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Bank-based financial development and investment nexus in Africa: evidence from quantile regression

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Abstract

Purpose – This study examines the nexus between financial development and domestic investment in Sub-Saharan Africa (SSA), considering existing levels of domestic investment.

Design/methodology/approach – The study used a representative sample of 36 SSA economies from 2000 to 2023 and applied the fixed effects (FE) regression, the system generalised method of moments (GMM) and the quantile regression (QR).

Findings – The results show across all estimators that domestic credit, bank credit, private credit, deposit money bank (DMB) assets, liquid liabilities and financial system deposits (FSDs) significantly influence domestic investment in the region. Importantly, the financial development–investment relationship depends on existing domestic investment levels. Bank credit reduces investment in high-investment countries, while domestic credit, bank branches and bank assets promote investment at both low and high levels. Private credit, liquid liabilities and FSDs boost investment only in high-investment countries.

Practical implications – The findings imply that policies to boost domestic investment in SSA must be tailored to country-specific investment levels and the particular dimensions of financial development. Additionally, governments and policymakers in the region should diversify financing sources, such as equity and long-term investment funds, while strengthening both physical and digital financial infrastructure. This targeted approach will improve access to finance, enhance savings mobilisation and foster sustainable capital formation and economic transformation.

Originality/value – The study makes a significant contribution to the literature by incorporating existing levels of domestic investment in SSA—a factor that previous studies have largely overlooked.

Keywords Financial development, Domestic investment, Africa, Panel data analysis

Paper type Research article

1. Introduction

Domestic investment in Sub-Saharan Africa (SSA) is core to sustainable growth and development. Its importance cuts across several dimensions. It is important for the increase in real gross domestic product (GDP) (Abdulle *et al.*, 2025); it boosts employment opportunities (Hoon *et al.*, 2018) and improves aggregate supply that aids economic stability. Despite its importance, SSA economies have had significant challenges in scaling domestic investment. Data from the World Bank (2025a), as revealed in Supplementary Figure A1, have revealed that SSA domestic investment as measured by gross fixed capital formation is the lowest globally. This highlights a deep structural concern that the fundamental drivers necessary to stimulate domestic investment in SSA remain weak or underdeveloped.

In this study, we seek to understand how improving financial development can aid in enhancing domestic investment in the region. Our focus in this study is on bank-based financial development which, according to Gizaw *et al.* (2024), refers to the advancement of financial institutions that help to reduce information, transaction and enforcement costs. For domestic investment, financial development can play a catalytic role by reducing the cost of

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financing investment projects (World Bank, 2025b), particularly in SSA, where investment constraints are more severe. This is achieved through the expansion of access to credit, mobilisation of domestic savings, improvement in the efficiency of financial intermediation and allocation of resources towards the most productive sectors (Khan *et al.*, 2020; Konstantakopoulou, 2023; Fengju and Wubishet, 2024). Furthermore, as revealed, financial development helps to lower information and transaction costs (Castro *et al.*, 2015; Mlambo, 2024), mitigate risks (Pham *et al.*, 2022) and strengthen the confidence of investors (Ibrahim *et al.*, 2024), all of which are key to driving investment activities. While theoretical considerations like Duesenberry (1958) have revealed that financial development is essential for domestic investment activities, there are several measures of financial development that capture different dimensions of the financial system, with each of these dimensions measuring a unique component of financial development. As a result, the choice of indicator is essential, as it can influence empirical conclusions of the financial development-domestic investment nexus. This means that empirics based on a single indicator will often lead to inconclusive evidence. Our study incorporates seven different measures of bank-based financial development that capture accessibility, depth and stability.

Moreover, studies within the context of SSA, such as Keho (2023a) and Salakpi *et al.* (2024), have failed to capture a key concept that can greatly influence the nexus. African economies have significant heterogeneity in the level of domestic investment. Due to this, the impact of bank-based financial development on domestic investment might just depend on the existing levels of domestic investment in SSA. This, current studies do not take into consideration, especially for SSA. Our study fills this gap in existing literature by utilising quantile regression (QR), which accounts for existing levels of an outcome variable. While conditional mean estimates remain essential, by utilising the QR, the study is able to improve domestic investment policy in the region by considering existing levels of domestic investment. Supplementary Figure A2 supports the conclusions of country-specific differences in the level of domestic investment in the region. The figure supports this, as data on domestic investment in 2023 across 36 SSA economies reveals significant heterogeneity. Thus, this study seeks to understand the impact of several dimensions of financial development on domestic investment while considering existing levels of domestic investment in SSA, offering value addition to the existing literature.

This study uses the fixed effects (FE) regression with Driscoll and Kraay (1998) standard errors, the system generalised method of moments (GMM) and the QR to capture the effect of bank-based financial development on domestic investment. Within the context of the FE and QR estimators, a two-stage approach is used to account for simultaneity on the nexus. This procedure has been considered in several empirical studies, such as Asongu and Nwachukwu (2017), Asongu and Nwachukwu (2018), and Iheonu *et al.* (2020b). The remainder of this study includes the literature review, the methodology and data section, the presentation and discussion of results, and the conclusions and recommendations for policy.

2. Literature review

There are several economic theories that explain the relationship between financial development and domestic investment. The financial intermediation theory (Diamond, 1984) argues that the stability of financial intermediaries improves the efficiency of fund allocation, thereby enhancing investment and productive activities. In a similar vein, the Keynesian theory of investment (Keynes, 1936) emphasises the importance of a stable and well-developed financial system in reducing investment uncertainty and encouraging capital formation. Duesenberry's (1958) financial theory of investment further highlights the role of credit availability in shaping firms' investment decisions. This theory suggests that access to credit promotes domestic investment but also notes that the demand for credit is negatively related to its cost, meaning that high borrowing costs may limit credit access and constrain investment. Additionally, the finance-growth theory (Armas and de Guzman, 2024; Montes

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and Oliveira, 2025) underscores how financial development fosters economic growth by improving the efficiency of savings and investment mechanisms. Through this channel, financial development boosts domestic investment, which is widely recognised as a key driver of economic growth (He and Yoo, 2024).

