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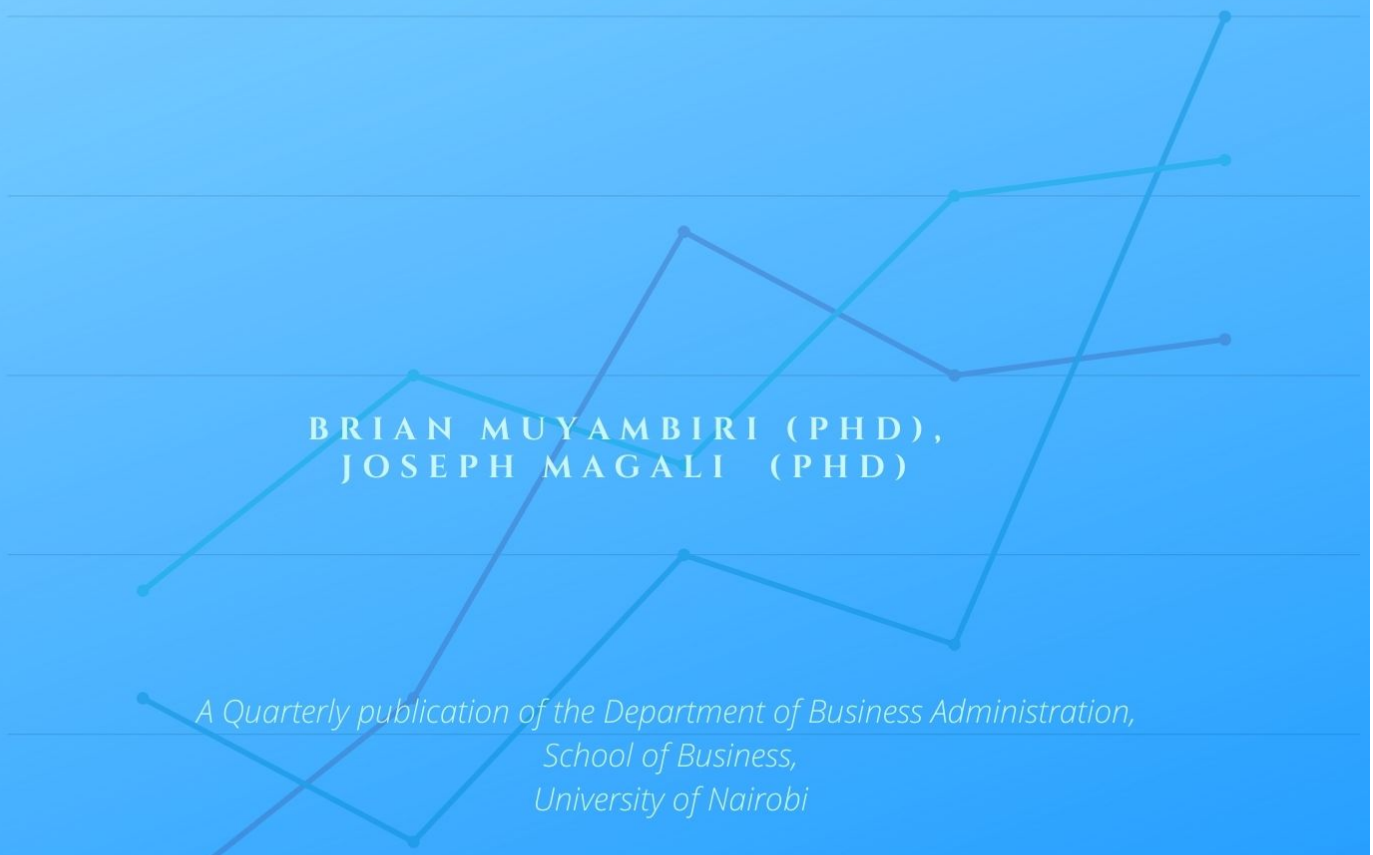

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THE FINANCIAL DEVELOPMENT-INVESTMENT-SAVINGS AND ECONOMIC GROWTH MULTIVARIATE CAUSAL NEXUS IN TANZANIA AND KENYA

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Abstract

This paper evaluates the dynamic causal relationship between financial development, savings, investment and economic growth in Tanzania and Kenya from 1990-2017 by employing a multivariate Granger-causality model. The results show that for both Tanzania and Kenya, investment precedes financial development in the short run and hence investment influences the economic growth than financial sector development. The paper recommends that both countries should address credit provision to enhance savings, investment and economic growth.

