

Financial Sector Development in Ethiopia and Its Effect on Domestic Investment: An Empirical Investigation

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Abstract

It is widely agreeable that investment is the engine for growth. Similarly, financial institutions play a critical role to stimulate economic growth by mobilizing financial resources and availing it to investors. This study investigated “the effect of financial sector development on domestic investment in Ethiopia for the years 2000-2022.” Broad Money Supply as a measure of Financial Depth, Bank Credit to Bank Deposit as a measure of Banks’ Intermediation Efficiency, and Domestic Credit to the Private sector as a measure of Financial Activity were used as an alternative measure of financial sector development. Using an Autoregressive Distributed Lag (ARDL) model and running all relevant pre and post estimation tests, the results of the study justified a different effect of financial sector development on domestic investment as the measurement of financial sector development varied. In this regard, Financial Activity has a positive and significant effect on domestic investment in the long run. However, it has a negative and significant effect in the short run. Conversely, both financial depth and intermediation efficiency have a negative and significant effect on domestic investment in the long run. Similarly, financial depth has a negative and significant effect on domestic investment in the long run. The researcher recommended that government should monitor the supply of money so that inflation will be controlled and domestic investment will be enhanced. Besides, banks should expand credit to the private sector by intensifying their resource mobilization endeavour so that domestic investment will be enhanced in the long run. However, decision makers should exercise caution when selecting financial sector development metrics as a tool for promoting domestic investment.

Keywords: Financial Depth, banks intermediation efficiency, Financial Activity, ARDL

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1. Introduction

The growth and development of every economy depends on the performance of its various sectors. The financial sector is one of these important sectors that contribute to the overall progress of a given economy through its intermediation role. This argument can be evidenced by ample studies regarding the effects of financial sector development in economic growth such as by (Puatwoe & Piabuo, 2017), (Levine, Loayza, & Beck, 2000), (Tadesse, 2015), (Olusegun, Ganiyu, & Oluseyi, 2013), (Tessema, 2016), (Ahmed & Malik, 2009), and (Al-Jarrah, Al-Zu’bi, Jaara, & Alshurideh, 2012).

The vast majority of studies investigated the effects of financial sector development on economic growth and research conducted on the effects of financial sector development on domestic investment; especially in Ethiopia is very limited. Yet, studies conducted by authors such as (Iheonu, Asongu, Odo, & Ojiem, 2020), (Nabamita & Sanjukta, 2009), and (Simplice A., 2014) concluded that the effects of financial sector development on domestic investment varies depending on the type of the variable used to measure financial sector development. However, other studies such as (Muyambiri & Odhiambo, 2018) concluded that both bank-based financial development and market-based financial development have an accelerator enhancing effect on investment. Similarly, positive relationship between financial sector development and investment is concluded (Luca & Spatafora, 2012).

Financial Sector in Ethiopia consists of banks, microfinance institutions, insurance companies, and saving and credit cooperatives. Besides, informal financial sectors such as Idir and Eqib are also playing a role in the sector. Recently, the financial sector has not opened for foreign players. However, the government recently, is on the verge of introducing a capital market and allow the involvement of foreign banks to play their role in the country’s financial sector.

Understanding the contribution of investment to economic growth in the one hand and the role of financial sector development to investment on the other, it is essential to thoroughly study how the financial sector development in Ethiopia is moving with domestic investment. Moreover, investigating the relationship between financial sector developments in Ethiopia to domestic investment is equally important to answer the question do all financial sector development measurements have the same effect to domestic investment.

1.1. Statement of the Problem

The Ethiopian financial sector is highly dominated by the presence of an increasing number of commercial banks and insurance. Until June 2022, there exist 18 insurance companies and 25 banks in the country (NBE, 2022). One can notice that, since liberalization was in place, the level of domestic investment in the country has also been showing an improvement over time. Concurrently, there is an acute scarcity of finance manifested by an average 97% loan- to-deposit-ratio from 2018–2022 by banks. Due to this, banks are tending to lend only to high-credit-worthy investors and limited investments. Moreover, lending rates are now becoming very high. With these facts at hand, the contribution of financial sector development in Ethiopia to domestic investment is not well studied. Rather, the vast majority of academic researchers conducted an investigation into how financial sector development affects economic growth. Still, studies conducted on the determinants of domestic private investment or the effect of financial sector development on economic growth use various proxies to measure financial sector development. Some of them use domestic credit to the private sector, others use broad money supply, some others use domestic saving, still, some others use the ratio of bank credit to bank deposit, or else, a combination of these variables. However, this research tries to investigate how domestic investment on the one hand is affected by financial sector development measured by different proxies without merely relying on a unique measurement. In this case, one can answer the question that is all proxies for financial sector development give similar responses to domestic investment. Or the response to domestic investment depends upon the variable one used to measure financial sector development?

