbstone brokers, as they conducted their auctions out in the street. By 1865, following the American Civil War, Stocks in small industrial companies such as iron and steel, textile and chemicals were first sold by curbstone brokers. In 1908, the New York Curb market agency was established to codify trading practices. In 1911, the curbstone brokers came to be known as the New York Curb market. After several years of outdoor trading, the Curbstone brokers moved indoors in 1921 and in 1929, the New York Curb market changed its name to the New York Curb Exchange. The Curb Exchange became the leading international stock market, listing more foreign issues than all other U.S securities markets combined. In 1953, the Curb Exchange was renamed the American Stock Exchange.

The NYSE merged with rival Archipelago in 2005 and became a for profit public company. It began trading under the name NYSE Group in 2006. In 2007, NYSE Group completed its merger with Euronext, the European combined stock market, thus forming the NYSE Euronext, the first transatlantic stock exchange. NYSE merged with the American Stock Exchange with NYSE composite closing above 10,000.

The roots of the ASE traced in colonial times when stock brokers formed outdoor markets to buy and sell new government securities. The AMEX keeps on to deal with small to mid size

stocks to options and exchange traded funds. In 1998, the American Stock Market amalgamated with the National Association of Securities Dealers to form 'the Nasdaq-Amex Market Group.' In 2004, following tension between the NASD and AMEX members, AMEX members bought out the NASD and got control of the AMEX. Being one of the leading American Stock Exchanges, the AMEX is recognized to have the most liberal policies regarding company listing and the majority of its companies are generally smaller contrasted to the NYSE and NASDAQ.

NYSE was formerly known as the American Stock Exchange, AMEX. AMEX was a mutual organization owned by its members. Until 1953, it was known as the New York Curb Exchange. In 2008, NYSE Euronext acquired AMEX for \$260 million stock. AMEX was integrated with the Alternext European Small-Cap exchange and renamed the NYSE Alternext U.S. In 2009, NYSE Alternext US was changed to NYSE AMEX Equities. In 2008, the AMEX trading floor was moved to the NYSE trading floor at 11 Wall Street.

Historically two major stock market exchanges have existed in the United States viz: the American Stock Exchange and the New York Stock Exchange. The American Stock Exchange is the third largest stock exchange in the United States after the NYSE and the NASDAQ. The New York Stock Exchange commonly referred to as the NYSE and occasionally as the "Big Board" is a stock exchange located at 11 Wall Street, lower Manhattan, New York City, New York, United States of America. It is by far the world's largest stock exchange by market capitalization of its listed companies at U.S \$14.242 trillion as of December, 2011. Average trading value was approximately US \$153 billion in 2008. The first indoor stock exchange to open in America was the Philadelphia Stock Exchange. Until 1863, New York Stock Exchange was set up in a coffee shop and called themselves 'the New York Stock and Exchange Board'. According to Adkin (2012), the history of business and economic growth in America is the New York Stock Exchange.

In 1971, the NASDAQ was founded by the National Association of Securities Dealers in answer to a direct request from the securities Exchange Commission (SEC) to increase regulation of the over the counter market in order to make OTC trading safer. The National Association of Securities Dealers Automated Quotation (NASDAQ) was the world's first

electronic market. The NASDAQ later purchased the Philadelphia Stock Exchange and has grown quickly as it is today, the largest electronic trading market in the world with thousands of companies listed. It is also the second largest trading market in the United States (NYSE, Fact Book, various years); (Report of the NYSE Commission on Corporate Governance (2010).

#### **2.6.4 Shanghai Stock Exchange (SSE)**

The trading for securities in Shanghai began in the late 1860 with the first shares appearing in 1866. In 1891 during the boom in mining shares, foreign businessmen founded the “Shanghai share brokers Association with its head quarters in Shanghai. This is China’s first stock exchange. In 1904, the association applied for registration in Hong Kong under the provision of the companies ordinance and was renamed as the “Shanghai Stock Exchange”. In 1920 and 1921, Shanghai Securities and Commodities Exchange and “Shanghai Chinese Merchant Exchange” started operation respectively. An amalgamation took place in 1929, and the combined markets operated as the “Shanghai Stock Exchange”. It is one of the two stock exchanges operating independently in the Peoples’ Republic of China. The other is Shenzhen Stock Exchange.

In November 26, 1990 Shanghai Stock Exchange was re-established. SSE is the World’s 5th Largest Stock Market with market capitalization at US\$2.5 trillion as of December 2011 (Shanghai Stock Exchange Fact Book, 2011). The Shanghai unlike the Hong Kong Stock Exchange is still not entirely open to foreign investors due to capital account controls exercised by the Chinese mainland authorities. In 2007, a stock market frenzy saw speculative trading as traders rush into the market, making China’s Stock Exchange temporarily the world’s second largest in terms of turnover after reaching an all time high of 6,124, 044 points.

The securities listed on the SSE include the three main categories of stocks, bonds and funds. Bonds traded on SSE include treasury bonds, corporate bonds and convertible corporate bonds. There are two types of stocks being issued in the Shanghai Stock Exchange: “A” shares and “B” shares “A” shares are priced in the local renminbi Yuan currency while “B” shares are quoted in U.S. Dollars. The high volatility of the Chinese Stock Market has attracted numerous empirical studies focusing on market operation and efficiency. Since



opening up to foreign trade and investment in 1979, China has been one of the world's fastest growing economies and has emerged as a major economic and trade partner. (CIA World Fact Book 2012; Madway G. 2006).

### **2.6.5 Brazilian Stock Exchange**

The Sao Paulo Stock Exchange was began in 1890 and ran as a state institution up till 1966 when it became a civil association with non-profit status. The Sao Paulo Stock exchange is linked to every other Brazil Stock Exchange including the government bond trading floor in Rio de Janeiro known as the Boverge. The indicator is the Index Bovespa of 50 stocks. The supervision of the Brazilian Stock Exchange is granted to the commission of movable Assets (Comisao de Valores Mobiliarios).

Rio de Janeiro Stock Exchange (Bolsa de Valores do Rio de Janeiro) is Brazil's second largest exchange after the Bovespa Stock Exchange in Sao Paulo and the Oldest of Brazilian Stock Exchanges in activity. There are eleven (11) stock exchanges in Brazil namely;

1. Balua Sergipe Alagoas Stock Exchange.
2. Brazilian Futures Exchange.
3. Santos Stock Exchange.
4. Pernambuco and Pariba Stock Exchange.
5. Far South Stock Exchange.
6. Sao Paulo Stock Exchange.
7. Minas, Espirito Santo, Brasilia Stock Exchange
8. Regional Stock Exchange.
9. The Commodities and Futures Exchange.
10. Rio de Janeiro Stock Exchange.
11. Parana Stock Exchange.

The Sau Paulo Stock Exchange accounts for nearly 70% of trades throughout the Latin American region. Laws in Brazil allow the exchange to trade stocks, futures, call and put options and debentures with all publicly held companies registered with the Brazilian Securities and Exchange Commission. According to the World Federation of Exchanges

(WFE, 2010) statistics, Sao Paulo is the largest Stock Exchange in Brazil and the fourth in American continent in terms of market capitalization.

Following international trend, the exchange concluded the process of demutualization and reorganization of ownership to go public and to have its own shares listed. Brazil's National Monetary Council (CMN) and the Securities and Exchange Commission are independent Federal agencies attached to the ministry of Finance that regulate the stock market in Brazil.

According to Sandra (2009), the Brazilian economy is the largest in South America and the tenth largest in the world, worth about \$1.3 trillion at the official exchange rate and \$1.8 trillion at purchasing power parity in 2007. In terms of sectorial composition, the Brazilian economy is dominated by the service sector which makes up more than half of the economy; followed by the manufacturing sector, at about 30%; processed food; agriculture and natural resources. The major exports and imports are shown in the table below;

**Table 2.6: Macroeconomic components of Brazilian GDP (Expenditure as percentage of GDP).**

Component	Percentage
Private consumption	61
Govt. expenditure	20
Investment consumption	16
Import demand	14
Export supply	17

**Source:** Social Accounting Matrix; Carnegie endowment for international peace.

### 2.6.6 Indian Stock Exchange

The National Stock Exchange is stock exchange located in Mumbai, India. It is in the top 20 largest stock exchanges in the world by market capitalization and largest in India by daily turnover and number of trades for both equities and derivative trading. According to World Federation of Exchanges, NSE has a market capitalization of about US\$1 trillion and over 1652 listings as of July 2012. The NSE and the Bombay Stock Exchange are the two most significant stock exchanges in India. NSE is mutually owned by a set of leading financial

institutions, banks, insurance companies and other financial intermediaries in India, but its ownership and management operate as separate entities.

In 2011, NSE was the third largest stock exchange in the world in terms of the number of contracts (1221 million) traded in equity derivatives. It is also rated as the second fastest growing stock exchange in the world with a recorded growth of 16.6%. (World Federation of Exchanges, 2010). NSE has the following major segments of the capital market:

**Equities:** Equities, indices, mutual funds, exchange traded funds, initial public offerings, security lending and borrowing scheme.

**Derivatives:** Equity derivatives, currency derivatives, interest rate futures.

**Debt:** Retail debt market, wholesale debt market, corporate bonds.

### 2.6.7 Cote D'Ivoire Stock Exchange

According to the BRVM website, the Ivorian Stock Market was created in 1973 and named Bourse des Valeurs d'Abidjan (BVA). It started with 22 firms before reaching 35 firms in 1997 before the BVA was transformed into a regional stock market, BRVM. BRVM is a private corporation with 2,904,300,300 CFA Francs in capital. The mission of BRVM is to organize the securities market, disseminate market information and promote the market. In 1994 when the domestic currency was devalued, the market capitalization increased sharply and continued until 1999 before falling after that year due mainly to the military coup and the political instability that followed. Turnover ratio (TOR) by then showed a very unstable trend. BRVM has at inception, two sections for stocks and a single for bond loans. To be eligible for the First Section, a company must satisfy the following conditions:

- Demonstrate market capitalization equal to or higher than 500 million CFA francs.
- Have a net revenue margin of 3% in each of the past three years.
- Demonstrate five years of certified statements.
- Agree to sign a market activation contract.
- Distribute to the public at least 20% of its capital as soon as it joins the exchange.
- Agree to publish semi-annual revenue estimates and results trend.

For the second section;

- Demonstrate market capitalization equal to or higher than 200 million CFA francs.
- Demonstrate 2 years of certified accounts.

- Agree to sign market activation contract.
- Agree to distribute to the public at least 20% of its capital within 2 years or 15% in the event of a share capital increase.

Of an estimated over 700 companies in Cote D'Ivoire, only very few are quoted on the exchange and most investors in the quoted companies are foreign residents or businesses. In 1986, Ivoirians owned only 30% of the shares. The BRVM lists about 39 securities and acts as the regional exchange for 8 countries as an African innovation when it opened in 1998. Sonatel, based in Senegal and including France Telecom as shareholders are the biggest listed company with CFA 1.65trn in market capitalization.

The BRVM composite index peaked at 174.89 as at January 11, 2013. The BRVM market indexes represent the activities of stock market shares. The BRVM composite comprises all securities listed on the exchange and comprises ten of the most active companies on the exchange. Formation and selection criteria for the BRVM composite and BRVM 10 are based on the leading global market indexes; especially the FCG index of the international finance corporation; a World Bank Affiliate. The formula for the indexes takes into account, market capitalization and transaction volume per session and transaction frequency. Only common shares are used to calculate the indexes. The BRVM is also reviewed four times a year (First Monday of January, April, July and October and BRVM composite after every new listing so it can keep pace with the growth of the regional financial exchange. the concept of liquidity also plays a key role in selecting securities for the BVRM 10. For each one, the average daily transaction volume in the three months preceding the quarterly review must not be less than the median daily transaction volume for all securities. Transaction frequency must always be higher than 50% and the security must be traded at least one out of two times during the three-month study period. BRVM operates electronically with the central site in Abidjan that provides securities quotation and trading services as well as regulation / issuing services.

Agents sitting at workstations in their offices located in national branch offices in WAEMU (West African Economic and monetary union) countries and brokerage firms can enter orders for securities and send them to the central site via the satellite network.

BRVM is a regional stock exchange serving the following West African Countries: Benin, Burkina Faso, Cote D'Ivoire, Mali, Niger, Senegal and Togo with the exchange located in Abidjan, Cote D'Ivoire ([www.http:brvm.org](http://www.brvm.org)).

The principles followed in establishing the BRVM satisfy the requirement for both compliance with international standards and adaptability to the WAEMU Socio-economic environment. It was created to encourage domestic investment and to provide Ivorian industries with access to the international financial market.

### **2.6.8 Johannesburg Securities Exchange**

JSE was established in 1887, the year after Gold was discovered in Johannesburg, to raise capital for the development of the mining industry. Legislation was passed in 1995 to allow for foreign membership of JSE. The following year, the automated trading system was introduced and the open-cry trading floor was closed. The name change to JSE Securities Exchange was done in 2000 and in 2001, the futures exchange was bought by JSE and the Safex commodity derivatives market operating as a division within the JSE.

JSE is South Africa's full service Securities Exchange, connecting buyers and sellers in a variety of different financial markets namely equities, equity derivatives, commodity derivatives and interest rate instruments. In terms of the number of contracts traded, the JSE is ranked as the 20th largest derivatives exchange in the world. It is the country's equity, currency and commodity derivatives trading exchange. The successful launch of Satrix, an exchange traded fund up of the top 40 companies on the board was followed up with Satrix Fini, which tracks the top 15 financial counters, and Satrix Indi, comprising the top 25 industrial shares. These products have opened channels for new entrants in the investment market.

Corporate governance was addressed comprehensively in 1999 with the adoption of the insider trading Act. The Alternative Exchange, Alt-X was launched, allowing for small and medium size companies to assess capital for development. Following Alt-X is SRI, the Socially Responsible Index – this allows investors with social concerns to make better informed decisions. The Exchange also introduced the Sharia Index, which gives Muslim

investors opportunities within non debt financed enterprises. JSE offers on-line courses to help educate investors. Modules include stock market for beginners, shares made easy, single stock futures, currency futures and equity options. JSE holds the investor's schools' challenge every year.

South African Stock Exchange Operator, JSE has listed on exchange traded fund (ETF) for platinum. Investors now prefer safe-haven assets to equities because of the global economic crisis. South Africa's largest ETF, Absa's New Gold which invests directly in gold has soared in value as gold price hit record highs. ETFs are listed and traded on a securities exchange and track an index sector or commodity, offering medium to long term investment returns with little risk. ETF trade blue chip firms from other big economies in Africa like Egypt, Nigeria and Kenya. The firms do not have to be listed on the JSE. JSE plans to start dark pool Block X to aid doing large trades without having a market impact on prices. Dark pools are trading venues that allow buyers and sellers of large stock orders to avoid revealing pre-trade information and signaling their intentions to the rest of the market. The JSE has over 400 on its listing with market capitalization of over \$182 billion. ([www.jse.co.za](http://www.jse.co.za)). The table below shows a brief financial highlights of JSE for six months January – June 2012 according to ASEA newsletter, Nov. 2012.

**TABLE 2.7: FINANCIAL HIGHLIGHT OF JOHANESBURG STOCK EXCHANGE.**

<b>INDICES</b>	
<b>JANUARY – JUNE 2012</b>	<b>USD</b>
Total value traded	2,008,507,442,191
Equity market value traded	221,068,875,568.00
Bond market value traded	1,466,527,606,286.00
Others	320,910,960,337.00
Total volume traded	32,482,619,454.00
Equity market volume trade	32,396,923,185.00
Bond market volume traded	-
Others	85,696,269.00
Total Number of transactions	14,650,525
Equity market Number of transactions	13,235,422
Bond market number of transactions	195,470
Others	1,219,633.00
Market capitalization	932,244,088,692.00
No of listed companies	401
No of traded companies	379
Exchange rate /US\$	7.89
Main index points	33,708.31
Gains in main index (%)	5.39
P/E ratio	14.87
Dividend yield (%)	3.34

**Source:** ASEA Newsletter, Issue 1, November 2012.

The table ex-rays major indices for the Johannesburg stock exchange.