Keywords: Finace, Investment, Savings, economic growth, Kenya, Tanzania

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1. Introduction

The financial sector (commercial banks, investment, insurance and real estate companies) promotes economic growth and improves the standard of living of citizens of a particular country. The strong financial sector promotes economic growth through the pooling of funds, reducing the risk and increasing investments (Muyambiri & Odhiambo, 2018). Odo, Ogbonna, Agbi, and Anoke (2016) contended that financial development induces improvement in quantity and quality of services of the financial intermediaries. When the banks channel funds from savers to borrowers facilitate the efficient growth of both investments and economy (Ahmed, Yousuf & Lubna, 2019). Moreover, when citizens save in the banks, they eliminate liquidity risk and make the financial systems to function effectively (Muyambiri & Odhiambo, 2018).

When the financial development influences the economic growth, it is termed as supply-leading hypothesis while the reverse influence is known as a demand-following hypothesis. The two concepts are both labelled as Patrick's stage-of-development hypothesis of 1966 (Muyambiri & Odhiambo, 2018). Scholars are indifferent on which one affects the other between financial development and economic growth (Carby, Craigwell, Wright, & Wood, 2012; Isu & Okpara, 2013). Scholars also lack consensus on which determines economic growth between savings and investment. Economic growth theories from Neo-classical and Marxist scholars support the former while Neo-Keynesian and classical models prioritize the later (Mndeme, 2015). Bakari (2017) asserted that domestic investment is an engine of the country's economic growth and economic cycle.

Popiel (1994) considered Kenya as an African country with a well-developed financial system encompassing formal, semi-formal and informal financial institutions. In 1997, Kenya liberalized its financial sector where the financial sector began to contribute 4 % of the GDP, which is equivalent to 40% of assets (Uddin, Sjö & Shahbaz, 2013). Tanzania adopted the financial sector reform in the 1980s and liberalized its financial sector in 1990s to minimize poverty and promote economic growth. The financial reform encouraged the increase of commercial banks and other financial institutions, including the NGO microfinance institutions, community banks, savings and credits cooperative societies and informal institutions such as village community banks (Chisimbili, 2015).

Muyambiri and Odhiambo (2018), Magana (2018), Karlis (2017) and Ahmed, Yousuf, and Lubna (2019) to list a few, indicated the influence of financial development on economic growth. Ullah, Shah, and Khan (2014), Lema and Dimoso (2014), Mahembe and Odhiambo (2016) analyzed how domestic and foreign direct investments (FDIs) affect economic growth. To the best of the authors' knowledge, none of the empirical studies has been conducted to assess the link between financial development, savings, investment, and economic growth in Tanzania and Kenya.

Studies from Tanzania such as Lema and Dimoso (2014), Maganya (2018), Bomani (2013) and Mndeme (2015) scrutinized how FDI inflows, financial development, exports, domestic investment and savings affect economic growth in Tanzania respectively. Moreover, studies conducted in Kenya such as Onuonga (2014) and Uddin, Sjö, and Shahbaz (2013) investigated how financial development influenced economic growth in Kenya while Odhiambo (2017) compared the supply-leading versus demand-following hypothesis in Kenya, South Africa and Tanzania. Muyambiri and Odhiambo (2018) argued that the studies which assess the causal relationship between financial development and investment concentrated on the bank-based versus market-based side variables. Furthermore, Muyambiri and Odhiambo (2018), through

reviewing the empirical literature, indicated the gaps for studies which link the variables of financial development, savings, investment and economic growth.

Given the aforementioned background, this study seeks to evaluate the causal relationship between financial development, investment and economic growth in Tanzania and Kenya during the period from 1990 to 2017.