Empirical studies have examined the relationship between financial development and domestic investment, particularly within the African context. For example, Keho (2023a) investigated the impact of financial development on domestic investment in West Africa using the pooled mean group (PMG) estimator over the period 1985 to 2019. Financial development was proxied by domestic credit to the private sector. The results indicated a positive and significant long-run relationship between financial development and domestic investment, although the short-run effect was found to be insignificant. Similarly, Salakpi *et al.* (2024) analysed data from 45 African economies spanning 1986 to 2020. Using the PMG estimator, they assessed the effects of three different financial development indicators—domestic credit to the private sector, private credit by financial institutions and broad money supply—on domestic investment. Their findings revealed that, in the long run, broad money had a positive impact on domestic investment, private credit had a negative effect and domestic credit to the private sector showed no significant influence. Additionally, all short-run effects were insignificant. These results highlight the importance of disaggregating financial development indicators to uncover nuanced relationships. In another study, Muyambiri and Odhiambo (2018) applied the autoregressive distributed lag (ARDL) approach to analyse the case of South Africa between 1976 and 2014. They constructed a composite index of bank-based financial development using liquid liabilities, domestic credit to the private sector and claims on the central government. Their analysis showed a negative short-run relationship between bank-based financial development and domestic investment in South Africa.

Furthermore, Iheonu *et al.* (2020a) applied the augmented mean group (AMG) estimator to analyse the impact of financial development on domestic investment across West African countries from 1985 to 2017. The study used three indicators of financial development—domestic credit to the private sector, bank credit to bank deposits and broad money supply. The results showed that both bank credit and broad money negatively affect domestic investment, while domestic credit to the private sector has no significant overall effect. However, country-specific results indicated that in Sierra Leone and Togo, domestic credit to the private sector positively and significantly influences domestic investment. In a related study, Keho (2023b) focused on Côte d'Ivoire using the ARDL estimator for the period 1975 to 2019 and found that domestic credit to the private sector reduces private domestic investment. In contrast, Abdulai *et al.* (2024), using system GMM and data from 41 SSA countries between 2000 and 2022, found that domestic credit has a positive and significant effect on domestic investment, particularly when domestic credit exceeds 6.52% of GDP.

Using a global dataset, He and Yoo (2024) applied both the system GMM and PMG estimators to a panel of 152 countries spanning 1980 to 2021. Relying on the IMF's Financial Development Index, their study found that financial development has a positive impact on investment. However, this effect diminishes beyond a certain threshold, after which further financial development begins to negatively affect domestic investment. The findings also indicate that financial development does not exert a significant short-run effect on investment. Notably, the positive relationship between financial development and investment is more evident in low- and middle-income countries. In a similar vein, Montes and Oliveira (2025) employed the system GMM estimator using data from 88 countries between 1996 and 2019. Their results confirm that financial development enhances domestic investment, particularly highlighting the depth of financial institutions and access to financial markets as the most influential components driving investment outcomes.

The empirical literature suggests that the relationship between financial development and domestic investment is highly sensitive to the specific proxy used to measure financial development. As a result, individual studies that rely on a single indicator may not provide reliable or generalisable conclusions. Moreover, the existing evidence on the finance-

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investment nexus remains inconclusive, particularly within the context of SSA. This study addresses key gaps in the literature in two ways. First, we extend the empirical scope by employing seven distinct indicators of bank-based financial development, moving beyond the commonly used proxy of domestic credit to the private sector. While a few SSA-focused studies have used alternative indicators such as bank credit, liquid liabilities and private credit, none have comprehensively incorporated multiple dimensions of financial development. Our approach highlights the importance of using a broad set of indicators to derive more robust conclusions. Second, most existing studies in SSA overlook the role of the existing levels of domestic investment, which, as discussed in the introduction, are crucial to understanding the finance-investment relationship. The seminal work of Koenker and Bassett (1978) offers the theoretical underpinning in the adoption of QR as against conditional mean estimates that do not account for the distribution of the outcome variable.

3. Methodology and data

3.1 Methodology

The method applied to this study, as revealed in the introduction section, includes the FE regression, the system GMM regression and QR. Accordingly, the FE regression with Driscoll and Kraay standard errors accounts for cross-sectional dependence, serial correlation and group-wise heteroskedasticity. The FE regression also accounts for unobservable heterogeneity across countries. Additionally, the study accounts for simultaneity between financial development indicators and domestic investment indicators using a two-stage procedure within the FE regression and QR. Firstly, bank-based financial development is regressed with its first lag with standard errors that are robust to heteroskedasticity using the ordinary least square (OLS). The results of the first-stage regressions are presented in Supplementary Table A1. The fitted values are then used as instruments in the original equation. This procedure is given in equations (1) and (2) below:

$$fd_{i,t} = \rho_0 + \rho_1 fd_{i,t-1} + \mu_{i,t}, \tag{1}$$

$$inv_{i,t} = \tau_0 + \tau_1 ifd_{i,t} + \tau_2 X_{i,t} + e_{i,t}. \tag{2}$$

here, $fd_{i,t}$ is an indicator of financial development and $fd_{i,t-1}$ is the first lag of the indicator of financial development. $inv_{i,t}$ is domestic investment and $ifd_{i,t}$ is the instrumented financial development indicator, derived from the first-stage regression. The underlying rationale for the use of the first lag of financial development as an instrument is that while the lagged value of financial development serves as a valid proxy for current financial development due to persistence over time, it is not contemporaneously influenced by current domestic investment. This satisfies the exclusion restriction necessary for valid instrumentation. $\mu_{i,t}$ and $e_{i,t}$ represent the error terms. In equation (2), $X_{i,t}$ represent control variables necessary for investment equation. Six control variables are employed in the equation, consistent with theoretical and empirical literature. They include GDP (Keho, 2023a; He and Yoo, 2024), inflation (Kamasa *et al.*, 2022), exchange rate (Chikwira and Jahed, 2024), remittances (Keho, 2024), foreign direct investment (FDI) (Nxazonke and van Wyk, 2019; Guo *et al.*, 2024) and political stability (Iheonu, 2019).

