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**Article**

## Institutional quality and credit growth: "Sand" or "grease" effect? Evidence from microfinance institutions

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## BANKING & FINANCE | RESEARCH ARTICLE

# Institutional quality and credit growth: “Sand” or “grease” effect? Evidence from microfinance institutions

Tilahun Aemiro Tehulu<sup>1\*</sup>

**Abstract:** This article examines the effect of institutional quality on the credit growth of Microfinance Institutions (MFIs) in sub-Saharan Africa (SSA). This paper uses a panel dataset of 131 MFIs across 31 SSA countries spanning 2004–2018 and applies the Arellano-Bover/Blundell-Bond two-step Generalized Method of Moments (GMM) Windmeijer bias-corrected standard errors to estimate the parameters. The study reveals that institutional quality is an important factor in the credit growth of MFIs. We uncover new and interesting evidence that political stability “sands the wheels” of credit growth of MFIs, implying that MFIs operating in more politically stable countries tend to be more risk averse and limit credit supply. On the other hand, the rule of law “greases the wheels” of credit growth of MFIs, suggesting that MFIs expand credits more when the rule of law is stronger. We also uncover that credit growth is linked to regulatory quality/government effectiveness positively, but not statistically significant. Similarly, voice and accountability and control of corruption do not have significant effects on MFI credit growth. The findings have several useful implications as discussed in the paper.

**Subjects:** Development Studies; Banking; Credit & Credit Institutions

**Keywords:** Credit growth; institutional quality; political stability; regulatory quality; rule of law; sub-Saharan Africa

## 1. Introduction

Empirical research on lending behavior has drawn attention for several reasons. First, developments in the financial sector might have increased the impact of firm-specific characteristics on



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Tilahun Aemiro Tehulu (PhD) is currently an Associate Professor in the Department of Accounting and Finance, College of Business & Economics, Bahir Dar University, Ethiopia. His research interests include finance, microfinance institutions, financial institutions and markets, micro and small enterprises, corporate governance and taxation. He has published several articles in different scholarly journals such as the *International Journal of Emerging Markets* (Emerald) and *Development in Practice* (Taylor & Francis). Dr. Tehulu has also been acting as a reviewer for different journals including *International Journal of Social Economics* (Emerald), *Development in Practice* (Taylor & Francis), *Cogent Economics and Finance* (Taylor & Francis) and *Ethiopian Journal of Business & Economics* (AJOL), among others.

lending behavior (Gambacorta & Marques-Ibanez, 2011). The second reason is the global financial crisis since financial performance cyclicalities are usually triggered by pro-cyclical movements in loan supply (Laidroo, 2012). In other words, financial institutions' lending behavior is a powerful predictor of financial crises (Schularick & Taylor, 2009). Third, loans are the main sources of funds for firms, individuals and households and contribute in the poverty alleviation endeavor (Elsafi et al., 2020). Lastly, loans also play a crucial role in the sustainability of financial institutions (Tehulu, 2013) as the loans are the main earning assets. Accordingly, numerous studies (Hessou & Lai, 2018; Tchakoute Tchuigoua et al., 2020; Tehulu, 2021; Wagner & Winkler, 2013) have examined the factors that influence lending behavior. However, prior studies have focused mainly on examining the role of firm-specific and macroeconomic factors in the credit supply of financial institutions.

