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BANKS, STOCK MARKET DEVELOPMENT AND ECONOMIC GROWTH IN KENYA: AN EMPIRICAL INVESTIGATION

Sheilla Nyasha[1] and Nicholas M. Odhiambo

Abstract

In this paper, we have examined the impact of both bank- and market-based financial development on economic growth in Kenya during the period 1980 to 2012, using the autoregressive distributed lag bounds testing approach. To capture as far as possible the breadth and depth of the Kenyan bank- and market-based financial systems, the study employs the method of means-removed average to construct both bank- and market-based financial development indices from an array of banking sector and stock market variables. The empirical results of this study show that market-based financial development has a positive impact on economic growth in Kenya. However, the results have also shown that bank-based financial development has no impact on economic growth in the study country. These results apply irrespective of whether the regression analysis is conducted in the long run or in the short run.

Keywords: Kenya, Bank-Based Financial Development, Market-Based Financial Development, Economic Growth

JEL Classification Code: G10, G20, O16

1. Introduction

The relationship between financial development and economic growth has generated a considerable amount of debate for many years, not only among academics but also among policy-makers. This debate can be traced back to Schumpeter (1911), who argued that finance is

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important in promoting economic growth. Although this debate has dragged on for centuries, there is still little consensus to date. On the one hand, a growing body of work supports Schumpeter's notion and reflects the close relationship between financial development and economic growth (Roubini and Sala-i-Martin, 1992; King and Levine, 1993). However, on the other hand, there is a group of studies, such as those by Van Wijnbergen (1983) and Buffie (1984), that views financial development as undesirable for economic growth. Apart from these two groups, there is the third group that views financial development and economic growth as not related (see also Robinson, 1952; Lucas, 1988; Stern, 1989).

Although the relationship between financial development and economic growth has received considerable attention for many years, in both developed and developing countries, the bulk of the previous studies have focussed mainly on the relationship between financial intermediaries and economic growth, giving market-based financial development little attention (Christopoulos and Tsionas 2004; Hassan *et al*., 2011; Adu *et al*., 2013). Where the latter studies have been undertaken, the empirical findings have been inconclusive (Levine and Zervos, 1996; Akinlo and Akinlo, 2009; Ujunwa and Salami, 2010; Bernard and Austin, 2011). The outcome was also found to vary depending on the specified model; the estimation method used; and the variable used to proxy financial development.

Further, most of the previous studies have mainly been on the causal relationship between financial development and economic growth. Very few studies have examined in detail the relative impact of both bank- and market-based financial development on economic growth. Some of the previous studies have also over-relied on the cross-sectional data, which may not have satisfactorily addressed the country-specific issues (Casselli *et al*., 1996; Ghirmay, 2004; Odhiambo, 2009). Amidst all this controversy, the studies on the impact of bank- and market-based financial development on economic growth in Kenya are very limited, if any – yet they are the most needed in a bid to guide policy.

Against this backdrop, the current study attempts to examine the relative impact of bank- and market-based financial development on economic growth in Kenya, using the autoregressive distributed lag (ARDL) bounds testing approach. In order to capture as far as possible the breadth and depth of the Kenyan bank- and market-based financial systems, the current study employs the method of means-removed average to construct both bank-based and market-based financial development indices from an array of banking sector and stock market variables.

The rest of this paper is structured as follows: Section 2 gives an overview of the financial systems in Kenya. Section 3 reviews literature on bank- and market-based financial development and economic growth. Section 4 presents the methodology of the study while section 5 presents the results and the empirical analysis thereof. Section 6 concludes the study.

2. Financial Systems in Kenya

Kenya has a young, but growing financial sector, which consists of the banking segment and the capital market segment. Although both segments are still at a developing stage, it is the banking sector that plays a leading role in savings mobilisation, capital allocation, oversight of investment decisions of corporate managers, as well as the provision of risk management vehicles (Demirguc-Kunt and Levine, 2001). It is for this reason that Kenya is generally referred to as having a bank-based financial system. At the apex of the Kenyan financial system is the Central Bank of Kenya, which was established in 1966 through the Central Bank of Kenya Act of 1966 (Central Bank of Kenya, 2015a).