### **2.6.9 Kenyan Stock Exchange**

The Nairobi stock exchange was constituted in 1954 as a voluntary association of stock brokers. In 1994, the NSE 20-share index recorded an all record high of 5030 points. This led to International Finance Corporation (IFC) rating NSE as the best performing market in the world with a return of 179% in dollar terms. In 1999, NSE set up the computerized delivery and settlement system (DASS) and also adopted the international accounting standards (IAS) as the local accounting standards. The T+5 trading cycle was introduced in August 2000 with the Central Depository System (CDS). In 2002, the foreign investor regulations was amended providing for 25% minimum reserve of the issued share capital for Kenyan citizens while the balance of the 75% becomes a free float for all classes of investors. Within this 75%

shareholding available to all classes of investors, there is no restriction on the amount to be held by a single foreign investor.

In 2006, an MOU between Nairobi Stock Exchange and Ugandan Securities Exchange was signed on mass cross listing. The MOU allowed listed companies in both exchanges to dualist so as to facilitate growth and development of the regional securities market. The NSE All Share Index (NASI) was introduced as an alternative index and measures an overall indicator of market performance.

In July, 2011, the Nairobi Stock Exchange Ltd changed its name to Nairobi Securities Exchange Ltd to reflect the strategic plan of the Nairobi Securities Exchange to evolve into a full service securities exchange which supports trading, clearing and settlement of equities, debt derivatives and other associated instruments. The Exchange houses indices such as

- NSE 20 share index
- NSE All Share Index (NASI)
- FTSE NSE indices.

The Exchange is seen as the sub-Saharan Africa's' fourth largest bourse. The exchange is somewhat speculative. The ceiling on foreign investment has been increased to 40% for institutions and 5% for individuals.

The government has opened trade in the NSE and gilts to foreign portfolio investors; removed exchange controls and introduced a favourable tax regime with non residents paying 10% withholding tax on dividends and locals, 5% but no capital gains, stamp duty or value added tax.



**TABLE 2.8: FINANCIAL HIGHLIGHTS OF NAIROBI SECURITIES EXCHANGE.**

For the six months, January to June 2012, equity market value traded was just 1.71% of Bond Market Value Traded.

<b>INDICES</b>	
<b>JANUARY – JUNE 2012</b>	<b>USD</b>
Total value traded	2,936,268,986
Equity market value traded	429,676,676
Bond market value traded	2,506,592,310
Others	0
Total volume traded	2,514,221,892
Equity market volume trade	2,514,221,572
Bond market volume traded	320
Others	0
Total Number of transactions	147,311
Equity market Number of transactions	144,724
Bond market number of transactions	2,587
Others	0
Market capitalization	12,484,731,243
No of listed companies	60
No of traded companies	56
Exchange rate /US\$	84
Main index Name	NSE 20 share Index
Main Index (Points)	3,704
Gains in main index (%)	15
P/E ratio	10
Dividend yield (%)	3.67

**Source:** ASEA News letter, issue 1, November 2012.

African Stock Market Statistics.

### 2.6.10 The Nigerian Stock Exchange

The Nigeria Stock Exchange was established in 1960 as the Lagos Stock Exchange and came to be called the Nigeria Stock Exchange in 1977. On its establishment in 1960, the seven business community made up of four individuals and three companies signed the memorandum and articles of Association of the Lagos Stock Exchange. The NSE is regulated by the Securities and Exchange Commission (SEC). The exchange is a full member and Executive Committee member of the African Securities Exchange Association (ASEA) and an

affiliate member of the World Federation of Exchanges (WFE). The NSE is an automated exchange and provides listing and trading services as well as electronic clearing settlement and delivery (CSD) services through central securities clearing system (CSCS) Ltd.

The second tier securities market (SSM) was established to cater for the requirements of small and medium scale enterprises in 1985. This move was necessary to dilute the listing requirements for this grade of companies and therefore encourage them to also seek quotation so as to broaden and deepen the market (Osaze, 2007). NSE indices is a product that provides comprehensive information about all the indices on the NSE market which include ASI, NSE 30, Food and Beverage, Banking, Insurance, oil and gas.

At the NSE, a market surveillance department was created to ensure that the Exchange is meeting its oversight responsibilities by conducting daily and other routine surveillance of trading activity on the facilities of the Exchange. The Exchange has 13 branches spread across Key Cities of Nigeria and a corporate head quarters in Lagos. NSE is an affiliate member of the World Federation of Exchanges and an observer at meetings of International Organization of Securities Commissions (IOSCO). In order to encourage foreign investment into Nigeria, the government has abolished legislation preventing the flow of foreign capital into the country. This has allowed foreign brokers to enlist as dealers on the Nigeria Stock Exchange. Nigerian companies are also allowed multiple and cross boarder listings on foreign markets.

As of September, 2012, NSE has about 200 listed companies with total market capitalization of about N7.8 trillion (\$49 billion). All listings are included in the Nigeria Stock Exchange All Shares Index. The global and financial crises of 2005 led to the crash of major markets across the world with a devastating impact on the Nigeria Stock Exchange. However, 2011 transformation kicked off with the reconstitution of Board Committee structure with the establishment of six board committees to guide the management of the exchange. This will lead to enhanced corporate governance.

The NSE launched the Shari'ah Compliant Index known as the NSE Lotus Islamic index (NSE, Lotus I). The index would consist of companies in conformity with the principles of Shari'ah. This is the first index created to track the performance of shari'ah compliant equities

on the floor of the Nigerian bourse and is expected to increase the breath of the market and create an important benchmark for investments as the alternative non-interest investment space widens.

**TABLE 2.9: FINANCIAL HIGHLIGHT OF THE NSE**

<b>INDICES</b>	<b>2009</b>	<b>2010</b>	<b>% change</b>
Market capitalization	N7.03Tr	N9.92 Tr	41.1%
NSE All Share Index	20827.17	24770.52	18.9
Turnover volume, total	N102.85 billion shares	93.335 billion shares	(9.25%)
Total value of shares traded	N685.72b	N797.55b	16.31
Average daily volume units	414.73m units	377.9m units	(8.90)
Average daily turnover	N2.76b	N3.73b	17.02
New issues approved	N279.25b	N2.44Tr	772.8
Number of listed companies	216	217	0.50%
Number of listed securities	265	264	(0.40)
Number of trading days	248	247	(0.40)
<b>Performance in US Dollars</b>	<b>2009</b>	<b>2010</b>	<b>% change</b>
Market capitalization	\$47.75b	\$66.24b	38.72
Total turnover value	\$4.7b	\$5.34b	13.62
Average daily turnover	\$18.8m	\$21.56m	14.68
New issues approved	\$1.9b	\$16.3b	757.89

**Source:** Nigerian Stock Exchange, Annual Summary data.

Retrieved from [www.resourcedat.com/2011](http://www.resourcedat.com/2011), World Bank, IBTC.

Market capitalization had a 41.1% increase from 2009 to 2010. Number of listed securities decreased by (.40%). The number of listed companies in Nigeria is still very poor compared to the stock exchanges of Johannesburg.

**TABLE 2.10: JANUARY – JUNE 2012 HIGHLIGHTS OF NSE**

<b>INDICES</b>	
<b>JANUARY – JUNE 2012</b>	<b>USD</b>
Total value traded	7,828,993,982.60
Equity market value traded	2,084,758,969.16
Bond market value traded	5,803,250,875.50
Others	984,137.88
Total volume traded	46,796,516,911
Equity market volume trade	45,745,163,436.00
Bond market volume traded	1,051,302,575.00
Others	59,648
Total Number of transactions	448,430.00
Equity market Number of transactions	441,023.00
Bond market number of transactions	7,241.00
Others	155
Market capitalization	79,758,912,861.57
No of listed companies	195
No of traded companies	157
Exchange rate /US\$	155.44
Main index Name	NSE All Share Index
Main Index (Points)	21,599.57
Gains in main index (%)	4.19
P/E ratio	22.58
Dividend yield (%)	0
Comments: Exchange Trade Funds	6,543,066.82

**Source:** ASEA Newsletter, Issue 1, November, 2012.

### 2.6.11 Ghana Stock Exchange

The Ghana Stock Exchange was founded in 1989 as a private company limited by guarantee under Ghana's Companies code 1963 with trading commencing in 1990. The manufacturing and brewery sectors dominate the exchange followed by the Banking Sector. There is a 10% withholding tax on dividend income for all investors both resident and non-resident. Capital gains on listed securities will remain exempt from tax until 2015. All securities can be listed and criteria for listing include capital adequacy, profitability, spread of shares, years of existence and management efficiency.

The main index is the GSE All Share index and all listings are included in this main index. Securities traded are common stock, preference shares, Exchange Traded Funds (ETFs). Brokerage Commissions range between 1 – 1.75% of the value of the trade. The exchange control has been given to non-resident Ghanans and foreigners to invest through the exchange without any prior approval. However, one external resident portfolio investor (whether individual or institution) can hold only up to 10% of any security approved for listing on the exchange. Also, the total holdings of all external residents in one listed security shall not exceed 74%.

The GSE has three listing classes viz: the first official list (FOL), second official list (SOL), and third official list (TOL). What list a company is on depends on its capital.

(<http://www.wikiinvest.com/wiki/Ghanastockexchange>)

January to June 2012 financial highlights of the GSE is as shown below:

**TABLE 2.11: GHANA STOCK EXCHANGE FINANCIAL STATISTICS**

<b>INDICES</b>	
<b>JANUARY – JUNE 2012</b>	<b>USD</b>
Total value traded	20,017,809.00
Equity market value traded	20,017,809
Bond market value traded	0
Others	0
Total volume traded	72,614,702
Equity market volume trade	72,614,702
Bond market volume traded	0
Others	-
Market capitalization	28,254.98
No of listed companies	34
No of traded companies	34
Exchange rate /US\$	1.95
Main index Name	GSE composite index
Main Index (Points)	1,045.48
Gains in main index (%)	7.89
P/E ratio	11.04
Dividend yield (%)	3.93

**Source:** ASEA Newsletter, Issue 1, November 2012.

CIA World Fact Book (2012).

It is observed that the Bond market in Ghana is rather weak compare to other countries.

## **2.7 THE ECONOMIES OF SELECTED COUNTRIES.**

### **2.7.1 ECONOMY OF UNITED STATES OF AMERICA**

The U.S has the largest, most technologically advanced and most diverse economy in the world. U.S. nominal GDP was estimated to be \$17.4 trillion in January 2014 approximately a quarter of nominal global GDP. Its GDP at purchasing power parity is also the largest of any single country in the world, approximately a fifth of the global total. The US has a mixed economy and has maintained a stable overall GDP growth rate, a moderate unemployment rate and high levels of research and capital investment. Its five largest trading partners are Canada, China, Mexico, Japan and Germany ([http://en.wikipedia.org/wiki/Economy of USA](http://en.wikipedia.org/wiki/Economy_of_USA)).

The U.S has abundant natural resources, a well developed infrastructure and high productivity. The U.S is the world's third largest producer of oil and second-largest producer of natural gas. It is the second-largest trading nation in the world behind China. It has been the world's largest national economy since at least the 1890's. As of 2010, the country remains the world's largest manufacturer, representing a fifth of the global manufacturing output. Of the world's 500 largest companies, 132 are headquartered in the US, twice that of any other country. The country has one of the world's largest and most influential financial markets. The New York Stock Exchange is by far the world's largest stock exchange by market capitalization, ([wiki.org/Economy of USA](http://wiki.org/Economy_of_USA)).

American investments total over 3.3 trillion and consumer spending comprises 71% of the US economy in 2013. Main export partners are Canada, 19%; Mexico, 14%; China, 7%; Japan 4.5% as at year 2012 while main import partners are China 19%; Canada, 14%; Mexico, 12%; Japan 6.4%; Germany, 4.7% as per 2012 estimates.

The country has many natural resources such as coal, copper, lead, phosphates, rare earth elements, Uranium, bauxite, gold, iron, mercury, nickel, potash, silver, tungsten, zinc, petroleum, natural gas and timber. The US has the world's largest coal reserves with 491 short tons accounting for 27% of the world's total. (CIA World Fact book; Internet world statistics).

A central feature of the U.S economy is the economic freedom afforded to the private sector by allowing the private sector to make the majority of economic decisions in determining the direction and scale of what the US economy produces. This is enhanced by relatively low levels of regulation and government involvement. Consumer spending has risen to 71% in

2013. Small businesses are the largest employer in the country representing 53% of U.S workers, while the second largest share of employment belongs to large businesses that employ 38% the US work force. The private sector employs 91% of Americans while Govt. accounts for 8% of all U.S workers. The unemployment rate in U.S as of 2013 was 7.7% or 12 million people out of the population of approximately 315 million people.

Most of the U.S economy is composed of services. In 2011, four of the world's ten largest companies by market capitalization were America; Exxon Mobil, Apple Inc., Chevron Corporation and Microsoft measured by value of its listed companies securities, the New York Stock Exchange is more than three times larger than any other stock exchange in the world. The United States is the world's second largest trading nation (U.S Dept. of commerce – Bureau of labour statistics).

### **2.7.2 THE CANADIAN ECONOMY**

Canada is one of the world's richest nations and boost of the eleventh largest economy in the world when measured in US dollars at market exchange rates. The economy is dominated by the services industry which employs about three quarters of Canadians.

Canada has one of the highest levels of economic freedom in the world and as a world leader in the production of many natural resources such as gold, uranium, nickel, diamonds, lead and crude petroleum. Canada also is a member of the organization for Economic co-operation and development (OECD). As at 2013, GDP by sector has agriculture at 1.7%, industry; 28.5%, services 69.8%. major export partners as at 2012 are united states, 73.2%, EU 4.6%, UK 4.3%, China, 4.3%, Israel 3.1% while main import partners are united states , 50.6%, China 11.0%, UK 6.2%, Japan 6.2%, Mexico 5.5, South Korea 4.5%, (CIA world fact Book: <https://www.cia.gov/library/publications/the-world-fact-book/geos/ca.html>). The service sector employs about  $\frac{3}{4}$  of Canadians accounting for about 78% of GDP and the largest employer is the retail sector, employing almost 12% of Canadians.

### **2.7.3 ECONOMY OF CHINA**

China is the world's second largest economy by nominal GDP and by purchasing parity after the United States. It is the world's fastest growing major economy with growth rates averaging 10% over the past 30years. China is also the largest exporter and second largest

importer of goods in the world. The largest manufacturing economy in the world, outpacing its world rival in this category; the service-driven economy of the United States of America, ([http://en.wikipedia.org/wiki/Economy\\_of\\_the\\_PRC](http://en.wikipedia.org/wiki/Economy_of_the_PRC)). The economy of China is the fastest growing consumer market in the world. China ranked 87th by nominal GDP and 92nd by GDP (PPP) in 2012 according to IMF. The modernization goal of China is to become a fully developed nation by 2049. In the beginning of the 2010's, China remained the sole Asian nation to have an economy above the \$10-trillion mark along with the United States and the European Union. Main export partners are United States 17.2%, Hong Kong 15.8%, Japan 7.4%, South Korea 4.3% as at 2012 estimates. Imports totaled \$1.95 trillion as at 2013. Main import partners are Japan, 9.8%, South Korea 9.2%, United States 7.1%, Germany 5.1%; Australia 4.3% as at 2012 estimates. Foreign reserve as at March 2013 stood at \$3.44 trillion. Export goods include electrical and other machinery, including data processing equipment, apparel, textiles, iron and steel, optical and medical equipment. Foreign direct investment as at 2011 was \$116 billion while public debt was 22.15% of GDP. (CIA world Fact Book). Since 1978, China Started major reforms to its economy focusing on foreign trade as a major vehicle for economic growth. In the 1980s, the combination of central planning with market-oriented reforms kicked off with the sole aim of increasing productivity, living standards and technological quality. Chinese economy grew at a rapid pace of 10.43% in the 1990's. The economy grew at an average rate of 10% per year during the period, 1990-2004, the highest growth rate in the world. By 2010, China was poised to move from export dependency to development of an internal market. GDP was valued at \$5.87 trillion which surpassed Japan's \$5.47 trillion and became the world's second largest economy after the US with a prediction that China could become the world's largest economy (by nominal GDP) sometime as earlier as 2020.

OECD 2007 report estimated that if using purchasing power parity conversions, then China will overtake the United States in 2015. China is the sole nation in Asia to register a GDP figure above \$10-trillion mark, alongside the United States and the European Union. Former World Bank president, James Wolfensohn estimated in 2010 that by 2030 two-thirds of the World's middle class will live in China. According to the China Center for Economic Reform at Peking University in 2011 stated that "Assuming that the Chinese and U.S economies grow respectively by 8% and 3% in real terms, that China's inflation rate is 3.6% and America's is



2%, and that the renminbi appreciates against the dollar by 3% per year, China would become the world's largest economy by 2021.

