



Monetary policy and financial development in Africa: Do governance mechanisms matter?



Authors:

John Gatsi¹ 
 Anthony A.A. Idun¹ 
 Felix Mensah¹ 

Affiliations:

¹Department of Finance,
 School of Business, University
 of Cape Coast, Cape Coast,
 Ghana

Corresponding author:

Anthony Idun,
 aidun@ucc.edu.gh

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Orientation: The financial system performs essential role in the mechanisms through which economic activities translate into economic growth and development of African economies, especially through their role in the allocation of finance from the surplus units to productive activities.

Research purpose: This article examines how monetary policy instruments impact the level of financial development in 37 African countries over the period 2002–2015. The article analyses how the governance systems in these countries can have both first- and second-order effects on the level of financial development through monetary policy mechanisms.

Motivation for the study: The need for the study emanates from the move toward monetary integration enshrined in the charter which culminated in the formation of the African Union. Inadequate discussion on the topic within the African continent also engineered interests in this investigation.

Research approach/design and method: To deal with any endogeneity issues, we perform the estimations using the dynamic general method of moment model.

Main findings: The results show that monetary policy instruments in Africa promote higher level of financial development. Also, financial development is stronger in the wake of weak governance systems. However, the interplay between effective governance and effective monetary policy has stronger positive impact on the level of financial development in Africa.

Practical/managerial implications: The study calls for the institution of responsive monetary policies that harness strong institutions to promote financial development.

Contribution/value-add: The article highlights the contributions of strong institutions that stimulate the contribution of monetary policy in effective financial intermediation.

Keywords: Africa; financial development; institutions; monetary policy; governance.

Introduction

The financial system performs an essential role in the mechanisms through which economic activities translate into economic growth and development of African economies, especially through its role in the allocation of finance from the surplus units to productive activities (Kwakye 2012). The role of finance in inducing growth has been well documented in contemporary empirical literature. Empirical literature proposes that well-functioning and responsive financial systems enhance long-run economic growth (Beck, Levine & Loayza 2000; Caprio & Honohan 2001; Levine 1997). Nonetheless, an interesting question that remains unanswered is: Why are financial markets in some countries more developed than others?

Given the finance–economic growth nexus, we need to frequently examine the factors that explain the disparity in the level of financial development of various economies. Empirical studies provide evidence of various determinants of financial development. The factors in the extant literature include trade liberalisation, political system and financial liberalisation (Rajan & Zingales 2003; Takyi & Obeng 2013); legal traditions, laws enforcement and protection of investors' rights (La Porta et al. 1997); adaptability and flexibility of legal systems (Beck, Demirgüç-Kunt & Levine 2003); geographic resource endowments (Acemoglu, Johnson & Robinson 2001) and governance effectiveness (Gerschenkron 1962).

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However, there are contentions as to the exact determinants of financial development. While this contention can be partly attributed to differences in financial systems, some authors contend that the relationship between financial development and economic growth is supply-driven. They argue that economic growth follows financial development via the supply of financial services that emanate from the growth of financial markets and institutions (King & Levine 1993; Arestis & Demetriades 1997). Other authors opine that the link between financial development and growth is demand-driven. They contend that the emergence of modern financial institutions is as a result of the demand of financial services from investors and depositors (King & Levine 1993; Wright & Watkins 2010). Some authors, however, consider both demand- and supply-driven factors in the same economic model, while others attempt to separate them into two different models.

The macroeconomic determinants of financial development have also been studied with special reference to advanced, emerging and developing economies. By using data for 16 industrialised economies, Hofmann (2001) found a significant and positive association between financial development, real gross domestic product (GDP) and inflation, but an inverse relationship between financial development and real interest rates. Similarly, Calza, Manrique and Sousa (2003) by employing data sampled from European economies found that there is a long-run positive relation between financial development and real GDP. Aisen and Franken (2010) studied the major determinants of financial development during the 2008 financial crisis for a total sample of over 80 economies and found that bank credit booms prior to the financial crisis and lower GDP growth is the most relevant determinant of post-crisis bank credit.

It is important that measures have to be put in place to regulate the value, supply and cost of money in consonance with the expected level of economic activity to ensure price stability, maintenance of balance of payments equilibrium, creation of employment, output growth and sustainable development, or simply to achieve stable and non-inflationary economic growth. Greenwood and Smith (1997) contended that at any stage of financial development, lack of policy coordination and its accompanying challenges pose a threat to short- and long-run economic growth of a country. Without efficient policy coordination, financial instability could ensue, leading to high interest rates, exchange rate pressures, rapid inflation and adverse impact on economic growth. In a more recent study of 24 emerging economies, Gozgor (2014) contended that an important factor that influences financial development is an expansionary monetary policy.

It appears that the discourse has centred on the finance growth nexus without much discussion about the monetary policy finance nexus. The transmission mechanisms through which monetary policy can affect financial development vary. Money supply can increase access to credit because increases in money supply reduce interest rates and therefore

make access to funds more affordable (Bernanke & Blinder 1988). Gozgor (2014) contends that an important factor that influences financial development is an expansionary monetary policy. On the contrary, in times of high inflationary pressure, rising prices increase the risk premium that increases interest rates and constrains access to credit (Azariadis & Smith 1996; Boyd, Choi & Smith 1997).

The link between monetary policy and financial development can also be traced through the cooperation between the financial system and central banks as the latter come up with strategies to promote economic stability. Central banks are responsible for monetary policy meant to direct the economy towards growth and development. The central banks do this by employing tools such as open market operation, announcements of policy rates and the use of discount rates, among others. For instance, when the central bank wants to increase money supply, they can initiate open market activities by buying back treasury bonds and bills. Such action can free up money for businesses to buy and employ resources and expand production. The result can include expansion of the real sector. The reverse can also occur, that is, when central banks seek to tackle a possible inflationary pressure, monetary policy instruments can be instituted to reduce the amount of money in circulation. Such action can increase interest rates in the short run, but the eventual effect may be reduction in the cost of operation by businesses because of reduction in input prices. But the above cannot be done effectively without a responsive financial intermediation. Monetary policies have been used by various governments to stimulate growth through savings mobilisation. The seminal works of McKinnon (1973) and Shaw (1973) postulated that monetary policy has a role to play in stimulating savings and investment in developing economies. In the above instances, we realise that financial development enhances effective monetary policy and vice versa.

Furthermore, the economic institutions hypothesis, which builds on the resource endowment hypothesis (Acemoglu, Johnson & Robinson 2004), proposes a dynamic political economy framework in which differences in economic institutions should be the fundamental cause of differences in economic development. According to the framework, the nature of policies and the extent of governmental involvement through political institutions determine the incentives and constraints of economic agents. Also, political institutions and income distribution are the dynamic forces that combine to shape economic institutions and outcomes. It is therefore argued that growth-promoting economic institutions emerge when political institutions (1) allocate power to groups with interests in broad-based property rights enforcement; and (2) create effective constraints on power holders and ensure that there are few rents to be captured by power holders. The economic institutions hypothesis is dynamic in nature and explains to some extent both the cross-country and the time-series variation in financial development. The economic institutions hypothesis suggests that notwithstanding possible complex political mechanisms such as social upheavals emanating from changing political forces, for

example, the rise of mass democracy and the changes in the distribution of income, economic institutions still hold the key to financial development and growth at any point in time. This article contributes to the discussion by emphasising the path through which institutions can induce effective monetary policy that induces financial sector development in Africa.

The study is imperative because the level of financial development in Africa is evolving. A 2016 International Monetary Fund Report on financial development in sub-Saharan Africa stated that African countries have made substantial progress in financial development over the past decade. However, there is still considerable potential for further development, especially when one compares the level of financial development in Africa with other regions. Indeed, until a decade ago, the level of financial development in a large number of sub-Saharan African countries had actually retrogressed relative to the early 1980s. With the exception of the region's middle-income countries, both financial market depth and institutional development are lower than the levels in other developing regions (Mlachila et al. 2016).

Although examining the determinants of access to bank credit has become a fascinating and growing subject in recent empirical literature, the determinant of financial development seems to be complex (Han & Elekdag 2012). Some studies focused on the effect of monetary policy on economic growth (Sackey & Nkrumah 2012; Twinoburyo & Odhiambo 2017); the relationship between monetary policy and the bank lending rate (Amidu 2006); the role banks play in monetary policy transmission (Peek & Rosengren 2013); the link between monetary policy and bank globalisation (Alpanda & Aysun 2012; Cetorelli & Goldberg 2012); the role institutions play in monetary policy transmission by examining the impact of legal origin (Aysun, Brady & Honig 2013) and recently the effect of financial market development on the effectiveness of monetary policy (Ma & Lin 2016). There is not enough evidence on the extent with which institutions complement monetary policy frameworks to induce financial sector development in Africa. This study seeks to examine the role country-level governance and monetary policy play in influencing financial development in sampled African economies.