The system GMM (Roodman, 2009a,b) is further utilised in this study to explicitly account for endogeneity. This procedure is an extension of the Arellano and Bover (1995) and Blundell and Bond (1998) procedures. Endogeneity is addressed using internal instruments, and unobservable heterogeneity is accounted for via the inclusion of country and year FE (Iheonu *et al.*, 2025). Moreover, the system GMM is used because the number of countries in the analysis is greater than the number of time period. Furthermore, heteroskedasticity is

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accounted for using the two-step procedure. Equations (3) and (4) present the GMM specifications in levels and first differences.

$$inv_{i,t} = \tau_0 + \vartheta_1 inv_{t-1} + \tau_1 fd_{i,t} + \tau_2 X_{i,t} + \omega_i + \varphi_t + e_{i,t}, \tag{3}$$

$$\begin{aligned} inv_{i,t} - inv_{i,t-1} = {} & \tau_0 + \vartheta_1 (inv_{t-1} + inv_{t-2}) + \tau_1 \left(fd_{i,t} - fd_{i,t-1}\right) + \tau_2 (X_{i,t} - X_{i,t-1}) \\ & + (\varphi_t - \varphi_{t-1}) + (e_{i,t} - e_{i,t-1}). \end{aligned} \tag{4}$$

In equations (3) and (4), ω_i is the country FE and φ_t is the year FE. Within the system GMM procedure, the Arellano and Bond (AB) second-order test is used to examine the presence or absence of autocorrelation, with the validity of the instruments examined using the robust Hansen test. In both the AB and Hansen tests, a probability value greater than 5% is an indication that autocorrelation is not an issue in the models and that the instruments are valid, respectively.

To account for existing levels of domestic investment in SSA, QR is applied. According to Claveria (2024), while mean regressions estimate the conditional mean of the response variable across values of the predictor variables, QR estimates the conditional median or other quantiles of the response variables. Additionally, QR estimates are robust to outliers in the response measurements (Koenker, 2005). Accordingly, in QR, for the λ^{th} quantile, it is assumed that the λ^{th} conditional quantile is given as a linear function of the explanatory variable (X):

$$Q_{Y|X}(\lambda) = X\beta_\lambda, \tag{5}$$

Accordingly, quantiles can be expressed as the solution of a minimisation problem. Given the distribution of Y, β_λ is obtained by solving equation (6).

$$\widehat{\beta}_\lambda = \underset{\beta \epsilon R^k}{min} \left\{ E\left[\varsigma_\lambda \left(Y_i - X_i'\beta\right)\right]\right\}, \tag{6}$$

where ς_λ is the loss function. Following Iheonu *et al.* (2025), QR improves the policy relevance of the study as the nexus between financial development and domestic investment is examined across low, medium and high levels of domestic investment in SSA. Based on the study, QR will be implemented in the 10th, 25th, 50th, 75th and 90th quantiles. Consequently, obtaining the λ^{th} quantile estimate of domestic investment involves solving the optimisation problem in Equation (7).

$$\underset{\beta \epsilon R^k}{min} \left[\underset{i \epsilon \{i : y_i \geq x_i\beta\}}{\Sigma \lambda |y_i - x_i\beta|} + \underset{i \epsilon \{i : y_i < x_i\beta\}}{\Sigma (1-\lambda) |y_i - x_i\beta|} \right] \tag{7}$$

In equation (7), $\lambda \epsilon (0, 1)$. For each quantile, QR minimises the weighted sum of absolute deviations by weighing the residuals approximately. In our QR, country fixed effects (FE) and year FE are included for each observed quantile to account for unobservable heterogeneity across country and time.

3.2 Data

The data used for this study are sourced from two key databases: the Global Financial Development Database (GFDD) and the World Development Indicators (WDI) database. This study uses seven indicators of financial development sourced from the GFDD. Domestic credit to the private sector as a share of GDP, private credit by deposit money banks (DMBs) as a share of GDP, DMBs' assets to GDP, liquid liabilities to GDP and financial system deposits

