



Financial Deepening, Regional Financial Contagion and Economic Growth: Evidence from East Africa

Dr. Nasiru Adamu¹ & Aishatu Abdullahi Mohammed²

¹Department of Economics,
Isa Kaita College of Education Dutsin-ma, Katsina State, Nigeria
adamun93@yahoo.com /08038213942, 07056612933

²Department of Social Sciences
Federal Polytechnic Bida, Nigeria

ABSTRACT

Economic disruptions within the financial system is often resulted from financial contagion which spread across Economies in the same region. This study examines the effects of financial development and financial contagion as they exert varying degree of impact on Economic growth within East Africa for the period (1985 to 2021). The study utilizes secondary data on seven (7) selected East African Countries. Analysis was conducted based on Panel unit-root test, Panel Cointegration, Panel Causality and Cross-Sectional dependence tests. The study found that Financial Contagion has a negative and statistically significant impact on economic growth in Eastern Africa this spread within the East African Sub-region. Causality was also found to be running in one direction within East Africa which is attributed to the under developed nature of the financial system within the east African Economies studied. The study suggests that favorable exchange rate policies and liberalized interest which will increase efficient allocation of credit to the productive private sector, these policies should be intended towards improving accessibility and affordability of credit to the productive private which will maintain these economies on the path of sustainable economic growth.

Keywords: financial Deepening, Regional financial contagion, Economic Growth, Trade openness, East Africa.

INTRODUCTION

Financial Economics literature has provided both theoretical and empirical backing on the connections between financial deepening and economic growth. A substantial number of studies that lend to both Demand-Following and Supply-Leading hypothesis includes; Christopoulos and Tsionas (2004), Hang and Teng (2006), Prakash (2009) and Jacques (2010). Their argument is centered on the critical roles of financial deepening in achieving both short-run and long-run Economic growth which manifests in both developed and developing financial systems. However, competitive strives of the financial structures within the financial systems have, in recent years, resulted to financial crises which emanated from the spill-over effects of these crises across different Economies within a region (see Gantman & Dabos 2012, and Alisha & Bhutta 2014) to these studies, financial contagion is believed to be the cause of financial instability in many Economies that trade in a common or different currencies, especially when trade and investment between these Economies has been a regular and active one.

While financial sector development is seen as an '*engine of growth*', the banking crises literature holds that monetary aggregates such as bank credit to the private sector seems to precede many episodes of banking crisis. According to Amri, Prabha and Whilborge (2012), the indicators of

financial sector development over several years increase the likelihood of banking crises and that monetary aggregates such as domestic credit to private sector are among the best predictors of crisis which lead to recession and growth slowdowns. Other scholars in financial economics hold that a financial deepening increases the vulnerabilities of financial system to shocks that may culminate into financial contagion (Ranciere, 2002). The International Monetary Fund (IMF) also reported that the extent of financial fragility always follows a period of financial development which appears more frequently in economies with weak regulatory institutions. This presents the apparent contradiction between two related but conflicting theories of financial deepening on one hand and financial contagion on the other hand. It is against this background that this research work empirically examines the relationship between financial deepening, financial contagion and economic growth in selected East African Economies.

Literature Review

Numerous theoretical and empirical studies on the connections between the level of financial deepening and financial contagion which affects economies within a region and which exerts varying degree of effect on economic growth across the region, this section reviewed studies conducted on this connection.

To begin with Misati and Nyamongo (2011) investigate financial development, financial fragility and economic growth in Sub-Saharan Africa. This work heavily focuses on the dual effects of financial liberalization on financial development and financial fragility. While Gantman and Dabos (2012) studies the fragile link between financial deepening and economic growth in a larger data set and a greater coverage in time and countries. This research work also poses conceptual shortcomings, first, this study wholly concentrates on financial deepening and economic growth nexus while paying little or no attention to possible outcomes of financial deepening on financial contagion, second, they operationalize financial deepening by measuring the credit size of the banking system (credit to the house hold and private sector credit). In a related development, Alisha and Bhutta (2014) set to provide empirical insight on how financial deepening creates financial contagion. this work also suffers both theoretical and methodological setbacks as it failed to provide theoretical postulations on the extent to which financial deepening could trigger financial contagion, in addition to the use of descriptive tool in the form of a symbolic demonstration of how financial development lead to financial contagion with no statistical or econometrics inferences made in their analysis. This indicates that very little has been written about the relationship between financial deepening and financial contagion, and no single research to my best knowledge was conducted on the African region on this nexus.

