THE IMPACT OF AN INTEGRATED (REGIONAL) CAPITAL MARKET ON THE ECONOMIC DEVELOPMENT OF EMERGING ECONOMIES: NIGERIA, SOUTH AFRICA AND KENYA

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Abstract

This study seeks to examine the impact of an integrated (regional) capital market on the economic development of emerging economies using Nigeria, South Africa and Kenya. The capital markets of emerging economies seem to have performed below expectation in terms of their contribution to economic growth and development despite apparent huge amount of money that have been spent to enhance the functionality of the markets in the affected countries. The objectives of this study is therefore to find out if an integrated (regional) capital market will have a positive and significant impact on the economic development of these countries. The study used secondary data and covered the period 1990 to 2018. The augmented dickey-fuller unit root test, Johansen's co-integration test, and the error correction model were among the analytical tools used in the study. Panel data (pooled) regression analysis was also carried out. The findings revealed that human development index (a proxy for economic development), is a positive and insignificant function of ratio of market capitalization to GDP in both Nigeria and South Africa; while in Kenya it is a negative and insignificant function of market capitalization to GDP ratio. Again, in both Nigeria and South Africa, value of securities traded ratio and stock market turnover ratio exert positive and significant effect on human development index. In Kenya, while value of securities traded ratio exerts positive and significant effect on human development index, the effect of stock market turnover ratio is negative and significant. However, while all share index has a negative and significant effect on human development index in Nigeria, its effect on both South Africa and Kenya is positive and significant. The effect of the capital market on human development index was found to be generally positive and significant when pooled regression analysis was carried out. Based on the findings above, the study recommends that government and capital market regulatory authorities should establish strong and more transparent institutional and legal framework as well as support investment in human resources to engender efficiency in the allocation of available financial resources for investment purposes and create the platform that will lead to increased investment and promotion of best corporate practices that will restore investors' confidence in the financial system and stimulate further economic growth and development.
Keywords: capital market, economic development, human development index, co-integration, error correction model and panel data.

Introduction

The capital market is a market where long-term financial instruments are traded as well as where arrangements for financing long-term investments are made. As part of the financial markets, the capital market plays an important role in the process of economic growth and development by facilitating savings and channelling funds from savers to investors (Nwanna, 2016). The market provides avenue for firms and governments to sell stocks and bonds to raise long-term funds from the savings of the surplus units of the economy which will subsequently lead to increase in total output of the economy (Dayaratne and Wijethunga, 2015). A well-functioning capital market is expected to facilitate the socio- economic growth and development of emerging and developed economies through some of the vital roles it plays such as mobilization of adequate resources and efficiently allocating these resources to productive investments through its intermediation process, provision of long-term, non-debt financial capital which enables companies to reduce the problem associated with over gearing, providing appropriate platform to engender best corporate practices that will lead to increase in investment and further growth of the economy as well as acquisition of information about firms, among others.

This study became necessary due the slow rate of economic development in the selected emerging economies as evidenced from apparent low GDP growth rate, low level of industrialization, high rate of unemployment, poor educational and health facilities as well as low level of infrastructural development in spite of the level of capitalization of their capital markets over the years and the apparent huge amounts of money that have been spent to enhance the functioning of the markets. This trend, if allowed to continue, could lead to serious economic depression in the affected economies. In the light of the above, the study investigated the effect of capital markets on the economic development of Nigeria, South Africa and Kenya. Specifically, the study examined: The relationship between market capitalization and economic development in the emerging economies.

i. To determine if there is a significant positive relationship between market capitalization/ GDP ratio and economic development in the emerging economies.

ii. To find out if there is a significant positive relationship between total value of securities traded/ GDP ratio and economic development in the emerging economies

iii. To examine the impact of stock market turnover ratio on economic development in the emerging economies.

iv. To investigate the effect of all share index on economic development in the emerging economies.

v. To investigate the impact an integrated (regional) capital market will have on the economic development of the emerging economies.

Earlier researchers have carried out studies to investigate the relationship between capital market and economic growth and development. This study however, has added to the stock of knowledge and has given rise to empirical basis for examining the causal relationship between the capital market and economic development. This is more so as the human development index (HDI), that gives a broader view of economic development than GDP, was used as proxy for economic development.

Literature Review

The capital market is the part of the financial market which deals in long-term corporate securities as well as procedures for financing long-term investments. The market offers a variety of high quality financial instruments such as common stock, preferred stock, bonds and convertible securities. By dealing in financial assets with attractive yields, liquidity and risk characteristics, the market encourages saving by individuals, groups and institutions. Through the institutions and intermediaries that make up the capital markets, the society's surplus funds are made available to government and corporations in need of funds for long-term investments, corporate expansion, development of new product lines and desirable social amenities that have both direct and indirect bearing with economic development. Osaze (2000) posited that the capital market drives any economy to growth and development because it is essential for the long-term growth capital formation.