By that time, both countries GDP will be at about 24 trillion. As of 2014, large state owned enterprises (SOEs) are the backbone of China's economy producing over 50%<sup>^</sup> of the nation's goods and services and employing over half of China's workers.

As of 2011, 35% of business activity and 43% of profits in the People's Republic of China were generated by companies which the state owned a majority interest. Most of China's financial institutions are state owned and governed and 98% of banking assets are state owned.

The renminbi is the currency of China, denominated as the Yuan, subdivided into 10 jiao or 100 fen. As of 2013, the RMB is the 8th most widely traded currency in the world ([http://en.wikipedia.org/wiki/Economy\\_of\\_PRC](http://en.wikipedia.org/wiki/Economy_of_PRC)).

#### **2.7.4 ECONOMY OF INDIA**

By nominal GDP the Indian economy is the eleventh largest in the world. The country is one of the G-20 major economies and a member of the BRICS. It is one of the fastest growing economies in the world. It is unfortunately also one of the poorest countries in the world. The main reason for this is the very large population of the country. India has recorded a growth of over 200 times in per capita income between 1947 to 2011 and the growth was led primarily due to huge increase in the size of the middle class consumer, a large labour force growth in the manufacturing sector. (<http://www.authorstream.com/presentation/sfaizi-india.co>) The service industry accounts for 57.2% of the country's GDP while the industrial and agricultural sector contribute 28.6% and 14% respectively.

Agriculture still remains the largest industry in the country, the growth has mainly been in the service and manufacturing sectors (<http://www.thridworldplanet.com/indianeconomy>). The growth of the economy is somehow unusual in the sense that India has done so with very little export. This is unlike China that has relied heavily on manufacturing products for exports since they have exported little, the growth must have come from consumer demand and health tourism. This has resulted in slower growth compared to China. India came out smooth from the global financial crisis due to the fact that so little of its economy depended on foreign

trade. Indian economy is grown on good and sound education system (World Bank Indian country overview 2008).

Indian labour regulations are among the most restrictive in the world. This has reduced the growth of the formal manufacturing sector where these laws are heavily applied. Goldman Sachs predicted that from 2007 to 2020, Indian GDP per capita in US and terms will quadruple and the economy will surpass that of the United States by 2043.

Official estimates has it that Indian economy was expected to grow at 7.6% in the fiscal years 2012-2013 but it ended up growing at 5% for fiscal 2012-2013. As of 2011 public debt stood at 68.5% of GDP and this is the highest among the emerging economies.

### **2.7.5 THE BRAZILIAN ECONOMY**

Brazil has the seventh largest economy by nominal GDP, the world over. Also it has the seventh largest by purchasing power parity. The economy is moderately a free market. The country has a market economy. Brazilian economy is the largest of the Latin American nations and the second largest in the western hemisphere according to Wikipedia.org. Brazil is one of the fastest growing major economies in the world with an average annual GDP growth rate of over 5 percent with predictions of being one of the five largest economies in the world (CIA fact book retrieved 2012). According to world economic forum Brazil was the top country in upward evolution of competitiveness in 2009 over coming Russia and partially closing the competitiveness gap with Indian and china among the BRIC economies. The service sector has 67% of the GDP in 2013 while industry and agriculture has 27.5% and 5.5% respectively. Main export partners are china 17% United State 11.1% Argentina 7.4% Netherlands 6.2%; whereas the main import partners are china 15.4%; United States 14.7% Argentina 7.4% Germany 6.4% and south Korea 4.1% with public debt standing at 54.9% of GDP in 2012. The Brazilian labour force is estimated at 100.77 million of which 10 percent is occupied in agriculture.

Brazil has the second biggest industrial sector in Americas, accounting for 28% of GDP, Brazil's diverse industries range from automobiles, steel and petrochemicals to computers, aircraft and consumer durables, Weiner B (2001).

Brazil has a population of over 195 million and abundant natural resources is one of the ten largest markets in the world, producing tens of millions of tons of steels, 26 million tons of cement, 3.5 million television sets and about 3 million refrigerators. Brazil has more than 93 Gigawatts of installed electric power capacity. A large part of Brazils growth has been fuelled by consumer credit while this has given people access to cars and TVs, it has left households with dangerously high debt levels. The average Brazillian household now spends approximately 22% of their income servicing debt. Brazil is strong industrially and economically, yet it still has to deal with its levels of poverty. Study shows that poverty affects 50% of the population. Predictions have it that Brazil will be the fift biggest economy in the world within the next five years.

Infrastructure spending has failed to keep up with the booming growth of the last few years. Brazil's largest export partner is China, so any Slowdown may cause repercussions at home.

#### **2.7.6 THE NIGERIAN ECONOMY**

Nigeria is the most populous country in Africa with a population of about 150 million people. The external sector is dominated by petroleum which generates about 95% of Nigeria's foreign exchange earnings while agriculture contributes less than 5%. The Nigerian economy has had chequed history. The period 1960 to 1970 saw the Gross domestic product recorded 3.1 percent growth annually. The oil boom of 1970-78 saw GDP growing positively by 6.2 percent annually. In the 1980's GDP had negative growth rates. The structural adjustment era, 1988-1997 saw GDP grow at a positive rate of 4.0%. The oil boom contributed to the negative growth of agriculture in the 1970's as the boom in oil sector lured away labour from the rural sector to urban centers in search of white collar jobs. In the 1960, the contribution of agriculture to GDP which was 63 percent in 1960 declined to 34% in 1988 principally due to neglect of the agricultural sector. The economy never experienced double-digit inflation during the 1960s. By 1976, inflation rate stood at 23 percent. It decreased to 11.8 percent in 1979 and jumped to 41 percent and 72.8 percent in 1989 and 1995 respectively. By 1998, the inflation rate had however, reduced to 9.5% from 29.0 percent in 1996 (Ekpo & Umoh, Retrieved from [www.onlinenigeria.com/links](http://www.onlinenigeria.com/links)).

Nigeria has an area of 356,669 miles (923,768km). Nigeria economy seems to be resistant to common shocks. What else can you expect from an economy that earns more than 90% of its

foreign exchange earnings and 83% of government revenues from oil. Thus the health of the Nigeria economy is based entirely on the health of the oil and gas sectors. The whole future of the Nigerian economy depends on oil. The financial sector remains underdeveloped compared to the size of the economy. For example, the largest bank in South Africa, Standard Bank Group in 2004, which have about the same capital base, has about three times the total assets of all the current 24 banks in Nigeria. Mortgage loans account for less than one percent of GDP in Nigeria compared to 20% in South Africa. The economy has been shaken by political instability, corruption and inadequate infrastructure (2014 CIA World Fact book).

Unemployment rate was 23.9% as at 2011 estimate. Vision 2020 attempts to exploit Nigeria's economic potentials and make her become one of the biggest twenty economies in the world by 2020. The financial sector has been identified as the driver needed to pull other sectors of the economy towards the vision, yet serious dichotomy still exists between the real sector and the financial sector. Thus, the financial system strategy (FSS) 2020 was initiated to synchronize the ongoing economic reforms.

Nigeria was the 49<sup>th</sup> largest economy in the world in 2006.

### **2.7.7 ECONOMY OF GHANA**

The Ghana economy has rich resource base with a primary manufacturing and exportation of digital technology goods combined with automotive and ship construction and exportation, as well as exportation of diverse and rich resource hydrocarbons, industrial minerals with others makes Ghana attain one of the highest GDP per capita in Africa. One of the top-ten fastest growing economies in the world and the fastest growing economy in Africa. The domestic economy in 2012 revolved around services which accounts for 50% of GDP and employs 28% of the work force. Growing output towards economic industrialization has made Ghana remain one of the more economically sound countries in Africa (User Documents / Economy of Ghana-Wikipedia). GDP as at 2013 estimate was \$90.882 billion for PPP and \$43 billion for nominal. GDP by sector include 50% for services, industry is 27.3%; Agriculture 22.7%; as at 2012. Population below poverty line is only 3% for 2013 estimate. Main export partners are; UAE 7.8%; China 7.2%; Germany 4.2%; Switzerland 4.1%; Japan 2.9%; Turkey 2.5% as of 2012 estimate. Main import partners are China 25.8%; Singapore 4.5%; India 4.0%; foreign direct investment was \$4.9 billion as at 2012.

### **2.7.8 THE ECONOMY OF COTE D'IVOIRE**

The economy of Cote d'ivoire is heavily dependent on agriculture and related activities which engaged roughly 68% of the population. It is the world's largest producer and exporter of cocoa beans and a significant producer and exporter of coffee and palm oil. Cocoa, oil and coffee are the country's top export revenue earners. The country is largely market-based and depends heavily on the agricultural sector where about 70% of the population are engaged in U.S. exports to Cote d'ivoire are rice and wheat, plastic materials, and resins, Kraft paper, agricultural chemicals, telecoms and oil and gas equipment whereas principal U.S imports are cocoa and cocoa products, petroleum, rubber and coffee (CIA world fact book 2014, [www.theodora.com/wfbcurrent/cote-d'ivoireeconomy](http://www.theodora.com/wfbcurrent/cote-d'ivoireeconomy)). GDP by sector are agriculture 28.2% industry: 21.3%, services: 50.6% as at 2011 estimate. Main export partners are Netherlands, 11%; United States, 11%; France, 8.3%; Germany, 8.2%; Ghana 6.9%; Nigeria 6.3%; as at 2012 estimate: main import partners are France 31%; China 28%; Brazil 4.4%; United States, 3.8%. Foreign direct investment plays a key role in the Ivorian economy accounting for between 40% to 45% of total capital in Ivorian firms with France the most important foreign investor. In June 2012, the IMF and the World Bank announced \$4.4 billion in debt relief for Cote d'ivoire under the highly indebted poor countries initiative. Challenges remain political instability and degrading infrastructure.

### **2.8 REVIEW OF EMPIRICAL LITERATURE**

The issue of whether or not stock markets promote economic growth has been an interesting topic to have prompted so many empirical studies. Discussion is still inconclusive as some empirical evidences still remain ambiguous and vague. Many people are proponents of existence of stock market and economic growth nexus. The authors that doubt this nexus are as many as the proponents. Thus the arguments for stock market development were supported by various empirical studies.

The first group of researchers to study on economic growth and financial market in general is Bagehot (1873), Schumpeter (1912), Robinson (1952), Cameron (1967), Goldsmith (1969), and McKinnon, (1973). Bagehot (1873) and Schumpeter (1912) focused on the constructive

assistance of financial sector to economic growth. Bagehot simply identified the constructive assistance of the financial market to economic growth. Schumpeter further articulated a view that the development of financial intermediation was positively related to economic growth as cited in (Haslag and Koo, 1999). Schumpeter recognized the importance of well-developed financial intermediaries in enhancing technological innovations, capital accumulation and economic growth. The argument follows that well –functioning financial markets, by lowering cost of conducting transactions, ensure that capital is allocated to the projects that yield the highest returns, and therefore enhances growth rates (see Alfora, Chanda, Kalemli and Sayel, 2003). Schumpeter posited in a nutshell that, technological innovation is the force underlying long-run economic growth, and that the cause of innovation is the financial sector’s ability to extend credit to the entrepreneur. The work of Schumpeter had been adjudged the most important and thorough one of the earliest contributions on financial development and economic growth (see Ake and Ognaligui, 2010). Kairola (2009) in (Robinson, 1952 and Locus, 1988) posited that during these periods, the studies of the direction of causality between the higher growth in financial sector and country’s economic growth rate was not clear.

Subsequently, researchers like (Cameron, 1967, Goldsmith, 1969 and McKinnon, 1973) applied case study techniques, providing evidence that countries with better developed financial systems were associated with higher rates of per-capita GDP growth (see Haslag and Koo, 1999). A number of studies argued that the development of financial sector has significantly promoted economic development (Schumpeter, 1912). The study argued that the technological innovation is the force underlying long-run economic growth. A good articulation of the irrelevance view may be found in Robinson (1952), who declared that “where enterprise leads, finance follows.” According to this view, economic development creates demand for particular types of financial arrangements and a country’s financial system automatically responds to these demands. He therefore concluded that the economic growth creates a demand for various types of financial services to which the financial system responds. Robinson posits that finance does not cause growth; finance only responds to changing demands from the “real sector”. Lucas (1988) states that economists badly overemphasized the role of finance in economic growth. He posited that no clear findings about the causality between financial sector and economic growth exist. Goldsmith (1969) on

the other hand reported a significant association between the level of financial development (defined as financial intermediary assets divided by GDP) and economic growth.

Earlier studies on international stock market linkages focused on the identification of short-term benefits of international portfolio diversification. According to McKinnon (1973), liberalization of financial markets allows financial deepening which reflects an increased use of financial intermediation by savers and investors and the monetization of the economy, and allows efficient flow of resources among people, and institutions over time. This encourages savings and reduces constraints on capital accumulation and improves allocation efficiency of investment by transferring capital from less productive to more productive sectors.

Another group of studies concentrated on examining financial links among stock markets by using either bivariate or multivariate co-integration methodology. Taylor and Tonks (1989) were the first to apply bivariate co-integration on the UK and U.S. markets to test the importance of the abolition of foreign exchange controls in 1979 (see Haslag and Koo, 1999). Furthermore, the empirical evidence was not conclusive, while a strong empirical causal relationship among the banking system, stock market development and economic performance was hardly established. Financial development is considered as a means to economic growth through various channels. An important role of financial intermediaries is to provide liquidity to individual investors (Diamond and Dybvig, 1983). Theoretically, there is disagreement among economists on the role of stock markets in economic growth. While the supply leading theorists are of the view that technological innovation is the underlying long-run economic growth, and the cause of innovation is the financial sectors ability to extend credit to the real sector (Hicks, 1969; Schumpeter, 1912). The demand following (growth led) theorists maintain that economic growth creates a demand for various types of financial services to which the financial system responds.

### **2.8.1 The Relationship between Stock Market Size and Economic Growth.**

Nyong (1997) tried to develop an aggregate index of capital market development and use it to determine its relationship with long-run-economic growth in Nigeria. The study used a time series data from 1970 to 1994 and for measures of capital market development, the ratio of market capitalization to GDP (in percentage), the ratio of total value of transactions on the main stock exchange to GDP (in percentage), the value of equities transaction relative to GDP

and listings were used. The four measures were combined into one composite index of capital market development using principal component analysis. Result shows that capital market development is negatively and significantly correlated with long-run growth in Nigeria and also that there exist bi-directional causality between capital market development and economic growth. Mohtadi and Agawal (n.d) examines the relationship between stock market development and economic growth for 21 emerging markets over 21 years using a dynamic panel method. Results show that indirectly, market size (capitalization ratio) affect investments which in turn, affects growth.

Ujunwa, A. and Salami, P. (2010) examine the impact of stock market development on long-run economic growth in Nigeria using time serial data for 21- year period; 1986 – 2006. The result showed that stock market size and turnover ratios are positive in explaining economic growth.

Garcia and Liu (1999) found insignificant and negative impact of inflation on market capitalization and argued that macroeconomic stability does not have any impact over stock market capitalization. Nyong (1997) analyzed the relationship between capital market development and economic growth. The authors used various indicators of stock market development like market capitalization-GDP ratio, total value of transaction-GDP ratio, value of transaction, GDP and listings to capture capital market development. Results revealed a negative effect on economic growth of capital market development.

Tachiwou (2010) study stock market development of West African monetary union over a period of 1995-2006 using market capitalization as stock market variables. They find that stock market development positively affects economic growth in West African monetary union both in the short run and long run.

According to Ake and Ognaligui (2010), who studied the Doula Stock Exchange and economic growth find that there is a systematic evidence that the market capitalization affects positively the GDP. Nowbutsing (2009), study the impact of stock market development on growth in Mauritius between 1989-2006 using size as a stock market development indices and find that stock market development positively affect economic growth in Mauritius both in the short run and long run.



Miner (2003) claim that a positive correlation between stock market development and economic growth does not appear to hold for countries with low levels of market capitalization.

Dritsaki and Melina (2005) study the causal relationship between stock and economic growth in Greece. Market capitalization is proxy for stock and using monthly data for the period 1988 – 2002, their results reveal uni-directional causality from economic development and stock market and bi-directional causality between economic developments and banking sector. Kolapo and Adaramola (2012) examine the impact of the Nigerian capital market on its economic growth between 1990 - 2010 using GDP as economic growth and market capitalization as stock market variable. Applying Johanson co-integration and Granger causality tests, results show that the Nigerian capital market and economic growth are co-integrated implying that a long run relationship exists between capital market and economic growth in Nigeria and there is no reverse causation from GDP to market capitalization.