2. Literature Review

2.1 *Financial development and economic growth*

Scholars have revealed unidirectional and bi-directional Granger causality between financial development and economic growth. For instance, Odo et al. (2016) in Nigeria and South Africa, Ahmed, Yousuf, and Lubna (2019) in Bangladesh, Ndlovu (2013) substantiated the unidirectional causality between economic growth and financial development in Zimbabwe. Muyambiri and Odhiambo (2018) revealed a short run bi-directional Granger-causal relationship between the bank and market-based financial development and investment. Acaravci, Ozturk, and Acaravci (2009) substantiated a bi-directional causal relationship between the growth of real GDP per capita and the banking sector's domestic credit for 24 countries of sub-Saharan African. Chisimbili (2015) showed that in 1988–2012, there was a bi-directional causality between financial development and economic growth in Tanzania. Moreover, Maganya (2018) found that in a long run financial development cointegrated with economic growth in Tanzania.

Uddin et al. (2013) used a Cobb–Douglas production, autoregressive distributed lag (ARDL) bounds testing and Gregory and Hansen's structural break cointegration and indicated that in the long run, financial sector development influenced positively the economic growth in Kenya between 1971 and 2011. Similarly, Onuonga (2014) established that financial development contributed to economic growth in Kenya and that economic growth promoted the financial sector.

Odhiambo (2007) revealed that a demand-following response (contribution of economic growth on financial development) was stronger in Kenya and South Africa while a supply-leading response (contribution of financial development on economic growth) dominated in Tanzania. Aboucha and Ezzahid (2016) disclosed that there was no causality between the financial sector development and economic growth in Morocco. Moreover, Carby, Craigwell, Wright, and Wood (2012) did not support Patrick (1966)'s hypothesis which articulates that financial development influences economic growth. Kenya and Tanzania both apply the financial sector to promote their economic growth. Tanzania has been categorized by the World Bank as a lower-middle-income country since July 2020 while Kenya strives to maintain its middle-income status. Hence, the authors are motivated to assess the current contribution of the financial development, investment and savings on the economic growth of each country under the study.

2.2 *Domestic Investment and Economic Growth*

Investment is a component of the amount of money exchanged for goods and services at a definite price level and a particular time. Consequently, increasing investment boosts economic growth (Epaphra & Massawe, 2016). Furthermore, an increase in investment in terms of physical capital, such as machinery, factories and roads lower the cost of production and makes production companies to achieve the economies of scale (Mndeme, 2015). Epaphra and Massawe (2016) revealed that both domestic, private and foreign direct investment promoted the economic growth in Tanzania. Mndeme (2015) exposed that in Tanzania from 1972 to 2012 the contribution of

investment on economic growth exceeded savings except in 1977. Ahmad, Luqman, and Hayat (2012) and Tabassum and Ahmed (2014) affirmed a positive relationship between investment and economic growth in Pakistan and Bangladesh respectively. Bakari (2017) by using the Johansen co-integration analysis of Vector Error Correction Model (VECM) and the Granger-Causality tests determined that the positive effect of domestic investment on economic growth in the long run in Malaysia. Since Tanzania has currently embarked on the industrial driven economy, the authors are also motivated to analyze the contribution of domestic investment on economic growth.

2.3 *Financial development, savings, investment and economic growth*

Mndeme (2015) asserted that higher savings align with higher levels of investment and productivity in the long run. Theoretically, more saving is also accompanied by higher investment. The countries whose citizens save and invest possess the higher outputs, income, wages and wealth. Muyambiri and Odhiambo (2018) found that financial development, savings and investment influenced the economic growth in Botswana. The study further revealed that there was a causal effect between the three variables both in the short run and long run, except the investment, influenced the financial sector in the short run. Ullah, Shah, and Khan (2014) registered the long-run relationship between domestic investments, foreign direct investment, and economic growth in Pakistan. Mndeme (2015) examined the relationship between domestic investment, savings and economic growth in Tanzania using VECM. The study used time series data of 42 years from 1972 to 2012. The result discovered a long-run positive correlation between investment and per capita GDP but the correlation between savings and economic growth was weak.

The empirical literature indicates that the studies that have assessed the influence of the financial development-investment- savings and economic growth focuses on either single or only two variables. To the best of the authors' knowledge, none of the studies has been conducted to assess the link between financial development, investment, and economic growth, particularly in Tanzania and Kenya. To conduct such as study is currently important because the literature portrays that the two countries are competing to revamp their economies using various strategies. Therefore, this study assesses how the financing development, savings and investment contribute to the economic growth of the two countries. The findings from this study may be used to develop strategies to promote the economic growth of the two neighbouring countries.