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(FSDs) to GDP are used to capture financial depth; the number of bank branches is used to measure financial access and the share of bank credit to bank deposits is used to measure financial stability, as noted by the GFDD. For clarity, it is essential to define these variables: the World Bank (2025c) defines domestic credit to the private sector as financial resources that financial corporations provide to private entities—through loans, purchases of non-equity securities, trade credits and other accounts receivable—which create claims for repayment. A higher volume of such credit signals higher levels of financial development. We expect that increases in domestic credit will translate into higher levels of domestic investment. Private credit are financial resources provided to the private sector by DMBs (World Bank, 2025d). DMBs assets are total assets held by DMBs. These assets can include claims on domestic real nonfinancial sector which includes central, state and local governments, nonfinancial public enterprises and private credit (World Bank, 2025e). This can aid in improving domestic investment by expanding the capacity of banks to finance investment activities. Furthermore, liquid liabilities, commonly referred to as broad money, comprise a wide range of financial instruments. These include currency and deposits held with the monetary authority, transferable deposits and electronic money; in addition to time and savings deposits, foreign currency transferable deposits, certificates of deposit and securities repurchase agreements. They also encompass travellers' checks, foreign currency time deposits, commercial paper and shares in money market or mutual funds held by residents (World Bank, 2025f). Higher liquid liabilities are indicative of a more development financial system, reflecting the ability of financial institutions to mobilise savings from the public, which improves the availability of funds for investment. According to the World Bank (2025g), FSD represents demand, time and savings deposits in DMBs and other financial institutions. A higher level of FSD indicates high level of confidence in the financial system by the public and reflects the capacity of financial institutions to mobilise savings, which in turn, enhances the pool of loanable funds that is available for domestic investment. According to the World Bank (2025h), bank branches refer to the number of commercial bank branches per 100,000 adults. A higher density of bank branches enhances access to formal financial services—such as savings, credit and payment systems—thereby promoting financial inclusion. Improved access to these bank-based financial instruments can facilitate capital mobilisation and increase domestic investment. Finally, the share of bank credit to bank deposits reflects the proportion of total deposits that DMBs allocate as credit to the private sector (World Bank, 2025i). This indicator captures the extent to which banks are actively transforming mobilised savings into productive lending. An increase in this share suggests greater credit availability, which enhances access to finance for businesses and individuals.

Furthermore, the natural logarithm (log) of gross fixed capital formation in constant United States dollars ($US) is used to measure domestic investment. These variables, along with the control variables used in this study, are further highlighted for clarity in Table 1. The data for this study is based on 36 SSA economies between 2000 and 2023. The use of 36 SSA economies as a representative sample over the observed time frame is due to data availability constraints for the financial development indicators. To account for measurement error and business cycle fluctuations, the study uses 3-year average non-overlapping intervals. The sample of countries used in this study includes Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo DR, Congo Republic, Cote d'Ivoire, Ethiopia, Eswatini, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Tanzania, Togo, Uganda and Zimbabwe.

4. Presentation and discussion of results

This section of the study is divided into two parts: the presentation of the summary statistics and the discussion of the results. Table 2 reveals the summary statistics of the variables employed in the econometric models. It is revealed that gross fixed capital formation has a

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Table 1. Description of variables

Variables	Description	Source
GFCFC	Gross Fixed Capital Formation, Constant $US	WDI
DC	Domestic Credit to the Private Sector (% of GDP)	GFDD
PCD	Private Credit by Deposit Money Banks to GDP (%)	GFDD
DMB	Deposit Money Bank's Assets to GDP (%)	GFDD
LL	Liquid Liabilities to GDP (%)	GFDD
FSD	Financial System Deposits to GDP (%)	GFDD
BB	Bank Branches per 100,000 Adults	GFDD
BC	Bank Credit to Bank Deposits (%)	GFDD
Control variables		
GDP	Gross Domestic Product (GDP) Constant $US	WDI
INF	Consumer Price Inflation (%)	WDI
EXC	Official Exchange Rate of the Local Currency to the $US	WDI
REM	Personal Remittance Received (% of GDP)	WDI
FDI	Foreign Direct Investment Inflow (% of GDP)	WDI
PS	Political Stability, estimate	WDI

Source(s): Authors' computation

Table 2. Summary statistics

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
GFCFC	269	6.90e+09	1.36e+10	1.28e+08	7.52e+10
DC	268	20.1269	22.8634	0.0032	135.7951
BC	273	74.2947	25.4961	18.03	151.4267
BB	206	6.9819	11.3403	0.205	56.93
PCD	272	20.7574	23.4757	0.5166	179.49
DMB	272	28.5867	29.7651	0.6033	240.22
LL	271	33.1170	27.4242	2.8266	207.03
FSD	272	27.0903	23.8121	1.53	147.8133
GDP	288	2079.009	2811.235	263.2748	16060.01
INF	277	8.5706	25.1874	−4.7427	301.7887
EXC	284	7,891,559	1.33e+08	0.0515	2.24e+09
REM	281	3.2215	5.8131	0	50.8413
FDI	288	3.8435	4.6490	−2.1670	33.5048
PS	288	−0.5636	0.8630	−2.5409	1.0932

Source(s): Authors' computation

mean value of $US6.9 billion. There is also a significant disparity between the minimum and maximum values. These disparities between the minimum and maximum values in our domestic investment indicator further support Supplementary Figure A2 and the adoption of QR as an estimation strategy.

Table 2 also shows that domestic credit to the private sector has an average value of 20.13%, the share of bank credit to bank deposits has an average value of 74.29%, and there are only seven bank branches per 100,000 adults on average. Furthermore, private credit by DMBs as a share of GDP is 20.75% on average. The share of DMB assets to GDP, liquid liabilities to GDP and FSDs to GDP have average values of 28.6%, 33.1% and 27.1%, respectively. The significant disparity between the minimum and maximum values is indicative of the difference in the level of financial development across SSA economies. The table further reveals the

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significant disparity between the minimum and maximum values of the control variables, suggesting country-specific heterogeneity.