Furthermore, sound institutional structures over the years have been argued to play a significant role in influencing financial development. However, existing studies concentrate on the influence of financial liberalisation (McKinnon 1993), the role of the legal systems (La Porta et al. 1997; Roe 2006), ownership of banks by governments (La Porta, Lopez-de Silanes & Shleifer 2002), the role of political institutions (Huang 2010; Roe & Siegel 2011) and the contribution of trade openness (TO) (Beck 2003; Law 2009; Rajan & Zingales 2003) in influencing financial development.

The above objectives were achieved by employing the efficient dynamic panel data generalised method of moment (GMM) panel data estimation technique. This

estimation technique is efficient because it minimises the endogeneity effect that may affect the credibility of the estimates. We tested the possibility of overriding identity between the instruments employed and the innovation and other dynamics by using the Sargan test. The test assured that the instruments do not correlate strongly with the error term. In effect, our estimates were confirmed reliable and therefore the inferences were valid. The institutional framework for most countries in Africa is shaped by their legal origin. For instance, the English-speaking countries have adapted the common law regime; the French-speaking countries have adapted the civil law regime; and the Islamic countries have adapted the Islamic law regime. We controlled for the differences in legal origin by constructing dummies for each of these legal regimes (which in most cases also define the origin of the countries' official language) and used them as instrumental variables for the dynamic GMM estimations. These helped by minimising the heterogeneity effects and ensuring efficient estimates for discussions on the major findings.

The next section discusses the method employed to achieve the objectives of the current study. The 'Results and discussions' section presents the results of the various estimates and their discussions. The 'Conclusion' section provides conclusions and recommendations.

Methodology

The article sampled 37 African economies for the analysis. These are countries that had usable observations on the variables under investigation. The period for the study is 2002–2015. We chose 2002 as the beginning of the period because it coincides with the year of the inauguration of the African Union(AU). This would enable us to access the transmission effect of monetary policy on financial development because the level of financial development is very much connected to the sustainable development agenda of the AU. Data on domestic credit to the private sector to GDP, stock of money supply and inflation were extracted from the World Bank's World Development Indicators (2017). Data on country-level governance variables – rule of law, government effectiveness, regulatory quality, voice and accountability, control of corruption and political stability – were extracted from the World Bank Governance Indicators (2017). In addition, data on the control variables – foreign direct investment (FDI), TO and gross domestic product per capita (GDPPC) – were obtained from the World Bank's World Development Indicators (2015).

To examine the role of country-level governance and monetary policy in financial development, the standard model by McKinnon (1973) and Shaw (1973), an endogenous growth model, was adopted for the analytical framework. McKinnon (1973) and Shaw (1973) assume a positive association between financial development and output level in an economy resulting from the complementarities between money and capital. In the Shaw (1973) model, the financial system through financial intermediation stimulates

investment that results in a rise in the level of output. Moreover, McKinnon (1973) and Shaw (1973) advocated for an unhindered and liberalised financial system, which according to them would lead to more growth. In the same vein, the endogenous growth literature also forecasts a positive relationship between financial depth, financial innovation and real income, investment and real interest rate (King & Levine 1993). A well-developed financial market encourages investment and growth by means of effectively channelling financial resources from the surplus unit to the most productive by the deficit spending unit.

Accordingly, the following model was estimated to determine the effect of monetary policy on financial development in sampled African economies. This particular model relates monetary policy variables (money supply and inflation) to financial development among sampled African economies. The model also assisted us to determine the first- and second-order effect of country-level governance on financial development through monetary policy.

$$FD_{it} = \beta_0 + \beta_1(FD_{t-1})_{it} + \beta_2(MP)_{it} + \beta_3(GDP)_{it} + \beta_4CG_{it} + \beta_5(FDI)_{it} + \beta_6(TO)_{it} + \beta_7(MP \times CG)_{it} + \beta_8(INFL \times CG)_{it} + \varepsilon_{it} \dots \quad [\text{Eqn 1}]$$

where *it* represents specified economies and time period and the rest of the variables are defined as follows:

FD means financial development measured by domestic access to credit by the private sector

β = the constant

β_1 = coefficient of *FD* lagone

β_2 = coefficient of money supply

β_3 = coefficient of inflation

β_4 = coefficient of country – level governance indicators

ε_t = is the error term

MP denotes money supply, *CG* means country-level corporate governance variables (voice and accountability [VA], rule of law [RL], government effectiveness [GE], political stability [PS], control of corruption [CC] and regulatory quality [RQ]). *INFL* stands for inflation rate, *FDI* denotes foreign direct investment, *GDP* represents gross domestic product per capita and *TO* means trade openness.

Justification of the variables

Bernanke and Blinder (1988) in their IS-LM analytical framework showed that money supply has a positive impact on domestic credit to the private sector. Expansionary money supply can result in improved access to credit by the private sector, while contraction in money supply can result in less domestic credit growth. The model captured money supply as one of the surrogate measures of monetary policy. A rise in money supply can lead to a decrease in the cost of credit, which, in turn, can induce access to finance by the private sector. Similarly, existing models highlight that inflation

affects credit delivery in an economy. Azariadis and Smith (1996) and Boyd et al. (1996) argue that inflation rate may influence the level of credit delivery in an economy. The study used change in the year-on-year consumer price indices as one of the surrogate measures of monetary policy to verify whether there is a link between price stability and domestic credit growth. The effect of inflation on financial development depends on whether inflation is anticipated or unanticipated. If inflation is anticipated, both demanders and suppliers of funds would factor the effect in their plans, which can lessen the adverse effect of inflation on financial development. The effect of unanticipated inflation on financial development can be complicated for both suppliers and demanders of funds. This depends on the bargaining power of both parties. If banks have greater bargaining power, they can pass on higher inflation in the form of increased lending rates to firms and the reverse can also be the case.

Furthermore, equity stake in companies becomes increasingly more attractive as institutional framework becomes more potent overtime (Perotti & Van Oijen 2001). Hence, the development of sound quality institutions can influence the attractiveness of financial development. The examination of the role of institutional quality on financial development is related to the literature on the relationship between legal institutional structures and corporate finance (La Porta et al. 1997). Demirgüç-Kunt and Maksimovic (1998) argue that economies characterised by an effective institutional system, grow faster. This study captures rule of law, political stability, regulatory quality, government effectiveness, control of corruption and voice and accountability as surrogate measures of country-level governance in the models 1 and 2.

Gross domestic product per capita is a standard measure of economy health and replicates the rate of demand for domestic credit (Frankel & Romer 1990). It is expected that higher level of GDPPC reflects higher domestic demand for credit (Takats 2010). Lane and McQuade (2013) contend that increasing foreign capital that inflows is likely to increase the volume of credit granted to the private sector by domestic banks. Capital inflow is measured by net FDI inflows to GDP to confirm the hypothesis of whether there is a connection between the two variables. Rajan and Zingales (2003) and Okeahalam (2005) argue that the simultaneous opening of a trade and capital account will improve financial development. The study as well includes *TO* as a controlled variable.

Some empirical studies find sufficient evidence of the existence of a link between *FDI* and financial development (Aggarwal, Demirgüç-Kunt & Pería 2011; Gupta, Pattillo & Wagh 2009). Foreign direct investment can be a crucial determinant of credit growth and a cause of credit booms (Calderon & Kubota 2012; Elekdag & Wu 2011; Hernandez & Landerretche 1999; Lane & McQuade 2013; Mendoza & Terrones 2008; Sa 2006). Foreign direct investment to African economies improves the availability of domestic capital, which serves as the launch of the transition process the financial system of these economies

(Lane & Mcquade 2013). The development of the banking sector as a result of capital availability through takeovers and Greenfield investment is good for the improvement of access to credit (Elekdag & Wu 2011).

The role of TO in the financial development has been empirically confirmed (Rajan & Zingales 2003). They argue that if an economy becomes more open to international capital inflows, it creates incentives that promote competition in the financial market. Law and Demetriades (2004), after examining the association between TO and financial development, found results that provide the findings of the hypothesis by Rajan and Zingales (2003) that the concurrent opening of both trade and capital flows will improve financial development. This assertion has also been highlighted in Okeahalam (2005).