3. Methodology

The data sets used for this study are publicly available at World Development Indicators (WDI), Washington, DC: The link is http://data.worldbank.org/data-catalog/world-development-indicators (accessed October 22, 2019). The autoregressive distributed lag (ARDL) was used to analyze data. Data of domestic investment, financial development indicator, the gross domestic savings and growth rate of the real gross domestic product, from 1990-2017 were considered for analysis. Following Muyambiri (2017), the ARDL model is estimated.

$$\Delta INV_t = \propto_0 + \sum_{i=1}^{n} \propto_{1i} \Delta INV_{t-i} + \sum_{i=0}^{n} \propto_{2i} \Delta FD_{t-i} + \sum_{i=0}^{n} \propto_{3i} \Delta SAV_{t-i} + \sum_{i=0}^{n} \propto_{4i} \Delta GDP_{t-i} + \sum_{i=0}^{n} \propto_{5i} \Delta TRD_{t-i} + \alpha_6 INV_{t-1} + \alpha_7 FD_{t-1} + \alpha_8 SAV_{t-1} + \alpha_9 GDP_{t-1} + \alpha_{10} TRD_{t-1} + \varepsilon_{1t} \dots\dots\dots\dots 1$$

$$\Delta FD_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta FD_{t-i} + \sum_{i=0}^{n} \beta_{2i} \Delta INV_{t-i} + \sum_{i=0}^{n} \beta_{3i} \Delta SAV_{t-i} + \sum_{i=0}^{n} \beta_{4i} \Delta GDP_{t-i} + \sum_{i=0}^{n} \beta_{5i} \Delta TRD_{t-i} + \beta_6 FD_{t-1} + \beta_7 INV_{t-1} + \beta_8 SAV_{t-1} + \beta_9 GDP_{t-1} + \beta_{10} TRD_{t-1} + \varepsilon_{2t} \dots\dots\dots\dots 2$$

$$\Delta GDP_t = \rho_0 + \sum_{i=1}^{n} \rho_{1i} \Delta GDP_{t-i} + \sum_{i=0}^{n} \rho_{2i} \Delta INV_{t-i} + \sum_{i=0}^{n} \rho_{3i} \Delta FD_{t-i} + \sum_{i=0}^{n} \rho_{4i} \Delta SAV_{t-i} + \sum_{i=0}^{n} \rho_{5i} \Delta TRD_{t-i} + \rho_6 GDP_{t-1} + \rho_7 FD_{t-1} + \rho_8 SAV_{t-1} + \rho_9 INV_{t-1} + \rho_{10} TRD_{t-1} + \varepsilon_{3t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3$$

$$\Delta SAV_t = \gamma_0 + \sum_{i=1}^{n} \gamma_{1i} \Delta SAV_{t-i} + \sum_{i=0}^{n} \gamma_{2i} \Delta INV_{t-i} + \sum_{i=0}^{n} \gamma_{3i} \Delta FD_{t-i} + \sum_{i=0}^{n} \gamma_{4i} \Delta GDP_{t-i} + \sum_{i=0}^{n} \gamma_{5i} TRD_{t-i} + \gamma_6 GDP_{t-1} + \gamma_7 FD_{t-1} + \gamma_8 SAV_{t-1} + \gamma_9 INV_{t-1} + \gamma_{10} TRD_{t-1} + \varepsilon_{4t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 4$$

$$\Delta TRD_t = \delta_0 + \sum_{i=1}^{n} \delta_{1i} \Delta TRD_{t-i} + \sum_{i=0}^{n} \delta_{2i} \Delta INV_{t-i} + \sum_{i=0}^{n} \delta_{3i} \Delta FD_{t-i} + \sum_{i=0}^{n} \delta_{4i} \Delta GDP_{t-i} + \sum_{i=0}^{n} \delta_{5i} \Delta SAV_{t-i} + \delta_6 FD_{t-1} + \delta_7 INV_{t-1} + \delta_8 TRD_{t-1} + \delta_9 GDP_{t-1} + \delta_{10} SAV_{t-1} + \varepsilon_{5t} \dots\dots\dots\dots 5$$