This study is rooted in the Endogenous Growth Theory (New Growth Theory) which emerged in the mid-1980s. The theorists (Romer 1986; Lucas 1988 and Howitt 1992, etc.) argued that technological progress is endogenous, and is an important determinant of economic growth. The theory posits that investment in physical and human capital, innovation, and knowledge are significant contributors to economic growth. The theory also focuses on positive externalities and spill over effects of a knowledge-based economy which will lead to economic development. The endogenous growth theory basically holds that long-run growth rate of an economy depends on policy measures. For example, policies that support subsidies for research and development or education will increase the growth rate by increasing the incentive for innovation. According to this theory, an economy's long-run growth rate depends on its saving rate.

There have been large numbers of empirical studies that tried to examine the effect of financial development on economic growth by using different types of econometric approaches and a variety of indicators to measure financial development. Some of these studies substantiate that both capital market and banking sector development have strong positive effect on growth, while in some cases, findings revealed lack of correlation between financial development and economic growth.

Mahammad, Nadeem and Liaquat (2008) examined the relationship between stock market development and economic growth in a developing economy, a study of Pakistan, using annual time-series data from 1971 to 2006. The study was conducted using co-integration and autoregressive distributed lag (ARDL) bounds testing technique and the result of the study revealed a strong relationship between stock market development and economic growth. Levine and Zervos (1996) investigated the relationship between stock market development and long-run economic growth. The study used pooled cross-country time series regression of forty – one countries from 1976 to 1993 to examine this relationship. The result showed a strong correlation between overall stock market development and long- run economic growth.

Donwa and Odia (2010) analysed time series data covering the period 1981 to 2008 and found out that capital market indicators (market capitalization, total listed equities, total new issues, volume of transaction and government stock) had no significant impact on Nigeria's economic growth. Ewah, Esang and Bassey (2009) examined the impact of capital market efficiency on economic growth in Nigeria by applying time series analysis on market capitalization, money supply, interest rate, total transaction and government development

stock. Their findings revealed that although the capital market in Nigeria has the potential to induce growth, it has not contributed meaningfully to Nigeria's economic growth due to market rigidity, low market capitalization, low absorptive capacity, illiquidity and misappropriation of funds among others.

Nyong (1997) developed an aggregate index of capital market development and used it to determine its relationship with long-run economic growth in Nigeria. The study was conducted using time series data from 1970 to 1994. In South Africa, Odihiambo (2009) examined the causal link between stock market development and economic growth in South Africa by applying Autoregressive Distributed Lag (ARDL) bounds testing to technique on annual time series data. The study found evidence of causal impact of stock market development on economic growth. Ndako (2009) also investigated the causal link between stock market developments in South Africa. The study applied the analytical technique of vector error correction models (VECM) on quarterly data for the same period as in the case of Odihiambo. The result of the study showed evidence of causal impact of economic growth on stock market development, which was a direct opposite of Odihiambo's finding in terms of causal flow.

The nature of the data as well as the techniques of analysis employed may have influenced the results. Irving (2005) investigated the link between capital market and overall socio-economic development in Eastern and Southern Africa and found it to be non-existent or even harmful. He therefore, advised that Africa should pay more attention to weightier problems such as poverty, undeveloped infrastructure and inadequate social services rather than devote further scare resources and efforts to promoting stock exchanges.

In Kenya, Olweny and Kimani (2011) investigated the causal relationship between stock market performance and economic growth in Kenya for the period 2001 to 2010, using quarterly secondary data. This investigation of the causal relationship was conducted using the Granger causality test base on the vector autoregressive (VAR) model. Findings of the study showed that causality between economic growth and stock market runs unilaterally in one direction from the Nairobi Stock Exchange (NSE) 20-share index to the GDP. From the results, it was inferred that the movement of stock prices in the Nairobi Stock Exchange reflect the micro-economic condition of the country and can therefore, be used to predict the future path of economic growth. Aduda, Chogii and Muraya (2014) examined the effect of capital market deepening on the economic growth in Kenya from 1992 to 2011. The study which used correlation analysis on the time series data, found out that capital market deepening has a positive effect on GDP growth in Kenya and therefore lends support to the finance growth nexus. They therefore recommended that government should take policy initiatives to foster growth of the capital market.

There are other researchers that contributed to the argument on the finance growth nexus. Shuaibu, Osemwengie and Oseme (2014) investigated the impact of capital market activities on economic growth in Nigeria using vector autoregressive (VAR) methodology. The study covered the period 1970 to 2010. Results of the investigation revealed that increase in capital market activities contributed significantly to the economic growth as well that there is a long-run relationship between economic growth and capital market activities.

Adaoye (2015) examined the impact of the Nigeria capital market on the Nigerian economy looking at a 20 years period from 1992 to 2011. The result of the multiple regression analytical approach revealed that the capital market had an insignificant impact on the

economy within the period under review. The study therefore, advised that policies and measures that would boost investors' confidence should be enshrined in the running of Nigerian capital market so that it could contribute significantly to the growth of the Nigerian economy.