To provide evidence in the role of finance in accounting for economic growth, Hassan, Sanchez & Yu (2010) studies this nexus based on low and middle income countries which are classified by geographical regions. Conducting analysis based on panel regressions and Variance Decompositions (VDCs). Their studies revealed a positive relationship between financial development and economic growth on one hand, short-term Multivariate analysis provides mixed result on the other hand. A two ways causal relationship between financial development and economic growth was reported for many regions, while one-way causation was found on the poorest regions. Their studies further stresses that a well-functioning financial system is a necessary but not a sufficient condition to reach steady growth in developing economies.

Examining the fundamental reasons for the spillover disturbances of financial contagion, Kaminsky & Reinhart (2000) attempted to analyze how trade links and financial sector links influences the pattern of fundamental based contagion. This research work examines the roles of international bank lending, the potentials for cross-market hedging, and bilateral and third-party trade in the propagation of financial crisis. Findings from this work revealed that financial contagion is more regional than global, though susceptibility to contagion is highly non-linear as a single country falling victim of financial fragility is not a good predictor of financial fragility elsewhere in the same region or in other parts of the globe. The probability of a domestic crisis rises sharply only if a core group of economies are already infected.

Pesola (2011) study the joint effects of financial contagion and microeconomic shocks on bank loan losses in nine (9) European countries namely; Belgium, Denmark, Finland, Greece, Germany,

Norway, Spain, Sweden and United Kingdom. Estimating the panel of sample countries using the Pooled Least Squares (PLS) method, this research work revealed a strong adverse aggregate shock which contributes to bank loan losses and financial fragility. It further demonstrates a non-linear joint effect of macroeconomic shocks on financial fragility which is consistent with the theoretical presuppositions of joint effects of financial fragility and macroeconomic shocks on the performance and the profitability of financial institutions.

In a nutshell, previous studies focus mainly on the effects of financial development and economic growth paying very little attention on the effects of financial development on financial contagion and economic growth on country specific bases and have not provided empirical insight on the possible spillover effects of relatively developing financial systems on smaller or less developed economies. Hence, the effects of regional financial flows and potential contribution of financial development on economic growth and the growth retarding effects of financial contagion has not been adequately quantified in the previous studies on finance-contagion and growth nexus.

Data and Method

This study utilizes secondary date sourced from World Development Indicator (WDI) and compared with other sources to ascertain objectivity and reliability for a period thirty-nine years (1985-2021) on selected East African countries. The Methodologies employed includes A panel unit-root test, Fully-modified OLS Regression, Panel Cointegration, Panel Causality and Cross-sectional Dependence analysis.

Variables and Model

To capture the connections between Financial Deepening, Financial Contagion and Economic Growth, the following model was specified:

$$LGDP_{it} = \beta_0 + \beta_1 LFIND_{it} + \beta_2 LFINS_{it} + \beta_3 LTOPE_{it} + \mu_{it} \dots \dots \dots (1)$$

Where; *LGDP* is the Log of real GDP per Capita as a dependent variable and proxy for Economic Growth. Explanatory variables are; *LFIND*, which is Log of Private sector credit as a proxy for Financial Deepening; *LFINS* which is the Log of Financial Volatility as a proxy for financial contagion and *LTOPE* as the Log of Trade Openness. β_0 is the Constant parameter while β_1, β_2 and β_3 , = Coefficients of explanatory variables.

Analysis is conducted based on Im, Pesaran and Shin (IPS) which is more efficient and powerful test than the usual single time-series test. The estimable equation of the IPS unit-root test is modeled as follows:

$$tNT = \frac{I}{N} \sum_{i=1}^N tit(Pi) \dots \dots \dots (2)$$

where t_i is the ADF t-statistics for the unit-root tests of each country and P_i is the lag order in the ADF regression, and the test statistics can be calculated as follows:

$$At = \frac{\sqrt{N(T)[tT - (tT)]}}{\sqrt{var(tT)}} \dots \dots \dots (3)$$

While the cointegration relationship is specified in equation 4

$$yit = ai + \delta it + \beta 1ix1it + \dots + \beta MixMi,t + \mu it \dots \dots \dots (4)$$

Lastly, Panel Causality test was conducted based on the following dynamic error correction model equation:

$$\Delta GDP_{it} = \beta_1 j + \sum_{k=1}^q \beta_{11k} \Delta GDP_{it-k} + \sum_{k=1}^q \beta_{12ik} \Delta FIND_{it-k} + \sum_{k=1}^q \beta_{13ik} \Delta FINS_{it-k} + \sum_{k=1}^q \beta_{14ik} \Delta TOPE_{it-k} + \alpha_{it} + \mu_{1it} \dots \dots \dots (5)$$

RESULTS AND DISCUSSIONS

This section presents data analysis of the selected East African countries, it begins with panel unit root-root test as shown in table 1.