The multivariate causality model is then presented as follows:

$$\Delta INV_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta INV_{t-i} + \sum_{i=1}^{n} \alpha_{2i} \Delta FD_{t-i} + \sum_{i=1}^{n} \alpha_{3i} \Delta SAV_{t-i} + \sum_{i=1}^{n} \alpha_{4i} \Delta GDP_{t-i} + \sum_{i=1}^{n} \alpha_{5i} \Delta TRD_{t-i} + \alpha_6 ECT_{t-1} + \mu_{1t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 6$$

$$\Delta FD_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta INV_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta FD_{t-i} + \sum_{i=1}^{n} \beta_{3i} \Delta SAV_{t-i} + \sum_{i=1}^{n} \beta_{4i} \Delta GDP_{t-i} + \sum_{i=1}^{n} \beta_{5i} \Delta TRD_{t-i} + \beta_6 ECT_{t-1} + \mu_{2t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7$$

$$\Delta SAV_t = \rho_0 + \sum_{i=1}^{n} \rho_{1i}\Delta INV_{t-i} + \sum_{i=1}^{n} \rho_{2i}\Delta FD_{t-i} + \sum_{i=1}^{n} \rho_{3i}\Delta SAV_{t-i} + \sum_{i=1}^{n} \rho_{4i}\Delta GDP_{t-i} + \sum_{i=1}^{n} \rho_{5i}\Delta TRD_{t-i} + \rho_6 ECT_{t-1} + \mu_{3t} \quad \ldots\ldots 8$$

$$\Delta GDP_t = \gamma_0 + \sum_{i=1}^{n} \gamma_{1i}\Delta GDP_{t-i} + \sum_{i=1}^{n} \gamma_{2i}\Delta INV_{t-i} + \sum_{i=1}^{n} \gamma_{3i}\Delta FD_{t-i} + \sum_{i=1}^{n} \gamma_{4i}\Delta SAV_{t-i} + \sum_{i=1}^{n} \gamma_{5i}\Delta TRD_{t-i} + \gamma_6 ECT_{t-1} + \mu_{4t} \quad \ldots\ldots 9$$

$$\Delta TRD_t = \delta_0 + \sum_{i=1}^{n} \delta_{1i}\Delta TRD_{t-i} + \sum_{i=1}^{n} \delta_{2i}\Delta INV_{t-i} + \sum_{i=1}^{n} \delta_{3i}\Delta FD_{t-i} + \sum_{i=1}^{n} \delta_{4i}\Delta GDP_{t-i} + \sum_{i=1}^{n} \delta_{5i}\Delta SAV_{t-i} + \delta_6 ECT_{t-1} + \mu_{5t} \quad \ldots\ldots 10$$

Where

INV = gross fixed capital formation (a proxy for the level of domestic investment), FD = financial development indicator, SAV = gross domestic savings,GDP= growth rate of the real gross domestic product, MFA= trade (% of GDP),ECT= error-correction term, , $\propto_0$, β_0, ρ_0, γ_0 andδ_0= respective constants, $\propto_1, \ldots, \propto_{10}$,$\beta_1, \ldots, \beta_{10}$, $\rho_1, \ldots, \rho_{10}$, $\gamma_1, \ldots, \gamma_{10}$ and $\delta_1, \ldots, \delta_{10}$=respective coefficients, Δ = difference operator, n=lag length, ε = error term and μ =white-noise error-term.

The two models differentiated by the choice of the financial development indicator are estimated for each of the countries under discussion. For Model 1, the financial development indicator (is liquid liabilities while for model 2, it is domestic credit provided by the financial sector. The choice of the two financial indicators stems from the notion that one is a deposit-based measure of financial development (financial liabilities) and the other is a credit-based measure of financial development (financial assets). Savings and trade are included as control variables so as to avoid the omission of variables bias.

4. Results and Discussion

To employ the ARDL bounds testing procedure, all variables to be included should be integrated to a maximum order of 1. Therefore, to ascertain this, unit root tests are done on all variables and confirm that all variables are integrated of maximum order 1. The unit root test results are shown in Table 1.