1.2. Research Objectives

The general objective of this study is to find out the effect of financial sector development, as measured by various proxies, on domestic investment in the case of Ethiopia. It specifically attempts to:

- i) Ascertain the effect of broad money supply on domestic investment in Ethiopia.
- ii) Scrutinize the effects of domestic credit to the private sector on domestic investment in Ethiopia,
- iii) Examine the effects of banking intermediation Efficiency on domestic investment in Ethiopia? answer
- iv) Investigates whether financial sector development indicators granger cause domestic investment or the other way round.

1.3. Research Hypothesis

Using the results of various studies and literatures in the area, the following alternative hypotheses are going to be verified in this research:

H₁: There is a significant relationship between Broad money supply and domestic investment in Ethiopia;

H₂: There is a significant relationship between Domestic credit to the private sector and domestic investment in Ethiopia;

H₃: There is a significant relationship between Banking intermediation efficiency and domestic investment in Ethiopia; and

H₄: Domestic Investment granger cause Financial Sector Development measured by all the three proxy variables.

2. Review of Related Literature

2.1. Financial Sector Development and Theory of Investment

Finance is a crucial resource determining the investment level of a nation. According to (Demirgüç-Kunt and Levine, 2008), as cited on (Estrada, Park, & Ramayandi, 2020), the main goal of a financial system is to lower the costs of information and transactions that hinder economic activity. It has been noted that the fundamental duties of a financial system are to mobilize savings, produce ex-ante information on possible investments and allocate capital, monitor investments and provide corporate governance after the provision of finance, and facilitate trading, risk diversification, and risk management.

Basically, the majority of literature quoted the accelerator theory of investment (Simple and Flexible), the financial theory of investment, the Tobin q theory of investment, and the neoclassical theory of investment when they are dealing with the theory of investment and their implications. In this section, the above selected theory of investments is examined as discussed on (Yemisirach, 2022).

The major conclusion of Simple Accelerator theory of investment is that changes in aggregate demand cause changes in capital stock. On the other hand, the Flexible Accelerator theory of investment is an improved version of the accelerator theory that takes into account the shortcomings of the Simple Accelerator theory. The basic idea behind this model is that if the gap between the existing capital stock and the desired capital stock is large, the firm's investment will always be larger. In both simple and flexible accelerator theories of investment behaviour, desired capital is proportional to output. The main implication of the model is that investment expenditure of an investing firm is proportional to its output while the output is a function of demand.

The most recent theory of investment, the Financial Theory, states that desired capital stock or investment depends on the degree of profit, which is the profit that the business is expected to generate in the future. One of

the more modern models, the Tobin-Q Theory proposed the Expected Profits model in investment expenditure, which is related to the market value to replacement value ratio of business capital assets (the acquisition cost of the firm). According to this hypothesis, the main factor influencing investment is the Q ratio, or the market value to replacement cost ratio of the existing capital stock. In other words, businesses are interested in investing when the market value of an extra unit increases above its cost of replacement.

The Neoclassical Theory of investment indicated that the optimal stock of capital is determined by production and the cost of capital services in relation to the cost of output. It is crucial to remember that a firm operating under the assumptions of the neoclassical model is presumptively subject to perfectly competitive product and factor markets, which presupposes, among other things, the absence of liquidity constraints (to adjust capital stock) and a situation of general equilibrium with full employment.

All the above investment theories did not exclusively elucidate how a financial sector development in a nation affects its investment. However, the theories independently indicated for instant how loan, interest rate, and other variables affect an investment. Hence, this study attempts to add other variables that are supposed to have strong association with investment so that how financial sector development affects investment in the Ethiopian Economy.

2.2. Empirical Literatures

Despite the fact that there are limited studies that investigate the effect of financial sector development on domestic investment, effort was exerted to review the empirical results of various studies conducted by different authors in different periods.

A research on “Financial Development, Savings and Investment in South Africa: A Dynamic Causality Test” during the period from 1976 to 2014 and Using the ARDL bounds testing approach to co integration and the ECM-based Granger-causality test by (Muyambiri & Odhiambo, 2017) conducted. The study finds out a unidirectional causal flow from investment to financial development, but only in the short run. In the long run, however, the study fails to find any causal relationship between financial development and investment irrespective of whether bank-based or market-based financial development is used as a proxy for financial sector development.

Using a panel of 124 developed and developing countries’ data over a period of 24 years (1980-2003), (Nabamita & Sanjukta, 2009) undertook a study on “The Impact of Financial Development on Domestic Investment: A Quintile Regression Approach.” indicated the need for financial sector development for countries with lower level of investment. It is also concluded that how the response of domestic investment varies for various proxies of financial development.