Development in domestic productivity plays a significant role in credit availability. Cotarelli et al. (2005) found that domestic access to credit is statistically significant and positively influenced by GDPPC. This result is confirmed by the findings of Égert, Backé and Zumer (2006) when they found that there is a positive relationship between domestic access to credit and GDPPC. Similarly, Calza et al. (2001) show that there is a long-run positive relationship between domestic credit and GDPPC. The study therefore controlled for FDI, TO and GDPPC in examining the relationship between monetary policy, country-level corporate governance and financial development in African economies.

We measured financial development by domestic credit to the private sector to GDP, while the independent variable (monetary policy) was measured by the stock of money supply to GDP (M2) and inflation by the year-on-year change in the consumer price index. Country-level governance, on the other side, is measured by World Governance Indicators (rule of law, regulatory quality, control of corruption, government effectiveness, voice and accountability and political stability). Nonetheless, to effectively and efficiently realise the above-stated objective and to fully account for fitness of the model developed, the study adopted a number of control variables. The study controls for GDPPC, FDI, and TO.

Estimation technique

To address impending endogeneity problems related to dynamic panel regressions models, the study deployed the General Method of Moments (GMM) estimator popularised by Arellano and Bond (1991) and Blundell and Bond (1998) in estimating the relationship between country-level governance and monetary policy on financial development in sampled African economies over the period 2002–2015. The dynamic GMM method is the most efficient for two main reasons. Firstly, the dynamic GMM method exercises direct control of endogeneity problems caused by the independent variables. Secondly, it is efficient if the study's time period is shorter than the cross-section observation (Roodman 2006). The time period considered in this study is 14 years and 37 African

economies were included. To ensure whether the estimation is consistent, the study applied the Arellano and Bond test of second-order serial correlation with the disturbance term (Arellano & Bond 1991). The study used the first lags of the variables as instruments to address possible endogeneity issues. Finally, Sargan's test was conducted to ensure that the instruments included were not correlated with the error term.

Ethical considerations

This article followed all ethical standards for a research without direct contact with human or animal subjects.

Results and discussions

Table 1 presents the descriptive statistics for the 37 sampled economies in Africa for the period 2002–2015. From Table 1, the average level of financial development for the sampled 37 African economies is 25.1% of GDP with a degree of variability of 25.9%. This mean is characterised by a median, maximum and a minimum value of 16.5, 160.1 and 2 units, respectively. What is clear is that outliers do not significantly affect the mean of data on domestic access to credit. The mean of broad money supply was about 41.0 units (SD = 26.0). This mean is defined by a minimum of 7.2 units and a maximum value of 131.7 units. The average inflation rate of the sampled economies was 6.8% (SD = 6.5). Inflation records a median, maximum and minimum rate of 5.6, 37.0 and -35.8 units, respectively.

Regarding country-level governance variables, control of corruption reported a mean of -0.5 (SD = 0.6), while the median recorded is -0.6. Control of corruption records a minimum and maximum value of -1.6 and 1.3 units, respectively. Furthermore, government effectiveness of the mean economy is -0.5 units with a standard deviation of 0.6 units. This mean is characterised by a median and range of -0.6 and -1.7 to 1.0 unit, respectively. The average of political stability of the sampled African economies is -0.3 units

TABLE 1: Descriptive statistics.

Variables	Mean	Median	Maximum	Minimum	SD	Observations
FD	25.12	16.52	160.13	2.02	25.84	452
MS	41.02	32.33	131.72	7.22	26.00	452
INFL	6.77	5.63	36.96	-35.84	6.52	452
CC	-0.48	-0.55	1.25	-1.61	0.57	452
GE	-0.53	-0.57	1.04	-1.71	0.58	452
PS	-0.34	-0.19	1.18	-2.51	0.84	452
RL	-0.48	-0.48	1.06	-1.86	0.59	452
RQ	-0.46	-0.46	1.12	-2.11	0.52	452
VA	-0.43	-0.38	0.97	-1.94	0.67	452
FDI	4.87	2.94	89.48	-5.50	8.53	452
GDPPC	2008.29	714.20	15697.60	78.40	2769.76	452
TO	83.73	73.74	321.63	21.67	43.20	452

Note: The table presents the descriptive statistics for the 37 sampled African economies from 2002 to 2015. These economies include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Cote D'Ivoire, Egypt, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda and Zambia.

FD, financial development; CC, control of corruption; GE, governments effectiveness; PS, political stability; RL, rule of law; RQ, regulatory quality; VA, voice and accountability; FDI, foreign direct investment; GDPPC, gross domestic product per capita; TO, trade openness.

(SD = 0.8). However, political stability recorded a minimum and maximum value of -2.5 and 1.2 units, respectively, while recording a median value of -0.2 units. Rule of law and regulatory quality, on the contrary, recorded equal means and median of -0.5 units and standard deviations of 0.6 and -0.5 units, respectively. This implies that data on rule of law and regulatory quality are not characterised by extreme values. Voice and accountability of the sampled African economies recorded an equal mean and median values of -0.4 units (SD = 0.7), respectively. This mean is characterised by a range of -1.9 to 1.0 units, respectively. The control variables – FDI, GDPPC and TO – recorded mean values of 4.9%, 2008 and 83.7%, respectively, as well as a median score of 2.9, 714.2 and 73.7 units, respectively. These mean and median values attest that the performance of the sampled African economies as far as these macroeconomic variables are concerned for the period under consideration is arguably satisfactory.

Correlation matrix results

Table 2 presents a correlation matrix for financial development, monetary policy variables and country-level governance variables as well as the control variables. It can be observed that most of the independent variables displayed weak-to-moderate correlation precisely below 0.7 with financial development. Specifically, the study documents a positive relationship between financial development and institutional structures (rule of law, regulatory quality, voice and accountability, control of corruption, property rights and political stability). Again, the correlation matrix shows a positive association between financial development and money supply, but displayed a negative relationship between financial development and inflation.

It is obvious from Table 2 that monetary policy and country-level governance variables displayed weak negative and positive correlation recording coefficients below 0.60 with financial development. Particularly, it could be observed that

TABLE 2: Correlation matrix baseline results.

Variable	FD	MS	INFL	CC	GE	PS	RL	RQ	VA	FDI	GDPPC	TO
FD	1.00	-	-	-	-	-	-	-	-	-	-	-
MS	0.62	1.00	-	-	-	-	-	-	-	-	-	-
INFL	-0.13	-0.16	1.00	-	-	-	-	-	-	-	-	-
CC	0.47	0.48	-0.07	1.00	-	-	-	-	-	-	-	-
GE	0.61	0.55	-0.05	0.86	1.00	-	-	-	-	-	-	-
PS	0.23	0.25	-0.12	0.70	0.63	1.00	-	-	-	-	-	-
RL	0.50	0.55	-0.07	0.88	0.90	0.75	1.00	-	-	-	-	-
RQ	0.58	0.38	-0.06	0.75	0.86	0.56	0.83	1.00	-	-	-	-
VA	0.40	0.28	0.04	0.72	0.70	0.57	0.73	0.69	1.00	-	-	-
FDI	-0.09	-0.03	0.11	0.04	-0.07	0.03	-0.04	-0.12	0.05	1.00	-	-
GDPPC	0.26	0.31	-0.12	0.33	0.33	0.37	0.27	0.10	0.05	0.04	1.00	-
TO	-0.00	0.21	0.08	0.27	0.10	0.25	0.14	-0.09	0.10	0.36	0.36	1.00

Note: The table presents the correlation matrix for financial development and the independent variables for the 37 sampled African economies from 2002 to 2015. These economies include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Cote D'Ivoire, Egypt, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda and Zambia.

MS, money supply; FD, financial development; CC, control of corruption; GE, governments effectiveness; PS, political stability; RL, rule of law; RQ, regulatory quality; VA, voice and accountability; FDI, foreign direct investment; GDPPC, gross domestic product per capita; TO, trade openness.

country-level governance variables and money supply have a positive correlation with financial development, while inflation and some of the control variables have a negative correlation with financial development.

However, the correlation between some of the variables is relatively high. Nonetheless, the relationship between government effectiveness and control of corruption, rule of law and control of corruption, regulatory quality and government effectiveness, among others, fall within a range of 0.70–0.9. However, addressing the severity of multicollinearity, Bryman and Cramer (2001) argued that multicollinearity exists if the correlation between variables exceeds 0.80. Also, Anderson, Sweeney and Williams (1990) suggested 0.70. Nonetheless, Kennedy (2008) contend that the correlation between variables of interest is high when it is above 0.80 or 0.90. Adopting the position of Kennedy (2008), the standard of multicollinearity is set at 0.90, thereby concluding that there is no multicollinearity existing between the variables of interest.