Table 1: Unit Root Tests

TANZANIA

DICKEY-FULLER GENERALISED LEAST SQUARE (DF-GLS)

Variable	**Stationarity in levels**		**Stationarity in differences**	
	With intercept, no trend	**With intercept and trend**	**With intercept, no trend**	**With intercept and trend**
INV	-1.048103	-1.960685	-5.001438***	-5.137349***
GDP	-1.89554*	-2.906505*	-	-
LL	-1.527374	-2.16598	-3.847943***	-3.849358***
DCFS	-2.214457**	-2.813329	-3.38728***	-3.91511***
SAV	-1.775248*	-2.97502*	-	-
TRD	-2.05669**	-2.182972	-3.069088***	-3.189843***

PERRON (1997) PPUROOT

Variable	**Stationarity in levels**		**Stationarity in differences**	
INV	-3.226334	-3.220351	-6.411789***	-7.061423***
GDP	-4.163093	-4.472275	-7.634504***	-8.134077***
LL	-2.911464	-2.886363	-7.318938***	-8.848355***
DCFS	-3.124117	-3.167107	-5.378391**	-5.716295**
SAV	-3.248264	-3.692816	-10.26611***	-10.07964***
TRD	-3.148039	-3.353306	-4.945224*	-6.669608***

KENYA

DICKEY-FULLER GENERALISED LEAST SQUARE (DF-GLS)

Variable	**Stationarity in levels**		**Stationarity in differences**	
	With intercept, no trend	**With intercept and trend**	**With intercept, no trend**	**With intercept and trend**
INV	-2.359081**	-2.835828	-4.712267***	-4.851608***
GDP	-4.209846***	-5.403869***		
LL	-2.014576**	-2.875088	-5.584235***	-5.968389***
DCFS	-2.569573**	-3.207223**	-	-
SAV	-1.924282*	-2.863701	-4.93778***	-4.926127***
TRD	-1.217121	-2.114904	-4.809684***	-5.017552***
		PERRON (1997) PPUROOT		
INV	-4.561779	-3.95444	-5.342259**	-5.452867*
GDP	-5.194027*	-5.079148	-4.984578*	-5.785465**
LL	-4.357552	-4.484268	-6.5652***	-6.990597***
DCFS	-4.146367	-4.276572	-6.597553***	-6.10405
SAV	-3.67088	-4.130992	-5.314248**	-6.019352**
TRD	-3.104639	-3.247164	-5.172985*	-5.697306**

Note: *, ** and *** denote stationarity at the 10%, 5% and 1% significance levels respectively

The empirical results of the ARDL bounds tests for cointegration are reported in Table 2 while Table 3 gives the Granger Causality test results for both Tanzania and Kenya for the two models employed in this study.

For the case of Tanzania, Model 1 shows that there is a short-run unidirectional causal relationship

from investment to liquid liabilities and, to trade. Also, there is a short-run bi-directional Granger causality between savings and economic growth. Economic growth and savings are found to have both a short-run and long-run, unidirectional causal effect on investment. Model 2, on the other hand, confirms the short-run unidirectional causal relationship from investment to another financial development indicator, domestic credit provided by the financial sector. Hence, in Tanzania, the implied deduction is that investment Granger causes financial development in the short run. The results show the bi-directional causal relationship between savings and economic growth. It implies that the short-run and long-run unidirectional causal effect from savings to investment precede trade. Nonetheless, domestic credit provided by the financial sector is found to precede economic growth. Therefore, for Tanzania, the choice of the financial development indicator is an important factor to consider for evaluating the causal relationship between financial development and economic growth. Moreover, the common variable to precede economic growth, for both models, is found that savings precede the economic growth which is contrary to commonly held expectations. That is to say that also, investment and financial development precede economic growth. On the other hand, the exception from Model 1, is that economic growth precedes investment both in the short run and in the long run.

For Kenya, Model 1 shows that for both the short run and the long run, there is a unidirectional causal relationship from economic growth, investment, savings, and trade to liquid liabilities; and, from investment to economic growth. Results from Model 1 show unidirectional causal relationships from liquid liabilities to savings; and, from investment to trade. Moreover, short-run bi-directional causality relationships are confirmed from Model 1 between savings and liquid liabilities; and, between trade and investment. In addition, the analysis confirms that investment precedes economic growth in the short run. Model 2 also shows that domestic credit provided by financial sector and trade have the same effect on economic growth, in the short run. The only other result from Model 2, for Kenya, is that investment precedes trade in the short run. The shared deduction from both models is that investment precedes economic growth in the short run in Kenya.