In Table 3, the FE regression on the nexus between financial sector development and domestic investment is presented. Table 3 revealed that domestic credit, bank branches, private credit, DMB assets, liquid liabilities and FSDs have a positive and significant impact on domestic investment. These findings support the broader theoretical and empirical literature on the positive and significant nexus between financial development and domestic investment (Keho, 2023a; Abdulai *et al.*, 2024; Montes and Oliveira, 2025). However, bank credit proved to be insignificant in improving domestic investment. These results clarify our stance on the inappropriateness of providing broad conclusions on the nexus between financial development and domestic investment, as the nexus is sensitive to the indicator used to measure financial development. Additionally, it is revealed that increasing domestic credit to the private sector and the number of bank branches has the most pronounced impact on increasing domestic investment. In particular, a one percentage point increase in domestic credit to the private sector as a share of GDP is associated with a 1.02% increase in domestic investment. Furthermore, each additional bank branch is associated with a 1.5% increase in domestic investment, on average. However, the results from the system GMM presented in Table 4 do not seem to be robust on the nexus between bank branches and domestic investment, as the result is revealed to be insignificant. Nonetheless, the nexus between domestic credit and domestic investment is robust in sign and significance. Accounting for endogeneity bias within the system GMM estimates further revealed a reduction in the coefficient values when compared to the FE regression estimates.

Based on the GMM results, it is revealed that a one percentage point increase in bank credit is associated with a 0.62% increase in domestic investment. Moreover, bank credit, private credit, DMB assets, liquid liabilities and FSDs are revealed to have a positive and significant influence on domestic investment. The GMM estimates also reveal that private credit offers the highest benefit for domestic credit. On average, a one percentage point increase in private credit leads to a 0.63% increase in domestic investment.

Further results from the control variables reveal that, on average, GDP has a positive and significant impact on domestic investment in both the FE and GMM estimates. This finding aligns with the result of Iheonu *et al.* (2020a), reinforcing the importance of economic growth in stimulating investment. Additionally, Tables 3 and 4 show that an increase in the inflation rate leads to a significant decline in domestic investment, consistent with previous studies such as Mogaji *et al.* (2020) and Kamasa *et al.* (2022), which underscore the adverse effect of inflation on investment decisions. The analysis also indicates that exchange rate depreciation—measured as an increase in the local currency exchange rate against the US dollar—negatively affects domestic investment in the FE estimates. This finding supports the arguments of Chikwira and Jahed (2024), who emphasised the detrimental impact of currency instability on investment flows in SSA. However, the results of the GMM do not support the negative nexus between the exchange rate and domestic investment. Within the GMM estimates, there is no conclusive evidence on the nexus between exchange rate and domestic investment. In both the FE and GMM results, FDI inflow is revealed to be positive and statistically significant in boosting domestic evidence lending support to the crowding-in hypothesis as observed by Guo *et al.* (2024), and Nxazonke and van Wyk (2019). Finally, the results emphasise the importance of political stability in boosting domestic investment in the GMM estimates, reaffirming the conclusions of Iheonu (2019) that institutional quality is vital for investment growth in SSA.

In Table 5, the QR results are presented where domestic credit and bank credit are proxies for financial development. The results revealed that the impact of both indicators of financial development depends largely on existing levels of domestic investment. It is revealed that domestic credit significantly raises domestic investment in the 10th, 25th and 90th quantiles. This denotes that domestic credit is key to driving domestic investment in countries where domestic investment is at its lowest and its highest levels. In the 10th quantile, a one percentage

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Table 3. Fixed effects regression results

Variables	Dependent variable: domestic investment						
DC	0.0102*** (0.000)						
BC		0.0006 (0.295)					
BB			0.0150*** (0.000)				
PCD				0.0021*** (0.000)			
DMB					0.0025*** (0.004)		
LL						0.0025** (0.017)	
FSD							0.0035** (0.044)
GDP	1.5992*** (0.000)	1.8261*** (0.000)	1.8269*** (0.000)	1.7758*** (0.000)	1.7549*** (0.000)	1.7635*** (0.000)	1.7392*** (0.000)
INF	−0.0029*** (0.004)	−0.0028*** (0.006)	−0.0030** (0.010)	−0.0029*** (0.005)	−0.0030*** (0.001)	−0.0031*** (0.002)	−0.0032*** (0.002)
EXC	−0.0604*** (0.001)	−0.0784*** (0.000)	−0.1021*** (0.000)	−0.0700*** (0.006)	−0.0666** (0.032)	−0.0720** (0.018)	−0.0749** (0.015)
REM	0.0037 (0.286)	0.0044 (0.192)	0.0071 (0.356)	0.0043 (0.206)	0.0033 (0.376)	0.0033 (0.322)	0.0034 (0.313)
FDI	0.0266*** (0.000)	0.0286*** (0.000)	0.0242*** (0.000)	0.0286*** (0.000)	0.0292*** (0.000)	0.0288*** (0.000)	0.0289*** (0.000)
PS	0.0168 (0.152)	−0.0010 (0.942)	−0.0103 (0.358)	0.0039 (0.770)	0.0073 (0.580)	0.0071 (0.608)	0.0105 (0.510)
Constant	−5.8626*** (0.000)	−7.2655*** (0.000)	−7.1924*** (0.000)	−6.9396*** (0.000)	−6.8320*** (0.000)	−6.8770*** (0.000)	−6.7005*** (0.000)
Within R^2	0.6118	0.6101	0.6057	0.6096	0.6153	0.6151	0.6162
Fisher	7303.66*** (0.000)	11586.94*** (0.000)	1546.41*** (0.000)	50124.72*** (0.000)	100704.67*** (0.000)	46644.49*** (0.000)	17718.62*** (0.000)
VIF	1.45	1.41	1.66	1.43	1.44	1.43	1.50
Observations	237	245	215	246	246	246	246

Note(s): ***, **, * indicate statistical significance at 1%, 5% and 10%. Probability values are in parentheses. VIF is Variance Inflation Factor

Source(s): Authors' computation

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Table 4. System GMM estimates