Money supply and financial development baseline result

Table 3 presents the results of the relationship between money supply and financial development in Africa. The first column displays the acronyms of the variables as they have been explained below Table 3. The second column (model 1) shows the results of the relationship between money supply and financial development. Finally, column 3 (model 2) highlights the results of the relationship between inflation and financial development within sampled African economies. The regression results were estimated by controlling for FDI, GDPPC and TO. Furthermore, statistical significance of the variables is pegged at 1%, 5% and 10% level of significance. An insignificant probability (*J*-statistics) results of 0.72 and 0.45 resulting from the estimation of the relationship between money supply and financial development and inflation and financial development, respectively, suggest that there is no overriding identity, hence the instruments deployed in the estimation are efficient and do not correlate with the error term. Likewise, an insignificant AR (2) values of 0.58 and 0.40 resulting from the estimation of the relationship between money supply and financial development inflation and financial development, respectively, imply that there is no serial or autocorrelation.

Money supply and financial development in African economies

The results presented in model 1, as shown in Table 4, signify that at 1% significant level of confidence, money supply has a significant positive relationship with financial development within the sampled African economies. Specifically, a unit increase in money supply results in a 0.375 unit increase in financial development within the sampled African economies from 2002 to 2015. The study therefore fails to reject the hypothesis that money supply has a significant positive relationship with financial development within the

TABLE 3: The interaction between country-level governance and money supply.

Eq name	01	02	03	04	05	06
FD(-1)	0.35 (0.02)**	0.35 (0.02)**	0.37 (0.03)**	0.38 (0.03)**	0.35 (0.02)**	0.42 (0.03)**
MS	0.14 (0.02)**	0.10 (0.04)**	0.16 (0.03)**	0.14 (0.03)**	0.12 (0.03)**	0.10 (0.03)**
FDI	0.03 (0.05)	0.04 (0.04)	-0.01 (0.05)	0.01 (0.04)	0.09 (0.05)	0.04 (0.05)
GDPPC	0.001 (0.00)	0.001 (0.00)**	0.001 (0.00)	0.001 (0.00)	0.001 (0.00)*	0.001 (0.01)
TO	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.03 (0.02)	-0.01 (0.01)
Period dummy	0.28 (0.14)	0.35 (0.13)**	0.38 (0.14)**	0.35 (0.13)**	0.13 (0.12)	0.48 (0.27)
MS × CC	-0.10 (0.03)**	-	-	-	-	-
MS × GE	-	-0.14 (0.04)**	-	-	-	-
MS × PS	-	-	-0.03 (0.02)	-	-	-
MS × RL	-	-	-	-0.05 (0.04)	-	-
MS × RQ	-	-	-	-	-0.06 (0.03)*	-
MS × VA	-	-	-	-	-	-0.06 (0.02)*
Observations	381	381	381	381	381	381
AR (2)	0.99	0.99	0.59	0.89	0.99	0.99
Sargan	0.46	0.51	0.60	0.53	0.74	0.74
Cross-sections	37	37	37	37	37	37

Note: The table presents the results of the sample used in the analysis. The sample includes the period of 2002–2015. These economies include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Cote D'Ivoire, Egypt, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda and Zambia. Values in brackets are probability values; values other than those in brackets represent the coefficient values.

FD(-1), financial development lag one; MS, money supply; CC, control of corruption; GE, governments effectiveness; PS, political stability; RL, rule of law; RQ, regulatory quality; VA, voice and accountability; FDI, foreign direct investment; GDPPC, gross domestic product per capita; TO, trade openness.

***Significant at 1%; **significant at 5%; *significant at 10%. The standard errors are in parenthesis.

sampled African economies. This implies that empirically economies that embark on expansionary money supply are at the advantage of expanding access to credit by the private sector within the 37 sampled African economies. The private sector of an economy is deemed to be the engine of growth and development. This growth is driven by improved access to credit by the private sector. Expansionary money supply enhances domestic access to credit by the private sector. This finding correlates with the findings of Adrian and Shin (2011) where, they argued that, expansionary money supply enhances access to credit by the private sector. Aysun et al. (2013) also contended that the transmission of monetary policy to the real economy is effective through the financial system.

Inflation and financial development in African economies

The results presented in model 2 of Table 4 indicate that at 5% level of significance, inflation has a significant positive relationship with financial development within the sampled African economies. Precisely, a unit increase in inflation results

TABLE 4: The relationship between monetary policy and financial development.

Variables	01	02
FD(-1)	0.37 (0.00)**	0.44 (0.00)**
MS	0.13 (0.00)**	-
INFL	-	0.07 (0.02)*
FDI	0.03 (0.48)	0.02 (0.66)
GDPPC	0.00 (0.50)	-0.00 (0.13)
TO	0.00 (0.73)	0.02 (0.22)
Degree of freedom	381	381
J-statistics	16.93	21.10
Probability (J-statistics)	0.72	0.45
AR (2)	0.58	0.40
Degree of freedom	381	381

Note: The table presents the baseline results of the relationship between money supply and financial development variables for the 37 sampled African economies from 2002 to 2015. These economies include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Cote D'Ivoire, Egypt, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda and Zambia.

MS, money supply; FD(-1), lag one of financial development variables; CIFD, composite index of financial development variables; ACC, access to credit by the private sector; BA, bank assets; BD, banks deposit; LLB, liquid liability of banks; FDI, foreign direct investment; GDPPC, gross domestic product per capita; TO, trade openness.

**, significant at 0.01; *, significant at 0.05. Standard errors are in parenthesis.

in 0.07 unit increase in financial development within the sampled African economies from 2002 to 2015. The study therefore fails to reject the hypothesis that inflation has a significant relationship with financial development within the sampled African economies. This means that higher inflation promotes financial development within the sampled African economies from 2002 to 2015. The classical economic thinkers were of the view that inflation is mainly detrimental to many economic outcomes as it amounts to depletion of wealth (Altig 2003). However, the association between inflation and economic outcomes can be linear. The relationship between inflation and financial development can be either negative or positive depending on whether or not money is an alternative to capital (Mundell 1965; Tobin 1965) or to complement capital (Stockman 1981; Fischer 1983). The latter suggests a negative influence of inflation on financial development and the former suggests a positive effect.

In contrast, Fischer (1993) proposes that the association between inflation and economic growth is rather a non-linear one; the relationship between inflation and growth is positive below a particular threshold of inflation, and negative above the said threshold. The findings support the assertion of Fischer (1993) that the average inflation of the sampled African economies falls below the average threshold. Moreover, the result suggests that a rise in inflation would cause banks to resort to innovations and the creation of new products to make up for the harmful effect of the inflation on credit growth. Banks increase the productivity of their capital when they operate as brokers; invest in products such as mutual, shares and pension funds; and engage in insurance services (Valverde, Paso & Fernández 2007).

Country-level governance and financial development

Table 5 highlights the results on the relationship between governance indicators and financial development by using the dynamic panel data GMM estimator and employing the lags of the explanatory variables as instrumental variables. The second column shows the results of the relationship between control of corruption and financial development, the third column displays the results of the relationship between government effectiveness and financial development, the fourth column presents the results of the relationship between political stability and financial development, the fifth column (model 4) highlights the results of the relationship between rule of law and financial development and the sixth column shows the results of the relationship between regulatory quality and financial development. Finally, column 7 highlights the results of the relationship between voice and accountability and financial development within the sampled African economies.

An insignificant probability (*J*-statistics) results of 0.32, 0.46, 0.44, 0.49, 0.57 and 0.47 generated from the estimation of the relationship between control of corruption, government effectiveness, political stability, rule of law, regulatory quality, voice and accountability and financial development respectively

TABLE 5: Country-level governance and financial development.

Variables	01	02	03	04	05	06
FD(-1)	0.44 (0.00)***	0.44 (0.00)***	0.44 (0.00)***	0.46 (0.00)***	0.44 (0.00)***	0.49 (0.00)***
CC	-4.23 (0.01)***	-	-	-	-	-
RL	-	-0.44 -0.75	-	-	-	-
PS	-	-	1.49 -0.27	-	-	-
GE	-	-	-	-0.49 (0.00)***	-	-
RQ	-	-	-	-	-2.93 (0.00)***	-
VA	-	-	-	-	-	-3.94 (0.02)***
FDI	0.06 -0.26	0.01 -0.85	0.06 -0.24	0.03 -0.48	0.06 -0.18	0.02 -0.71
GDPPC	0.00 (0.05)*	0.00 (0.03)**	0.00 (0.05)*	0.00 (0.05)**	0.00 (0.01)***	0.00 (0.04)**
TO	0.03 (0.01)***	0.02 -0.20	0.02 -0.27	0.02 -0.20	0.02 (0.06)*	0.01 -0.58
Observ.	377	377	377	377	377	377
Sargan	0.32	0.46	0.44	0.49	0.57	0.47
AR (2)	0.19	0.22	0.14	0.10	0.24	0.21
Cross-section	37	37	37	37	37	37

Note: The table presents the results of the sample used in the analysis. The sample includes the period of 2002–2015. These economies include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Cote D'Ivoire, Egypt, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda and Zambia. Values in brackets are probability values; values other than those in brackets represent the coefficient values.