Prior to Kenya's independence from Britain in 1963, Kenyan banking was dominated by local units. However, these have been challenged by local institutions targeting the lower end of the market. Currently, there are 43 licensed commercial banks and one mortgage finance company (Central Bank of Kenya, 2015b). Of the 44 institutions, 31 are locally owned while 13 are foreign owned. The banks have formed an association called the Kenya Bankers Association,

which serves as a lobby for the banking sector's interests. This association serves as a forum to address issues affecting its members (Central Bank of Kenya, 2015a).

Kenya has one stock market, known as the Nairobi Securities Exchange (formerly the Nairobi Stock Exchange). Although this stock market is one of the most developed among those of the Eastern and Central African countries; and it is rated the second largest stock market in Africa, it is still young and developing by international standards. In the 1980s, the Kenyan Government embarked on a reform process in order to promote the growth and development of the Kenyan financial sector. These reforms focused on both the banking sector and the stock market. The results of these wide-ranging reforms include the modernisation of, and improved performance of, the stock exchange (Nairobi Securities Exchange, 2015). The banking sector also benefited from Kenya's reform of its financial system, as evidenced by growth in assets, deposits, product-offerings and profitability (World Bank, 2014).

3. Literature Review

To date, although extensive work has been done in an attempt to establish the nature of the relationship between financial development and economic growth, studies examining the impact of bank-based financial development on economic growth, on the one hand, and market-based financial development and economic growth, on the other hand, are scant. Even where such studies have been undertaken, the empirical findings have been largely inconclusive.

Studies that have empirically tested the impact of bank- and market-based financial development on economic growth can be categorised into three groups. The first group is of studies that have found bank-based and market-based financial development to have a positive impact on economic growth (see also Levine and Zervos, 1996; Adjasi and Biekpe, 2006; Kargbo and Adamu, 2009). The second group consists of studies that have found bank-based and market-based financial development to have a negative impact on economic growth (see also De

Gregorio and Guidotti, 1995; Ujunwa and Salami, 2010; Bernard and Austin, 2011). Then there is the third group that comprises studies that have found bank-based and market-based financial development to have no impact on economic growth. Studies that fall in this category, such as those by Robinson (1952) and Lucas (1988), deny the existence of any finance-growth relationship.

Although there is little consensus on whether or not bank-based and market-based financial development have a positive impact on economic growth, globally, and in developing countries in particular, the bulk of the empirical literature attests to the positive impact bank- and market-based financial development has on economic growth. Table 1 gives a summary of the empirical studies on the impact of financial development on economic growth. Panel A shows studies on bank-based financial development and economic growth while Panel B indicates studies on market-based financial development and economic growth.

Table 1: Studies Showing the Nature of Impact of Bank- and Market-Based Financial Development on Economic Growth

Author(s)	Region/Country	Variables	Methodology	Positive/Negative Impact
Panel A: Bank-Based Financial Development and Economic Growth				
De Gregorio and Guidotti, 1995	A large number of countries	– GDP per capita – Credit – Investment – Human capital accumulation – Government spending – Political instability	– Cross-sectional data	Positive impact (in a large cross-country sample)
Odedokun, 1996	LDCs - 71 developing countries	– Annual growth rate of the real GDP – Financial depth – Labour force growth – Investment/GDP ratio – Real export growth	– Ordinary Least Squares (OLS) techniques – Generalized Least Squares (GLS) technique	Positive impact (in 85% of the 71 countries)
Ahmed and Ansari, 1998	India, Pakistan and Sri Lanka	– Per capita real GDP – Per capita nominal GDP – M2/GDP – Quasi-money/GDP – Domestic credit to nominal GDP	– Pooled data based on time-series and cross- sectional observations	Positive association
Allen and Ndikumana, 2000	8 Southern Africa – Botswana, Lesotho,	– Per capita GDP – Ratio of M3 to GDP	– Cross-sectional data analysis	Positive association