In their study in titled, “Finance, Investment, and Growth: Time Series Evidence from 10 Asian Economies”, (Rousseau & Vuthipadorn, 2005) using a period of over 1950–2000 and Vector Autoregressive Models (VARs) and Vector Error Correction Models (VECMs) concluded that finance did, on the whole, act as a driving force behind investment.

(Woldemariam, 2018) , in his study on “The Determinants of private Investment in Ethiopia”, using OLS regressions model concluded that public investment, real GDP, external debt servicing , and availability of bank credit have significant positive effect on private investment.

In their study with title “Determinants of Investment in Muslim Developing Countries: An Empirical Investigation”, (Mohammed, Rabul, & Syed, 2009), using a Fixed Effect Estimator concluded that lagged investment, growth rate of per capita real GDP, domestic savings, trade openness and institutional development have positive significant effect on investment. In addition, private sector credit has significant positive impact on investment and debt servicing has a negative effect on investment.

In a sample of 30 sub-Saharan African countries, (Leonce, 2000), in his study, “Financial Determinants of Domestic Investment in Sub-Saharan Africa: Evidence from Panel Data”, revealed a positive relationship between domestic investment and various financial development indicators. The study also revealed that a higher level of financial development is associated with higher levels of investment in the future, suggesting a significant long-term impact of financial development on domestic investment.

2.2.1. Private Sector Credit to Investment

In their study on “Does Private Sector Credit has an Impact on Private Investment in Nigeria?” (Okorie & Chikwendu, 2019), concluded that private sector credit has positive and significant impact on private sector investment in the short-run. However, it has an insignificant impact in the long-run. Similarly, (Asante, 2000) comes into a conclusion from his study of “Determinants of Private Investment Behaviour in Ghana”, that the growth of real credit to the private sector had a positive and significant effect on private investment. From a study on “Determinants of Domestic Investment in Nigeria: An Autoregressive Distributive Lag Approach” the authors (Ojong, Ogar, & Arikpo, 2018) concludes no long run causality between credit to the private sector and domestic investment.

With a title, “Financial development and private investment in Sub-Saharan Africa”, (Misati & Nyamongo,

2011) conducted a study using panel data covering a period from 1991 to 2004 from 18 countries in Africa. The results of their study indicate both the credit to the private sector and turnover ratio used as a proxy for financial sector development; have significant relationships with private investment.

In her study (Yemisirach, 2022), on the Determinants of Domestic Private Investment in Ethiopia by means of an ARDL approach and secondary data between 1992-2020 using Domestic credit to the private sector as a independent variable and other six independent variables concluded that in the short run, domestic credit to the private sector affects domestic private investment negatively. Besides, there exists a long run positive relationship between domestic credit to the private sector and domestic private investment.

Using Error correction model and based on an ARDL approach (khatib, Altaleb, & Alokori, 2012), came to the conclusion that the increased access to domestic credit will boost domestic investment in the short term. A study conducted by (Brian & Nicholas, 2018) investigates the causal relationship between both bank based (using measurements such as domestic credit to the private sector and domestic credit provided by the financial sector) and market based (using stock market trends) financial development and investment in Mauritius for the period of 1976-2014 using an autoregressive distributed lag bounds testing approach. The study concluded that both bank-based and market-based financial development Granger-cause investment, both in the short run and in the long run.

Authors of a research (Assa & Abdi-khalil, 2012) examined the empirical relationships among macroeconomic factors that could affect short- and long-term private investment decisions in Malawi using a time series data from 1979 to 2009. The result demonstrated that real interest rates, bank credit to the private sector, and governmental investment all seemed to have an impact on investment decisions in the short run.

2.2.2. Broad Money Supply to Investment

Studies which found out the relationship between broad money supply and domestic investment are very scarce. However following are some of the empirical evidences in the area.