Variables	Dependent variable: domestic investment						
DC	0.0062*** (0.000)						
BC		0.0026** (0.010)					
BB			−0.0002 (0.954)				
PCD				0.0063*** (0.000)			
DMB					0.0050*** (0.001)		
LL						0.0030*** (0.001)	
FSD							0.0012** (0.046)
GDP	0.6716*** (0.000)	0.5614*** (0.000)	0.5695*** (0.000)	0.0063*** (0.000)	0.5094*** (0.000)	0.5040*** (0.000)	0.4396*** (0.000)
INF	−0.0021*** (0.000)	−0.0021*** (0.000)	−0.0013*** (0.002)	−0.0013*** (0.003)	−0.0011*** (0.009)	−0.0013*** (0.000)	−0.0014*** (0.000)
EXC	0.0332 (0.223)	0.0079 (0.724)	0.0204 (0.439)	0.0370 (0.140)	0.0516** (0.038)	0.0465*** (0.002)	0.0421*** (0.001)
REM	0.0041 (0.284)	0.0031 (0.250)	0.0035 (0.238)	0.0004 (0.896)	0.0013 (0.695)	0.0011 (0.661)	0.0019 (0.326)
FDI	0.0216*** (0.000)	0.0274*** (0.000)	0.0200*** (0.000)	0.0239*** (0.000)	0.0238*** (0.000)	0.0230*** (0.000)	0.0226*** (0.000)
PS	0.1479*** (0.001)	0.1966*** (0.000)	0.2499*** (0.000)	0.2580*** (0.000)	0.2504*** (0.000)	0.1682*** (0.000)	0.1320*** (0.000)
Constant	−26.5305*** (0.000)	−28.1196*** (0.000)	−21.7697** (0.025)	−24.1365*** (0.004)	−18.1327** (0.023)	−15.8966*** (0.008)	−15.4921*** (0.001)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fisher	15285.38*** (0.000)	24883.69*** (0.000)	22843.03*** (0.000)	19439.42*** (0.000)	31548.47*** (0.000)	36697.30*** (0.000)	110385.89*** (0.000)
AR2 *p*-value	0.181	0.117	0.803	0.835	0.861	0.616	0.238
Hansen *p*-value	0.105	0.107	0.159	0.291	0.210	0.101	0.168
Instruments	28	28	28	28	28	28	32
N	35	35	36	35	35	35	35
Observations	212	215	186	215	215	215	215

Note(s): ***, **, * indicate statistical significance at 1%, 5% and 10%. Probability values are in parentheses. *N* is the number of instruments. The lag of the log domestic investment is included in each estimation

Source(s): Authors' computation

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Table 5. QR results on domestic credit and bank credit

Variables	Q.10	Q.25	Q.50	Q.75	Q.90
DC	0.0101***	0.0080***	0.0044	0.0007	0.0036***
	(0.000)	(0.003)	(0.451)	(0.858)	(0.001)
GDP	1.2380***	1.3617***	1.5459***	1.3844***	1.2792***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.0031***	−0.0016	−0.0040	−0.0051**	−0.0067***
	(0.000)	(0.200)	(0.139)	(0.012)	(0.000)
EXC	−0.0579*	−0.0605	−0.2608**	−0.3659***	−0.5171***
	(0.071)	(0.251)	(0.023)	(0.000)	(0.000)
REM	0.0040*	−0.0012	0.0011	−0.0090	−0.0134***
	(0.095)	(0.758)	(0.892)	(0.156)	(0.000)
FDI	0.0273***	0.0248***	0.0215***	0.0308***	0.0329***
	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)
PS	0.0651***	0.0687**	0.0660	0.0549	0.0401***
	(0.000)	(0.012)	(0.259)	(0.207)	(0.000)
Constant	−3.7451***	−4.4584***	−4.0886**	−2.0279*	−0.4523
	(0.000)	(0.000)	(0.011)	(0.088)	(0.129)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.8771	0.8491	0.8450	0.8696	0.8969
Observations	237	237	237	237	237
BC	0.0007	0.0008	−0.0007	−0.0022*	−0.0011**
	(0.286)	(0.402)	(0.695)	(0.099)	(0.047)
GDP	1.3308***	1.3764***	1.5216***	1.2308***	1.3263***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.0015	−0.0020	−0.0044	−0.0057***	−0.0066***
	(0.119)	(0.107)	(0.100)	(0.002)	(0.000)
EXC	−0.0712*	−0.1053**	−0.3315***	−0.4209***	−0.4964***
	(0.077)	(0.043)	(0.003)	(0.000)	(0.000)
REM	0.0064**	−0.0023	0.0006	−0.0086	−0.0140***
	(0.040)	(0.563)	(0.942)	(0.146)	(0.000)
FDI	0.0277***	0.0257***	0.0229***	0.0321***	0.0323***
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)
PS	0.0447**	0.0570**	0.0786	0.0762*	0.0560***
	(0.039)	(0.041)	(0.186)	(0.065)	(0.002)
Constant	−4.2425***	−4.3044***	−3.4356**	−0.6480	−0.7759
	(0.000)	(0.000)	(0.039)	(0.573)	(0.114)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.8733	0.8474	0.8512	0.8752	0.8992
Observations	245	245	245	245	245

Note(s): ***, **, * indicate statistical significance at 1%, 5% and 10%. Probability values are in parentheses. Year FE is Year Fixed Effects and Country FE is Country Fixed Effects

Source(s): Authors' computation

point increase in domestic credit leads to a 1.01% increase in domestic investment and a 0.36% increase in domestic investment in the 90th quantile. Additionally, the results show that bank credit significantly reduces domestic investment in countries where existing levels of domestic investment are at their highest levels, supporting the findings of Iheonu *et al.* (2020a). In Table 6, the positive nexus between bank branches and domestic investment is apparent in the 10th and 90th quantiles. The result showed that each additional bank branch per 100,000 adults is associated with a 1.02% increase in domestic investment in countries where the existing levels of domestic investment are at the lowest and a 1.89% increase in domestic investment in countries where existing levels of domestic investment are at the highest. Furthermore, the