Christian, Nwezeaku and Akujuobi (2015) evaluated the impact of capital market on economic growth and development in Nigeria using regression analysis on annual data from1981 to 2012 and concluded that the capital market has significant positive impact on economic growth in Nigeria. The study however, revealed that growth in market capitalization does not have significant impact on the economy in Nigeria. They therefore, recommended that capital market regulatory authorities should put in place policies that will enhance and sustain the market's contribution to economic development.

Agu (2018) appraised the responsiveness of economic growth to capital market development in Nigeria using time series data from 1995 to 2016. The study used real gross domestic product (RGDP) as a proxy for economic growth while market capitalization, value of shares traded and total new issues in the capital market (equity and government stock) were used as proxies for capital market development. The analysis of data was carried out using descriptive statistics and ordinary least square (OLS) regression technique. The result of the study shows that market capitalization has negative and insignificant relationship with gross domestic product (GDP) in Nigeria. The study also reveals positive and insignificant relationship between value of shares traded and GDP. As a way of improving on the declining market capitalization, the study recommends that more foreign investors should be encouraged to participate in the market. It further recommends that regulatory authorities should restore confidence in the market by ensuring transparency and fair trading transaction and dealing in the stock exchange. Sharp practices by some companies should also be discouraged.

Araoye, Ajayi and Aruwaji (2018), examined the impact of the Nigerian Stock market development on the nation's economic growth from 1985 to 2014. The GDP was used as proxy for economic growth while market capitalization and market turnover ratio were used as proxies for stock market development in terms of size and liquidity respectively. The study used the Johansen's co-integration test in establishing if a long–run relationship does exist between stock market development and economic growth in Nigeria. The study also used the error correction model to find out if the stock market is significant in determining economic growth in Nigeria .Results of the study revealed that the stock market has impacted insignificantly on the economic growth. This is because both market capitalization and turnover ratio presented positive and insignificant relationship with gross domestic product. The study recommends that policy makers should ensure improvement in market capitalization by encouraging foreign direct investment participation in the market. It further recommended that small and medium entrepreneurs should be encouraged to access the market for investible funds given their close affinity with the grass root fund mobilization ability.

Methodology

This is an econometric study of the capital markets of Nigeria, South Africa and Kenya involving the analysis of annual time series data covering the period 1990 to 2018. The selection of the study period in this case was based on the year (1990) in which the United Nations Development Programme (UNDP), in its Annual Development Reports, initiated the

construction and refinement of the Human Development Index (HDI) (Todaro and Smith 2009).The Nigerian Stock Exchange (NSE), National Bureau of Statistics, Nigeria (NBSN), Central Bank of Nigeria (CBN),World Federation of Exchanges (WFE), African Federation of Exchanges(AFE), Johannesburg Stock Exchange (JSE) Website, Nairobi Stock Exchange (NSE) Website, United Nations Development Programme (UNDP) Reports (various series), the relevant literatures (books, journals, previous research papers and electronic sites) and the World Bank were the main sources of data for this study.

In view of the above, the general econometric model for the determination of long-run effect of the capital market on the economic development of Nigeria, South Africa and Kenya will be stated as follows:

HDI = F(MCAPGDP, VSTGDP, SMT, ALSI)…………………………………………………………… 3.1

Where:

HDI = Human Development Index (proxy for economic development)
MCAPGDP = Total Market Capitalization Ratio
VSTGDP = Total Values of Securities Traded Ratio
SMT = Stock Market Turnover Ratio
ALSI = All Share Index

Model 1:
This model specifies the equation for Nigeria

$HDI_tN = \beta_0 + \beta_1 HDI_{t-1} + \beta_2 MCAPGDP_t + \beta_3 VSTGDP_t + \beta_4 SMT_t + \beta_5 ALSI + \mu_t$…………………………… 3.2

Model 2:
This model specifies the equation for South Africa

$HDI_tSA = \beta_0 + cHDI_{t-1} + \beta_2 MCAPGDP_t + \beta_3 VSTGDP_t + \beta_4 SMT_t + \beta_5 ALSI + \mu_t$……………………….. 3.3

Model 3:
This model specifies the equation for kenya

$HDI_tK = \beta_0 + \beta_1 HDI_{t-1} + \beta_2 MCAPGDP_t + \beta_3 VSTGDP_t + \beta_4 SMT_t + \beta_5 ALSI + \mu_t$……………………….. 3.4

Where:

β_0 = Intercept of relationship in the model.
Constants $\beta_1 - \beta_5$ = coefficients of each of the independent variables.
μ_t = stochastic/error term

For the purpose of analysis, variables for Nigeria, South Africa and Kenya shall be differentiated by attaching N, SA and K respectively.

Human Development Index:
This is an index that combines measurements of life expectancy, literacy, educational attainment and gross domestic product (GDP) per capital for countries worldwide. It is used as a standard means of measuring development, as well as to determine whether a country is developed, developing or underdeveloped.

Market Capitalization Ratio:
This is a measure for the stock market size. It is calculated as the ratio of the market capitalization to GDP. The reason behind this measure is that the overall market size is

positively correlated with the ability of the market to mobilize capital and diversify risk on economy wide basis (Levine and Zervos 1996).