A positive and statistically significant effect of Money supply on private investments was proved by (Gedion, 2021) in his study entitled “Effects of Monetary Policy on Private Investments in Ethiopia”. Similarly, the argument on which private investment is positively affected by broad money supply, domestic credit and interest rate channels is evidenced by a study conducted by (Dang, Pham, & Tran, 2020). The same conclusion was reached by (Abdulahi, 2022); in his study on “Monetary Policy Impact on Private Sector Performance in Nigeria” using Autoregressive Distributive Lag (ARDL) method that broad money supply has a significant positive impact on private sector performance both in the short run and long run. , using an ordinary least squares (OLS) estimates (Brima & Brima, 2017), in his study on “Monetary Policy Effects on Private Sector Investment: Evidence from Sierra Leone” suggests that money supply exerts positive and statistically significant effect on private sector investments in Sierra Leone. Similar studies conducted in Pakistan by (Chaudhry, Iqbal, Umar, & Faheem, 2021) with a title “Impact of Monetary Policy on Inflation and Investment in Pakistan: A Time Series Analysis” using an Autoregressive distributed lag model comes into suggests the long-run positive and significant impact of money supply on investment. A negative long run relationship between Broad money supply and Domestic investment was also concluded (Iheonu, Asongu, Odo, & Ojiem, 2020). Similarly, in studying Monetary Policy and Domestic Private Investment in Nigeria, (Ebisine & Oki, 2021) revealed a negative and significant effect of money supply on domestic private investment the long run in Nigeria.

During the investigation they made about “Does Financial Development Drive Private Investment in Ghana”, (Daniel, Micheal, & Mustapha, 2016), based on the ARDL bounds testing approach to co integration for the years 1970–2014 and using five proxy measures of financial sector development, namely, private sector credit to GDP, broad money supply to GDP, deposit money bank assets to GDP, financial system deposit to GDP. The study concluded that in the long run, all indicators of financial development: private sector credits, broad money supply to GDP, deposit money banks’ assets to GDP, and financial system deposits have no significant influence on private investment. However, broad money supply and index of all FD indicators had an effect on private investment in the short run. The authors eventually reached into a conclusion that financial sector development has not been a key driver of private investment in the long run, while, in the short run, the effect of financial development on private investment depends on the measurements of financial sector development.

2.2.3. Bank Efficiency and Investment

In their study, with a title “Financial sector development and Investment in selected countries of the Economic Community of West African States”, (Iheonu, Asongu, Odo, & Ojiem, 2020), using 33 years data and augmented mean group (AMG) procedure, find out that the impact of financial sector development on domestic investment depends on the measure of financial sector development utilised. In this case, Domestic credits to the private sector an insignificant impact on domestic investment. Whereas, banking intermediation efficiency or ability of the banks to transform deposits into credit, and broad money supply negatively and significantly affect domestic investment. Also, the study concludes that Domestic credit to the private sector Granger causes domestic investment in ECOWAS.

A study conducted by (SimpliceA, 2014) with a title “Linkages between investment flows and financial

development: Causality evidence from selected African countries” – Vector autoregressive models in the perspectives of Vector Error Correction Model and short-run Granger causality using 16 African Countries using four different measures of Financial Sector Developments what he noted as DESA variables which are Financial Depth (D=Broad Money Supply: GDP), Bank Efficiency (E=Bank Credit: Bank Deposit), Size (S= “deposit bank assets” to “total assets” (deposit banks assets on “central bank assets plus deposit bank assets”) and Financial Activity (which is the ability of banks to grant credit to economic operators and measured by the ratio of private credit by domestic banks on GDP) concluded that financial efficiency appears to impact investment more than financial depth (M2).

3. Model Specification

The study used an Autoregressive Distributive Lag (ARDL) model to find out the relationship between the variables under consideration. Among the many advantages this model has, it allows the measurements of both short term and long run effects. Besides, it can work with a mixed stationary condition of I_0 and I_1 (Kelvin, 2016). Functionally, the model can be written as :

$$DI_t = \alpha_0 + \alpha_1 DCPS_t + \alpha_2 BMS_t + \alpha_3 BCBD_t + \alpha_4 TO_t + \alpha_5 GINF_t + \alpha_6 DS_t + \varepsilon_t \dots\dots$$

Where,

- DI= Domestic Investment;
- DCPS= Domestic Credit to the Private Sector as a measure of Financial Activity;
- BMS= Broad Money Supply as a measure of Financial Depth; and
- BCBD= Bank Credit to Bank Deposit as a measure of Financial Efficiency;
- Besides, in order ensure the fitness of the model, three variables are included based on literature review. These are:
- TO=Trade Openness;
- GINF= General Inflation; and
- DS=External Debt Servicing

Lag Length Selection

Choosing few lags will lead to “omission of relevant variable bias,” which has very serious consequences. On the other hand, choosing a higher number of lag lengths will lead to the “inclusion of irrelevant variable bias,” (Gujarati & Porter, 2009). Hence, too long a lag length will distort the data and lead to a decrease in power of explaining the dynamic behaviour of the variables.