Adam and Sanni (2005) examine the roles of stock market on Nigeria's economic growth using Granger causality test and regression analysis. The authors discovered a one way causality between GDP growth and market capitalization. Abu (2009), examined whether stock market development raised economic growth in Nigeria, by employing the error correction approach. The econometric results indicate that stock market development (market capitalization-GDP ratio) increases economic growth.

Ewah et al (2009), appraise the impact of capital market efficiency on economic growth in Nigeria using time series data on market capitalization between 1961 – 2004 using multiple regression and ordinary least squares estimation techniques. The results show that the capital market in Nigeria has the potential to induce growth but has not contributed meaningfully to the economic growth of Nigeria because of low market capitalization.

Nieuwerburgh, Buelens and Cuyvers (2006) studied the relation between capital market development and economic growth in Belgium by analyzing the long run relationship between stock market development, measured by market capitalization and economic growth and emphasized that stock market development determine economic growth in Belgium.

Garretasen, Lensink and Sterken (2004) studied the Romanian market using Granger causality test. They found out that a causal relationship exists between economic growth and financial markets development and that a 1% improvement of economic growth determines a 0.4% rise of market capitalization /GDP ratio. Yet according to their results, market capitalization / GDP ratios does not represent a significant determinant of economic growth.

### **2.8.2 The Relationship between Stock Market Liquidity and Economic Growth.**

Kyle (1984) in Nowbustsing (2009) argues that an investor can profit by researching a firm before the information becomes widely available and prices change. Thus investors will be more likely to research and monitor firms to the extent that larger, more liquid stock markets increase incentives to research firms, the improved information resource allocation can accelerate economic growth. Nowbustsing also reported that the role of stock markets in improving informational asymmetries was questioned by Stiglitz (1985) who argues that stock markets reveal information through price changes rapidly, creating a free-rider problem that reduces investor incentives to conduct costly search. Using information asymmetries as bench, Stiglitz (1989) and Magor (1989) suggested that the existence of stock markets has little relevance to real economic activity. (See Bekaert & Harvey, 1997).

Stock exchanges are expected to increase the amount of savings channeled to corporate sector. Evidence can be found in the work of Greenwood and Jovanovic (1990). The study concluded that the stock markets play an important role in allocation of capital to corporate sector that in turn stimulates real economic activity.

Levine and Zervos (1996) examines whether there is a strong empirical association between stock market development and long run economic growth. The study used pooled cross-country time series regression for forty-one countries from 1976 to 1993 to evaluate this association. The study tow the line of Demirguc-Kunt and Levine (1996) by conglomerating measures such as stock market size, liquidity and integration with world markets into index of stock market development. The growth rate of Gross Domestic product (GDP) per capita was regressed on a variable designed to control for initial conditions, political stability, investment in human capital and macroeconomic conditions; and then include the conglomerated index of stock market development. The finding was that a strong correlation between overall stock market development and long-run economic growth exist.

Maosheng and Weiguo (2002) studied the Chinese Stock Market and find that the expansion of China's stock market had weak effect on economic growth and that the relationship between stock market liquidity and economic growth was insignificant. The study of Jianghuai et al (2000), on Chinese stock market believed that the stock market development has significantly positive correlation with savings which indicated that stock market did stimulate economic growth. Pardy (1992) has argued that in less developed countries, capital markets are able to mobilize domestic savings and allocate funds more efficiently. Spears (1991) reported that in the early stages of development, financial intermediation induced economic growth.

Pioneering work from Spears (1991), Pardy (1992), Atje and Jovanovic (1993) show that stock market development is strongly correlated with growth rates of real GDP per capita. More importantly, they found that stock market liquidity predict the future growth rate of economy. Chen et al (2004), Paudel (2005) and Hove and Zicchino (2006) also acknowledged that stock markets, due to their liquidity, enable firms to attain much needed capital quickly, hence facilitating capital allocation, investment and growth.

Hamid Mohtadi and Sumit Agarwal examine the relationship between stock market development and economic growth for 21 emerging markets over 21 years using a dynamic panel method. Results show that market liquidity has a positive impact on growth and also that the stock market development leads to higher growth because it reduces both liquidity and productivity shocks. The results also suggest that value of shares traded ratio (STR) is not an effective measure of stock market liquidity. According to them, this may be especially so in developing countries where stock markets are highly volatile, causing the value of shares traded to be misleading indicators of liquidity.

Caporale et al (2004) examines the causal linkage between stock market development, financial development and economic growth from seven countries. Evidence suggests that a well-developed stock market can foster economic growth in the long run and also provides support to theories to which well functioning stock markets can promote economic development by fuelling the engine of growth through faster capital accumulation and by tuning it through better resource allocation. They found also that stock market liquidity and banking development both predict the future growth rate of economy when they both enter the

growth regression. Further, Paudel (2005) confirmed that stock markets, on account of liquidity, facilitate firms to attain the much needed capital quickly; therefore it facilitates capital allocation, investment and growth.

Levine and Zervos (1998) provide empirical evidence that stock market liquidity and banking development are both positively and robustly correlated with future economic growth.

Also Bencivenga et al (1996) and Levine (1991) argue that stock market liquidity is more important for growth although many profitable investments require a long-run commitment of capital; savers do not like to relinquish control of their savings for long periods. Kyle (1994) and Holmstrom and Tirole (1993) argue also that liquid stock market can increase incentives for investors to get information about firms and improve corporate governance.

The analysis of Morck et al (1990a, 1990b) suggests that stock market development can hurt economic growth by easing counter-productive corporate takeover. According to them, besides stock market size, liquidity, integration and excess liquidity can hinder investment, and therefore impede growth.

Empirically, Atje and Jovanovic (1993) test the hypothesis that has a positive impact on performance and find a significant correlation between economic growth and the value of stock market traded divided by GDP for forty countries covering a period of 1980 – 1988. Levine and Zervos (1998), using cross country data for 47 countries from 1976 – 1993 find that stock market liquidity is positively and significantly correlated with current and future rates of economic growth, even after controlling for economic and political factors. Additionally, they find that measures of both stock market liquidity and banking development significantly predict future rates of growth.

Rousseau and Wachtel (2000) study the link between equity markets and growth for 47 countries between 1980-1995 in a dynamic panel setting. They emphasize the importance of the liquidity of stock markets for economic growth. Naceur, Ghazouani and Omran (2007) conduct an empirical study by using a panel of 12 North African and Middle East countries and show that saving rate is a determinant of stock market development.

Levine (1991) and Bencivenga, Smith and Starr (1996) show that stock markets may affect economic activity through the creation of liquidity.

Demirguc-Kunt and Levine (1996) opined that increased liquidity can deter growth through at least three channels; first by increasing returns to investment as stock market liquidity may reduce saving rates via income and substitution effects as if savings rate fall enough and if there is an externality to capital accumulation, stock market liquidity may slow economic growth. Also by reducing uncertainty associated with investment, greater stock market liquidity may reduce saving rates because of effects of uncertainty on savings. Thirdly, stock market liquidity encourages investor's short sightedness, thus affecting corporate governance and thus reduces economic growth.

Nzotta (2002) claims a link between stock market liquidity and economic growth asserting that this ratio varies with the relative ease of trading. Baker and Stan (2004) developed a model that helps to explain that an increase in liquidity predicts lower subsequent returns in both firm-level and aggregate data. The model of Campbell Gross and Jiang (1993) provides rationale why pessimism indicates that a group of liquidity traders will suddenly decide to buy or sale equity, supporting Delong et al that maintains that absolute value of pessimism will increase trading volume.

Kyle (1984) and Holmstrom and Tirole (1993) argue that liquid stock markets can increase incentives for investors to get information about firms and improve corporate governance. On the other hand, Levine and Zervos (1993); Atje and Jovanovic (1993); Levine and Zervos (1998); Rouseau and Wachtel (2000) and Beck and Levine (2003) show that stock market development is strongly correlated with growth rates of real GDP per capita and found that stock market liquidity and banking development both predict the future growth rate of the economy.

Stock exchanges are expected to accelerate economic growth by increasing liquidity of financial assets, making global risk diversification easier for investors, promoting wiser investment decisions by saving-surplus units based on available information. In line with Levine (1991) and Benchivenga and Smith and Starr (1996), emphasized the positive role of liquidity provided by stock exchanges on the size of new real asset investments through common stock financing.

Again, Bencivenga et al (1996) and Levine (1991) have argued that stock market liquidity, the ability to trade equity easily plays a key role in economic growth. The contribution of

liquidity itself to long –term growth has been questioned by Demiguc-Kunt and Levine (1996). Liquidity is an important attribute of stock markets because, in theory, liquid markets improve the allocation of capital and enhance prospects for long term economic growth, (Abu-Sharia and Junankar, 2003). According to them, multiple regression procedures suggest that stock market liquidity helps forecast economic growth even after accounting for a variety of non financial factors that influence economic growth.

After controlling for inflation, fiscal policy, political stability, education, the efficiency of the legal system, exchange rate policy, and openness to international trade, stock market liquidity is still a reliable indicator of future long-term growth, (Levine, 1996). The turnover ratio is related to the size of the market and the value traded ratio to the size of the economy. Thus, a small liquidity market will have a high turnover ratio but a low value traded ratio. According to Abu-sharia and Junankar, (2003), liquidity is an important attribute of stock markets because in theory, liquid markets improve the allocation of capital and enhance prospects for long-term economic growth.

Also Demirguc-Kunt and Maksimovic (1996b) present firm level evidence from thirty countries consistent with the hypothesis that firms with access to liquid stock markets grow at rates faster than they could have grown without this access. Bencivenga et al (1996) and Levine and Renelt (1992) suggested that stock market liquidity plays a major role in economic growth. Levine and Zervos (1998) emphasize on the fact that stock market liquidity, measured as the value of stock traded relative to the size of the market and the size of the economy is significantly and positively related to the rate of economic growth. Liquidity, the ability to buy and sale equities easily, exhibits the strongest connection to long-run growth (Levine, 1997).

Nowbutsing (2009), study the impact of stock market development on growth in Mauritius between 1989 – 2006 using liquidity as one of the stock market development indices and find that stock market development positively affect economic growth in Mauritius both in the short run and long run.

Ujunwa and Salami (2010) study the impact of stock market development on long run economic growth in Nigeria using serial data for 21 year period, 1986-2006. The result also

shows that stock market liquidity coefficient was negative in explaining long run growth in Nigeria.

Tachiwou (2010) study stock market development of West African monetary union over a period of 1995-2006 using liquidity as stock market variable and find that stock market development positively affects economic growth in West African monetary union both in the short run and long run.

Ewah et al (2009) appraise the impact of capital market efficiency and economic growth in Nigeria using time series data on money supply between 1961-2004 using multiple regressions and ordinary least squares estimation techniques. Results show that the capital market in Nigeria has the potential to induce growth but has not contributed meaningfully to the economic growth of Nigeria because of illiquidity.

The study of Pagano (1993) and Levine (1997) concluded that the financial development could affect the rate of economic growth by altering productivity growth and the efficiency of capital and that countries with relatively liquid stock markets in 1976, grew much faster over the next 18 years than countries with illiquid markets.

Levine (2003) shed some empirical light on the ambiguous predictions about the relationship between stock market liquidity and economic growth presenting cross-country evidence on the association between one measure of stock market liquidity – the total value of stock transactions divided by GDP and average economic growth rates over 1976 – 1993. The study shows a strong positive relationship exists between long-run economic growth rates and stock market liquidity.

Yartey and Adjasi studied critical issues and challenges of stock market development in sub-Saharan Africa and found inconclusive evidence on the impact of stock markets on economic growth in African countries but acknowledged that the stock market value traded seems to be positively and significantly associated with growth.

Arestis et al (2001) used time series data on Germany, France, Japan, the United Kingdom, and the United States and find that stock market volatility had negative effect on output growth in Japan, France, and the United Kingdom; yet the effect in Germany and the United States is insignificant.

From the literature it is evident that no work seen by the researcher has actually compared the major stock market indices of the selected economies of advanced emerging and developing.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 RESEARCH DESIGN**

This dissertation used quantitative research predicated on ex-post facto research design. An ex-post facto design is a study that requires the use of variables which the researcher does not have the capacity to change its state or direction in the course of the exercise (Onwumere 2009). The ex-post-facto design was used because the data type are variables on stock market development and economic growth which are normally collected and are already documented by highly research based institutions like the World Bank, IMF, the CBN among others. Thus, researchers have to adapt to and rely on such official publications for valid and reliable academic exercise.

#### **3.2 SOURCES OF DATA**

The analyses for this dissertation were based on data generated from secondary sources. The data for the study was gathered from World Bank Development Indicator Online Database, which provided the detailed information about the GDP growth rate, stock market development indices for the selected developed, emerging and developing economies. The data generated covered annual time series information on market capitalization, value traded ratio, turnover ratio, and GDP and GDP growth rate for the selected economies. Thus, time series panel data type was used for the study. The time frame for the study covered 1988 to 2011. The use of this period (1988 – 2011) is necessitated by availability of data: stock market development indicators for most of the economies selected started from 1988 till 2010/2011.

The countries selected are in the same homogenous class, thus the simple random sampling was adopted in the selection of the countries for the study.

### 3.3 SPECIFICATION OF MODELS

The study developed six unique models to capture the proposed relationships posed in the hypotheses in chapter one. The first three models addressed issues on the relationships between economic growth and stock market size. The models used “a” to depict developed economy, “b” for emerging “c” for developing economies. The indices for stock market size included in the models are market Capitalization Ratio (MCR). The study included Interest Rate (INT) to capture the investors’ reaction to interest rate effect on the economies. Thus, the models are:

$$GDPR_a = \alpha_0 + \alpha_1 MCR_a + \alpha_2 INT_a + e_t$$

$$GDPR_b = \alpha_0 + \alpha_1 MCR_b + \alpha_2 INT_b + e_t$$

$$GDPR_c = \alpha_0 + \alpha_1 MCR_c + \alpha_2 INT_c + e_t$$

Where;

GDPR = Annual growth Domestic Product.

MCR = Market Capitalization Ratio

INT = Interest Rate

a = Developed Economy

b = Emerging Economy

c = Developing Economy

$\alpha_0$  = Constant

$\alpha_{1-2}$  = Coefficient of the independent variables (MCR, Int.).

The second three models of the study addressed issues on the relationship between stock market liquidity and economic growth in (a) developed, (b) emerging & (c) developing economies of the world. The indices for stock market liquidity included in the study are Value Traded Ratio (VTR) and Turnover Ratio (TOR). The models also included interest rate to capture the interest rate effect on investment in these economies. They models are thus:

$$\text{GDPR}_a = \beta_0 + \beta_{1a} \text{VTR}_a + \beta_2 \text{TOR}_a + \beta_3 \text{INT}_a + U_t$$

$$\text{GDPR}_b = \beta_0 + \beta_{1b} \text{VTR}_b + \beta_2 \text{TOR}_b + \beta_3 \text{INT}_b + U_t$$

$$\text{GDPR}_c = \beta_0 + \beta_{1c} \text{VTR}_c + \beta_2 \text{TOR}_c + \beta_3 \text{INT}_c + U_t$$

Where;

GDPR = Annual growth Domestic Product.

VTR = Value Traded Ratio

TOR = Turn Over Ratio.

INT = Interest Rate.

a = Developed Economy

b = Emerging Economy

c = Developing Economy

$\beta_0$  = Constant

$\beta_{1-3}$  = Coefficient of the Independent Variables (TOR, VTR, INT)

### 3.4 ECONOMETRIC ANALYSIS

The preliminary tests were carried out on the employed variables to ascertain their nature and distribution. To be specific, summary statistics of the employed variables were undertaken after which the stationary properties of the variables were verified. Unlike traditional econometric methodology, time-series econometrics methodology requires an analysis of the time-series properties of the economic variables in a regression equation before estimation in order to avoid any spurious relationship between them. If the time-series properties of the variables are fulfilled, then a possible long-run (co-integration) relationship between them can be investigated.

As suggested by Engle & Granger (1987) and Elder & Kennedy (2001), a possible long-run relationship between the economic variables can be examined by identifying their time-series paths. According to Nelson and Plosser (1982) and Konya (2004) there exists a unit root in

most macroeconomic time series. Therefore, it is necessary to analyze whether the series are stationary or not, whenever time series data are involved. The presence of a unit root implies that the time series under investigation is non-stationary; while the absence of a unit root shows that the stochastic process is stationary (Iyoha and Ekanem, 2002). The long-run relationship between the economic variables exists if the variables are stationary in their level or differentiated forms. The economic variables in question should be integrated in the same order, that is, they should be stationary in their level or in their first differences denoted as  $I(0)$  and  $I(1)$ , respectively.