Author(s)	Region/Country	Variables	Methodology	Positive/Negative Impact
	Mauritius, Malawi, Swaziland, South Africa, Zambia and Zimbabwe	– Market capitalisation – Total value traded – Gross domestic investment		
Güryay et al., 2007	Northern Cyprus	– Annual growth rates of real GDP – Annual population growth – Annual growth of export – Ratio of domestic investments to GDP – Ratio of deposits to GDP – Ratio of loan to GDP	– Time-series – Ordinary Least Squares techniques	Positive impact (though negligible)
Kargbo and Adamu, 2009	Sierra Leone	– Real GDP – Financial development index – Investment – Real deposit rate	– Time-series – ARDL approach	Positive impact
Hassan et al., 2011	Low- and middle-income countries	– GDP per capita – Domestic credit provided by the banking sector to GDP – Domestic credit to the private sector as a percentage of GDP – M3 to GDP – Gross domestic savings to GDP	– Panel regressions – Variance decompositions	Positive impact
Adu et al., 2013	Ghana	– Real GDP – Credit to the private sector as ratio to GDP – Total domestic credit	– Time-series – ARDL approach	Positive impact (when credit to the private sector as ratio to GDP and

Author(s)	Region/Country	Variables	Methodology	Positive/Negative Impact
		– Broad money stock to GDP ratio – Real gross fixed capital formation to GDP ratio – Real gross government expenditure – Trade openness – Inflation – Financial liberalisation dummy		total domestic credit are used as proxies for financial development)
De Gregorio and Guidotti, 1995	A large number of countries	– GDP per capita – Credit – Investment – Human capital accumulation – Government spending – Political instability	– Cross-sectional data	Negative impact (in Latin America)
Odedokun, 1996	LDCs - 71 developing countries	– Annual growth rate of the real GDP – Financial depth – Labour force growth – Investment-GDP ratio – Real export growth	– OLS techniques – Generalized Least Squares (GLS) technique	Negative impact (in 15% of the 71 countries)
Adu *et al.*, 2013	Ghana	– Real GDP – Credit to the private sector as ratio to GDP – Total domestic credit – Broad money stock to GDP ratio – Real gross fixed capital formation to GDP ratio – Real gross government expenditure – Trade openness	– Time-series – ARDL approach	Negative impact (when broad money stock to GDP ratio is used as proxies for financial development)

Author(s)	Region/Country	Variables	Methodology	Positive/Negative Impact
		– Inflation – Financial liberalisation dummy		
Ram, 1999	95 countries	– GDP Growth – Financial development – Export growth – Investment as a share of GDP	Individual/country group time-series	No impact
Andersen and Tarp, 2003	74 countries	– Private credit – GDP per capita – Commercial bank assets to commercial bank plus central bank assets – Liquid liabilities – legal origin dummy – Education – Initial GDP per capita – Region – Education	Cross-section	No impact
Panel B: Market-Based Financial Development and Economic Growth				
Levine and Zervos, 1996	41 countries	– Market capitalisation – Total value of trades – Turnover ratio – Initial education	– Cross-country regressions	Positive impact
Caporale *et al.,* 2003	Four developing countries (Chile, Korea, Malaysia	– GDP in levels – Market capitalisation ratio – Value traded ratio	– Quarterly time-series – non-causality	Positive impact