Using the “matrix list e (lags)” command, the STATA-15 automatically produced the following result which confirms the selection of a maximum lag length of one in applying an ARDL. Off course, the individual lag length result has given the same result using especially on SBIC test.

e (lags) [1, 7]							
	lncgfmn	lndcpsmn	lnbcabd	lnbmsgdp	lntogdp	lnginf	lndsmn
r1	1	1	0	1	0	1	0

Stationary Test

The study used the Augmented Dicky-Fuller test to decide on whether the variables under consideration are stationary or integrated of order zero $I(0)$ or $I(1)$, or neither. The H_0 (Null hypothesis) of the Augmented Dicky-Fuller test is that the time series under consideration includes a unit root and hence it is non-stationary. In this research, all the variables, except **lnbcabd** (stands for bank credit to bank deposit) and **lnginf** (stands for general inflation) are stationary at first difference or $I(1)$ which is evidenced by the significance of all the p-values at least at 5% except **lndcpsmn** which is significant at 10% which suggested to reject the null hypothesis. Being some of the variables are stationary at level and some others are stationary at first difference; the researcher has opted to apply an Autoregressive Distributive Lag (ARDL) Model.

ARDL Bound Test for Long Run Relationship

The existence of long-run /co-integrating relationship in ARDL can be tested by Pesaran, Shin, and Smith (PSS) bounds test.


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Pesaran, Shin, and Smith (2001) bounds test
H0: no level relationship                                F =      4.550
Case 3                                                  t =     -3.900

Finite sample (6 variables, 22 observations, 3 short-run coefficients)

Kripfganz and Schneider (2020) critical values and approximate p-values
    
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	10%		5%		1%		p-value	
	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
F	2.722	4.276	3.453	5.317	5.472	8.149	0.020	0.083
t	-2.490	-3.940	-2.932	-4.513	-3.893	-5.775	0.010	0.105

The null hypothesis in this test is, H_0 : No level relationship. Where, a model has said to have a co-integrating relationship and we cannot reject the null hypothesis if the F-statistics value is greater than the I_1 serious or if the T-statistic value is below the upper bound. Based on the ARDL bound test as indicated above, it can be asserted that the value of the F statistics is greater than the lower bound of the critical values. In addition, the value of the T statistics is less than the lower bound of the critical values which are evidences for the existence of co-integration. Hence, the researcher failed to reject the null hypothesis and concluded the existence of long run relationship in the model.

Goodness of Fit Statistics

The goodness of fit statistics illustrates how well a statistical model fits to a set of observed data. These statistics provide measures of how closely the observed data match the expected data according to the model being tested. The R^2 and adjusted R^2 in this model are 85% and 72%, respectively. Using the adjusted R^2 of 72%, one can conclude that other things remains the same, about 72% of the variations in the dependent variable which is domestic investment is explained by variations of the independent variables used in the model.

Sample: 2001 - 2022	Number of obs	=	22
	R-squared	=	0.8534
	Adj R-squared	=	0.7201
Log likelihood = 35.995783	Root MSE	=	0.0666

Test for Multicollinearity

In order to check the presence of multicollinearity in the model, a pair wise correlation has been conducted. In this case, (Gujarati & Porter, 2009) indicated that if the pair-wise or zero-order correlation coefficient between two regressors is high (in excess of 0.8), then multicollinearity is suspected and it is a serious problem. Accordingly, looking at the correlation coefficient of the whole variables under consideration which are all below 0.8, the researcher deduced the absence of multicolliniality in the model.

Heteroscedasticity Test

The study used Breush-Pagan/Cook-Weisberg to test for the existence of Heteroscedasticity. The null hypothesis of this particular test is homoscedasticity/constant variance. However, given the p value is more than any significance level (1%, 5% and 10%), the researcher failed to reject the null hypothesis and concluded the absence of Heteroscedasticity.

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Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of D.lngcfmn

chi2(1)          =      0.55
Prob > chi2      =      0.4580
    
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Autocorrelation Test

The study used the Breusch-Godfrey LM test to prove on whether there exists an Autocorrelation in the model or not. The null hypothesis in this test is absence of serial correlation and decision rule is to reject the null hypotheses whenever the p-value test is less than the level of significance ($p < \alpha$). However, since the p-value is

greater than the level of significance ($p > \alpha$), the researcher failed to reject the null hypothesis and prove the absence of serial correlation.

Breusch-Godfrey LM test for autocorrelation			
lags (p)	chi2	df	Prob > chi2
1	1.233	1	0.2669
H0: no serial correlation			

Residual Normality Test

The residual normality test is a statistical method used to test if the residuals (i.e. the differences between the observed values and the predicted values) from a regression or other statistical model are normally distributed. The residuals are normally distributed is the null hypothesis for this test. Given an insignificant p-value at any significance level (1%, 5% and 10%), the researcher failed to reject the null hypothesis and prove that the residuals are normally distributed.

Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
residual	22	0.95712	1.086	0.168	0.43342

Test for Omitted Variables

The Ramsey Reset Test is a statistical test used to determine whether a regression model that has been used to analyze a dataset has omitted important variables. The test helps to ensure that the model is correctly specified and can be used to make reliable predictions. The null hypothesis of this test is that “the model has no omitted variables”. Looking at the test result the p-value at any significance level (1%, 5% and 10%) is insignificant and hence the researcher failed to reject the null hypothesis and conclude that the model has no omitted variables.

Ramsey RESET test using powers of the fitted values of D.lngcfmn	
Ho: model has no omitted variables	
F(3, 8) =	1.42
Prob > F =	0.3075

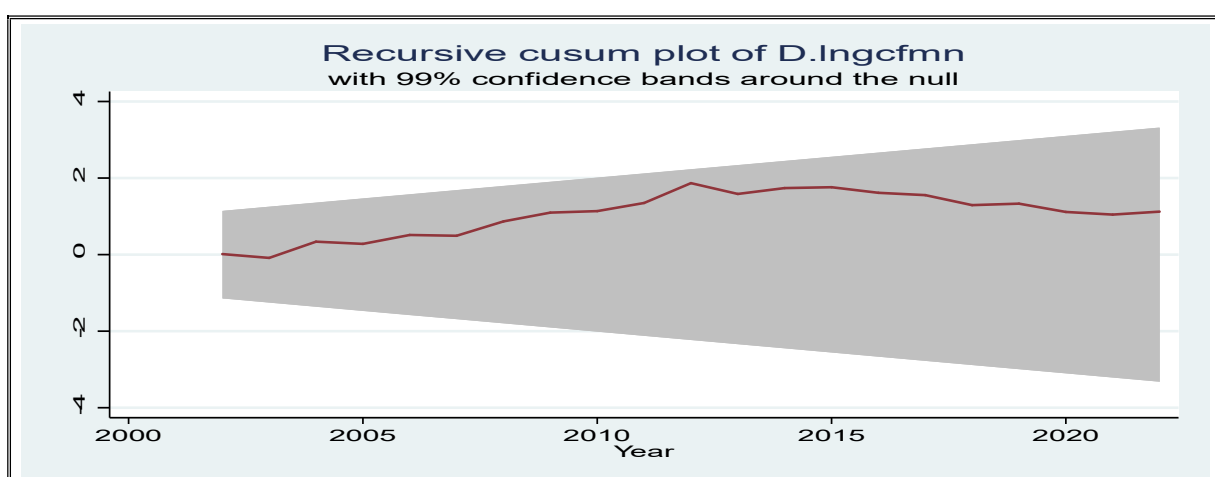
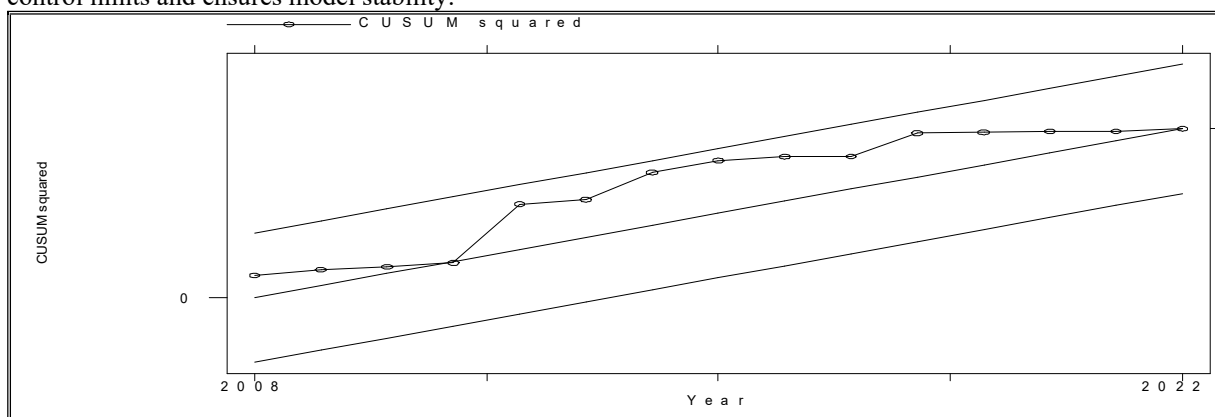
Granger Causality Wald Test

Granger causality test is commonly used to study cause-and-effect relationships between variables over time. It was the researcher’s intent to find out the granger causality among the dependent variable and all major variables representing financial sector development. The results of the granger causality test justified that domestic investment as measured by gross capital formation granger-cause all the variables to measure financial sector development, However, all the three independent variables which represent financial sector development do not granger-cause domestic investment at 5% significance level. This supports the researcher’s expectation in that domestic investment granger-cause financial sector development.