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Table 6. QR results on bank branches and private credit

Variables	Q.10	Q.25	Q.50	Q.75	Q.90
BB	0.0102***	0.0046	−0.0030	0.0043	0.0189***
	(0.001)	(0.560)	(0.750)	(0.661)	(0.000)
GDP	1.6401***	1.7161***	1.4959***	1.4964***	1.3424***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.0019***	−0.0031	−0.0040*	−0.0047*	−0.0081***
	(0.008)	(0.111)	(0.090)	(0.056)	(0.000)
EXC	−0.0945***	−0.1731*	−0.2640**	−0.3567***	−0.6412***
	(0.007)	(0.061)	(0.017)	(0.002)	(0.000)
REM	0.0059**	−0.0029	−0.0019	0.0127	0.0005
	(0.033)	(0.695)	(0.825)	(0.167)	(0.806)
FDI	0.0249***	0.0222***	0.0222***	0.0261***	0.0229***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
PS	0.0588***	0.0217	0.0539	0.0492	0.0480***
	(0.000)	(0.623)	(0.307)	(0.370)	(0.001)
Constant	−6.1249***	−6.0713***	−3.8069**	−2.9495*	−0.1244
	(0.000)	(0.000)	(0.019)	(0.079)	(0.777)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.8773	0.8522	0.8514	0.8774	0.8987
Observations	215	215	215	215	215
PCD	0.0004	0.0007	0.0014	0.0026*	0.0025***
	(0.592)	(0.436)	(0.497)	(0.095)	(0.000)
GDP	1.4278***	1.3469***	1.4744***	1.2423***	1.2641***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.0018*	−0.0020	−0.0044*	−0.0050**	−0.0069***
	(0.069)	(0.106)	(0.099)	(0.012)	(0.000)
EXC	−0.0941**	−0.1001**	−0.3195***	−0.3697***	−0.5232***
	(0.025)	(0.048)	(0.004)	(0.000)	(0.000)
REM	0.0049	−0.0022	0.0001	−0.0092	−0.0136***
	(0.129)	(0.559)	(0.988)	(0.149)	(0.000)
FDI	0.0268***	0.0242***	0.0220***	0.0296***	0.0334***
	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)
PS	0.0691***	0.0695**	0.0815	0.0434	0.0518***
	(0.002)	(0.011)	(0.162)	(0.326)	(0.001)
Constant	−4.7067***	−4.0839***	−3.2063**	−1.1756	−0.3070
	(0.000)	(0.000)	(0.049)	(0.340)	(0.486)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.8711	0.8464	0.8523	0.8758	0.8998
Observations	246	246	246	246	246

Note(s): ***, **, * indicate statistical significance at 1%, 5% and 10%. Probability values are in parentheses. Year FE is Year Fixed Effects and Country FE is Country Fixed Effects

Source(s): Authors' computation

study finds private credit to be significant in propelling domestic investment in countries where existing levels of domestic investment are at their highest levels.

In Table 7, it is revealed that DMB assets have a positive and significant impact on domestic investment in the 25th quantile and in the 75th and 90th quantiles. Moreover, the impact of liquid liability on domestic investment is only apparent in the 75th and 90th quantiles, i.e., in countries where existing domestic investment levels are high. In Table 8, financial systems deposits are also only able to improve domestic investment in the 75th and 90th quantiles, indicating that in countries where existing levels of domestic investment are high, FSDs

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Table 7. QR results on DMB assets and liquid liability

Variables	Q.10	Q.25	Q.50	Q.75	Q.90
DMB	0.0004	0.0018**	0.0020	0.0021*	0.0020***
	(0.497)	(0.014)	(0.196)	(0.072)	(0.000)
GDP	1.4287***	1.3253***	1.4790***	1.2374***	1.2560***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.0019**	−0.0022*	−0.0044*	−0.0053***	−0.0068***
	(0.063)	(0.076)	(0.095)	(0.007)	(0.000)
EXC	−0.0969**	−0.1018**	−0.3036***	−0.3808***	−0.5126***
	(0.022)	(0.047)	(0.006)	(0.000)	(0.000)
REM	0.0054*	−0.0022	−0.0003	−0.0094	−0.0142***
	(0.096)	(0.569)	(0.970)	(0.130)	(0.000)
FDI	0.0266***	0.0247***	0.0207***	0.0300***	0.0341***
	(0.000)	(0.000)	(0.005)	(0.000)	(0.000)
PS	0.0711***	0.0697**	0.0785	0.0430	0.0595***
	(0.002)	(0.011)	(0.178)	(0.315)	(0.002)
Constant	−4.7050***	−3.9035***	−3.3866**	−1.0951	−0.3192
	(0.000)	(0.000)	(0.037)	(0.357)	(0.539)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.8712	0.8465	0.8530	0.8767	0.8994
Observations	246	246	246	246	246
LL	0.00004	0.0006	0.0022	0.0023**	0.0022***
	(0.942)	(0.446)	(0.175)	(0.041)	(0.000)
GDP	1.3257***	1.3561***	1.4868***	1.2481***	1.2660***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.0013	−0.0020	−0.0046*	−0.0053***	−0.0070***
	(0.182)	(0.105)	(0.079)	(0.004)	(0.000)
EXC	−0.0485	−0.1031*	−0.3207***	−0.3722***	−0.5219***
	(0.256)	(0.051)	(0.003)	(0.000)	(0.000)
REM	0.0057*	−0.0018	−0.0001	−0.0094	−0.0137***
	(0.082)	(0.655)	(0.988)	(0.103)	(0.000)
FDI	0.0275***	0.0245***	0.0214***	0.0308***	0.0338***
	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)
PS	0.0481**	0.0673**	0.0825	0.0480	0.0338***
	(0.035)	(0.017)	(0.155)	(0.228)	(0.000)
Constant	−4.2985***	−4.1353***	−3.3370**	−1.0965	−0.3476
	(0.000)	(0.000)	(0.039)	(0.322)	(0.468)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.8710	0.8463	0.8532	0.8771	0.9002
Observations	246	246	246	246	246