FD(-1), financial development lag one; CC, control of corruption; GE, governments effectiveness; PS, political stability; RL, rule of law; RQ, regulatory quality; VA, voice and accountability; FDI, foreign direct investment; GDPPC, gross domestic product per capita; TO, trade openness.

***, significant at 1%; **, significant at 5%; *, significant at 10%.

suggest that there is no overriding identity, hence the instruments deployed in the estimation are efficient and do not correlate with the error term. Likewise, insignificant AR (2) values of 0.19, 0.22, 0.14, 0.10, 0.24 and 0.21 resulting from the estimation of the relationship between control of corruption, government effectiveness, political stability, rule of law, regulatory quality, voice and accountability and financial development respectively imply that there is no serial or autocorrelation. Table 6, however, presents the empirical findings of relationship between country-level governance and financial development for the sampled African economies from 2002 to 2015.

Control of corruption and financial development in African economies

The results displayed in model 1 of Table 5 indicate that at 1% significant level control of corruption has a significant negative relationship with financial development within the sampled African economies. Specifically, a unit increase in control of corruption results in 4.23 unit decrease in financial development within the sampled African economies from 2002 to 2015. The study therefore fails to reject the hypothesis that there is a significant relationship

TABLE 6: The interaction between country-level indicators and inflation towards financial development.

Eq name	01	02	03	04	05	06
FD(-1)	0.47 (0.04)**	0.47 (0.03)**	0.44 (0.04)**	0.44 (0.03)**	0.45 (0.03)**	0.49 (0.05)**
INFL	-0.03 (0.06)	-0.01 (0.05)	0.07 (0.06)	0.04 (0.06)	-0.03 (0.06)	-0.06 (0.05)
FDI	0.05 (0.05)	0.04 (0.06)	0.02 (0.05)	0.04 (0.07)	0.03 (0.06)	0.05 (0.07)
GDPPC	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
TO	0.03 (0.02)	0.02 (0.01)	0.02 (0.02)	0.03 (0.02)	0.03 -0.02	0.03 -0.02
Period dummy	0.27 (0.27)	0.34 (0.28)	0.35 (0.35)	0.54 (0.27)*	0.35 (0.30)	0.24 (0.34)
INFL × CC	-0.19 (0.06)**	-	-	-	-	-
INFL × GE	-	-0.15 (0.08)*	-	-	-	-
INFL × PS	-	-	-0.04 (0.06)	-	-	-
INFL × RL	-	-	-	-0.08 (0.10)	-	-
INFL × RQ	-	-	-	-	-0.16 (0.08)*	-
INFL × VA	-	-	-	-	-	-0.29 (0.08)**
Observations	381	381	381	381	381	381
AR (2)	0.40	0.05	0.89	0.74	0.99	0.99
Sargan	0.65	0.61	0.48	0.43	0.51	0.83
Cross-sections	37	37	37	37	37	37

Note: The table presents the results of the sample used in the analysis. The sample includes the period of 2002–2015. These economies include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Cote D'Ivoire, Egypt, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda and Zambia.

FD(-1), financial development lag one; INFL, inflation; CC, control of corruption; GE, governments effectiveness; PS, political stability; RL, rule of law; RQ, regulatory quality; VA, voice and accountability; FDI, foreign direct investment; GDPPC, gross domestic product per capita; TO, trade openness.

**, Significant at 0.01; *, significant at 0.05. The standard errors are in parenthesis.

between control of corruption and financial development within the sampled African economies.

This result means that empirically the level of control of corruption within the sampled African economies is not strong enough to result in financial development as it is empirically evident that control of corruption deters financial development. African economies are characterised by institutionalised corruption and any attempt to control it could result in an exercise in futility. It is argued that the level of control of corruption of the sampled African economies is very low relative to other advanced economies that score higher rating regarding control of corruption. The result, however, is similar to the findings of Brooks (2016) where he found that corruption has a significant positive influence on stock market growth. Ahlin and Pang (2008) found that corruption increases stock market liquidity, which, in turn, leads to financial development.

Rule of law and financial development in African economies

The results presented in model 2 of Table 5 signify that rule of law has an insignificant but negative relationship with financial development within the sampled African economies. The study therefore rejects the hypothesis that there is a significant positive relationship between rule of law and financial development within the sampled African economies. This result means that the degree of rule of law does not play any role in influencing the decision of banks to grant credit to the private sector in the sampled African economies. Practically, the rules of society, quality of contract enforcement, property right and the likelihood of crime and violence do not play any significant role in the decision of domestic banks to grant credit to the private sector. This is because it is believed that domestic banks are well informed about the characteristics of the legal environment and the nature of clients they are dealing with and that these issues would not be of relevance to them but to foreign investors who have little or no knowledge about the domestic business and legal environment.

Political stability and financial development in African economies

The results, as shown in model 3 of Table 5, indicate that there is an insignificant but positive relationship between political stability and financial development within the sampled African economies. The study therefore rejects the hypothesis that there is a significant positive relationship between political stability and financial development within the sampled African economies. This result means that political stability within an economy does not affect banks' decision to grant credit to the private sector.

This result implies that in the quest to grant credit to the private sector of the sampled economies, domestic banks do not put a premium on the likelihood of politically motivated

violence as well as terrorism. This is because the level of political stability has improved in recent times relative to the level of political instability that has characterised African economies about some two decades ago. This great improvement in political stability could explain the level of confidence banks within the sampled African economies instil in the domestic economy. Because of the complex nature of political risk, a country risk analysis would be relevant to the foreign investors.

Government effectiveness and financial development in African economies

The results presented in model 4 of Table 6 signify that at 1% significant level of confidence government effectiveness has a significant negative relationship with financial development within the sampled African economies. Specifically, a unit rise in government effectiveness leads to 0.49 units decrease in financial development within the sampled African economies from 2002 to 2015. The study therefore rejects the hypothesis that there is a significant positive relationship between government effectiveness and financial development within the sampled African economies. This result contradicts the expected *a priori* expectation of a positive relationship. This result means that the level of government effectiveness within the sampled African economies is not strong enough to trigger credit growth.

What is obvious is that the mean economy of government effectiveness within the sampled African economy is -0.53 units on a scale of 2.5 units, which is relatively low given that it is not up to zero. This result displays the ineffectiveness and poor governance of African countries by political office holders. Fan, Fui and Zhao (2008) contend that firms in economies that are poorly governed have higher transaction and agency costs relative to economies that are characterised by sound governance structure. Higher transaction and agency costs deter financial development.

Regulatory quality and financial development in African economies

The results presented in model 5 of Table 6 indicate that at 1% level of significance regulatory quality has a significant negative relationship with financial development within the sampled African economies. Precisely, a unit increase in regulatory quality leads to 2.93 units fall in financial development within the sampled African economies from 2002 to 2015. The study therefore rejects the hypothesis that there is a significant positive relationship between regulatory quality and financial development in the sampled African economies. The result is contrary to the *a priori* expectation of a positive relationship. Although the relationship between regulatory quality and financial development in African economies is significant, it is negative, indicating that high level of regulatory quality inversely induces domestic credit growth in African economies.

Perhaps, political meddling in the formulation and implementation of regulations could explain the negative

effect of regulatory quality on financial development. It is expected that regulatory bodies should be independent and autonomous devoid of any form of political influence in the delivery of their duties (Cook et al. 2004). Hence, it is likely that economies that are characterised by consistent political interference in the work regulatory bodies could experience a low level of financial development. In addition, it could be reasoned that the sampled African economies are characterised by unwarranted regulatory burden, unpredictable policies and lack of commitment on the part of the regulatory institutions. These occurrences reduce the confidence investors have in an economy and eventually deter financial development (Daude & Stein 2007).