Granger causality Wald tests				
Equation	Excluded	chi2	df	Prob > chi2
lngefmn	lnncpsmn	21.325	1	0.000
lngefmn	lnncbd	36.59	1	0.000
lngefmn	lnbmsgdp	25.199	1	0.000
lngefmn	ALL	42.494	3	0.000
lnncpsmn	lngefmn	.31463	1	0.575
lnncpsmn	lnncbd	9.4271	1	0.002
lnncpsmn	lnbmsgdp	4.2933	1	0.038
lnncpsmn	ALL	32.726	3	0.000
lnncbd	lngefmn	3.627	1	0.057
lnncbd	lnncpsmn	3.9101	1	0.048
lnncbd	lnbmsgdp	.09622	1	0.756
lnncbd	ALL	5.4765	3	0.140
lnbmsgdp	lngefmn	3.3282	1	0.068
lnbmsgdp	lnncpsmn	3.3097	1	0.069
lnbmsgdp	lnncbd	5.6596	1	0.017
lnbmsgdp	ALL	5.8925	3	0.117

Stability (CUSUM) Test

CUSUM (Cumulative Sum) and CUSUMSQ (Cumulative Sum of Squares) tests are commonly used in Auto-Regressive Distributed Lag (ARDL) modelling to examine the stability of the coefficients in the long-run relationship between variables. As can be seen from the two diagrams below the graphs remains within the control limits and ensures model stability.



The Long Run and Short Run Dynamics Equilibrium

Once the existence of long run relationship in the model is asserted by Pesaran, Shin, and Smith (PSS) bounds test, it is now possible to run the ARDL model and see the long run and short run dynamics equilibrium using the following output.

D.lngcfmn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ADJ					
lngcfmn					
L1.	-.974627	.2498978	-3.90	0.002	-1.524648 -.4246055
LR					
lndcpsmn	.8397805	.0601383	13.96	0.000	.7074169 .9721441
lnbcdb	-.9856282	.3922483	-2.51	0.029	-1.848961 -.1222956
lnbmsgdp	-.5435155	.2744028	-1.98	0.073	-1.147472 .060441
lntogdp	.5067577	.2250113	2.25	0.046	.0115111 1.002004
lnginf	.0217213	.0197114	1.10	0.294	-.0216631 .0651057
lndsmn	.0798889	.0424198	1.88	0.086	-.0134764 .1732543
SR					
lndcpsmn					
D1.	-.5961391	.2638849	-2.26	0.045	-1.176946 -.0153325
lnbmsgdp					
D1.	-.6025679	.2733675	-2.20	0.050	-1.204246 -.00089
lnginf					
D1.	-.0212445	.0120038	-1.77	0.104	-.0476647 .0051757
_cons	5.517681	2.929866	1.88	0.086	-.9309109 11.96627

The Long Run Relationship

All the most important variables in the model are all significant. However, there exist a different directional relationship among those variables used to measure financial sector development.

To start with, other things remains the same, a percentage increase in the financial activity as measured by domestic credit to the private sector, likely leads to a 0.84% increase in domestic investment in the long run. This result is consistent with the research results of (khatib, Altaieb, & Alokor, 2012), (Ndikumana, 2000), and (Misati & Nyamongo, 2011), and is consistent with the researchers expectation.

Looking at the other major of financial sector development, that is bank credit to bank deposit which measures banking sector intermediation efficiency or the ability of banks to make over deposits into credit, one can conclude that other things remains constant, a percentage change in a banking intermediation efficiency will lead to a 0.99 percentage decrease in the long run in domestic investment. A similar finding was obtained by (Iheonu, Asongu, Odo, & Ojiem, 2020). As to the author, the major reason for this negative long run relationship is owing to the failure of banks to convert mobilised deposits into lending big investors and investments. Generally, it can be argued that higher intermediation efficiency will lead to higher lending rates since banks tend to get a higher return from their limited deposits. This can increase the cost of borrowing for businesses and deter investors, which ultimately lowers the level of capital formation. In addition, more efficient banks in intermediating funds may prefer to lend to already established businesses over start-ups or engage in less important enterprises, which could reduce the overall amount of capital available for long-term investment. Furthermore, banks' increased emphasis on short-term earnings at the expense of long-term investments in the economy could impede the expansion of capital creation.