Table 1: Results of Panel Unit root test

Variables	Level Value	Diff. Value	Prob.	Conclusion
LRGDP	1.61859	-7.74805***	0.0000	I(1)
LFIND	0.19735	-7.88189***	0.0000	I(1)
LFINS	0.3786	-10.0548***	0.0000	I(1)
LTOPE	-1.40280*	-11.1580***	0.0000	I(1)

Source: Author’s Computation using EVIEWS 9.

***, **, *, Indicates level of significance at 1%,5% and 10% respectively.

Table 1 presents the results of Levin, Lin and Chu Panel Unit-root test of the East African Sub-region for the variables of interest (LRGDP, LFIND, LFINS and LTOPE) for the period of analysis (1985-2021). Panel unit-root test for the East Africa revealed a level value of 1.61859, 0.19735, and 0.3786 for RGDP, FIND and FINS respectively. TOPE has a coefficient of -1.40280 which is statistically significant at 10% and this shows that the variables are not stationary at levels and that the variables have unit-root. However, the variables became stationary after taking their first difference as DRGDP, DFIND, DFINS and DTOPE have the coefficients of -7.74805, -7.88189, -10.0548 and -11.158 respectively, these coefficients are statistically significant at 1% with probability values of 0.0000 and concluded to be integrated of the first order I(1).

Table 2: FMOLS Panel Cointegration

Variables	Coefficients	Statistics	P-Values
Dependent Variable: Log of Real GDP (LRGDP)			
LFIND	2.38E+09	2.291324**	0.0023
LFINS	-1.36E+09	-1.34580**	0.0048
LTOPE	-163691.4	-0.001924*	0.0098
R²	0.58707		
Adjusted R²	0.56912		
L/Run Variance	1.56E+20		

Source: Author’s Computation using E-VIEWS 9.

***, **, *, Indicates level of significance at 1%,5% and 10% respectively.

The results of Fully Modified Least Squares (FMOLS) panel cointegration regression in Table 2 Indicates that the Log of RGDP is the dependent variable, Private Sector Credit (FIND) as a proxy for financial development has a positive and statistically significant coefficient of 2.38 with a corresponding probability value of 0.0023 which is significant at 5% while financial fragility proxied by FINS has a negative and statistically significant coefficient of -1.36 which is also significant at 5%. TOPE has a negative coefficient of -1.64 which is significant at 10% level. However, the joint effects of the explanatory variables (FIND, FINS and TOPE) on the dependent variable (RGDP) as shown by the computed R² is 0.587 and 0.567 after taking care of errors within the model as indicated by the Adjusted R² value.

Table 3: Results of Pedroni Panel Cointegration test

Functions	Statistics	Weighted Statistics	P-Values
Panel ADF	3.1270	0.3449*	0.0095
Panel PP	2.7797	1.5117*	0.0098
Panel V	-0.8969	0.5456	0.0304
Panel rho	2.8944	0.9343**	0.0053

Source: Author’s Computation using E-VIEWS 9.

***, **, *, Indicates level of significance at 1%,5% and 10% respectively.

To examine the presence of long-run relationship between financial development, financial contagion and economic growth, Pedroni residual cointegration test for panel analysis was conducted as shown in table 3 which includes 7 cross-sections in the East African Sub-region. The result indicates the values of Panel ADF, Panel PP, Panel V and Panel Rho statistics and their weighted statistics. The results indicates an ADF value is 3.127, Panel PP is 2.779, Panel V statistics is -0.897 with corresponding p-values of 0.009, 0.009 and 0.005 respectively, while Panel Rho is 2.894 and a corresponding p-value of 0.038 which is not statistically significant. The result of weighted statistics also indicates a panel ADF of 0.825, panel PP of 0.546 and a panel V statistics of 0.345 with the corresponding probability values of 0.009, 0.008 and 0.005, while Rho weighted statistics is 1.512 which corresponds to a p-value of 0.304 which is not statistically significant.