Value of Security Traded Ratio:
Compliments market capitalization. It is an indicator of market liquidity and it is computed as the total value of bonds and shares traded divided by the gross domestic product of the economy.

Turnover Ratio:
Measures liquidity of the market and high turnover ratio is an indication of low transaction cost in the capital market. The ratio also compliments the total value traded ratio and is computed as the value of total share traded divided by market capitalization.

All Share Index:
Shows the changing average value of the share prices of all companies on a stock exchange, and it is used as a measure of how well a market is performing.

Apriori Expectation
Based on the literature, all capital market development measures especially those being used for this study are expected to have positive impact on economic development through liquidity injection and efficient allocation of resources. That is, a priori expectation of the coefficients of the model is that $\beta_1, \beta_2, \beta_3, \beta_4 > 0$

Results and discussions
Data on HDI, MCAPGDP, VSTGGDP, SMT and ALSI for Nigeria, South Africa and Kenya are presented in Tables 4.1, 4.2 and 4.3, respectively.

Unit Root Test
The human development index and capital market indicators in Tables 4.1, 4.2 and 4.3 were tested for stationarity using the Augmented Dickey-Fuller Unit Root Test, to avoid spurious results which could have arisen if non stationary data were used for regression. The results show that all the variables are stationary at first difference. In other words, all the variables are integrated of order one, I(1). The summary of these results is shown in Table 4.4 as follows:

Table 4.1: Data on Human Development index and Capital Market Indicators in Nigeria

Year	HDIN	MCAPGDPN	VSTGDPN	SMTN	ALSIN
1990	0.411	3.45	0.05	1.41	513.79
1991	0.405	4.23	0.04	1.04	783
1992	0.406	3.56	0.06	1.57	1107.61
1993	0.418	4.36	0.07	1.68	1543.84
1994	0.429	4.74	0.07	1.49	2205.02
1995	0.432	6.2	0.06	1.02	5092.21
1996	0.42	7.09	0.17	2.44	6992.1
1997	0.436	6.73	0.25	3.66	6440.53
1998	0.439	6.58	0.34	5.17	5672.72
1999	0.427	6.41	0.3	4.69	5266.41
2000	0.434	7.04	0.42	5.96	8111.04

2001	0.521	9.61	0.84	8.71	10963
2002	0.440	9.81	0.76	7.77	12137.72
2003	0.453	13.71	1.21	8.86	20128.94
2004	0.462	18.51	1.98	10.69	23844.46
2005	0.468	19.85	1.8	9.07	24085.8
2006	0.466	27.58	2.53	9.18	33189.31
2007	0.478	63.81	5.21	8.16	57990.23
2008	0.486	39.36	6.91	17.56	31450.82
2009	0.449	28.36	2.77	9.75	20827.21
2010	0.493	18.16	1.46	8.07	24770.5
2011	0.499	16.32	1.01	6.22	20730.63
2012	0.505	20.64	1.13	5.47	28078.84
2013	0.521	23.82	2.94	12.32	41329.21
2014	0.525	18.95	1.5	7.91	34657.2
2015	0.527	17.86	1	8.2	28642.25
2016	0.530	9.10	0.40	7.52	32438.54
2017	0.532	12.00	0.60	5.90	38439.38
2018	0.538	12.36	0.57	6.20	38540.24

Sources: World Bank, UNDP, World Federation of Exchanges (WFE), African Federation of Exchanges (AFE), CBN, NSE, National Bureau of Statistics of Nigeria.

Table 4.2: Data on Human Development Index and Capital Market Indicators in South Africa

Year	HDISA	MCAPGDPSA	VSTGDPSA	SMTSA	ALSISA
1990	0.621	123.19	4.57	6.86	2720.01
1991	0.618	139.74	5.21	5.26	3440.01
1992	0.705	76.69	5.95	5.72	3259
1993	0.722	131.93	10.01	9.45	4893
1994	0.734	166.44	11.49	7.84	5867
1995	0.654	185.64	11.28	6.74	6228
1996	0.652	168.07	18.93	18.42	6657.5
1997	0.655	155.93	30.05	18.89	6202.3
1998	0.697	126.77	43.45	28.98	5430.5
1999	0.674	197.07	54.75	33.7	8543
2000	0.632	154.24	58.32	33.18	8326
2001	0.63	117.95	58.81	40.43	10441.7
2002	0.645	166.17	69.12	48.6	9358.9
2003	0.658	159.16	72.29	45.46	10387.22
2004	0.635	207.93	76.5	45.02	12656.87
2005	0.603	228.86	90.05	39.32	18096.55
2006	0.621	273.95	117.45	48.8	24915.2
2007	0.61	291.28	160.05	55	28957.97
2008	0.623	179.37	108.51	60.62	21509.2
2009	0.631	249.04	142.61	57.27	27666.44
2010	0.643	278.53	110.52	39.61	32118.89

2011	0.651	130.40	102.87	37.82	29247.21
2012	0.659	159.42	115.73	40.26	34712.45
2013	0.663	257.43	134.51	35.43	39286.12
2014	0.665	266.73	146.00	32.56	46318.5
2015	0.666	234.00	145.80	31.80	51269.54
2016	0.667	312.21	136.21	30.50	48352.26
2017	0.666	332.28	138.45	25.70	59772.80
2018	0.669	340.10	140.25	25.92	59820.16

Sources: World Bank, UNDP, World Federation of Exchanges (WFE), African Federation of Exchanges (AFE), Johannesburg Stock Exchange (JSE) Website.