Author(s)	Region/Country	Variables	Methodology	Positive/Negative Impact
	and the Philippines)	– Level of investment – Investment productivity	trivariate test	
Bekaert *et al.* 2005	A large number of countries	– real per capita GDP – Turnover and 25 other variables		Positive impact
Adjasi and Biekpe, 2006	14 African countries	– GDP – Market capitalisation to GDP – Total value of shares traded to GDP – Turnover ratio – Investment – Trade	Dynamic panel data modelling	Positive impact
Nurudeen, 2009	Nigeria	– Real GDP – Market capitalisation – Market turnover – Openness – Minimum rediscount rate	– Time-series – Error-correction approach	Positive impact
Akinlo and Akinlo, 2009	Seven countries in sub-Saharan Africa	– Per capita nominal GDP – Value traded ratio – Market capitalisation ratio – Discount rate – Openness ratio	ARDL bounds test	Positive impact
Ujunwa and Salami, 2010	Nigeria	– GDP per capita – Total market capitalisation Total value of shares traded – Turnover ratio – Inflation rate – Gross capital formation	– Time-series – Ordinary Least Squares techniques	Positive impact (when stock market development is proxied by stock market size and turnover ratios)

Author(s)	Region/Country	Variables	Methodology	Positive/Negative Impact
		– Government consumption expenditure		
Bernard and Austin, 2011	Nigeria	– Real GDP – Stock market capitalisation – Value traded ratio – Turnover ratio	– Time-series – Ordinary Least Squares techniques	Positive impact (when stock market development is proxied by turnover ratio)
Ujunwa and Salami, 2010	Nigeria	– GDP per capita – Total market capitalisation Total value of shares traded – Turnover ratio – Inflation rate – Gross capital formation – Government consumption expenditure	– Time-series – Ordinary Least Squares techniques	Negative impact (when stock market development is proxied by total value of shares traded)
Bernard and Austin, 2011	Nigeria	– Real GDP – Stock market capitalisation – Value traded ratio – Turnover ratio	– Time-series – Ordinary Least Squares techniques	Negative impact (when stock market development is proxied by market capitalization and value traded ratios)

4. Methodology

4.1 ARDL Bounds Testing Procedure

This study employs the autoregressive distributed lag (ARDL) bounds testing approach to examine the cointegration relationship between bank- and market-based financial development and economic growth. The choice of this test is based on the numerous advantages it has over other cointegration tests, such as the residual-based approach by Engle and Granger (1987) and the Full-Maximum Likelihood (FML) test based on Johansen and Juselius (1990). The ARDL test has superior small sample properties, when compared to the other conventional methods of testing cointegration (Pesaran and Shin, 1999). Thus, while other cointegration techniques are sensitive to the size of the sample, the ARDL test is suitable even when the sample size is small. Further, the ARDL technique generally provides unbiased estimates of the long-run model and valid t statistics − even when some of the regressors are endogenous (Odhiambo, 2008). Moreover, unlike other conventional cointegration techniques, the ARDL-bounds testing approach does not impose the restrictive assumption that all the variables under study must be integrated of the same order. The ARDL approach can be applied to examine the existence of a relationship between variables regardless of whether the underlying regressors are integrated of order one [I(1)], order zero [I(0)], or fractionally integrated. Therefore, the approach is considered to be very appropriate for analysing the underlying relationship. This approach has also been increasingly used in empirical research in recent years.

4.2 Empirical Model Specification

The empirical model used in this study to test the impact of financial development, both bank-based and market-based, on economic growth is based on Majid (2008) and Kargbo and Adamu (2009). The ARDL representation of the model is expressed as follows:

$$\Delta y_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \beta_{2i}\Delta BFD_{t-i} + \sum_{i=0}^{n} \beta_{3i}\Delta MFD_{t-i} + \sum_{i=0}^{n} \beta_{4i}\Delta INV_{t-i}$$

$$+ \sum_{i=0}^{n} \beta_{5i}\Delta SAV_{t-i} + \sum_{i=0}^{n} \beta_{6i}\Delta TOP_{t-i} + \vartheta_1 y_{t-1} + \vartheta_2 BFD_{t-1} + \vartheta_3 MFD_{t-1}$$

$$+ \vartheta_4 INV_{t-1} + \vartheta_5 SAV_{t-1} + \vartheta_6 TOP_{t-1} + \mu_{1t} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (1)$$

Where β_0 is a constant, β_1-β_6 and ϑ_1-ϑ_6 are respective regression coefficients, Δ is the difference operator, n is the lag length and μ_t is the white noise-error term.