Table 4: Results of Panel Granger Causality test

Null Hypothesis	Lags	Obs.	F-statistics	P-Value
FIND does not Granger Cause RGDP	2	210	0.73540	0.4806
RGDP does not Granger Cause FIND	2	210	10.3860	5.E-05
FINS does not Granger Cause RGDP	2	210	1.19071	0.3061
RGDP does not Granger Cause FINS	2	210	5.73230**	0.0038
TOPE does not Granger Cause RGDP	2	210	1.57994	0.2085
RGDP does not Granger Cause TOPE	2	210	0.55459	0.5752
FINS does not Granger Cause FIND	2	210	1.23143	0.2940
FIND does not Granger Cause FINS	2	210	0.20223	0.8171
TOPE does not Granger Cause FIND	2	210	2.05403	0.1308
FIND does not Granger Cause TOPE	2	210	0.66774	0.5140
TOPE does not Granger Cause FINS	2	210	2.88457	0.0582
FINS does not Granger Cause TOPE	2	210	0.67432	0.5106

Source: Author’s Computation using E-Views 9.

***, **, *, Indicates level of significance at 1%,5% and 10% respectively.

Table 4 shows the results of Pairwise panel granger causality test for the East African sub-region which includes 210 observations within the 7 cross-sections over the period of analysis (1985-2021). The results indicate that there is no causal relationship between FIND and RGDP with F-Statistics of 0.735 and a probability value of 0.480 which is not statistically significant even at the weakest 10% level. FINS does not Cause RGDP with an F-Statistics of 1.190 and a corresponding P-Value of 0.306. The null hypothesis of RGDP does not Cause FINS is rejected as the relationship has an F-Statistics of 5.732 and a corresponding P-Value of 0.003 which is statistically significant at 5% and which suggests a one way causation between RGDP and FINS. The null hypothesis of RGDP not causing TOPE is accepted as the F-Statistics is 1.579 and 0.554 with corresponding probability values of 0.208 and 0.575 respectively. Causal relationship between FINS and FIND indicates an F-Statistics of 1.231 and 0.202 with corresponding P-Values of 0.294 and 0.817 suggesting that there is no causal relationship between FINS and FIND. Moreover, the causal relationship between TOPE and FIND has F-Statistics of 2.054 and 0.668 on the other way with corresponding P-Values of 0.130 and 0.514 which are not statistically significant. The null hypothesis of no causation between TOPE and FINS is accepted as the F-Statistics is 2.885 and 0.674 with corresponding values of 0.058 and 0.516 which are not statistically significant.

Table 5: Cross-Sectional Dependence Test

Variables	Breusch-Pagan	Pesaran scaled	P-value
L RGDP	579.4509***	86.17084***	0.0000
LFIND	188.0080***	25.76990***	0.0000
LFINS	25.76990***	27.91648***	0.0000
LTOPE	98.32551***	11.93158***	0.0000

Source: Author's Computation using E-Views 9.

***, **, *, Indicates level of significance at 1%, 5% and 10% respectively.

Cross-sectional dependence test was conducted to examine the contagious effects of shocks within the cross-sections (Pesaran & Yamagata, 2008). Table 5 presents a comparison of Breusch-Pagan and Pesaran Scaled tests of cross-sectional dependence. Based on the results, RGDP has a coefficient of 274.7160 and 59.19230 based on Breusch-Pagan and Pesaran Scaled and all are significant at 1%. LFIND also indicates statistically significant coefficients of 154.2297 and 32.25073 which are also significant at 1%. LFINS has a coefficient of 150.2217 and 31.35453 based on Breusch-Pagan and Pesaran Scaled which are also significant at 1%. Results of cross-sectional dependence test on LTOPE revealed a coefficient of 40.81224 and 6.88983 also significant at 1%. Results from these tests revealed the contagious effect of shocks within the East African sub-region.

CONCLUSIONS

Results from the analysis of this study concludes that Financial instability has a negative and statistically significant impact on economic growth in Eastern Africa this spread with the East African Sub-region. Causality was also found to be running in one direction within East Africa, this is attributed to the under developed nature of the financial system within the east African Economies studied, it is therefore recommended that sound financial intermediation policies such as favorable exchange rate policies and liberalized interest which will increase efficient allocation of credit to the productive private sector, these policies should be intended towards improving accessibility and affordability of credit to the productive private sector which should include Small and Medium Enterprises (SMEs) which will maintain these economies on the path of sustainable economic growth.

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