Government effectiveness and financial development in African economies

The results shown in model 6 of Table 6 indicate that at a 5% level of confidence voice and accountability has a significant negative relationship with financial development within the sampled African economies. Particularly, a unit rise in voice and accountability leads to a 3.94 units decrease in financial development within the sampled African economies from 2002 to 2015. The study therefore fails to reject the hypothesis that there is a significant negative relationship between effective voice and accountability and financial development within the sampled African economies. This result is consistent with the expected *a priori* expectation of a negative relationship. This result means that higher level of voice and accountability within the sampled African economies deters credit growth.

It is argued that voice and accountability weaken the bargaining powers of foreign investors and private firms that bring in fresh capital for investment. These activities could perhaps discourage financial development. Consequently, voice and accountability could possibly increase the synergy of 'unskilled workers' voices' against private investors and firms within an economy, and this, in turn, affects credit delivery and growth. This result supports the findings of Li and Resnick (2003) that 'pluralism' is negatively related to the dominance of foreign firms in an economy. Similarly, Jadhav and Katti (2012) found that voice and accountability have significant negative relationship with financial development.

Discussions on the controlled variables in models 1, 2 and 3

Regarding the result produced for the control variables as far as Table 3 is concerned, the study reported an insignificant relationship between FDI, TO and GDPPC on financial development in all instances. Also, the study recorded an insignificant positive relationship between FDI and financial development in all instances while recording an insignificant relationship between TO and financial development in some instances and a significant negative relationship between GDPPC and financial development.

Finally, as far as Tables 4 and 5 are concerned, the study recorded an insignificant positive relationship between FDI and financial development in all instances while recording a significant negative relationship between GDPPC and financial development and an insignificant relationship between TO and financial development in some instances.

Added to the above, previous years' financial development FD (-1) has a role to play in influencing the current year's financial development in African economies. This is because the lag of financial development FD (-1) has been observed to have a significant relationship with financial development.

Interaction between country-level governance variables and money supply and financial development

This section presents the regression results of model 3 in Table 3 highlights the results of model 3 (see Chapter 3) by adopting the efficient dynamic panel data GMM estimator and employing the lags of the explanatory variables as instrumental variables. The first column (variables) displays the acronyms of the variables as they have been explained below Table 6. The second column (model 1) shows the results of the interaction between control of corruption and money supply and financial development; the third column (model 2) displays the results of the interaction between government effectiveness and money supply and financial development; the fourth column (model 3) presents the results of the interaction between political stability and money supply and financial development; the fifth column (model 4) highlights the results of the interaction between rule of law and money supply and financial development; and the sixth column (model 5) shows the results of the interaction between regulatory quality and money supply and financial development. Finally, column 7 (model 6) highlights the results of the interaction between voice and accountability and money supply and financial development in the sampled African economies.

Insignificant probability probability (J-statistics) values 0.32, 0.33, 0.43, 0.38, 0.51 and 0.49 units produced from the estimation of the relationship between interaction between control of corruption, government effectiveness, political stability, rule of law, regulatory quality, voice and accountability and financial development, respectively, suggest that there is no overriding identity, hence the instruments deployed in the estimation are efficient and do not correlate with the error term.

Likewise, insignificant AR (2) values of 0.99, 0.43, 0.23, 0.26, 0.91 and 0.26 units resulting from the estimation of the relationship between the interaction of control of corruption, government effectiveness, political stability, rule of law, regulatory quality, voice and accountability and financial development, respectively, imply that there is no serial or autocorrelation. Table 3, however, presents the empirical findings of relationship between the interaction between

country-level governance variables and money supply and financial development for the sampled African economies from 2002 to 2015.

Interaction between country-level governance variables and money supply towards financial development

Column 2 (01) of Table 3 presents the results of the relationship between money supply and control of corruption ($MS \times CC$) and financial development. The results indicate that at a significant level of 1% the interaction between control of corruption and money supply has a negative significant relationship with financial development. This means control of corruption and money supply are substitutes in inducing financial sector development. If African countries can reduce corruption, there will be no need for manipulation of the level of money supply in promoting financial sector development. Corruption can increase leakages in financial intermediation and that can be injurious to financial sector development in Africa.

Furthermore, column 3 (02) of Table 3 highlights the results of the relationship connecting the interaction between money supply and government effectiveness ($MS \times GE$) and financial development. The results indicate that at 1% level of significance, the interaction between government effectiveness and money supply has a negative significant relationship with financial development. This implies that the quality of public sector effectiveness and the quantity of money supply are substitutes in inducing financial sector development. To promote effective intermediation, African countries must improve the quality of the public services even when monetary instruments cannot be manipulated to achieve that end.

Likewise, column 6 (05) of Table 3 shows the results of the model linking the interaction between money supply and regulatory quality ($MS \times RQ$) and financial development. The results indicate that at 1% level of significance regulatory quality support a negative relationship between money supply and financial development. The result shows that if regulatory quality improves in Africa, a fall in money supply will still enable the financial sector to improve financial intermediation that will channel more credit to the private sector.

Finally, column 5 (06) of Table 3 presents the results of the model relating the interaction between money supply and voice and accountability ($MS \times VA$) and financial development. The results indicate that at 1% level of confidence voice and accountability supports a negative relationship between money supply and financial development. This implies that voice and accountability and the level of money supply at a time are substitutes in promoting financial sector development. If society becomes outspoken and holds policymakers accountable, then the financial sector leakages will minimise even in the wake of reduction in money supply. This supports

the view by Pagano (1993) that strong institutions reduce leakages in financial intermediation and induce financial sector development.

Column 2 (01) of Table 6 presents the results of the model relating the interaction between inflation and control of corruption ($INFL \times CC$) and financial development. The results point out that at 1% level of significance control of corruption supports a negative relationship between inflation and financial development. This implies that during a period of high inflation reduction in corruption will induce greater financial market development and credit availability.

Column 3 (02) of Table 6 presents the results of the model connecting the interaction between inflation and government effectiveness ($INFL \times GE$) and financial development. The results indicate that at 5% level of significance government effectiveness maintains a negative relationship between inflation and financial development in African economies. Inflation and the quality of the public sector are substitutes in inducing financial sector development. This means that in times of increases in the general price level, the effectiveness of the public sectors will improve financial sector development. This is especially true when the public sector activities do not influence leakages in financial intermediation.

Likewise, column 6 (05) of Table 6 highlights the results of the model linking the interaction between inflation and regulatory quality ($INFL \times RQ$) and financial development. The results indicate that at 5% level of significance regulatory quality supports a negative relationship between inflation and financial development in African economies. Again, regulatory quality and inflation are substitutes in inducing financial sector developments. If regulations are sound to the extent that they promote a free business environment, the financial sector in Africa will develop in the wake of rising prices.

Similarly, column 7 (06) of Table 3 presents the results of the model relating the interaction between inflation and voice and accountability ($INFL \times VA$) and financial development. The results indicate that at 1% level of significance voice and accountability supports a negative relationship between inflation and financial development in African economies. This implies that voice or accountability and inflation are substitutes in inducing financial sector development in Africa.

Conclusion

The study employs two monetary policy variables (money supply and inflation) and six country-level governance variables (rule of law, government effectiveness, regulatory quality, voice, accountability, control of corruption and political stability) and assesses how improvement in these variables could enhance the level of financial development in African economies. The results revealed that there is a significant positive relationship between money supply, inflation and financial development. These findings corroborate the assertion that expansionary money supply

and inflation positively influence financial development in African economies. However, the study documents a significant negative relationship between government effectiveness, regulatory quality, voice, accountability, control of corruption and financial development in African economies. This is an indication that the level of institutional quality in the sampled African economies is not strong enough to trigger a positive cause of financial development. It is also argued that African countries have good legal systems; however, the enforcement of these laws becomes problematic because of political interferences in the work of the law enforcement agencies. It can also be concluded that overburdened regulatory, unpredictable policies and lack of commitment on the part of the government to enforce regulation accounted for the negative effect of country-level governance on financial development in the sampled African economies. These occurrences reduce the level of confidence banks have in an economy and this can eventually deter their ability to grant credit to the private sector to embark on economic activities. Furthermore, political stability and the rule of law have been observed to have an insignificant relationship with financial development. This shows that the level of political stability and rule of law do not influence banks' decision to provide credit to the private sector in the sampled African economies.

Recommendation

There is the need for the central banks in African economies to consistently increase the amount of money supply without the fear of inflation because it is obvious from the results of the study that inflation increases the level of credit banks granted to the private sector to aid in financial activities to support economic growth. Likewise, financial institutions in African economies should consider decreasing their interest rate on lending to encourage borrowing from the private sector. In this regard, the government should consider improving institutional, legal and regulatory framework to allow financial institutions to efficiently perform their roles devoid of financial friction. Political interference in the formulation, implementation and evaluation of regulations deters financial development. Hence, law enforcement agencies should intervene to uphold the independence and autonomy mandate of state institutions. Also, governments of the sampled economies should encourage a regulatory framework that is consistent with international best practices, realistic and easy to comply with.