Table 4.3: Data on Human development index and Stock Market Indicators for Kenya

Year	HDIK	MCAPGDPK	VSTGDPK	SMTK	ALSIK
1990	0.473	16.24	0.04	1.42	1096.21
1991	0.476	16.8	0.06	1.57	1128.05
1992	0.481	17.06	0.05	1.65	1167.29
1993	0.52	18.48	0.1	1.14	2513.74
1994	0.532	42.62	0.53	2.25	4559.4
1995	0.544	22.3	0.47	3.12	3468.88
1996	0.523	14.93	0.44	4.01	3114.11
1997	0.498	13.82	0.51	5.38	3117.5
1998	0.508	14.82	0.35	3.55	2962.1
1999	0.488	12.9	0.36	4.8	2303.2
2000	0.447	9.88	0.28	3.58	1914.4
2001	0.454	8.05	0.25	3.62	1354.59
2002	0.46	10.89	0.16	2.42	1317.45
2003	0.474	28.06	0.57	4.16	2128.32
2004	0.465	24.17	1.37	7.42	2471.28
2005	0.479	34.07	1.37	5.24	2527.32
2006	0.495	44.06	3.22	9.67	2924.13
2007	0.502	41.76	4.46	13.49	2746.24
2008	0.508	30.24	3.58	10.8	2762.16
2009	0.504	29.62	1.25	9.26	2780.72
2010	0.529	36.15	3.32	8.95	2783.14
2011	0.535	24.32	2.43	8.87	3112.52
2012	0.539	36.3	2.98	6.82	2971.41
2013	0.544	35.22	3.02	8.11	2789.64
2014	0.550	36.8	3.12	9.27	3109.42
2015	0.555	32.70	2.16	9.12	4064.16
2016	0.585	26.80	1.20	9.18	4286.24
2017	0.590	32.50	1.68	9.24	4325.62
2018	0.585	32.80	1.72	9.30	4342.50

Sources: World Bank, UNDP, World Federations of Exchanges (WFE), African Federation of Exchanges (AFE), Nairobi Stock Exchange (NSE) Website.

Unit Root Test

The human development index and capital market indicators in Tables 4.1, 4.2 and 4.3 were tested for stationarity using the Augmented Dickey-Fuller Unit Root Test, to avoid spurious results which could have arisen if non stationary data were used for regression. The results show that all the variables are stationary at first difference. In other words, all the variables are integrated of order one, I(1). The summary of these results is shown in Table 4.4 as follows:

Table 4.4: Augmented Dickey-Fuller (ADF) Unit- Root Test.

Countries	Variables	Lag	ADF Test Statistic	Critical Values		Remarks
		SCI	1st difference	1%	5%	
	HDIN	5	-7.764835	-3.737853	-2.991878	Stationary
	MCAPGDPN	5	-5.080782	-3.737853	-2.991878	Stationary
Nigeria	SMTN	5	-7.369156	-3.737853	-2.991878	Stationary
	VSTGDPN	5	-4.204753	-3.737853	-2.991878	Stationary
	ALSIN	5	-6.852780	-3.737853	-2.991878	Stationary
	HDISA	5	-5.609092	-3.737853	-2.991878	Stationary
	MCAPGDPSA	5	-6.693941	-3.752946	-2.998064	Stationary
South	SMTSA	5	-3.974996	-3.737853	-2.991878	Stationary
Africa	VSTGDPSA	5	-7.097575	-3.737853	-2.991878	Stationary
	ALSISA	5	-4.581521	-3.737853	-2.991878	Stationary
	HDIK	8	-3.527659	-3.737853	-2.991878	Stationary
	MCAPGDPK	5	-6.013647	-3.737853	-2.991878	Stationary
Kenya	SMTK	5	-5.284681	-3.737853	-2.991878	Stationary
	VSTGDPK	5	-5.734561	-3.737853	-2.991878	Stationary
	ALSIK	5	-3.727465	-3.737853	-2.991878	Stationary

From Table 4.4, the absolute values of ADF statistic of all the series in Nigeria, South Africa and Kenya are more than their 1 percent critical values and far more than that of 5 percent at first difference. This implies that the series are differenced once for them to be stationary. They are therefore said to be integrated of order one and since all the variables are integrated of order one, the researcher resorted to testing for co-integration between the variables to determine the stationarity of the combined series.