Based on the ARDL model specified in equations (1), the following ARDL-based error-correction model is specified:

$$\Delta y_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \beta_{2i}\Delta BFD_{t-i} + \sum_{i=0}^{n} \beta_{3i}\Delta MFD_{t-i} + \sum_{i=0}^{n} \beta_{4i}\Delta INV_{t-i}$$

$$+ \sum_{i=0}^{n} \beta_{5i}\Delta SAV_{t-i} + \sum_{i=0}^{n} \beta_{6i}\Delta TOP_{t-i} + \xi_1 ECM_{t-1} + \mu_t \ldots \ldots \ldots \ldots (2)$$

5.2 Data Sources and Definition of Variables

The annual time series data, covering the period from 1980 to 2012, utilised in this study were obtained from the World Bank Economic Indicators and the Emerging Stock Markets Factbook (IFC, various issues). The definitions of all variables used in this study are reported in Table 2.

Table 2: Variable Description

Variable	Description
y	Growth rate of real gross domestic product – a proxy for economic growth
BFD	An index of bank-based financial development, which is a means-removed average of M2, M3 and credit provided to the private sector by financial intermediaries – a proxy for bank-based financial development (see also Demirguc-Kunt and Levine, 1996)
MFD	An index of market-based financial development, which is a means-removed average of stock market capitalisation, stock market traded value and stock market turnover – a proxy for market-based financial development (see also Demirguc-Kunt and Levine, 1996)
INV	Share of gross fixed capital formation in GDP
SAV	Share of savings in GDP
TOP	Trade openness, which is the sum of the share of total imports in GDP and the share of total exports in GDP

To compute a conglomerate index of bank-based financial development (BFD), the means-removed values of the three indicators of bank development are averaged, in a two-step procedure. First, the means-removed values of M2 to nominal GDP (M2), M3 to nominal GDP (M3) and domestic credit to private sectors to nominal GDP (C) are computed. The means-removed value of variable X is defined as $Xm = [X- mean(X)] / [ABS(mean(X))]$, where ABS (z) refers to the absolute value of z. For mean (X), the average value of X over the 1980-2012 period was used. Second, a simple average of the means-removed M2 to nominal GDP, M3 to nominal GDP and domestic credit to private sectors to nominal GDP, is taken to obtain an overall index of bank-based financial development (BFD). The same procedure is applied to market-based financial development obtain MFD.

5. Empirical Results

5.1 Unit Root Tests

The variables were first tested for stationarity using the Dickey-Fuller generalised least squares (DF-GLS) and Phillips-Perron (PP) tests. The results of the stationarity tests on all variables are presented in Table 3.

Table 3: Stationarity Tests for all Variables

Dickey-Fuller Generalised Least Square (DF-GLS)				
Variable	**Stationarity of all Variables in Levels**		**Stationarity of all variables in First Difference**	
	Without Trend	With Trend	Without Trend	With Trend
y	-3.060***	-3.283**	–	–
BFD	-2.190**	-2.764	-6.714***	-7.327***
MFD	-1.257	-2.916*	-6.259***	-6.284***
INV	-2.634**	-2.668	-5.454***	-5.516***
SAV	-3.227***	-3.498**	–	–
TOP	-1.846*	-2.379	-5.684***	-5.957***
Phillips-Perron (PP)				
Variable	**Stationarity of all Variables in Levels**		**Stationarity of all variables in First Difference**	
	Without Trend	With Trend	Without Trend	With Trend
y	-3.310**	-3.331*	–	–
BFD	-2.769*	-2.819	-7.795***	-7.747***
MFD	-1.466	-2.845	-6.280***	-6.162***
INV	-2.547	-2.572	-7.571***	-8.456***
SAV	-3.098**	-3.323*	–	–
TOP	-2.054	-2.468	-5.760***	-6.423***