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Data availability statement

For readers who are interested in the dataset, it will be made available by contacting the corresponding author.

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References

- Acemoglu, D., Johnson, S. & Robinson, J., 2004, *Institutions as the fundamental cause of long-run growth*, NBER Working Paper 10481, National Bureau of Economic Research, Cambridge, MA.
- Acemoglu, D., Johnson, S. & Robinson, J.A., 2001, 'The colonial origins of comparative development: An empirical investigation', *American Economic Review* 91, 1369–1401. <https://doi.org/10.1257/aer.91.5.1369>
- Adrian, T. & Shin, S.H., 2011, 'Financial intermediary balance sheet management', *Annual Review of Financial Economics* 3(1), 289–307. <https://doi.org/10.1146/annurev-financial-102710-144915>
- Aggarwal, R., Demirgüç-Kunt, A. & Martínez Pería, M.S., 2010, 'Do remittances promote financial development?', *Journal of Development Economics* 96(2), 255–264. <https://doi.org/10.1016/j.jdeveco.2010.10.005>
- Ahlin, C. & Pang, J., 2008, 'Are financial development and corruption control substitutes in promoting growth?', *Journal of Development Economics* 86(2), 414–433. <https://doi.org/10.1016/j.jdeveco.2007.07.002>
- Aisen, A. & Franken, M., 2010, *Bank credit during the 2008 financial crisis: A cross-country comparison*, International Monetary Fund Working Paper, No. 10/47, International Monetary Fund, Washington DC.
- Alpanda, S. & Aysun, U., 2012, 'Global banking and the balance sheet channel of monetary transmission', *International Journal of Central Banking* 8(3), 141–175.
- Altig, D., 2003, 'What is the right inflation rate?', in *Economic commentary. Federal Reserve Bank of Cleveland*, September, 15.
- Amidu, M., 2006, 'The link between monetary policy and banks' lending behaviour: The Ghanaian Case', *Banks and Bank Systems* 1(4), 37–48.
- Anderson, D.R., Sweeney, D.J. & Williams, T.A., 1990, *Introduction to statistics: Concepts and applications*, West Pub, St. Paul, MN.
- Arellano, M. & Bond, S., 1991, 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations', *Review of Economic Studies* 58, 277–297.
- Arestis, P. & Demetriades, P., 1997, 'Financial development and economic growth: Assessing the evidence', *The Economic Journal* 107(442), 783–799. <https://doi.org/10.1111/j.1468-0297.1997.tb00043.x>
- Arestis, P., 1992, *The Post-Keynesian approach to economics*.
- Aysun, U., Brady, R. & Honig, A., 2013, 'Financial frictions and the strength of monetary transmission', *Journal of International Money and Finance* 32, 1097–1119. <https://doi.org/10.1016/j.jimonfin.2012.09.003>
- Azariadis, C. & Smith, B., 1996, 'Private information, money, and growth: Indeterminacy, fluctuations, and the Mundell-Tobin effect', *Journal of Economic Growth* 1, 309–332. <https://doi.org/10.1007/BF00141041>
- Beck, T., 2003, *Financial development and international trade. Is there a link?* The World Bank Group Working Paper, No. 2608.
- Beck, T., Demirgüç-Kunt, A. & Levine, R., 2003, 'Law, endowments, and finance', *Journal of Financial Economics* 70(2), 137–181. [https://doi.org/10.1016/S0304-405X\(03\)00144-2](https://doi.org/10.1016/S0304-405X(03)00144-2)
- Beck, T., Levine, R. & Loayza, N., 2000, 'Finance and the sources of growth', *Journal of Financial Economics* 58(2), 261–300. [https://doi.org/10.1016/S0304-405X\(00\)00072-6](https://doi.org/10.1016/S0304-405X(00)00072-6)
- Bernanke, B.S. & Blinder, A.S., 1988, 'Credit, money, and aggregate demand', *The American Economic Review* 78(2), 435–439. <https://doi.org/10.3386/w2534>
- Blundell, R. & Bond, S., 1998, 'Initial conditions and moment restrictions in dynamic panel data', *Journal of Econometrics* 87, 115–144. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8)
- Boyd, J.H., Levine, R. & Smith, B.D., 1996, *Inflation and financial market performance*, Working paper 573D, Pennsylvania State University, Pennsylvania.
- Boyd, J.H., Levine, R. & Smith, B.D., 2001, 'The impact of inflation on financial sector performance', *Journal of Monetary Economics* 47(2), 221–248. [https://doi.org/10.1016/S0304-3932\(01\)00049-6](https://doi.org/10.1016/S0304-3932(01)00049-6)
- Brooks, G., 2016, *Criminology of corruption: Theoretical approaches*, Springer.