Results of Co-integration Test

The result of the co-integration test is presented in Table 4.5 as follows:

Table 4.5: Johansen's Co-integration Test Results

Countries	Hypothesized		Trace	0.05	
	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
Nigeria	None *	0.958435	158.0379	69.81889	0.0000
	At most 1 *	0.922928	84.88769	47.85613	0.0000
	At most 2	0.477742	25.93846	29.79707	0.1305
	At most 3	0.290399	10.99788	15.49471	0.2116
	At most 4	0.126386	3.107673	3.841466	0.0779
South Africa	None *	0.772241	83.44638	69.81889	0.0028
	At most 1 *	0.573303	47.94255	47.85613	0.0491
	At most 2	0.443384	27.50217	29.79707	0.0899
	At most 3	0.388698	13.44085	15.49471	0.0996
	At most 4	0.065623	1.628897	3.841466	0.2019
Kenya	None *	0.677105	77.39280	69.81889	0.0110
	At most 1 *	0.648093	50.26332	47.85613	0.0292
	At most 2	0.482654	25.19816	29.79707	0.1545
	At most 3	0.216589	9.381107	15.49471	0.3313
	At most 4	0.136521	3.522839	3.841466	0.0605

The results of Table 4.5 show that there are two cointegrating equations in the series suggesting the existence of a long-run relationship between the human development index and the capital market indicators in countries under study. The existence of co-integrating equations informed the use of the error correction model in order to know how these variables adjust in response to a random shock and also to determine the long-run impact of the capital market variables on the human development index in Nigeria, South Africa and Kenya.

Results of Error Correction Model

The parsimonious result of the error correction model for Nigeria, South Africa and Kenya are shown in Tables 4.6, 4.7 and 4.8; respectively as follows:

Table 4.6: Parsimonious Results of the Error Correction Model for HDI in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	0.545862	0.206729	2.640465	0.0385
D(MCAPGDPN(-2))	0.019907	0.008322	2.001841	0.0639
D(MCAPGDPN(-3))	0.009118	0.003260	2.796262	0.0813
D(SMTN(-1))	0.040497	0.006441	3.181162	0.0190
D(SMTN(-3))	0.008313	0.005893	2.410736	0.0080
D(SMTN(-4))	-0.032725	0.008314	-3.935740	0.0077
D(VSTGDPN(-1))	0.196660	0.066437	2.960071	0.0253
D(VSTGDPN(-3))	0.215372	0.063252	3.404985	0.0144
D(VSTGDPN(-4))	0.013268	0.016254	0.816290	0.4455
D(ALSIN(-1))	-1.28E-05	4.91E-06	-2.614412	0.0399
D(ALSIN(-2))	4.20E-06	3.08E-06	1.364782	0.2213

D(ALSIN(-3))	-2.24E-05	4.46E-06	-5.015000	0.0024
D(ALSIN(-4))	-2.87E-05	6.38E-06	-4.496714	0.0041
ECT(-1)	-2.650111	0.434559	-6.098394	0.0009
C	0.072715	0.015309	4.749643	0.0032

R-squared	0.930369	Mean dependent var	0.004048
Adjusted R-squared	0.767896	S.D. dependent var	0.031791
S.E. of regression	0.015316	Akaike info criterion	-5.344046
Sum squared resid	0.001407	Schwarz criterion	-4.597959
Log likelihood	71.11248	Hannan-Quinn criter.	-5.182126
F-statistic	5.726292	Durbin-Watson stat	1.886569
Prob (F-statistic)	0.020619		

The result of the analysis in Table 4.6 shows that past human development index (HDI) at lag 1 reinforces itself. In other words, increase in the past HDI in Nigeria leads to increase in the present value of HDI. The ratio of value of securities traded to GDP and stock market turnover ratio which are proxies for market liquidity exert positive and significant impact on human development index in Nigeria while all share index at lags 1, 3 and 4 exert negative and significant impact on HDI. Market capitalization ratio at lags 2 and 3 related positively and insignificantly to HDI.

Table 4.7: Parsimonious Results of the Error Correction Model for HDI in South Africa

Variable	Coefficient	Std. Error	t-Statistic	
D(HDISA(-1))	0.490354	0.169696	-2.889572	0.0202
D(MCAPGDPSA(-2))	0.000199	0.000124	1.601602	0.1479
D(SMTSA(-1))	0.003737	0.001176	3.173340	0.0131
D(SMTSA(-2))	0.000579	0.000792	0.731310	0.4855
D(VSTGDPSA(-2))	0.041284	0.000314	3.766306	0.0055
D(VSTGDPSA(-3))	0.001756	0.000431	4.057815	0.0036
D(VSTGDPSA(-4))	5.41E-05	0.000252	0.214887	0.8352
D(ALSISA(-3))	5.14E-06	1.52E-06	3.391203	0.0095
D(ALSISA(-4))	2.34E-06	1.76E-06	1.330114	0.2201
D(ALSISA(-5))	8.34E-06	2.66E-06	3.132732	0.0140
ECT(-1)	-0.704463	0.248626	-2.833426	0.0220
C	-0.012998	0.005883	-2.209005	0.0582