Note: *, ** and *** denote stationarity at 10%, 5% and 1% significance level

The results of the stationarity tests reported in Table 3 show that after differencing the variables once, all the variables were confirmed stationary. Although the ARDL test does not require the pre-testing of variables to be done, the unit-root test provides guidance as to whether ARDL procedure is applicable or not, as it is only applicable for the analysis of

variables that are integrated of order not more than one. In this instance, the variables are a mixture of those integrated of order 0, and of those integrated of order 1. Therefore, the ARDL bounds testing procedure can be performed.

5.2 Bounds Test for Cointegration

In this section, the long-run relationship between the variables in the specified model is examined using the ARDL bounds testing procedure. The first step is to get the order of lags on the first differenced variables in equations (1) by using the Akaike Information Criterion and the Schwartz Bayesian Criterion. This is followed by the application of a bounds F-test to equation (1) to establish a long-run relationship between the variables under study. The null hypothesis of no co-integration, expressed as H_0: $\vartheta_1 = \vartheta_2 = \vartheta_3 = \vartheta_4 = \vartheta_5 = \vartheta_6 = 0$, is tested against the alternative hypothesis of co-integration, expressed as H_1: $\vartheta_1 \neq \vartheta_2 \neq \vartheta_3 \neq \vartheta_4 \neq \vartheta_5 \neq \vartheta_6 \neq 0$. The calculated F-statistic is matched with the critical values computed by Pesaran *et al*. (2001). If the calculated F-statistic lies above the upper bound level, the null hypothesis of no co-integration is rejected; and it is concluded that the variables in question are co-integrated. Conversely, if the calculated F-statistic lies below the lower-bound level, the null hypothesis of no co-integration is accepted; and it is concluded that the variables are not co-integrated. However, in the event that the calculated F-statistic falls within the upper and the lower-bound levels, the results are interpreted as inconclusive. The results of the bounds F-test are reported in Table 4.

Table 4: Bounds F-test for Cointegration

Dependent Variable	Function			F-statistic		Cointegration Status	
y	F(y|BFD, MFD, INV, SAV,TOP)			3.365*		Cointegrated	
Asymptotic Critical Values							
Pesaran *et al*. (2001), p.300, Table CI(iii) Case III	1%		5%		10%		
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
	3.41	4.68	2.62	3.79	2.26	3.35	

Note: * denotes statistical significance at 10% level

The results of the ARDL bounds test for cointegration reported in Table 4 show that the calculated F-statistic for Kenya is 3.37. The calculated F-statistic is higher than the critical values reported by Pesaran *et al*. (2001) in Table CI(iii) Case III, at 10% significance level. The results, therefore, show that the variables used in the specified model are cointegrated.

5.3 Estimated ARDL Model

With y and BFD, MFD, INV, SAV and TOP all co-integrated, the model can be estimated using the ARDL approach. The first step in this analysis is to determine the optimal lag length for the model, using the Akaike Information Criterion (AIC) or the Schwarz Information Criterion (SIC). The optimal lag length selected based on SIC is ARDL(1,0,0,0,0,0). The SIC-based model was preferred because it was more parsimonious than the AIC-based model. The long-run results are reported in Table 5 Panel A while the short-run dynamics are reported in Panel B.