The results between the same models in the two countries show that for Model 1 in the short run, investment is found to cause Granger liquid liabilities; and, investment precedes trade. For Model 2 in the short run, domestic credit provided by the financial sector precedes economic growth; and, investment precedes trade. The only common result amongst models and countries is that there is a short-run unidirectional causality relationship from investment to trade.

Table 2: Bounds F-Test for CointegrationTANZANIA

MODEL 1

Dependent Variable	Function	F-statistic	Cointegration Status
LL	F(INV| GDP, LL, SAV, TRD)	3.0840	Not cointegrated
GDP	F(LL| GDP, INV, SAV, TRD)	3.1549	Not cointegrated
INV	F(SAV| GDP, LL, INV, TRD)	4.9700**	Cointegrated
SAV	F(GDP| INV, LL, SAV, TRD)	2.7085	Not cointegrated
TRD	F(TRD| GDP, LL, SAV, INV)	1.0417	Not cointegrated

MODEL 2

Dependent Variable	Function	F-statistic	Cointegration Status
DCPS	F(INV| GDP, DCPS, SAV, TRD)	3.3013	Not cointegrated
GDP	F(DCPS| GDP, INV, SAV, TRD)	3.2525	Not cointegrated
INV	F(SAV| GDP, DCPS, INV, TRD)	3.8394*	Cointegrated
SAV	F(GDP| INV, DCPS, SAV, TRD)	2.6968	Not cointegrated
TRD	F(TRD| GDP, DCPS, SAV, INV)	1.9141	Not cointegrated

KENYA

MODEL 1

Dependent Variable	Function	F-statistic	Cointegration Status
LL	F(INV| GDP, LL, SAV, TRD)	4.4596**	Cointegrated
GDP	F(LL| GDP, INV, SAV, TRD)	5.2308***	Cointegrated
INV	F(SAV| GDP, LL, INV, TRD)	0.64221	Not cointegrated
SAV	F(GDP| INV, LL, SAV, TRD)	1.0980	Not cointegrated
TRD	F(TRD| GDP, LL, SAV, INV)	2.2028	Not cointegrated

MODEL 2

Dependent Variable	Function	F-statistic	Cointegration Status

DCPS	F(INV| GDP, DCPS, SAV, TRD)		1.3810		Not cointegrated	
GDP	F(DCPS| GDP, INV, SAV, TRD)		3.4775		Not cointegrated	
INV	F(SAV| GDP, DCPS, INV, TRD)		0.72544		Not cointegrated	
SAV	F(GDP| INV, DCPS, SAV, TRD)		0.83583		Not cointegrated	
TRD	F(TRD| GDP, DCPS, SAV, INV)		1.5400		Not cointegrated	
Asymptotic Critical						
	1%		5%		10%	
Pesaran et al. (2001:301) TableCI(iii) Case III	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	3.74	5.06	2.86	4.01	2.45	3.52

Note: *, ** and *** denotes significance at the 10%, 5% and 1% significance levels respectively

Table 3: Granger-Causality Test Results

TANZANIA						
MODEL 1						
Dependent Variable	**F-statistics (probability)**					ECT_t
	ΔLL_t	ΔGDP_t	ΔINV_t	ΔSAV_t	ΔTRD_t	**[t-statistics]**
ΔLL_t	-	0.2573 (0.776)	2.600* (0.097)	0.025305 (0.975)	0.32091 0.730	-
ΔGDP_t	0.21750 (0.807)	-	0.73534 (0.496)	2.7699* (0.095)	0.19672 (0.824)	-
ΔINV_t	0.92057 (0.421)	15.6289*** (0.000)	-	5.5328** (0.017)	0.037006 (0.964)	-0.51896*** [-5.9840]
ΔSAV_t	0.34305 (0.715)	4.0603** (0.039)	0.43587 (0.655)	-	0.29705 (0.747)	-
ΔTRD_t	1.3696 (0.284)	0.41984 (0.665)	2.7106* (0.099)	0.0030145 (0.997)	-	-