Note(s): ***, **, * indicate statistical significance at 1%, 5% and 10%. Probability values are in parentheses. Year FE is Year Fixed Effects and Country FE is Country Fixed Effects

Source(s): Authors' computation

significantly increase domestic investment. The results of the control variables across the models indicate that there is significant heterogeneity in the sampled countries. However, the results reveal that GDP raises domestic investment. Nonetheless, existing levels of domestic investment matter for the nexus. Inflation and exchange rates are largely detrimental to domestic investment across quantiles. FDI and political stability are largely positive across quantiles, while the nexus between remittances is dependent on existing levels of domestic investment.

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Table 8. QR results on FSD

Variables	Q.10	Q.25	Q.50	Q.75	Q.90
FSD	0.00006	0.0008	0.0029	0.0035**	0.0033***
	(0.940)	(0.423)	(0.186)	(0.020)	(0.000)
GDP	1.3252***	1.3517***	1.5037***	1.2213***	1.2430***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.0014	−0.0021*	−0.0046*	−0.0053***	−0.0069***
	(0.175)	(0.089)	(0.083)	(0.003)	(0.000)
EXC	−0.0489	−0.1062**	−0.3128***	−0.3689***	−0.5073***
	(0.246)	(0.040)	(0.005)	(0.000)	(0.000)
REM	0.0057*	−0.0015	0.00003	−0.0094*	−0.0138***
	(0.079)	(0.692)	(0.997)	(0.099)	(0.000)
FDI	0.0275***	0.0244***	0.0219***	0.0307***	0.0342***
	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)
PS	0.0482**	0.0683**	0.0815	0.0600	0.0690***
	(0.033)	(0.014)	(0.162)	(0.126)	(0.000)
Constant	−4.2932***	−4.0892***	−3.4722**	−1.0603	−0.2709
	(0.000)	(0.000)	(0.033)	(0.330)	(0.603)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.8710	0.8461	0.8529	0.8772	0.9001
Observations	246	246	246	246	246

Note(s): ***, **, * indicate statistical significance at 1%, 5% and 10%. Probability values are in parentheses. Year FE is Year Fixed Effects and Country FE is Country Fixed Effects

Source(s): Authors' computation

5. Conclusions and recommendations for policy

Domestic investment is one of the key drivers of economic activity, growth and development. It contributes to capital accumulation, job creation and productivity gains. However, in SSA, domestic investment has consistently fallen short of its potential, limiting the region's ability to achieve sustained economic transformation. Literature highlights the critical role that financial development can play in enhancing domestic investment, particularly by improving access to credit, mobilising savings and facilitating efficient resource allocation. Accordingly, various studies have employed different measures of financial development to assess its impact on domestic investment in SSA. A significant number of these studies largely find that financial development has a positive influence on investment outcomes. However, our study provides evidence that the strength and direction of this relationship are not uniform and depend on important factors. (1) The indicator used to measure financial development plays a significant role in shaping the empirical findings. Studies that rely on a single indicator may fail to capture the full scope of financial development, potentially leading to incomplete or misleading conclusions. (2) Existing levels of domestic investment matter for the nexus between financial development and domestic investment. These findings suggest the need for policies that are tailored to the specific dimensions of financial development and responsive to country-specific investment conditions in SSA.

Accordingly, the following recommendations are provided: (1) In countries with low levels of domestic investment, targeted interventions to expand access to domestic credit and the need to increase the number of bank branches are essential to improve the access to financial services that is necessary to stimulate capital formation and support broader economic growth. This can be achieved via tax breaks for financial institutions, especially microfinance institutions that are willing to expand to underserved areas and also willing to invest in digital financial infrastructure aimed at complementing traditional banking networks. (2) In high-investment countries where evidence shows that bank credit can dampen domestic investment,

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it is essential to limit the dependence on traditional bank lending. Instead, policymakers should diversify investment finance sources by promoting and encouraging equity financing and long-term investment funds. These funds should also be tailored to businesses and the private sector, which has been revealed to support domestic investment. (3) The need to leverage physical and digital bank infrastructure in expanding bank branches is essential to improve domestic investment in low- and high-investment countries. This can be achieved by adopting a cost-effective branch expansion strategy like agency banking while also scaling digital solutions in underserved areas. (4) Government and relevant stakeholders should enhance policies that promote private sector access to credit, improve liquid liability and enhance FSDs in high investment countries. Accordingly, regulatory frameworks should be designed that reduce borrowing costs and ensure credit is allocated efficiently to productive sectors. This should be further complemented with policies that deepen capital markets in SSA and improve financial literacy and inclusion that broadens the base of savers and increases the availability of long-term funds for investment, and (5) the government and financial institutions should collaborate to ensure that savings instruments are attractive to increase the volume of FSDs, which helps to improve liquidity, fostering domestic investment in high-investment countries.

The study has extensively revealed that taking into account existing levels of domestic investment is an essential approach in the financial development and domestic investment debate in SSA. Future studies can also examine the nexus between stock market-based financial development and domestic investment while also considering the existing levels of domestic investment.

Supplementary material

The supplementary material for this article can be found online.

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