The variables used in the analysis were subjected to two types of unit root tests, Im, Persaran and Shin test and Levin, Lin and Chu test, to determine whether they are stationary series or non-stationary series. The two tests are employed to ascertain if they reinforce one another, which is expected to boost the confidence in their reliability. The null hypothesis that is tested in both unit root tests is the presence of unit root.

Thereafter, correlation analysis of the employed variables was examined. The correlation analysis examined if there exist linear relationship between two variables. Correlation analysis helps to investigate the degree of linear association between two variables. Correlation analysis helps the researcher to avoid inconsistency in the regression analysis as the substitutability of the variable is established. As a result, they provide a useful guide in the specification of the models.

Two panel regression analyses were carried out and Hausman test was used to decide which of the result to abide by. The two panel regression analyses were Fixed and Random-Effect. Fixed-effect is used whenever the interest is in analyzing the impact of variables that vary overtime. It explores the relationship between predictor and outcome variables within an entity such that each entity has its own individual characteristics that may or may not influence the predictor variables. Fixed-effect is used when something within the individual may impact or bias the predictor or outcome variables and there is need to control for it. It removes the effect of time-invariant characteristics from the predictor variables to assess the predictors' net effect. Fixed-effects models are designed to study the causes of changes within an entity free from time-invariant characteristics.

On the other hand, random effect model is employed when the differences across entities have some influence on the dependent variable. Random effect model allows the inclusion of time invariant variables. Hausman Test is conducted to decide between fixed and random effects. Its null hypothesis is that the preferred model is random effects while the alternative hypothesis is that fixed effects are preferred. It basically tests whether the unique errors are correlated with the regressor and the null hypothesis is that they are not.

## CHAPTER FOUR

### MODEL ESTIMATIONS, EVALUATION AND INTERPRETATION OF RESULTS

#### 4.1 Introduction

This chapter presents the estimated result of the models specified in the previous chapter. It began with the summary statistics of the variables employed. It also presented the correlation analysis of the employed variable to show the association among annual growth of domestic product and the other employed explanatory variables. Thereafter, the results of various models estimated through the fixed and random-effects techniques of panel data analysis were presented.

#### 4.2 Statistical Properties of the Variables

The summary statistics of the employed variables for developed, emerging and developing economies were presented in Table 4.1. The summary statistics provided information about the means, medians, standard deviations (SD), minimum and maximum of all the employed variables. Mean is the average value of the series, median is the middle value of the series when the values are ordered from smallest to the largest. Of the two, the median is a robust measure of the centre of the distribution. Max and Min represent the maximum and minimum values of the series in the employed sample. Standard deviation measures dispersion in the series. The employed variables presented in Table 4.1 included annual growth of domestic product (GDPR), market capitalisation ratio (MCR), interest rate (INT), value traded ratio (VTR) and turnover ratio (TOR).

GDPR in emerging economy was the highest (5.48); this was followed by that of developing economies (3.685), while the average GDPR in developed economies was 1.905. This implied that on average, emerging economies were growing faster than both developed and developing economies. The distribution of median in developed, emerging and developing economies also followed the pattern that their mean followed. In terms of the average maximum value of GDPR, it was highest in emerging economies (14.2), followed by developing (10.6) and developed (7.15). The average minimum also followed the same distribution; it was -5.53 in developed economies, -4.7 in developing economies and -4.3 in emerging economies.

**TABLE 4.1 SUMMARY STATISTICS OF THE EMPLOYED VARIABLES**

		<b>GDPR</b>	<b>MCR</b>	<b>VTR</b>	<b>TOR</b>	<b>INT</b>
<b>Developed</b>	<b>Mean</b>	1.905	101.423	98.630	93.285	5.996
	<b>Median</b>	2.24	102.405	70.26	69.93	5.865
	<b>SD</b>	2.171	35.821	86.457	67.098	3.056
	<b>Minimum</b>	-5.53	41.53	12.23	22.98	0.63
	<b>Maximum</b>	7.15	195.06	450.19	404.07	14.75
<b>Emerging</b>	<b>Mean</b>	5.480	75.027	41.601	82.005	20.811
	<b>Median</b>	5.16	41.98	28.50	66.43	13.83
	<b>SD</b>	3.938	70.945	43.184	66.106	19.260
	<b>Minimum</b>	-4.3	0.53	0.216	5.262	5.31
	<b>Maximum</b>	14.2	291.28	222.999	328.616	86.36
<b>Developing</b>	<b>Mean</b>	3.685	16.056	1.005	4.897	16.332
	<b>Median</b>	3.995	11.88	0.374	3.223	17.075
	<b>SD</b>	2.910	11.918	1.756	5.112	7.987
	<b>Minimum</b>	-4.7	1.15	0.017	0.406	4
	<b>Maximum</b>	10.6	52.04	10.110	29.304	36.24

On market capitalisation ratio, the mean value was 101.432 in developed economies, 75.027 in emerging and 16.056 in developing economies. This distribution showed that the MCR was highest in developed economies. The median value also followed the same ordering, however, the gap between the median and mean value for emerging economies was wide. This was also reflected in the standard deviation statistics; where the SD value for emerging economies was 70.945, this value almost doubled that of the developed economies (35.82). It was striking to note that the standard deviation of the developing economies was not up to one-third of that of developed countries and slightly higher than one-seventh of the emerging economies.

The mean value of the value traded ratio was 98.63 in developed, 41.601 for emerging and 1.01 in developing economies. VTR for developed economies was the highest during the sampled period. The median values of the VTR for developed, emerging and developing economies followed same pattern with their average mean values. In terms of the turnover ratio, the mean values and the median values followed the pattern exhibited by the VTR.

On the contrary, the interest rate of emerging economies was 20.8. This was closely followed by that of developing economy, which recorded the mean value of about 16.33. The mean

value of INT in developed economies was the least (5.996). The median value of INT in developing economies was highest (17.075) followed by that of emerging economies (13.83).

### 4.3 PANEL UNIT ROOT (STATIONARITY) TEST

**TABLE 4.2: THE UNIT ROOT (STATIONARITY) TEST RESULTS FOR SELECTED VARIABLES**

	Variables		Im, Pesaran and Shin W-stat	Levin, Lin & Chu t*	Conclusion
<b>Developed</b>	<b>GDPR</b>	Level	-3.996***	-4.345***	I(0)
	<b>MCR</b>	Level	-1.667**	-2.36***	I(0)
	<b>VTR</b>	Level	-0.377	-1.032	I(1)
		1 <sup>st</sup> Difference	-5.738***	-4.024***	
	<b>TOR</b>	Level	0.288	-0.185	I(1)
		1 <sup>st</sup> Difference	-6.987***	-5.692***	
<b>INT</b>	Level	-3.803***	-6.691***	I(0)	
<b>Emerging</b>	<b>GDPR</b>	Level	-3.400***	-2.095***	I(0)
	<b>MCR</b>	Level	-0.191	-2.202**	I(1)
		1 <sup>st</sup> Difference	-10.692***	-11.680***	
	<b>VTR</b>	Level	1.739	1.780	I(1)
		1 <sup>st</sup> Difference	-7.193***	-7.120***	
	<b>TOR</b>	Level	-0.957	-0.830	I(1)
		1 <sup>st</sup> Difference	-6.286***	-7.786***	
	<b>INT</b>	Level	0.703	-0.435	I(1)
		1 <sup>st</sup> Difference	-5.103***	-5.116***	
	<b>Developing</b>	<b>GDPR</b>	level	-1.555*	-1.235
1 <sup>st</sup> Difference			-9.162***	-9.507***	
<b>MCR</b>		Level	-1.101	-1.880**	I(1)
		1 <sup>st</sup> Difference	-7.793***	-9.123***	
<b>VTR</b>		Level	0.099	-0.982	I(1)
		1 <sup>st</sup> Difference	-8.111***	-7.317***	
<b>TOR</b>		Level	-4.831***	-4.226***	I(0)
<b>INT</b>		Level	0.117	-0.339	I(1)
	1 <sup>st</sup> Difference	-5.780**	-6.535***		

Source: Author's Computation

Note: The critical values are -3.64, -2.95 and -2.61 at 1%, 5% and 10% significance levels respectively;

\*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

The variables used in the analysis are subjected to two types of unit root tests, Im, Persaran and Shin test and Levin, Lin and Chu test, to determine whether they are stationary series or



non-stationary series. The two tests are employed to ascertain if they reinforce one another, which is expected to boost the confidence in their reliability. The null hypothesis that is tested in both unit root tests is the presence of unit root.

The results of the unit root test as presented in Table 4.2 showed that all variables under consideration for developed economies were stationary at level except VTR and TOR for both tests. However, VTR and TOR were found stationary after differencing once. For emerging economies, GDPR was stationary at level while other variables were stationary after the first difference, implying that they were integrated of order one. For developing economies, all variables were stationary after the first difference for both tests. This suggested that they were all of order one.

#### 4.4 Correlation Analysis

In order to understand the degree of association that exist between the dependent and the independent variables as well as among the explanatory variables, correlation analysis was carried out. Table 4.3 presented the correlation analysis of the employed variables. In developed economies, MCR and INT had weak positive significant linear association with GDPR while VTR and TOR had weak negative linear association with GDPR. However, the coefficient of the association of VTR and GDPR was not significant while that of TOR and GDPR was statistically significant.

In emerging economies, the degree of association between MCR and GDPR was negative and significant; this is also true of interest rate. The degree of linear association between TOR and GDPR was significantly negative, while that of VTR was positive but not significant. In developing economies, MCR, VTR and TOR had weak-positive significant association with GDPR. Although, INT had weak-positive association with GDPR, the association was statistically insignificant.

**TABLE 4.3: CORRELATION ANALYSIS OF THE EMPLOYED VARIABLES**

		GDPR	MCR	VTR	TOR	INT
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<b>Developed</b>	<b>GDPR</b>	1				
	<b>MCR</b>	0.343*** (0.001)	1			
	<b>VTR</b>	-0.137 (0.210)	0.480*** (0.000)	1		
	<b>TOR</b>	-0.257** (0.018)	0.324*** (0.003)	0.925*** (0.000)	1	
	<b>INT</b>	0.200* (0.066)	-0.043 (0.693)	-0.142 (0.196)	-2.333** (0.032)	1
<b>Emerging</b>	<b>GDPR</b>	1				
	<b>MCR</b>	-0.299** (0.011)	1			
	<b>VTR</b>	0.174 (0.146)	0.562*** (0.000)	1		
	<b>TOR</b>	-0.567*** (0.000)	-0.412*** (0.000)	0.258** (0.030)	1	
	<b>INT</b>	-0.485*** (0.000)	-0.183 (0.126)	-0.303*** (0.010)	-0.310*** (0.008)	1
<b>Developing</b>	<b>GDPR</b>	1				
	<b>MCR</b>	0.240** (0.041)	1			
	<b>VTR</b>	0.313*** (0.007)	0.679*** (0.000)	1		
	<b>TOR</b>	0.383*** (0.001)	0.548*** (0.000)	0.925*** (0.000)	1	
	<b>INT</b>	0.129 (0.278)	-0.026 (0.828)	-0.015 (0.900)	0.054 (0.651)	1

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

#### 4.5 Fixed and Random Effects Estimations

Table 4.4 presented the fixed and random effects regression results of the relationships between economic growth and stock market size in developed economies. In the models, GDPR was the dependent variables while MCR and interest rate were introduced as explanatory variables.

Based on the insignificance of the coefficient of Hausman test, it followed that random effect model estimates were preferred above that of the fixed effect. The intuition that arose from this was that differences across the countries had some influences on the GDPR. The F-

statistic was significant at the 5% level suggesting that all the coefficients in the model were different from zero. However the Adjusted R-square showed that the explanatory variables (MCR and INT) were able to explain only about 17.1% of the total variation in GDPR. The coefficient of MCR was significant at the 1% level and it implied that on average, a hundred unit increases in MCR would induce about 2.6 unit increases in GDPR. The coefficient of INT was also significant at the 1% level suggesting that on average, one unit change in interest rate in developed economies would result in about 0.237 unit change in GDPR. The conclusion that emerged from the result obtained was that GDPR in developed economies was positively related to MCR and INT.

**TABLE 4.4 THE RELATIONSHIPS BETWEEN STOCK MARKET SIZE AND ECONOMIC GROWTH IN DEVELOPED ECONOMIES**

<b>Explanatory Variables</b>	<b>Fixed Effects</b>	<b>Random Effects</b>
<b>Constant</b>	-3.006*** (0.005)	-2.158** (0.030)
<b>MCR</b>	0.031*** (0.000)	0.026*** (0.000)
<b>INT</b>	0.294*** (0.001)	0.237*** (0.004)
<b>Adj. R-Squared</b>	0.206	0.171
<b>F-statistic</b>	5.525*** (0.000)	9.997*** (0.000)
<b>No. of Countries</b>	3	3
<b>No of Observations</b>	88	88
<b>Hausman Test</b>		
<b>Test Summary</b>	Chi-Sq. Statistic	Prob.
<b>Cross-section random</b>	3.502	0.174

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

Table 4.5 presented the fixed and random effect regression results of the relationship between stock market liquidity and economic growth in developed economies. The model estimate expressed GDPR as a function of value traded ratio, turnover ratio and interest rate.

The insignificance of the coefficient obtained from the Hausman test suggested that the random effect would be preferred above its counterpart (Fixed-Effect model estimates). This was because the differences across the countries influenced the behaviour of GDP in the model. The F-statistic was also significant at the 5% level, which implied overall significant of the model but the included explanatory variables were able to explain about 11.2% of the total variation in the GDP of developed economies. The coefficient of VTR, which was significant at the 5% level, implied that on average, one unit increase in VTR would result in about 0.016 unit increase in GDP. However, the coefficient of INT was not statistically significant. The coefficient of TOR was significant at the 1% level but it impacted negatively on GDP, for instance, on average, a unit increase in TOR would induce a reduction of about 0.025 units in GDP of the developed economies.

**TABLE 4.5 THE RELATIONSHIPS BETWEEN STOCK MARKET LIQUIDITY AND ECONOMIC GROWTH IN DEVELOPED ECONOMIES**

<b>Explanatory Variables</b>	<b>Fixed Effects</b>	<b>Random Effects</b>
<b>Constant</b>	2.347*** (0.008)	2.241*** (0.001)
<b>VTR</b>	0.015** (0.038)	0.016** (0.024)
<b>TOR</b>	-0.025*** (0.008)	-0.026*** (0.005)
<b>INT</b>	0.043 (0.663)	0.069 (0.373)
<b>Adj. R-Squared</b>	0.093	0.112
<b>F-statistic</b>	2.449** (0.032)	4.540** (0.005)
<b>No. of Countries</b>	3	3
<b>No of Observations</b>	85	85
<b>Hausman Test</b>		
<b>Test Summary</b>	Chi-Sq. Statistic	Prob.
<b>Cross-section random</b>	1.353	0.717

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

The analysis presented in Table 4.6 related with the fixed and random effect regression results of the relationship between economic growth and stock market size in emerging economies.

**TABLE 4.6 THE RELATIONSHIPS BETWEEN ECONOMIC GROWTH AND STOCK MARKET SIZE IN EMERGING ECONOMIES**

<b>Explanatory Variables</b>	<b>Fixed Effects</b>	<b>Random Effects</b>
<b>Constant</b>	5.223*** (0.001)	6.365*** (0.000)
<b>MCR</b>	0.019*** (0.004)	0.014** (0.027)
<b>INT</b>	-0.052** (0.042)	-2.161** (0.034)
<b>Adj. R-Squared</b>	0.718	0.13
<b>F-statistic</b>	38.206** (0.000)	6.571*** (0.002)
<b>No. of Countries</b>	4	4
<b>No of Observations</b>	74	74
<b>Hausman Test</b>		
<b>Test Summary</b>	Chi-Sq. Statistic	Prob.
<b>Cross-section random</b>	7.705**	0.021

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

The significance of the coefficient of Hausman test implied that as regards the relationship between economic growth and stock market size in emerging economies, the causes of changes in GDPGR was free from individual-country specific characteristics and as such fixed effect model estimates were expected to be stable than that of the random effect. The F-statistic was significant at the 1% level implying that the overall model specification was statistically significant. The result of the Adjusted R-square suggested that only 71.8% of the total variation in GDPGR of emerging economies were captured by the explanatory variables. The estimated coefficients of both MCR and INT were statistically significant but on average a unit increase in MCR would led to 0.019 increase in GDPGR while on average one unit increase in INT would result in 0.52 reduction in GDPGR. The conclusion that emerged on the effect of stock market size in emerging economies on GDPGR was that during the period covered by this study, MCR affected GDPGR positively. On the other hand, INT had inverse relationship with GDPGR.