MODEL 2						
Dependent Variable	**F-statistics (probability)**					ECT_t
	$\Delta DCFS_t$	ΔGDP_t	ΔINV_t	ΔSAV_t	ΔTRD_t	**[t-statistics]**
$\Delta DCFS_t$	-	0.64473 (0.539)	5.4634** (0.017)	0.53871 (0.5494)	0.60953 0.557	
ΔGDP_t	2.9870* (0.081)	-	1.1849 (0.333)	4.9334** (0.023)	0.26588 (0.770)	
ΔINV_t	0.38711 (0.686)	2.1362 (0.155)	-	6.2658** (0.011)	0.50004 (0.617)	-0.94722** [-4.1232]
ΔSAV_t	1.0536 (0.373)	4.3603** (0.032)	0.0043068 (0.996)	-	0.55474 (0.586)	
ΔTRD_t	0.23471 (0.794)	0.68807 (0.520)	4.9280** (0.017)	0.37697 (0.693)	-	

KENYA						
MODEL 1						
Dependent Variable	**F-statistics (probability)**					ECT_t
	ΔLL_t	ΔGDP_t	ΔINV_t	ΔSAV_t	ΔTRD_t	**[t-statistics]**
ΔLL_t	-	5.0437** (0.025)	1.2703 (0.342)	3.9694** (0.047)	5.7029** (0.018)	-0.56547** [-5.0898]
ΔGDP_t	1.7115 (0.216)	-	2.8207** (0.093)	0.37262 (0.696)	0.98513 (0.398)	-0.99088 [-4,4222]
ΔINV_t	1.4582 (0.264)	1.5183 (0.251)	-	1.0533 (0.373)	2.7150* (0.099)	-
ΔSAV_t	3.5968* (0.053)	0.44388 (0.650)	0.16095 (0.853)	-	0.90003 (0.427)	-
ΔTRD_t	1.7138 (0.214)	2.7479* (0.096)	4.8500** (0.024)	0.84370 (0.450)	-	-

MODEL 2

Dependent Variable	**F-statistics (probability)**					ECT_t
	$\Delta DCFS_t$	ΔGDP_t	ΔINV_t	ΔSAV_t	ΔTRD_t	**[t-statistics]**
$\Delta DCFS_t$	-	0.97212 (0.401)	0.13486 (0.875)	0.63184 (0.545)	0.45261 (0.644)	-
ΔGDP_t	3.2944* (0.065)	-	4.8490** (0.024)	1.4080 (0.275)	4.8162** (0.024)	-
ΔINV_t	1,2196 (0.323)	1.1627 (0.339)	-	0.4884 (0.623)	1.8159 (0.197)	-
ΔSAV_t	0.25583 (0.778)	0.10810 (0.898)	0.54465 (0.591)	-	0.024324 (0.976)	-
ΔTRD_t	0.41583 (0.667)	2.0564 (0.162)	3.9263** (0.043)	1.1840 (0.333)	-	-

Note: *, ** and *** denotes significance at the 10%, 5% and 1% significance levels, respectively.

5. Conclusion and recommendations

In this paper, the causal relationship between financial development, investment and economic growth has been empirically examined from of 1990 to 2017 for Tanzania and Kenya with the aid of a multivariate Granger-causality model. The results show that for the case of Tanzania, no matter the choice of the financial development indicator, investment precedes financial development in the short run. When liquid liabilities are used as an indicator of financial development, economic growth precedes investment. On the other hand, when domestic credit provided by financial sector is used as an indicator of financial development, financial development precedes economic growth. For the case of Kenya, when liquid liabilities are used as an indicator of financial development, investment precedes both financial development and economic growth in both the short run and the long run. On the other hand, when domestic credit provided by financial sector is used as an indicator of financial development, financial development and investment precede economic growth. Therefore, for both countries, domestic credit provision has a significant causal effect on economic growth and investment has the same effect on liquid liabilities, all in the short run. Therefore, policy should address credit provision to enhance economic growth and investment to enhance higher liquid labilities in both Tanzania and Kenya. Thus, the causal relationship between financial development, investment and economic growth in the two countries varies with the choice of the financial development indicator employed. The paper adds to the body of knowledge by integrating the variables of financial development, investment, savings and economic growth in the two countries.

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