Table 5: Empirical Results of the Estimated ARDL Model

Panel A: Estimated long-run coefficients [Dependent variable: real GDP growth rate (y)]

Regressor	Co-efficient (t-statistic)
C	-4.06 (-0.86)
BFD	-0.08 (-0.81)
MFD	0.21** (2.420
INV	0.82*** (3.12)
SAV	0.08 (0.83)
TOP	-0.14 (-1.58)

Panel B: Error-correction representation of the selected ARDL model [Dependent variable: real GDP growth rate (Δy)]

ΔBFD	-0.07 (-0.80)
ΔMFD	0.17** (2.56)
ΔINV	0.66** (2.63)
ΔSAV	0.06 (0.90)
ΔTOP	-0.11 (-1.59)
Ecm (-1)	-0.80*** (-4.34)

R-Squared	0.731	R-Bar-Squared	0.701
SE of Regression	1.741	F-Stat F(6,24)	4.237[.005]
Residual Sum of Squares	39.359	DW statistic	1.873

Note: ** and *** denote stationarity at 5% and 1% significance levels respectively.

The results reported in Table 5 show that in Kenya, market-based financial development has a positive impact on economic growth. This applies both in the long run and in the short run. The long-run positive impact is supported by the coefficient of market-based financial development in Panel A, that is positive and statistically significant, while the short-run economic impact of market-based financial development is evidenced by the coefficient of market-based financial development in Panel B, that is also positive and statistically significant.

However, the results further show that, in Kenya, bank-based financial development has no significant impact on economic growth, both in the long run and in the short run. This is confirmed by the coefficient of bank-based financial development in Panels A and B that is statistically insignificant. Although contrary to the expectations of this study, these results are similar to those found by other researchers on the same subject (see, among others, Andersen and Tarp, 2003). It is also interesting to note that although Kenya has a bank-based financial system, it is the market-based financial development, rather than the bank-based financial development that propels the country's real sector.

Other results show that the coefficient of investment is positive and statistically significant as expected, suggesting that investment impacts positively on economic growth. These results apply both in the long and short run. However, the coefficient of savings ratio and that of trade openness is statistically insignificant, irrespective of whether the model is estimated over the long run or over the short run. These findings, though contrary to the expectations of the current study, are consistent with the results obtained in some of the previous studies (see Odedokun, 1996; Güryay *et al*., 2007). The coefficient of ECM (-1) is also found to be negative and statistically significant as expected.

A battery of tests performed for the model shows that the model conforms to the basic diagnostic tests, as shown in Table 6. Similarly, the stability tests based on Cumulative Sum of Recursive Residuals and Cumulative Sum of Squares of Recursive Residuals reported in Figures 1 and 2 respectively also show that the parameters in this model are stable over the sample period.