- Bryman, A. & Cramer, D., 2001, *Quantitative data analysis with SPSS release 10 for windows: A guide for social scientists*, Routledge, London. <https://doi.org/10.4324/9780203471548>
- Calderon, C. & Kubota, M., 2012, *Gross inflows gone wild: Gross capital inflows, credit booms and crises*, World Bank Policy Research Working Paper No. 6270. World Bank, Washington.
- Calza, A., Gartner, C. & Sousa, J., 2001, *Modelling the demand for loans to the private sector in the Euro area*, pp. 1–33, ECB Working Paper No. 55, European Central Bank, Frankfurt.
- Calza, A., Manrique, M. & Sousa, J., 2003, 'Aggregate loans to the Euro area private sector', *ECB Working Papers Series*, No. 202, European Central Bank, Frankfurt.
- Caprio, G. & Honohan, P., 2001, *Finance for growth: Policy choices in a volatile world*, vol. 1, World Bank.
- Cetorelli, N. & Goldberg, L., 2012, 'Banking globalization and monetary transmission', *Journal of Finance* 67(5), 1811–1843. <https://doi.org/10.1111/j.1540-6261.2012.01773.x>
- Ciccarelli, M., Maddaloni, A. & Peydró, J.L., 2015, 'Trusting the bankers: A new look at the credit channel of monetary policy', *Review of Economic Dynamics* 18(4), 979–1002. <https://doi.org/10.1016/j.red.2014.11.002>
- Cook, P., Kirkpatrick, C., Minogue, M. & Parker, D. (eds.), 2004, *Competition and regulation in developing countries*, Edward Elgar, Cheltenham.
- Cottarelli, C., Dell'Ariccia, G. & Vladkova-Hollar, L., 2005, 'Early birds, late risers and sleeping beauties: Bank credit growth to private sector in Central and Eastern Europe and in the Balkans', *Journal of Banking and Finance* 29(1), 83–104. <https://doi.org/10.1016/j.jbankfin.2004.06.017>
- Daude, C. & Stein, E., 2007, 'The quality of institutions and foreign direct investment', *Economics and Politics* 19(3), 317–344.
- Demetriades, P. & Law, S., 2004, *Finance, institutions and economic growth*, Working paper No. 04/5, Department of Economics, University of Leicester, Leicester.
- Demircug-Kunt, A. & Maksimovic, V., 1998, 'Law, finance, and firm growth', *Journal of Finance* 53, 2107–2137. <https://doi.org/10.1111/0022-1082.00084>
- Égert, B., Backé, P. & Zumer, T., 2006, 'Credit growth in central and eastern Europe new (over)shooting stars?', *ECB Working Paper Series No 687/October 2006*, European Central Bank, Frankfurt.
- Elekdag, S. & Wu, Y., 2011, *Rapid credit growth: Boon or boom-bust?*, IMF Working Papers 11/241, International Monetary Fund, Washington, DC.
- Fan, J.P.H., Rui, O.M. & Zhao, M., 2008, 'Public governance and corporate finance: Evidence from corruption cases', *Journal of Comparative Economics* 36(3), 343–364. <https://doi.org/10.1016/j.jce.2008.05.001>
- Fischer, S., 1993, 'The role of macroeconomic factors in growth', *Journal of Monetary Economics* 32, 485–511. [https://doi.org/10.1016/0304-3932\(93\)90027-D](https://doi.org/10.1016/0304-3932(93)90027-D)
- Frankel, J. & Romer, D., 1990, 'Does trade cause growth?', *American Economic Review* 89(3), 379–399. [https://doi.org/10.1016/0014-6963\(90\)00033-7](https://doi.org/10.1016/0014-6963(90)00033-7)
- Gerschenkron, A., 1962, *Economic backwardness in historical perspective: A book of essays* (No. 330.947 G381), Belknap Press of Harvard University Press, Cambridge, MA.
- Gozgor, G., 2014, 'Determinants of domestic credit levels in emerging markets: The role of external factors', *Emerging Markets Review* 18, 1–18. <https://doi.org/10.1016/j.ememar.2013.11.003>
- Greenwood, J. & Smith, B.D., 1997, 'Financial markets in development, and the development of financial markets', *Journal of Economic Dynamics and Control* 21(1), 145–181. [https://doi.org/10.1016/0165-1889\(95\)00928-0](https://doi.org/10.1016/0165-1889(95)00928-0)
- Gupta, S., Pattillo, C.A. & Wagh, S., 2009, 'Effect of remittances on poverty and financial development in sub-Saharan Africa', *World Development* 37(1), 104–115. <https://doi.org/10.1016/j.worlddev.2008.05.007>
- Han, M.F. & Elekdag, S., 2012, *What drives credit growth in emerging Asia?* (No. 12-43), Washington DC, International Monetary Fund.
- Hernandez, L. & Landerretche, O., 1999, 'Capital inflows, credit booms and macroeconomic vulnerability: The cross-country experience', *Money Affairs* 12(1), 1–69.
- Hofmann, B., 2001, 'The determinants of private sector credit in industrialized countries: Do property prices matter?', *BIS Working Papers* No 108.
- Huang, Y., 2010, *Private investment and financial development in a globalized world; department of land economy*, University of Cambridge, Cambridge, UK.
- Jadhav, P. & Katti, V., 2012, 'Institutional and political determinants of foreign direct investment: Evidence from BRICS economies', *Poverty and Public Policy* 4(3), 49–57. <https://doi.org/10.1002/pop4.5>
- Kennedy, P., 2008, *A guide to econometrics*, 6th edn., Wiley-Blackwell, Malden, CA.
- King, R.G. & Levine, R., 1993, 'Finance, entrepreneurship and growth', *Journal of Monetary Economics* 32(3), 513–542. [https://doi.org/10.1016/0304-3932\(93\)90028-E](https://doi.org/10.1016/0304-3932(93)90028-E)
- Kwakye, J.K., 2012, *Financial intermediation and the cost of credit in Ghana*, Institute of Economic Affairs, Accra.
- La Porta, R., Lopez-de Silanes, F. & Shleifer, A., 2002, 'Investor protection and corporate valuation', *Journal of Financial Economics* 58, 3–27. [https://doi.org/10.1016/S0304-405X\(00\)00065-9](https://doi.org/10.1016/S0304-405X(00)00065-9)
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R.W., 1997, 'Legal determinants of external finance', *Journal of Finance* 52, 1131–1150. <https://doi.org/10.1111/j.1540-6261.1997.tb02727.x>
- Lane, P.R. & McQuade, P., 2013, 'Domestic credit growth and international capital flows', *European Central Bank Working Paper Series*, No. 1566, European Central Bank, Frankfurt.
- Law, S.H., 2009, 'Trade openness, capital flows and financial development in developing economies', *International Economic Journal* 23(3), 409–426. <https://doi.org/10.1080/10168730903268398>
- Levine, R., 1997, 'Financial development and economic growth: Views and agenda', *Journal of Economic Literature* 35, 688–726.
- Li, Q. & Resnick, A., 2003, 'Reversal of fortunes: Democratic institutions and foreign direct investment inflows to developing countries', *International Organization* 57(1), 175–211. <https://doi.org/10.1017/S0020818303571077>
- Ma, Y. & Lin, X., 2016, 'Financial development and the effectiveness of monetary policy', *Journal of Banking & Finance* 68, 1–11. <https://doi.org/10.1016/j.jbankfin.2016.03.002>
- McKinnon, R.I., 1973, *Money and capital in economic development*, Brookings Institution, Washington, DC.
- McKinnon, R.I., 1993, *The order of economic liberalization: Financial control in the transition to a market economy*, JHU Press.
- Mendoza, E.G. & Terrones, M.E., 2008, *An anatomy of credit booms: Evidence from macro aggregates and micro data* (No. w14049), National Bureau of Economic Research, National Bureau of Economic Research, Cambridge, MA.
- Mlachila, M., Cui, L., Jidoud, A., Newiak, M., Radzewicz-Bak, B., Takebe, M. et al., 2016, *Financial development in sub-Saharan Africa: Promoting inclusive and sustainable growth*, International Monetary Fund, Washington, DC.
- Mundell, R.A., 1965, 'Growth, stability, and inflationary finance', *Journal of Political Economy* 73(2), 97–109. <https://doi.org/10.1086/258999>
- Okeahalam, C.C., 2005, 'Institutions and financial market development in the MENA region', *Progress in Development Studies* 5(4), 310–328. <https://doi.org/10.1191/1464993405ps1190a>
- Pagano, M., 1993, 'Financial markets and growth: An overview', *European Economic Review* 37, 613–622. [https://doi.org/10.1016/0014-2921\(93\)90051-B](https://doi.org/10.1016/0014-2921(93)90051-B)
- Peek, J. & Rosengren, E.S., 2013, *The role of banks in the transmission of monetary policy. Public policy discussion paper*, No. 13-5, Federal Reserve Bank of Boston, Boston.
- Perotti, E.C. & Van Oijen, P., 2001, 'Privatization, political risk and stock market development in emerging economies', *Journal of International Money and Finance* 20(1), 43–69. [https://doi.org/10.1016/S0261-5606\(00\)00032-2](https://doi.org/10.1016/S0261-5606(00)00032-2)
- Rajan, R.G. & Zingales, L., 2003, 'The great reversals: The politics of financial development in the twentieth century', *Journal of Financial Economics* 69(1), 5–50. [https://doi.org/10.1016/S0304-405X\(03\)00125-9](https://doi.org/10.1016/S0304-405X(03)00125-9)
- Roe, M.J., 2006, 'Legal origins, politics, and modern stock markets', *Harvard Law Review* 120(2), 460–527. <https://doi.org/10.1016/j.jce.2011.02.001>
- Roe, M.J. & Siegel, J.I., 2011, 'Political instability: Effects on financial development, roots in the severity of economic inequality', *Journal of Comparative Economics* 39(3), 279–309.
- Roodman, D., 2006, *How to do xtabond2: An introduction to 'difference' and 'system' GMM in Stata*, Working Papers 103, Center for Global Development, Washington, DC.
- Sa, S., 2006, 'Capital flows and credit booms in emerging market economies', *Financial Stability Review* 9(3), 49–66.
- Sackey, F.G. & Nkrumah, E.M., 2012, 'Financial sector deepening and economic growth in Ghana', *Journal of Economics and Sustainable Development* 3(8), 122–139.
- Shaw, E., 1973, *Financial deepening in economic development*, Oxford University Press, New York.
- Stanley Fischer, S., 1983, *The economy of Israel*, NBER Working paper No. w1190, SSRN, viewed n.d., from <https://ssrn.com/abstract=305570>
- Stockman, A.C., 1981, 'Anticipated inflation and the capital stock in a cash-in-advance economy', *Journal of Monetary Economics* 8(3), 387–393. [https://doi.org/10.1016/0304-3932\(81\)90018-0](https://doi.org/10.1016/0304-3932(81)90018-0)
- Takats, E., 2010, 'Was it credit supply? Cross-border bank lending to emerging market economies during the financial crisis', *Bank for International Settlements Quarterly Review* 2, 49–56.
- Takyi, P.O. & Obeng, C.K., 2013, 'Determinants of financial development in Ghana', *International Journal of Development and Sustainability* 2(4), 2324–2336.
- Tobin, J., 1965, 'Money and economic growth', *Econometrica* 33(4), 671–684. <https://doi.org/10.2307/1910352>
- Twinoburyo, E.N. & Odhiambo, N.M., 2017, 'Monetary policy and economic growth in Uganda: An empirical investigation', *International Journal of Sustainable Economy* 9(3), 199–212. <https://doi.org/10.1504/IJSE.2017.085050>
- Valverde, S.C. & Fernández, F.R., 2007, 'The determinants of bank margins in European banking', *Journal of Banking & Finance* 31(7), 2043–2063. <https://doi.org/10.1016/j.jbankfin.2006.06.017>
- World Bank, 2017, *World Development Indicators 2017*, World Bank, Washington, DC.
- Wright, M. & Watkins, T., 2010, *Marketing financial services*, Routledge, London.