R-squared	0.846514	Mean dependent var	0.001050
Adjusted R-squared	0.635471	S.D. dependent var	0.022439
S.E. of regression	0.013548	Akaike info criterion	-5.481442

Sum squared resid	0.001468	Schwarz criterion	-4.884003
Log likelihood	66.81442	Hannan-Quinn criter.	-5.364816
F-statistic	4.011093	Durbin-Watson stat	2.128505
Prob (F-statistic)	0.029420		

The result of the analysis in Table 4.7 shows that past human development index (HDI) at lag 1 reinforces itself. In other words, increase in the past HDI in South Africa leads to increase in the present value of HDI. The value of securities traded ratio, stock market turnover ratio and all share index exert positive and significant impact on human development index (HDI). Market capitalization ratio does not exert any significant impact on HDI in South Africa. The error correction term has the correct sign (negative) and corrects about 70.5% of the short-run deviations in the long-run. The coefficient of determination is high (84.65), while the overall regression is significant (74.5%) with no autocorrelation.

Table 4.8: Parsimonious Results of the Error Correction Model for HDI in Kenya

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-1))	0.611015	0.076033	-8.036235	0.0151
D(MCAPGDPK(-1))	-0.001605	0.000103	-1.52799	0.0841
D(MCAPGDPK(-2))	-0.002838	0.000119	-2.00361	0.0627
D(MCAPGDPK(-5))	0.000338	7.43E-05	4.550729	0.0450
D(SMTK(-2))	-0.009109	0.000588	-15.50228	0.0041
D(SMTK(-3))	-0.009068	0.000450	-20.13368	0.0025
D(VSTGDPK(-2))	0.006455	0.001133	5.695938	0.0295
D(VSTGDPK(-3))	0.007757	0.000906	8.557030	0.0134
D(VSTGDPK(-4))	0.009015	0.000791	11.39363	0.0076
D(VSTGDPK(-5))	-0.002879	0.000667	-4.314103	0.0498
D(ALSIK(-1))	3.62E-05	1.78E-06	20.28936	0.0024
D(ALSIK(-2))	1.47E-05	1.70E-06	8.646749	0.0131
D(ALSIK(-3))	2.79E-05	1.97E-06	14.17316	0.0049
D(ALSIK(-7))	-1.90E-05	1.03E-06	-18.54627	0.0029
ECT(-1)	-0.816481	0.046745	-17.46683	0.0033
C	0.011128	0.000647	17.19572	0.0034
R-squared	0.998215	Mean dependent var	0.002500
Adjusted R-squared	0.984830	S.D. dependent var	0.013103
S.E. of regression	0.001614	Akaike info criterion	-10.43989
Sum squared resid	5.21E-06	Schwarz criterion	-9.648444
Log likelihood	109.9590	Hannan-Quinn criter.	-10.33076
F-statistic	74.57427	Durbin-Watson stat	2.128536

The result of the analysis in Table 4.8 shows that the ratio of market capitalization to GDP, used as proxy for the size of the market, exerts negative and insignificant impact on

human development index in Kenya at lags 1 and 2. However, it exerts positive impact on human development index at lag 5. Human development index in Kenya is also found to be a negative function of stock market turnover (SMTK) in Kenya. On the other hand, value of shares traded as a ratio of GDP and all share indexes exert positive and significant impact on human development index. The error correction term is correctly signed and corrects about 81.6 percent of the short- run deviations in the long- run. The coefficient of determination is high (99.8%) while the overall regression is significant with no autocorrelation.

Results of Panel Data (Pooled)
Fixed effects model:

Table 4.9: Results of fixed effect model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.532508	0.012991	40.99105	0.0000
MCAPGDP	5.54E-05	0.000137	0.405222	0.6870
SMT	0.001390	0.000618	2.249312	0.0289
VSTGDP	-0.001129	0.000234	-4.830916	0.0000
ALSI	1.14E-06	3.93E-07	2.905656	0.0054
Effects Specification				

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.960639	Mean dependent var	0.543238
Adjusted R-squared	0.934661	S.D. dependent var	0.090363
S.E. of regression	0.023098	Akaike info criterion	-4.407407
Sum squared resid	0.026676	Schwarz criterion	-3.423505
Log likelihood	219.1111	Hannan-Quinn criter.	-4.011887
F-statistic	36.97897	Durbin-Watson stat	1.311626
Prob(F-statistic)	0.000000		

The fixed effects in Table 4.9 show that the variables Stock market turnover (SMT) and all share index (ALSIN) are positively and significantly related to Human development index in all the countries. Market capitalization as ratio of GDP (MCAPGDP) exerts positive but insignificant impact on human development index while Value of shares traded as a ratio of GDP (VSTGDP) impact negatively and significantly on human development index. The model is highly fitted (R^2 = 96 %) and the overall regression (F = 36.979) is significant.

Having estimated and evaluated the fixed effects, the researcher resorted to estimating the random effects and also evaluated the results.

Random Effects Models
The results of the random effects are presented in Table 4.10 as follows.