Table 6: Diagnostic Tests

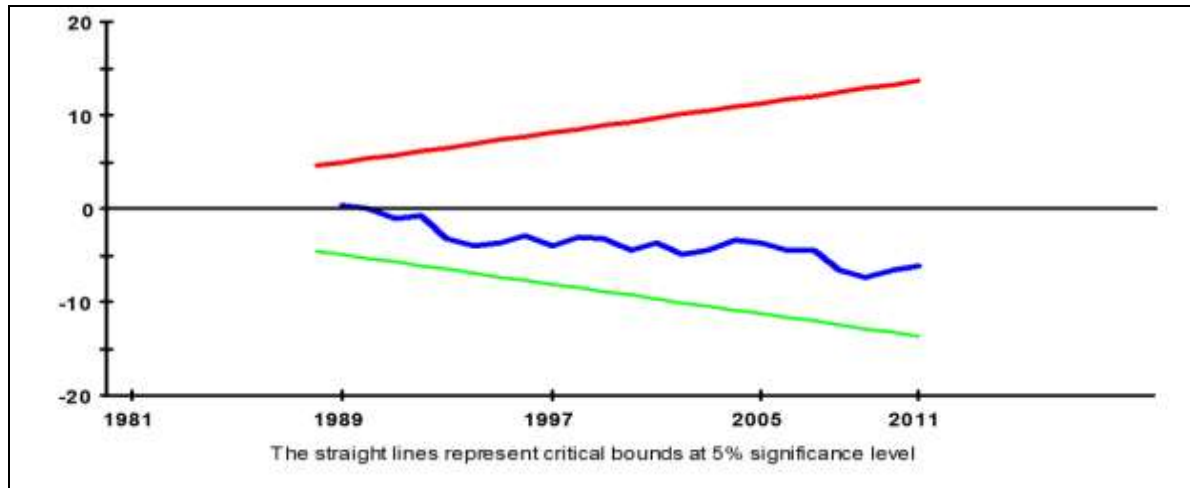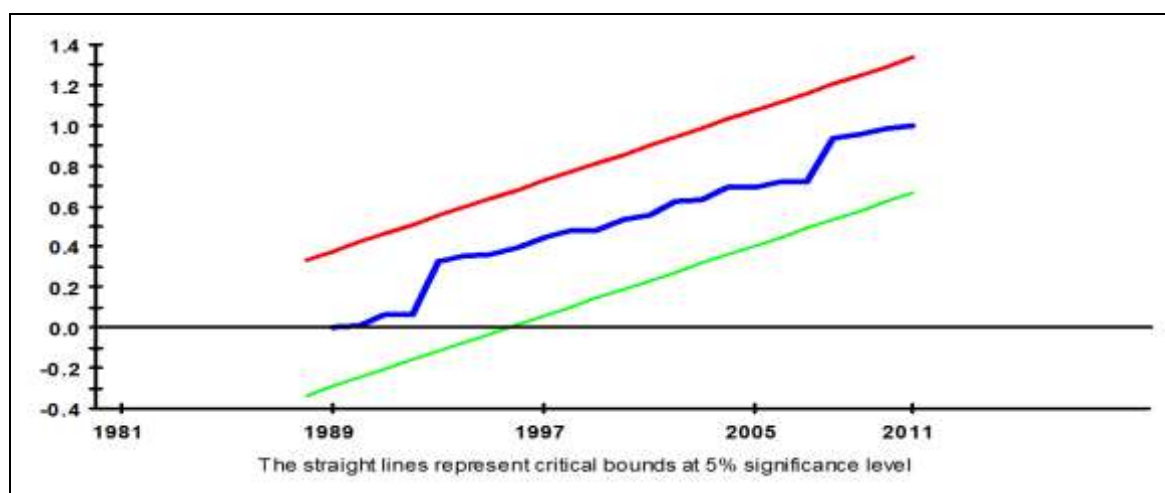| LM Test Statistic	Results
Serial Correlation: CHSQ(1	2.007[0.157]
Functional Form: CHSQ(1)	0.051[0.821]
Normality: CHSQ (2)	0.100[0.951]
Heteroscedasticity: CHSQ (1)	0.496[0.481]

Figure 1: Plot of Cumulative Sum of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

Figure 2: Plot of Cumulative Sum of Squares of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

6. Conclusion

In this paper, the relative impact of bank-based and market-based financial development on economic growth in Kenya has been examined during the period from 1980 to 2012. Although extensive work has been done in an attempt to establish the nature of the relationship between financial development and economic growth, studies examining the impact of bank-based financial development on economic growth, on the one hand, and market-based financial development and economic growth, on the other hand, are scant. Even where such studies have been undertaken, the empirical findings have been largely inconclusive. In addition, the current study uses the newly developed ARDL-bounds testing approach to examine this linkage – an approach which has best small sample size properties. Furthermore, the study employs the method of means-removed average to construct both bank-based and market-based financial development indices. The empirical results of this study show that there is a positive long- and short-run relationship between market-based financial development and economic growth in Kenya. However, the study failed to find any significant impact of bank-based financial development on economic growth, irrespective of whether the regression analysis is conducted in the short run or in the long run. The findings of this study, therefore, lend more support to pro-market-based financial development policies in Kenya in order to foster economic growth and development.

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