Table 4.7 illustrated the results of the relationship between stock market liquidity and economic growth in emerging economies.

**TABLE 4.7 THE RELATIONSHIPS BETWEEN STOCK MARKET LIQUIDITY AND ECONOMIC GROWTH IN EMERGING ECONOMIES**

<b>Explanatory Variables</b>	<b>Fixed Effects</b>	<b>Random Effects</b>
<b>Constant</b>	6.818*** (0.000)	5.095*** (0.000)
<b>VTR</b>	0.013* (0.077)	-0.005*** (0.435)
<b>TOR</b>	-0.002 (0.703)	0.026*** (0.000)
<b>INT</b>	-0.076* (0.08)	-0.070*** (0.000)
<b>Adj. R-Squared</b>	0.698	0.404
<b>F-statistic</b>	27.982*** (0.000)	16.82*** (0.000)
<b>No. of Countries</b>	4	4
<b>No of Observations</b>	71	71
<b>Hausman Test</b>		
<b>Test Summary</b>	Chi-Sq. Statistic	Prob.
<b>Cross-section random</b>	68.272***	0.000

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

Hausman test suggested that fixed effect was more appropriate relative to the random effect model. The fixed effect model was significant at the 1% level and about 69.8% of the total variations in GDPGR were accounted for by VTR, TOR and INT in emerging economies. The estimated coefficients of VTR was statistically significant, on average, one unit increase in VTR would result in about one-hundredth increase in GDPGR. The result also revealed that a unit increase in INT would result in about 0.076 reductions in GDPGR.

Table 4.8 presented the fixed and random effects estimation of the relationship between economic growth and stock market size in developing economies

**TABLE 4.8 THE RELATIONSHIPS BETWEEN ECONOMIC GROWTH AND STOCK MARKET SIZE IN DEVELOPING ECONOMIES**

Explanatory Variables	Fixed Effects	Random Effects
Constant	4.825*** (0.000)	3.945*** (0.001)
MCR	0.033 (0.196)	0.038 (0.123)
INT	-0.112** (0.040)	-0.060 (0.217)
Adj. R-Squared	0.264	0.031
F-statistic	6.609*** (0.000)	2.229 (0.115)
No. of Countries	4	4
No of Observations	79	79
Hausman Test		
Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	6.239**	0.044

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

Hausman test supported the appropriateness of the fixed effect model. On overall bases, the fixed effect model was statistically significant but the explanatory variables included in the model accounted for about 26.4% of the total variation in GDP. Although MCR had positive relationship with economic growth in developing economies, its coefficient was not statistically significant. The coefficient of interest rate in developing economies suggested that a unit increase in interest rate would result in a reduction of 0.112 units in GDP.

The result of the relationship between stock market liquidity and economic growth in developing economies were presented in Table 4.9. The null hypothesis for the Hausman Test (the preferred model is random) was rejected while the alternative was accepted. The result of the F-statistics implied that overall, the fixed effect model was statistically different from zero and the explanatory variables included in the model were able to explain about 26.5% of variations in GDP.

**TABLE 4.9 THE RELATIONSHIPS BETWEEN STOCK MARKET LIQUIDITY AND ECONOMIC GROWTH IN DEVELOPING ECONOMIES**

Explanatory Variables	Fixed Effects	Random Effects
Constant	3.708*** (0.001)	1.705** (0.014)
VTR	-0.185 (0.667)	-0.364 (0.372)
TOR	0.197 (0.204)	0.312 (0.029)
INT	-0.068 (0.234)	-0.031 (0.370)
Adj. R-Squared	0.265	0.131
S.E. of Regression	2.389	2.598
Durbin Watson-stat	1.156	0.940
F-statistic	5.323*** (0.000)	4.608*** (0.005)
No. of Countries	4	4
No of Observations	73	73
Hausman Test		
Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	15.595***	0.001

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

VTR and interest rate impacted negatively on GDP, while TOR impact on GDP was positive though not significant. The conclusion that emerged from the foregoing was that VTR, INT and TOR were not sufficient enough to explain the variation in economic growth of developing economies.

In sum, Table 4.10 presented a snapshot of the findings as regards the response of economic growth to stock market size and liquidity.



**TABLE 4.10 SYNOPSIS OF THE FINDINGS**

	MCR	INT		VTR	TOR	INT	
Developed	+***	+***		Developed	+**	-***	+
Emerging	+***	-**		Emerging	+*	-	-*
Developing	+	-**		Developing	-	+	-

Note: \*\*\* denotes significant at 1%, \*\* denotes significant at 5%; \* denote significant at 10%.

#### 4.6 Validation of the Hypotheses

In this study, six hypotheses were examined and in this sub-section, each of them was appropriately looked into. To be specific, the six hypotheses are:

Ho1<sub>a</sub>: There is no significant relationship between stock market size and economic growth of developed economies.

Ho1<sub>b</sub>: There is no significant relationship between stock market size and economic growth of emerging economies.

Ho1<sub>c</sub>: There is no significant relationship between stock market size and economic growth of developing economies.

Ho2<sub>a</sub>: There is no significant relationship between stock market liquidity and economic growth of developed economies.

Ho2<sub>b</sub>: There is no significant relationship between stock market liquidity and economic growth of emerging economies.

Ho2<sub>c</sub>: There is no significant relationship between stock market liquidity and economic growth of developing economies.

In what follows, each of them was look into.

**Ho1<sub>a</sub>: There is no significant relationship between stock market size and economic growth of developed economies**

The result that relate with the validation of if there is significant relationship between stock market size and economic growth in developed economies is presented in Table 4.4. Based on the insignificant of the Hausman test, since its probability value (p-value) indicates that the Hausman coefficient is insignificant, the random effect model is appropriate relative to the fixed effect model in explaining the relationship between stock market size and economic growth in developed economies. The p-value for the estimated coefficients of both proxies of stock market size (MCR and INT), which implies significance of both estimates at 1% level of significance, suggest the existence of a significant relationship between stock market size and economic growth in developed economies. Therefore, the null hypothesis that “There is no significant relationship between stock market size and economic growth in developed economies” is rejected, while the alternative hypothesis that “There is significant relationship between stock market size and economic growth in developed economies” is accepted.

**Ho1<sub>b</sub>: There is no significant relationship between stock market size and economic growth of emerging economies**

The result that relay with the validation of the existence of significant relationship between stock market size and economic growth in emerging economies is presented in Table 4.6. Given that the Hausman test coefficient (7.705) for the model is significant at 5% level, the fixed effect model is appropriate in estimating the relationship between economic growth and stock market size in emerging economies relative to the random effect model. The p-value for the estimated coefficients of both proxies of stock market size in emerging economic, namely, MCR and INT, which are significant at 1% level of significance, suggest the existence of a significant relationship between stock market size and economic growth in emerging economies. Therefore, the null hypothesis that “There is no significant relationship between stock market size and economic growth in emerging economies” is rejected, while the alternative hypothesis that “There is significant relationship between stock market size and economic growth in emerging economies” is accepted.

**Ho1c: There is no significant relationship between stock market size and economic growth of developing economies**

The result that authenticates the existence of significant relationship between stock market size and economic growth in developing economies is presented in Table 4.8. Given that the Hausman test coefficient (6.239) for the model is significant at 5% level, the fixed effect model is appropriate in validating the relationship between economic growth and stock market size in developing economies relative to the random effect model. The p-value for the estimated coefficients of both proxies of stock market size in developing economic, which are MCR and INT, are significant at 5% level of significance. This suggests the existence of a significant relationship between stock market size and economic growth in developing economies. Therefore, the null hypothesis that “There is no significant relationship between stock market size and economic growth in developing economies” is rejected, while the alternative hypothesis that “There is significant relationship between stock market size and economic growth in developing economies” is accepted.

**Ho2a: There is no significant relationship between stock market liquidity and economic growth of developed economies**

The result that relate with the validation of if there is significant relationship between stock market liquidity and economic growth in developed economies is presented in Table 4.5. Based on the insignificant of the Hausman test, since its p-value indicates that the Hausman coefficient is insignificant, the random effect model is appropriate relative to the fixed effect model in explaining the relationship between stock market liquidity and economic growth in developed economies. The p-value for the estimated coefficients of the two proxies of stock market liquidity (VTR and TOR), which implies significance of both estimates at 5% and 1% level of significance, respectively, suggest the existence of a significant relationship between stock market liquidity and economic growth in developed economies. However, the coefficient of the third proxy of stock market liquidity is not statistically significant, suggesting the existence of insignificant relationship between economic growth and INT in developed economies. Since VTR and TOR, which are proxies of stock market liquidity, are significantly related to economic growth, there is significant relationship between stock market liquidity and economic growth in developed economies. Therefore, the null hypothesis

that “There is no significant relationship between stock market liquidity and economic growth in developed economies” is rejected, while the alternative hypothesis that “There is significant relationship between stock market liquidity and economic growth in developed economies” is accepted.

**Ho2<sub>b</sub>: There is no significant relationship between stock market liquidity and economic growth of emerging economies**

The result that relay with the validation of the existence of significant relationship between stock market liquidity and economic growth in emerging economies is presented in Table 4.7. Given that the Hausman test coefficient (68.272) for the model is significant at 1% level, the fixed effect model is appropriate in evaluating the relationship between economic growth and stock market liquidity in emerging economies relative to the random effect model.

The p-value for the estimated coefficients of the two proxies of stock market liquidity (VTR and INT), which implies significance of both estimates at 10% level of significance, suggest the existence of a significant relationship between stock market liquidity and economic growth in emerging economies. However, the coefficient of the third proxy of stock market liquidity (TOR) is not statistically significant, indicating the existence of insignificant relationship between economic growth and TOR in emerging economies. Since VTR and INT, which are proxies of stock market liquidity, are significantly related to economic growth in emerging economies, there is significant relationship between stock market liquidity and economic growth in emerging economies. Therefore, the null hypothesis that “There is no significant relationship between stock market liquidity and economic growth in emerging economies” is rejected, while the alternative hypothesis that “There is significant relationship between stock market liquidity and economic growth in emerging economies” is accepted.

**Ho2<sub>c</sub>: There is no significant relationship between stock market liquidity and economic growth of developing economies**

The result that authenticates the existence of significant relationship between stock market liquidity and economic growth in developing economies is presented in Table 4.9. Given that the Hausman test coefficient (15.595) for the model is significant at 1% level, the fixed effect model is appropriate in validating the relationship between economic growth and stock market

liquidity in developing economies relative to the random effect model. The p-value for the estimated coefficients of all the proxies of stock market liquidity in developing economic, which are VTR, TOR and INT, are not significant, even at 10% level of significance. This suggests that there is no existence of a significant relationship between stock market size and economic growth in developing economies. Therefore, the null hypothesis that “There is no significant relationship between stock market size and economic growth in developing economies” is accepted, while the alternative hypothesis that “There is significant relationship between stock market size and economic growth in developing economies” is rejected.

#### **4.7 Discussion of Findings**

The findings of this study were discussed in line with the descriptive analyses and research hypotheses raised in the study.

##### **4.7.1 Descriptive Studies on Nature of Economic Growth and Stock Market Development for Developed, Emerging and Developing Economies**

The descriptive analysis presented on table 4.1 showed the characteristics of the various economy groups (developed, emerging and developing) in terms of economic growth patterns, size and liquidity of the stock market. The results showed that the economic growth rate (GDPR) in emerging economy was the highest (5.48); this was followed by that of developing economies (3.685), while the average GDPR in developed economies was 1.905. This implied that on average, emerging economies were growing faster than both developed and developing economies.

Analysis further showed that stock market size of developed economies is largest. This is evident from the mean value of the market capitalisation ratio (101.432) for developed economies, 75.027 for emerging and 16.056 for developing economies. This suggest that the larger the size of the stock market, the more advanced an economy becomes. Hence, this infers that there could be positive relationship between level of economic development and stock market size.

Moreover, results on stock market liquidity indicate that developed economies have more liquid market than other economies. The mean value of the value traded ratio was 98.63 for developed, 41.601 for emerging and 1.01 for developing economies. More so, median values of the VTR for developed, emerging and developing economies followed same pattern with

their average mean values. In terms of the turnover ratio, the mean values and the median values followed the pattern exhibited by the VTR. This suggests that as economy advances, the level of trading on the floor of her stock exchange increases which implies more liquidity for stock-market-traded financial instruments. Since market liquidity is expected to boost confidence, one can then conclude that market confidence is higher in developed economies (98.63) than in emerging (41.601) and developing (1.01). The mean further revealed that market liquidity is very low in developing economies which implies that confidence in stock market is very poor in developing countries.

The study also showed that interest rate is higher in developing and emerging economies than in developed ones. The results showed that the interest rate of emerging economies was 20.8. This was closely followed by that of developing economy, which recorded the mean value of about 16.33. The mean value of INT in developed economies was the least (5.996). The median value of INT in developing economies was highest (17.075) followed by that of emerging economies (13.83). This shows that, on the average, interest rate in developed economies grow in units while those of developing and emerging economies grow in double digits (mostly tens). The values of standard deviation shows that interest rate risk is higher in emerging economies (19.260) than in developing (7.987) and developed (3.056) economies. This can be attributed to the vibrant and high level of economic activities going on in emerging economies; and the high need for capital. This suggests that capital is in shorter supply in emerging economies than other economies.

Further analyses of the characteristics of the various economic stages are examined using the coefficient of Hausman test. The results revealed that for developed economies, differences across the countries had some influences on the rate of economic growth (GDPR), where as in emerging and developing economies, the causes of changes in GDPR was free from country-specific characteristics. This suggests that country-specific factors influence the relationship between stock market development and economic growth in developed economies and while economies (emerging and developing) are affected by general factors across economies.

#### **4.7.2 Impact of Stock Market Size on Economic Growth in Developed, Emerging and Developing Economies**

Result of the analyses of the impact of stock market size on economic growth showed that stock market size significantly impacted on economic growth rate of developed economies (F-statistic =  $9.997 < 0.05$ ). However the Adjusted R-square showed that the explanatory variables (MCR and INT) were able to explain only about 17.1% of the total variation in GDP. The result suggests that stock market size is not major factors that explain economic growth in developed economies. In the case of emerging economies, the F-statistic (38.206; p. 0000) was significant at the 5% level implying stock market size have significant impact on economic growth of emerging economies, and the Adjusted R-square suggested that 71.8% of the total variation in GDP of emerging economies were captured by the explanatory variables. Thus, stock market size variable largely explains economic growth in emerging economies; unlike the developing economies where the explanatory variables included in the model accounted for about 26.4% of the total variation in GDP. The results generally imply that emerging economies enjoy a significant contribution from stock market size.

The finding support the assertion from Mauro (2000) which posited that stock market is a stable predetermining factor of economic growth in emerging economies. Also supported by this finding is the work of Mohtadi and Agawal (n.d) that examines the relationship between stock market development and economic growth for 21 emerging markets over 21 years using a dynamic panel method and revealed that market size (capitalization ratio) affect investments which in turn, affects growth. Thus, one can then agree with Demirguc-Kunt and Levine (1996) that between 1990 and 2007, the world stock markets surged and emerging markets accounted for a large amount of this boom.

Further results showed that the coefficient of MCR for developed economies was significant at the 1% level and it implied that on average, a hundred unit increases in MCR would induce about 2.6 unit increases in GDP. For emerging economies, a unit increase in MCR would led to 0.019 increase in GDP while MCR in developing economies had positive relationship with economic growth, its coefficient was not statistically significant. The conclusion that emerged on the effect of stock market size in developed and emerging economies on GDP

was that during the period covered by this study, MCR significantly affected GDPGR positively. In other words, the developing economies had insignificant positive relationship between GDPGR and stock market size. This result suggests that stock market size in more advanced economies had more effect on economic growth than less developed ones. This assertion support Mala and White (2006) which posit that the level to which stock market contributes to economic growth depends on its level of development.

These findings oppose the work of Filler, Hanousek and Campos (1999) that the nature and economic significance of the relationship between stock market development and growth vary according to a country's level of economic development with a larger impact in less developed economies.