Table 4.10: Results of Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.527074	0.010331	51.01887	0.0000
MCAPGDP	2.61E-05	0.000117	0.222889	0.0242
SMT	0.000861	0.000425	2.026286	0.0462
VSTGDP	-0.001019	0.000192	-5.299229	0.0825
ALSI	2.05E-06	4.11E-07	4.979614	0.0000

Effects Specification				
			S.D.	Rho
Cross-section fixed (dummy variables)				
Period random			0.010956	0.1837
Idiosyncratic random			0.023098	0.8163

Weighted Statistics			
R-squared	0.909777	Mean dependent var	0.543238
Adjusted R-squared	0.902746	S.D. dependent var	0.088560
S.E. of regression	0.027618	Sum squared resid	0.058731
F-statistic	129.4062	Durbin-Watson stat	0.844515
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.887105	Mean dependent var	0.543238
Sum squared resid	0.076513	Durbin-Watson stat	0.744883

The results of Table 4.10 also indicate that market capitalization to GDP ratio (MCAPGDP), Stock market turnover (SMT) and all share index (ALSI) are positively and significantly related to Human development index in all the countries while value of shares traded as a ratio of GDP (VSTGDP) impact negatively but insignificantly on human development index. The model is highly fitted (R^2 = 91 %) and the overall regression (F = 129.4062) is significant.

To determine a more appropriate method to choose among the fixed effects and the random effects, we use the Hausman test. The researcher therefore states the hypothesis for choosing between the fixed and random effects model as follows:

H_0:   Random effects is more appropriate

H_1:   Fixed effects is more appropriate

On the basis of this hypothesis, the result of the Hausman test is presented in Table 4.11 and the decision rule follows as well.

Table 4.11: Hausman Test Results

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	0.000000	4	1.0000

* Period test variance is invalid. Hausman statistic set to zero.
** WARNING: robust standard errors may not be consistent with
   Assumptions of Hausman test variance calculation.

Decision Rule

Since the Chi-square is greater than 5% (1.000 > 0.05%) we accept Ho that the Random effects are more appropriate and reject H_1 that the fixed effects is more appropriate. Thus, the fixed model is rejected and the random effect is accepted for analyzing the impact of capital market indicators on human development index. This shows that the results are time variant and the individuality of the selected countries are not recognized in explaining the effect of capital market indicators on human development index.

The researcher therefore stated the rightful model based on the random effect as follows:

HDI = 0.527074 + 0.0000261MCAPGDP + 0.00086SMT - 0.001019VSTGDP + 0.0000021ALSI
SD   (0.010331)   (0.000117)   (0.000425)   (0.000192)   (0.00000411)

R^2 = 91%, F = 129.4062

Discussion of Findings

The findings of this study show that Nigeria and South Africa share relatively common characteristics in terms of capital market behaviour. Human development index in Nigeria and South Africa is a positive and insignificant function of ratio of market capitalization to GDP. In other words, in both countries, market capitalization to GDP ratio has a positive and insignificant effect on human development index. In Kenya it is not so rather human development index is a negative and insignificant function of market capitalization to GDP ratio. Again, in both Nigeria and South Africa, values of securities traded and stock market turnover ratio exert positive and significant impact on human development index. In Kenya, on the other hand, values of securities traded exert positive and significant impact on human development index while the impact of stock market turnover ratio is found to be negative and significant. However, all share indexes exerts negative and significant impact on human development index in Nigeria while it exerts positive and significant impact in both South Africa and Kenya. The result of panel data (pooled) regression analysis revealed that human development index is a positive and significant function of market capitalization, stock market turnover ratio and all

share index in all the countries; while value of securities traded has negative and insignificant impact on HDI.

The error correction terms are rightly signed and the overall regressions are significant with no autocorrelation. The three models are robust and Table and can be used for policy making and forecasting.

This analysis suggests that the degree of responsiveness of human development index to a small change in all share indexes (stock price) in Nigeria is elastic since a unit increase in the stock price decreases significantly the Human development index.

Conclusion

The capital market was found to have more positive and significant impact on human development index when pooled regression analysis, using the random effect model, was carried out. In particular, market capitalization to GDP ratio, which was found to have positive but insignificant effect on human development index when the analysis was done on country by country basis, turned out to have positive and significant effect in all the selected economies. Furthermore, stock market turnover ratio and all share indexes were also found to have positive and significant impact on human development index in all the three countries. This implies that regional integration of the capital markets will lead to faster economic development in the emerging economies. Based on the findings of the study, the following recommendations are made: trading impediments such as high transaction and information costs should be reviewed to encourage more active trading in stocks, there should be deliberate government policy to remove listing impediments, aimed at encouraging health and educational institutions to be listed on the stock exchanges. This will have the effect of boosting investments in the health and education sectors to ensure that growth in the economy translates to improvements in the quality of health care and education that invariably lead to economic development, and lastly, appropriate authorities should work towards regional integration of the capital markets of emerging economies as this will lead to faster economic development of the affected countries.

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