In a similar vein, in the long run, other things remains the same, a percentage increase in financial depth measured by Broad Money Supply, will lead to a 0.5 percentage decrease in domestic investment. The result is consistent with (Iheonu, Asongu, Odo, & Ojiem, 2020) and (Ebisine & Oki, 2021). Few possible reasons for why broad money supply may have a negative and significant relationship with domestic investment can be when money supply increases over time; it can lead to inflation, which means that the value of money decreases over time. This makes it more expensive to invest in new projects and can reduce the return on investment, which may discourage investors from investing domestically.

Short Run Relationship

Looking at the coefficients in the short run, both domestic credit to the private sector and broad money supply has a significant negative relationship with that of domestic investment. More specifically, other things being constant, a percentage increase in domestic credit to the private sector will lead to a 0.6% decrease in domestic investment in the short run. A similar short term relationship does exist between broad money supply and domestic investment where a percentage increase in broad money supply will lead to a 0.6% decrease in domestic investment.

Speed of Adjustment

The coefficient of the error correction term or the speed of adjustment is negative and significant at 1% significance level indicating that whenever there exists a percentage shock in any variable in the short run,

domestic investment will respond by moving back towards its long run equilibrium level by 97% which asserted the quick adjustment to restore long-run equilibrium.

4. Conclusions

Both Financial Size (broad money supply) and Financial Activity (domestic credit to the private sector) are found to have an adverse effect in the short term on domestic investment. (Yemisirach, 2022), also find out a negative short run relationship between financial activity and domestic investment. On the other hand, Financial Activity has a positive and significant long run effect to domestic investment in Ethiopia. This result is consistent with the research results of (khatib, Altaleb, & Alokor, 2012), (Ndikumana, 2000), and (Misati & Nyamongo, 2011), and is consistent with the researchers expectation. This effect is attributed to the fact that when investors have access to credit they can invest in variety of long term projects that leads to boost economic growth. However, investors might not able to invest long term projects immediately and may use the credit obtained from banks to finance their short term working capital needs and this misallocation of resources may result in a negative relationship in the short run. Besides, in the context of credit availability, investors may become hesitant to invest in the short term due to uncertainties of different kind such us inflation and public unrest. However, Financial Size and banks' intermediation efficiency (ratio of bank credit to bank deposit) will cause domestic investment to fall in the long run. In their study, (Iheonu, Asongu, Odo, & Ojiem, 2020) also find out a negative long run relationship between banks' intermediation efficiency and domestic investment. It can be argued that higher intermediation efficiency will lead to higher lending rates since banks tend to get a higher return from their limited deposits. This can increase the cost of borrowing for businesses and deter investors, which ultimately lowers the level of capital formation. In addition, more efficient banks in intermediating funds may prefer to lend to already established businesses over start-ups or engage in less important enterprises, which could reduce the overall amount of capital available for long-term investment. Furthermore, banks' increased emphasis on short-term earnings at the expense of long-term investments in the economy could impede the expansion of capital creation.

Also, the finding on the long run relationship between financial size and domestic investment is consistent with (Iheonu, Asongu, Odo, & Ojiem, 2020) and (Ebisine & Oki, 2021). Few possible reasons for why financial size may have a negative and significant relationship with domestic investment can be when money supply increases over time; it can lead to inflation, which means that the value of money decreases over time. This makes it more expensive to invest in new projects and can reduce the return on investment, which may discourage investors from investing domestically.

The granger causality test entails that domestic investment granger cause financial sector development calling the government to intensively work on domestic investment and encourage private investors so that its domestic financial sector will develop. Besides, the speed of adjustment to restore equilibrium following a disturbance was statistically significant at 1% with a speed of adjustment of 0.974 and negative which signifies that adjustment to restore long-run equilibrium is very high.

In general, this study concluded that the effect of financial sector development depends up on the variables used to measure financial sector development.

Recommendations

In general, based on the findings of the study, the following key recommendations can be drawn:

- i) Apart from lending activities, domestic banks should intensively work on domestic resource mobilization so that the speed of credit provision and resource mobilization matched and hence it confiscate their tendency to demand a higher return from limited resources since economics of scale is take place;
- ii) The government should control the supply of money so that inflation will be controlled and investors will be encouraged expecting a positive and adequate return on their investment hence domestic investment will ultimately be enhanced;
- iii) Given the results of the study, decision makers should exercise caution when selecting financial sector development metrics as a tool for promoting domestic investment. This is because, different measures of financial sector development will lead to different conclusions and then to different policy intervention; and
- iv) The Ethiopian government should promote domestic investment by applying various applicable tax incentives, developing enabling infrastructures, reducing the bureaucracy hurdles to execute investment in the country so that domestic investment will be improved which leads to the development of the domestic financial sector. This is because; an increase in investment can attract more investors and boost the overall growth of the economy which can in turn lead to an increase in demand for domestic financial services.

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