The theory that well developed stock markets indicate high degree of financial development which facilitates channels between capital accumulation and economic growth is equally supported by this work. Thus, this work infers that the level of significance of the contributions of stock market size can be used to assign the level of development of an economy.

The results equally measured the contribution of interest rate on the impact of stock market size on economic growth based on the stage of economic development. The coefficient of INT was significant at the 1% level suggesting that on average, one unit change in interest rate in developed economies would result in about 0.237 unit change in GDPGR while a one unit increase in INT would result in 0.52 reduction in GDPGR in emerging economies. The coefficient of interest rate in developing economies would result in a reduction of 0.112 units in GDPGR. The result implies that interest rate has inverse relationship with GDPGR in emerging and developing economies. This might be due to lack of capital for development and productive activities in emerging and developing economies.

#### **4.7.3 Impact of Stock market liquidity on Economic Growth in Developed, Emerging and Developing Economies**

This is a discussion on the results of the impact of stock market liquidity on economic growth for all the stages of economic development (developed, emerging and developing economies). The variables of liquidity included are Value Traded Ratio (VTR) and Turnover Ratio (TOR).



VTR was found to exert significant positive effect on economic growth of developed and emerging economies while its effect on developing economies was inverse, though insignificant. Similarly, TOR was estimated to affect economic growth inversely in developed and emerging economies, but the effect was significant in developed economies; it was not in emerging economies. The positive effect of TOR in developing economies was not significant. Thus, the stock market liquidity measured in terms of value traded ratio (VTR) and turnover ratio (TOR) were found to have mixed impact on economic growth of developed, emerging and developing economies.

Moreover, it was only in emerging economies that the interest rates channel had significant impact on the relationship between stock market liquidity and economic growth. The coefficient of INT was not statistically significant in developed economies. In Emerging economies, a unit increase in INT would result in about 0.076 reductions in GDP. For the developing economies, interest rate had insignificant inverse relationship with economic growth. The result implies that interest rate can erode liquidity of stock in emerging economies when not checked. This study asserts that emerging economies are highly sensitive to interest rate changes due to high need for productive capital.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this chapter, the key findings of the study are presented. The lessons for policy are drawn. Thereafter, the agenda for future research and the concluding remarks were presented.

#### **5.1 Summary of Findings**

This study was prompted by the disagreements, and varied findings on the relationship between stock market development and economic growth across various economies respectively. The objective of the study is then to empirically investigate the impact of major stock market indices on economic growth of developed, emerging and developing economies. The specific objectives of this study are two-fold, and they are to empirically validate whether the stage of economic development in developed, emerging and developing economies has any impact on the stock market size and economic growth and whether the stock market liquidity in developed, emerging and developing economies has any effect on economic growth.

The study used aggregate time series data to examine nexus in order to solidify the existing empirical work in these economies. The study used pooled data for twelve countries from 1988 to 2011.

It began with the summary statistics of the variables employed. It also presented the correlation analysis of the employed variable to show the association among annual growth of domestic product and the other employed explanatory variables. Thereafter, the results of various models were estimated through the fixed and random-effects techniques of panel data analysis.

The results revealed the following about stock-growth nexus among the various economies under study:

1. Emerging economies were growing faster than both developed and developing economies.

2. There could be positive relationship between level of economic development and stock market size.
3. As economy advances, the level of trading on the floor of her stock exchange increases which implies more liquidity for stock-market-traded financial instruments.
4. Market confidence is higher in developed economies than in emerging and developing ones.
5. Market liquidity is very low in developing economies which implies that confidence in stock market is very poor in developing countries.
6. Interest rate risk is higher in emerging economies than in developing and developed economies, because capital is in shorter supply in emerging economies than other economies.
7. Country-specific factors influences the relationship between stock market development and economic growth in developed economies and while other economies (emerging and developing) are affected by general factors across countries.
8. Stock market size is not major factors that explain economic growth in developed economies.
9. Stock market size variable largely explains economic growth in emerging economies which indicated that emerging economies enjoy a significant contribution from stock market size.
10. For developing economies, stock market size variable does not have significant effect and does not explain economic growth.
11. Unlike the developed economies, interest rate has inverse relationship with GDPR in emerging and developing economies which might be due to lack of capital for development and productive activities in emerging and developing economies.
12. The stock market liquidity measured in terms of value traded ratio (VTR) and turnover ratio (VTR) were found to have mixed impact on economic growth of developed, emerging and developing economies.
13. Moreover, it was only in emerging economies that the interest rates channel had significant impact on the relationship between stock market liquidity and economic

growth, which indicated that emerging economies are highly sensitive to interest rate changes due to high need for productive capital.

## **5.2 Conclusion**

The findings have shown that the stages of economic development have effect on the relationship between economic growth and stock market development (size and liquidity). The study has conclude that stock market was growing faster in emerging economies with higher interest risk, and thus has significantly explained major growth in the economies. The study further concluded that the developed economies has been so saturated that stock market no longer explains significantly economic growth in such economies, though liquidity is very high stock-traded financial instruments, resulting in high market confidence.

However, the developing economies do not have much to show to their involvement in stock market activities. The result of the analysis carried out on developing economies showed that value traded ratio of the stock market as well as the turnover ratio did not have significant effect on the economic growth during the period covered in the analysis; this was an evidence of the dichotomy that exist between financial and real sector of the developing economies.

The study further conclude therefore, that it is imperative for the government to factor in the stage of economic development when formulating policies that are meant to stimulate economic growth through stock market size and stock market liquidity.

## **5.3 Policy Implications of Findings and Recommendations**

The government should endeavour to enact policies that will integrate the real and financial sectors for developing economies like Nigeria. Integrating the real sector and the financial sector will make the stock market to be effective, that is, significantly liquid such that it is very easy for investors to change their investors status between stock and real investment. Therefore, improving trading on stock can encourage economic growth in developing economies like Nigeria. For the Nigerian and other developing economies, efforts of the government should therefore gear towards encouraging real investments. Real investment boosts the activities in the financial (stock) sector which in turn facilitate investments in the real sector. The actual function of the stock market should be to boost investors' confidence

which is lacking in the Nigerian stock market (and other developing economies) as a result of low liquidity. Stock trading can hence be improved by encouraging low cost transactions, and boost public confidence on the stock market of developing economies.

The study has found that the stage of economic development has effect on the roles of stock market on economic growth of countries. It is therefore essential for the government to put into consideration the stage of economic development when formulating policies that are meant to stimulate economic growth through stock market size and stock market liquidity. This implied that the structure of the economy must be critically studied and analysed before policies are to be formulated.

#### **5.4 Agenda for Future Research**

Since it is obvious through the empirical analysis carried out in this study that the level of economic development significantly influences behaviour of economy through stock market, it would be of interest if the channels through which stock market liquidity and size affect the economic growth in developed, emerging and developing economies are empirically validated. This is believed to further deepen the understanding of the interaction of the financial sector and real sector in developed, emerging and developing economies.

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## APPENDIX

## Panel Unit Root Result Developed economies

Panel unit root test: Summary

Series: GDPR

Date: 06/24/13 Time: 07:18

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.34453	0.0000	4	92
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.99633	0.0000	4	92
ADF - Fisher Chi-square	29.7129	0.0002	4	92
PP - Fisher Chi-square	29.9329	0.0002	4	92

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: MCR

Date: 06/24/13 Time: 07:20

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.36213	0.0091	4	92
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.66698	0.0478	4	92
ADF - Fisher Chi-square	13.7083	0.0897	4	92
PP - Fisher Chi-square	12.7846	0.1195	4	92

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

## Panel unit root test: Summary

Series: D(VTR)

Date: 06/24/13 Time: 07:23

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 4

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.02384	0.0000	4	79
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.73844	0.0000	4	79
ADF - Fisher Chi-square	45.4084	0.0000	4	79
PP - Fisher Chi-square	42.0221	0.0000	4	88

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

## Panel unit root test: Summary

Series: TOR

Date: 06/24/13 Time: 07:24

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.18464	0.4268	4	89
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.28752	0.6131	4	89
ADF - Fisher Chi-square	5.44052	0.7096	4	89
PP - Fisher Chi-square	5.77075	0.6729	4	89

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

## Panel unit root test: Summary

Series: D(TOR)

Date: 06/24/13 Time: 07:27

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 4

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.69176	0.0000	4	81

Null: Unit root (assumes individual unit root process)

Method	Statistic	Prob.	Cross-sections	Obs
Im, Pesaran and Shin W-stat	-6.98728	0.0000	4	81
ADF - Fisher Chi-square	54.1510	0.0000	4	81
PP - Fisher Chi-square	49.2959	0.0000	4	85

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: INT

Date: 06/24/13 Time: 07:28

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 4

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.69090	0.0000	4	76
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.80281	0.0001	4	76
ADF - Fisher Chi-square	32.5336	0.0001	4	76
PP - Fisher Chi-square	3.01126	0.9336	4	84

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

## Emerging economies

Panel unit root test: Summary

Series: GDPR

Date: 06/24/13 Time: 07:30

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.09482	0.0181	4	89
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.40041	0.0003	4	89
ADF - Fisher Chi-square	25.6414	0.0012	4	89
PP - Fisher Chi-square	25.9760	0.0011	4	89

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: MCR  
 Date: 06/24/13 Time: 07:31  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0 to 2  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.20246	0.0138	4	84
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.19069	0.4244	4	84
ADF - Fisher Chi-square	7.03847	0.5325	4	84
PP - Fisher Chi-square	8.09818	0.4239	4	86

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(MCR)  
 Date: 06/24/13 Time: 07:33  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0 to 1  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-11.6802	0.0000	4	81
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.6920	0.0000	4	81
ADF - Fisher Chi-square	83.2093	0.0000	4	81
PP - Fisher Chi-square	448.803	0.0000	4	82

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: VTR  
 Date: 06/24/13 Time: 07:34  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0 to 4  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	1.77983	0.9624	4	82



Null: Unit root (assumes individual unit root process)

Method	Statistic	Prob.**	Cross-sections	Obs
Im, Pesaran and Shin W-stat	1.73887	0.9590	4	82
ADF - Fisher Chi-square	3.75690	0.8784	4	82
PP - Fisher Chi-square	3.70895	0.8824	4	86

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(VTR)

Date: 06/24/13 Time: 07:36

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 2

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.12033	0.0000	4	80
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.19259	0.0000	4	80
ADF - Fisher Chi-square	54.5163	0.0000	4	80
PP - Fisher Chi-square	53.1496	0.0000	4	82

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: TOR

Date: 06/24/13 Time: 07:36

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 3

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.82987	0.2033	4	82
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.95727	0.1692	4	82
ADF - Fisher Chi-square	10.9390	0.2052	4	82
PP - Fisher Chi-square	12.0131	0.1506	4	85

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(TOR)  
 Date: 06/24/13 Time: 07:38  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0 to 2  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.78584	0.0000	4	79
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.28614	0.0000	4	79
ADF - Fisher Chi-square	47.4356	0.0000	4	79
PP - Fisher Chi-square	59.9533	0.0000	4	81

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: INT  
 Date: 06/24/13 Time: 07:39  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.43507	0.3318	4	73
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.70340	0.7591	4	73
ADF - Fisher Chi-square	3.40198	0.9067	4	73
PP - Fisher Chi-square	3.36940	0.9091	4	73

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(INT)  
 Date: 06/24/13 Time: 07:40  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0 to 1  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.11620	0.0000	4	67

Null: Unit root (assumes individual unit root process)

Method	Statistic	Prob.**	Cross-sections	Obs
Im, Pesaran and Shin W-stat	-5.10331	0.0000	4	67
ADF - Fisher Chi-square	38.7834	0.0000	4	67
PP - Fisher Chi-square	38.2807	0.0000	4	69

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

## Developing economies

Panel unit root test: Summary

Series: GDPR

Date: 06/24/13 Time: 07:41

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 1

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.23533	0.1084	4	89
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.55481	0.0600	4	89
ADF - Fisher Chi-square	14.4987	0.0697	4	89
PP - Fisher Chi-square	21.9247	0.0051	4	90

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(GDPR)

Date: 06/24/13 Time: 07:43

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 3

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-9.50743	0.0000	4	82
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-9.16232	0.0000	4	82
ADF - Fisher Chi-square	75.6554	0.0000	4	82
PP - Fisher Chi-square	96.3108	0.0000	4	86

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: MCR

Date: 06/24/13 Time: 07:44  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.87979	0.0301	4	87
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.10121	0.1354	4	87
ADF - Fisher Chi-square	11.5376	0.1731	4	87
PP - Fisher Chi-square	10.6216	0.2241	4	87

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary  
 Series: D(MCR)  
 Date: 06/24/13 Time: 07:45  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-9.12279	0.0000	4	83
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.79260	0.0000	4	83
ADF - Fisher Chi-square	59.6717	0.0000	4	83
PP - Fisher Chi-square	134.885	0.0000	4	83

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary  
 Series: VTR  
 Date: 06/24/13 Time: 07:46  
 Sample: 1988 2011  
 Exogenous variables: Individual effects  
 Automatic selection of maximum lags  
 Automatic lag length selection based on SIC: 0 to 3  
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.98201	0.1630	4	79
Null: Unit root (assumes individual unit root process)				

Im, Pesaran and Shin W-stat	0.09894	0.5394	4	79
ADF - Fisher Chi-square	16.6551	0.0339	4	79
PP - Fisher Chi-square	19.2782	0.0134	4	83

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(VTR)

Date: 06/24/13 Time: 07:47

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 2

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.31730	0.0000	4	75
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-8.11100	0.0000	4	75
ADF - Fisher Chi-square	63.1040	0.0000	4	75
PP - Fisher Chi-square	171.389	0.0000	4	79

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: TOR

Date: 06/24/13 Time: 07:49

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 1

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.22579	0.0000	4	82
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.83060	0.0000	4	82
ADF - Fisher Chi-square	37.6467	0.0000	4	82
PP - Fisher Chi-square	31.7384	0.0001	4	83

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: INT

Date: 06/24/13 Time: 07:50

Sample: 1988 2011

Exogenous variables: Individual effects  
Automatic selection of maximum lags  
Automatic lag length selection based on SIC: 0  
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.33898	0.3673	4	75
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.11709	0.5466	4	75
ADF - Fisher Chi-square	6.90445	0.5470	4	75
PP - Fisher Chi-square	6.95354	0.5417	4	75

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(INT)

Date: 06/24/13 Time: 07:51

Sample: 1988 2011

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 4

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.53502	0.0000	4	67
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.78012	0.0000	4	67
ADF - Fisher Chi-square	44.0601	0.0000	4	67
PP - Fisher Chi-square	58.8218	0.0000	4	71

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

## Panel Data Analysis

### Developed economies

Dependent Variable: GDPR  
 Method: Panel Least Squares  
 Date: 06/20/13 Time: 20:03  
 Sample (adjusted): 1988 2009  
 Periods included: 22  
 Cross-sections included: 4  
 Total panel (balanced) observations: 88

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.006213	1.036669	-2.899877	0.0048
MCR	0.031243	0.007086	4.409052	0.0000
INT	0.293870	0.086990	3.378225	0.0011

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.251997	Mean dependent var	1.907045
Adjusted R-squared	0.206387	S.D. dependent var	2.224321
S.E. of regression	1.981535	Akaike info criterion	4.271367
Sum squared resid	321.9715	Schwarz criterion	4.440276
Log likelihood	-181.9401	Hannan-Quinn criter.	4.339416
F-statistic	5.525045	Durbin-Watson stat	0.964483
Prob(F-statistic)	0.000196		

Dependent Variable: GDPR  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 06/20/13 Time: 20:06  
 Sample (adjusted): 1988 2009  
 Periods included: 22  
 Cross-sections included: 4  
 Total panel (balanced) observations: 88  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.158072	0.977737	-2.207210	0.0300
MCR	0.026206	0.006555	3.998049	0.0001
INT	0.237142	0.079660	2.976941	0.0038

#### Effects Specification

	S.D.	Rho
Cross-section random	0.621144	0.0895
Idiosyncratic random	1.981535	0.9105

#### Weighted Statistics

R-squared	0.190437	Mean dependent var	1.072501
Adjusted R-squared	0.171388	S.D. dependent var	2.195983
S.E. of regression	1.998962	Sum squared resid	339.6471
F-statistic	9.997453	Durbin-Watson stat	0.876474
Prob(F-statistic)	0.000126		

## Unweighted Statistics

R-squared	0.135968	Mean dependent var	1.907045
Sum squared resid	371.9151	Durbin-Watson stat	0.800429

## Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.501645	2	0.1736

## Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
MCR	0.031243	0.026206	0.000007	0.0614
INT	0.293870	0.237142	0.001222	0.1046

## Cross-section random effects test equation:

Dependent Variable: GDPR

Method: Panel Least Squares

Date: 06/20/13 Time: 20:07

Sample (adjusted): 1988 2009

Periods included: 22

Cross-sections included: 4

Total panel (balanced) observations: 88

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.006213	1.036669	-2.899877	0.0048
MCR	0.031243	0.007086	4.409052	0.0000
INT	0.293870	0.086990	3.378225	0.0011

## Effects Specification

## Cross-section fixed (dummy variables)

R-squared	0.251997	Mean dependent var	1.907045
Adjusted R-squared	0.206387	S.D. dependent var	2.224321
S.E. of regression	1.981535	Akaike info criterion	4.271367
Sum squared resid	321.9715	Schwarz criterion	4.440276
Log likelihood	-181.9401	Hannan-Quinn criter.	4.339416
F-statistic	5.525045	Durbin-Watson stat	0.964483
Prob(F-statistic)	0.000196		

Dependent Variable: GDPR

Method: Panel Least Squares

Date: 06/20/13 Time: 20:09

Sample (adjusted): 1988 2009



Periods included: 22  
 Cross-sections included: 4  
 Total panel (unbalanced) observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.347256	0.856027	2.742035	0.0076
VTR	0.014846	0.007055	2.104335	0.0386
TOR	-0.024821	0.009174	-2.705612	0.0084
INT	0.042685	0.097833	0.436309	0.6638

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.158531	Mean dependent var	1.794588
Adjusted R-squared	0.093803	S.D. dependent var	2.157286
S.E. of regression	2.053616	Akaike info criterion	4.355845
Sum squared resid	328.9524	Schwarz criterion	4.557004
Log likelihood	-178.1234	Hannan-Quinn criter.	4.436757
F-statistic	2.449173	Durbin-Watson stat	0.865776
Prob(F-statistic)	0.031944		

Dependent Variable: GDPR

Method: Panel EGLS (Cross-section random effects)

Date: 06/20/13 Time: 20:09

Sample (adjusted): 1988 2009

Periods included: 22

Cross-sections included: 4

Total panel (unbalanced) observations: 85

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.241189	0.665945	3.365425	0.0012
VTR	0.015538	0.006743	2.304180	0.0238
TOR	-0.026132	0.008962	-2.915789	0.0046
INT	0.069362	0.077369	0.896509	0.3726

#### Effects Specification

	S.D.	Rho
Cross-section random	7.51E-08	0.0000
Idiosyncratic random	2.053616	1.0000

#### Weighted Statistics

R-squared	0.143938	Mean dependent var	1.794588
Adjusted R-squared	0.112232	S.D. dependent var	2.157286
S.E. of regression	2.032626	Sum squared resid	334.6572
F-statistic	4.539771	Durbin-Watson stat	0.860804
Prob(F-statistic)	0.005421		

#### Unweighted Statistics

R-squared	0.143938	Mean dependent var	1.794588
Sum squared resid	334.6572	Durbin-Watson stat	0.860804

## Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.352702	3	0.7167

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
VTR	0.014846	0.015538	0.000004	0.7387
TOR	-0.024821	-0.026132	0.000004	0.5032
INT	0.042685	0.069362	0.003585	0.6560

Cross-section random effects test equation:

Dependent Variable: GDPR

Method: Panel Least Squares

Date: 06/20/13 Time: 20:10

Sample (adjusted): 1988 2009

Periods included: 22

Cross-sections included: 4

Total panel (unbalanced) observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.347256	0.856027	2.742035	0.0076
VTR	0.014846	0.007055	2.104335	0.0386
TOR	-0.024821	0.009174	-2.705612	0.0084
INT	0.042685	0.097833	0.436309	0.6638

## Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.158531	Mean dependent var	1.794588
Adjusted R-squared	0.093803	S.D. dependent var	2.157286
S.E. of regression	2.053616	Akaike info criterion	4.355845
Sum squared resid	328.9524	Schwarz criterion	4.557004
Log likelihood	-178.1234	Hannan-Quinn criter.	4.436757
F-statistic	2.449173	Durbin-Watson stat	0.865776
Prob(F-statistic)	0.031944		

## Emerging economies

Dependent Variable: GDPR  
 Method: Panel Least Squares  
 Date: 06/20/13 Time: 20:13  
 Sample (adjusted): 1988 2009  
 Periods included: 22  
 Cross-sections included: 4  
 Total panel (unbalanced) observations: 74

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.223013	1.206634	4.328580	0.0001
MCR	0.019366	0.006467	2.994683	0.0038
INT	-0.051796	0.042259	-1.225677	0.2245

### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.737485	Mean dependent var	5.650270
Adjusted R-squared	0.718182	S.D. dependent var	3.901591
S.E. of regression	2.071220	Akaike info criterion	4.371757
Sum squared resid	291.7166	Schwarz criterion	4.558573
Log likelihood	-155.7550	Hannan-Quinn criter.	4.446280
F-statistic	38.20647	Durbin-Watson stat	1.215876
Prob(F-statistic)	0.000000		

Dependent Variable: GDPR  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 06/20/13 Time: 20:14  
 Sample (adjusted): 1988 2009  
 Periods included: 22  
 Cross-sections included: 4  
 Total panel (unbalanced) observations: 74  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.364939	1.565507	4.065738	0.0001
MCR	0.013791	0.006095	2.262638	0.0267
INT	-0.073060	0.033807	-2.161085	0.0341

### Effects Specification

	S.D.	Rho
Cross-section random	2.264100	0.5444
Idiosyncratic random	2.071220	0.4556

### Weighted Statistics

R-squared	0.156188	Mean dependent var	1.166062
Adjusted R-squared	0.132419	S.D. dependent var	2.309993
S.E. of regression	2.152823	Sum squared resid	329.0601
F-statistic	6.570988	Durbin-Watson stat	1.070067
Prob(F-statistic)	0.002408		

## Unweighted Statistics

R-squared	-0.038244	Mean dependent var	5.650270
Sum squared resid	1153.734	Durbin-Watson stat	0.305197

## Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.704861	2	0.0212

## Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
MCR	0.019366	0.013791	0.000005	0.0099
INT	-0.051796	-0.073060	0.000643	0.4017

## Cross-section random effects test equation:

Dependent Variable: GDPR

Method: Panel Least Squares

Date: 06/20/13 Time: 20:15

Sample (adjusted): 1988 2009

Periods included: 22

Cross-sections included: 4

Total panel (unbalanced) observations: 74

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.223013	1.206634	4.328580	0.0001
MCR	0.019366	0.006467	2.994683	0.0038
INT	-0.051796	0.042259	-1.225677	0.2245

## Effects Specification

## Cross-section fixed (dummy variables)

R-squared	0.737485	Mean dependent var	5.650270
Adjusted R-squared	0.718182	S.D. dependent var	3.901591
S.E. of regression	2.071220	Akaike info criterion	4.371757
Sum squared resid	291.7166	Schwarz criterion	4.558573
Log likelihood	-155.7550	Hannan-Quinn criter.	4.446280
F-statistic	38.20647	Durbin-Watson stat	1.215876
Prob(F-statistic)	0.000000		

Dependent Variable: GDPR

Method: Panel Least Squares

Date: 06/20/13 Time: 20:17

Sample (adjusted): 1989 2009

Periods included: 21

Cross-sections included: 4

Total panel (unbalanced) observations: 71

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.818254	1.113085	6.125545	0.0000
VTR	0.013201	0.007355	1.794934	0.0774
TOR	-0.002113	0.005522	-0.382740	0.7032
INT	-0.076119	0.043099	-1.766157	0.0821

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.724010	Mean dependent var	5.564507
Adjusted R-squared	0.698136	S.D. dependent var	3.928089
S.E. of regression	2.158177	Akaike info criterion	4.469791
Sum squared resid	298.0945	Schwarz criterion	4.692872
Log likelihood	-151.6776	Hannan-Quinn criter.	4.558503
F-statistic	27.98209	Durbin-Watson stat	1.082174
Prob(F-statistic)	0.000000		

Dependent Variable: GDPR

Method: Panel EGLS (Cross-section random effects)

Date: 06/20/13 Time: 20:17

Sample (adjusted): 1989 2009

Periods included: 21

Cross-sections included: 4

Total panel (unbalanced) observations: 71

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.094690	0.638064	7.984612	0.0000
VTR	-0.005247	0.006678	-0.785776	0.4348
TOR	0.026949	0.004026	6.694277	0.0000
INT	-0.070437	0.014090	-4.999225	0.0000

#### Effects Specification

	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	2.158177	1.0000

#### Weighted Statistics

R-squared	0.429599	Mean dependent var	5.564507
Adjusted R-squared	0.404059	S.D. dependent var	3.928089
S.E. of regression	3.032375	Sum squared resid	616.0851
F-statistic	16.82044	Durbin-Watson stat	0.733817
Prob(F-statistic)	0.000000		

#### Unweighted Statistics

R-squared	0.429599	Mean dependent var	5.564507
Sum squared resid	616.0851	Durbin-Watson stat	0.733817

Correlated Random Effects - Hausman Test

Equation: Untitled  
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	68.271650	3	0.0000

\*\* WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
VTR	0.013201	-0.005247	0.000009	0.0000
TOR	-0.002113	0.026949	0.000014	0.0000
INT	-0.076119	-0.070437	0.001659	0.8891

Cross-section random effects test equation:

Dependent Variable: GDPR  
Method: Panel Least Squares  
Date: 06/20/13 Time: 20:18  
Sample (adjusted): 1989 2009  
Periods included: 21  
Cross-sections included: 4  
Total panel (unbalanced) observations: 71

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.818254	1.113085	6.125545	0.0000
VTR	0.013201	0.007355	1.794934	0.0774
TOR	-0.002113	0.005522	-0.382740	0.7032
INT	-0.076119	0.043099	-1.766157	0.0821

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.724010	Mean dependent var	5.564507
Adjusted R-squared	0.698136	S.D. dependent var	3.928089
S.E. of regression	2.158177	Akaike info criterion	4.469791
Sum squared resid	298.0945	Schwarz criterion	4.692872
Log likelihood	-151.6776	Hannan-Quinn criter.	4.558503
F-statistic	27.98209	Durbin-Watson stat	1.082174
Prob(F-statistic)	0.000000		

#### Developing economies

Dependent Variable: GDPR  
Method: Panel Least Squares  
Date: 06/20/13 Time: 20:21  
Sample (adjusted): 1988 2008  
Periods included: 21  
Cross-sections included: 4  
Total panel (unbalanced) observations: 79

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.825077	1.048117	4.603568	0.0000
MCR	0.032544	0.024919	1.306029	0.1956
INT	-0.112231	0.053532	-2.096514	0.0395

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Effects Specification

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Cross-section fixed (dummy variables)

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R-squared	0.311618	Mean dependent var	3.491392
Adjusted R-squared	0.264469	S.D. dependent var	2.817081
S.E. of regression	2.416017	Akaike info criterion	4.675028
Sum squared resid	426.1110	Schwarz criterion	4.854986
Log likelihood	-178.6636	Hannan-Quinn criter.	4.747125
F-statistic	6.609162	Durbin-Watson stat	1.054646
Prob(F-statistic)	0.000040		

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Dependent Variable: GDPR

Method: Panel EGLS (Cross-section random effects)

Date: 06/20/13 Time: 20:22

Sample (adjusted): 1988 2008

Periods included: 21

Cross-sections included: 4

Total panel (unbalanced) observations: 79

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.945386	1.119104	3.525486	0.0007
MCR	0.038230	0.024525	1.558818	0.1232
INT	-0.059770	0.047996	-1.245315	0.2168

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Effects Specification

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	S.D.	Rho
Cross-section random	1.178637	0.1922
Idiosyncratic random	2.416017	0.8078

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Weighted Statistics

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R-squared	0.055397	Mean dependent var	1.470708
Adjusted R-squared	0.030539	S.D. dependent var	2.529344
S.E. of regression	2.482477	Sum squared resid	468.3646
F-statistic	2.228554	Durbin-Watson stat	0.944284
Prob(F-statistic)	0.114675		

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Unweighted Statistics

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R-squared	-0.044557	Mean dependent var	3.491392
Sum squared resid	646.5850	Durbin-Watson stat	0.684008

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## Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.238747	2	0.0442

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
MCR	0.032544	0.038230	0.000019	0.1976
INT	-0.112231	-0.059770	0.000562	0.0269

Cross-section random effects test equation:

Dependent Variable: GDPR

Method: Panel Least Squares

Date: 06/20/13 Time: 20:22

Sample (adjusted): 1988 2008

Periods included: 21

Cross-sections included: 4

Total panel (unbalanced) observations: 79

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.825077	1.048117	4.603568	0.0000
MCR	0.032544	0.024919	1.306029	0.1956
INT	-0.112231	0.053532	-2.096514	0.0395

## Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.311618	Mean dependent var	3.491392
Adjusted R-squared	0.264469	S.D. dependent var	2.817081
S.E. of regression	2.416017	Akaike info criterion	4.675028
Sum squared resid	426.1110	Schwarz criterion	4.854986
Log likelihood	-178.6636	Hannan-Quinn criter.	4.747125
F-statistic	6.609162	Durbin-Watson stat	1.054646
Prob(F-statistic)	0.000040		



Dependent Variable: GDPR  
 Method: Panel Least Squares  
 Date: 06/20/13 Time: 20:23  
 Sample (adjusted): 1989 2008  
 Periods included: 20  
 Cross-sections included: 4  
 Total panel (unbalanced) observations: 73

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.707633	1.110946	3.337365	0.0014
VTR	-0.185201	0.428730	-0.431976	0.6672
TOR	0.197304	0.153676	1.283891	0.2037
INT	-0.068446	0.057024	-1.200301	0.2343

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.326126	Mean dependent var	3.352466
Adjusted R-squared	0.264865	S.D. dependent var	2.786057
S.E. of regression	2.388767	Akaike info criterion	4.670407
Sum squared resid	376.6096	Schwarz criterion	4.890041
Log likelihood	-163.4699	Hannan-Quinn criter.	4.757935
F-statistic	5.323525	Durbin-Watson stat	1.155941
Prob(F-statistic)	0.000157		

Dependent Variable: GDPR  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 06/20/13 Time: 20:23  
 Sample (adjusted): 1989 2008  
 Periods included: 20  
 Cross-sections included: 4  
 Total panel (unbalanced) observations: 73  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.704806	0.673494	2.531288	0.0136
VTR	-0.363947	0.405141	-0.898322	0.3721
TOR	0.312476	0.139967	2.232497	0.0288
INT	0.031305	0.034704	0.902062	0.3702

#### Effects Specification

	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	2.388767	1.0000

#### Weighted Statistics

R-squared	0.166893	Mean dependent var	3.352466
Adjusted R-squared	0.130671	S.D. dependent var	2.786057
S.E. of regression	2.597658	Sum squared resid	465.6002
F-statistic	4.607514	Durbin-Watson stat	0.940087
Prob(F-statistic)	0.005361		

## Unweighted Statistics

R-squared	0.166893	Mean dependent var	3.352466
Sum squared resid	465.6002	Durbin-Watson stat	0.940087

## Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.595411	3	0.0014

\*\* WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
VTR	-0.185201	-0.363947	0.019670	0.2025
TOR	0.197304	0.312476	0.004026	0.0695
INT	-0.068446	0.031305	0.002047	0.0275

Cross-section random effects test equation:

Dependent Variable: GDPR

Method: Panel Least Squares

Date: 06/20/13 Time: 20:24

Sample (adjusted): 1989 2008

Periods included: 20

Cross-sections included: 4

Total panel (unbalanced) observations: 73

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.707633	1.110946	3.337365	0.0014
VTR	-0.185201	0.428730	-0.431976	0.6672
TOR	0.197304	0.153676	1.283891	0.2037
INT	-0.068446	0.057024	-1.200301	0.2343

## Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.326126	Mean dependent var	3.352466
Adjusted R-squared	0.264865	S.D. dependent var	2.786057
S.E. of regression	2.388767	Akaike info criterion	4.670407
Sum squared resid	376.6096	Schwarz criterion	4.890041
Log likelihood	-163.4699	Hannan-Quinn criter.	4.757935
F-statistic	5.323525	Durbin-Watson stat	1.155941
Prob(F-statistic)	0.000157		