Although institutional quality has gained popularity in studying the performance of financial institutions (Alraheb et al., 2019; Awdeh & El-Moussawi, 2021; Canh et al., 2021; El Hourani & Mondello, 2019), empirical research that examines the effect of institutional quality<sup>1</sup> on loan supply is scant in financial institutions in general and missing in the context of microfinance institutions (MFIs). Weaknesses in institutional environment could affect the performance of the financial sector by affecting investments (Beekman et al., 2014), contract enforcement (Bae & Goyal, 2009) and efficiency of resource allocations, among other factors. Empirical studies have also confirmed that institutional quality is one of the determinants of the efficiency (Chan et al., 2015; Hussain et al., 2021), capital structure (Alraheb et al., 2019; Tchakoute Tchuigoua, 2014) and systemic risk (Anginer et al., 2018; Canh et al., 2021; Essid et al., 2014) of financial institutions. Despite international organizations' efforts and call of developing countries to improve institutional quality, empirical studies that examine whether investments in improving institutional environment contribute to greater credit supply for the poor are scant and consequently, the need for additional studies is obvious. Institutional framework could matter in the lending behavior of financial institutions as financial institutions might, for example, reduce loan amounts in a weak institutional environment, specially, when contracts are weakly enforceable (Bae & Goyal, 2009).

In addition, institutional quality could influence the credit market by affecting the lending terms, the degree of adverse selection and borrower moral hazard problems (Bermpei et al., 2018). Information asymmetry, adverse selection and moral hazard problems are major problems in the credit decisions of financial institutions as the loans have to be repaid. The degree of regulatory compliance could also depend on the institutional quality of the countries in which the financial institutions operate (Damanian et al., 2004). This might also affect lending behavior as MFIs operating in a weak institutional environment might violate regulations such as liquidity and capital requirements and grant more loans in order to attain their twin goals of financial sustainability and social missions. Accordingly, empirical research has also focused on the role of institutional quality in the credit growth of financial institutions, particularly commercial banks (Awdeh & El-Moussawi, 2021; Gani & Rasul, 2020; El Hourani & Mondello, 2019). Nevertheless, while those empirical studies are scant, studies that examine the institutional quality and credit growth nexus in the context of MFIs are also missing. Consequently, using unbalanced panel dataset of 131 MFIs across 31 sub-Saharan Africa (SSA) countries during 2004–2018, the study examines the relationship between credit growth and institutional quality. To this end, we apply the Arellano-Bover /Blundell-Bond two-step Generalized Method of Moments (GMM) Windmeijer bias-corrected standard errors to estimate the parameters.

The study has several valuable contributions. First, the study reveals new and interesting evidence that political stability “sands the wheels” of credit growth of MFIs suggesting that MFIs operating in countries where there is stronger political stability tend to be more risk averse and limit credit supply. This negative relationship between credit growth and political stability suggests that MFIs operating in countries with political instability ought to hold adequate capital buffer to absorb any anticipated and actual loan losses as less risk aversion may lead to excessive credit growth and build-up of systemic risk that could eventually lead to MFI insolvency. Second, the

study uncovers that the rule of law “greases the wheels” of credit growth of MFIs, indicating that when people abide by the rule of law, MFIs expand credits more as borrowers are less likely to engage in moral hazard problems. Given this vital role of strong legal enforcement in the credit supply of MFIs, the study also recommends that governments need to strive for a stronger rule of law to expand credits more in the poverty alleviation endeavor as weak law enforcement might invite borrowers for moral hazard problems and discourage MFIs from lending more. Third, our findings show that, apart from MFI specific and macroeconomic factors, institutional quality is also an important determinant of MFI credit supply. Hence, regulatory bodies also need to consider the role of institutional quality in the credit growth of MFIs to deal with a possible credit crunch. Moreover, the study also adds new evidence to the literature on the institutional quality and credit growth nexus in financial institutions in the context of MFIs.

The remaining sections are structured as follows: In Section 2, we provide our review of the literature on what drives the credit growth of financial institutions with particular focus on the role of institutional quality in the loan growth of financial institutions along with our hypothesis. In Section 3, we describe our data, sampling, modeling and estimation technique. In Section 4, we present and discuss the results. Finally, in Section 5 we wind up our study by providing the conclusions and implications of our findings.

## 2. Review of the literature

### 2.1. Institutional quality and credit growth

Numerous studies have revealed that firm-specific and/or macroeconomic factors are the commonly identified determinants of the loan supply of financial institutions (Hessou & Lai, 2018; Tchakoute Tchuigoua et al., 2020; Tehulu, 2021; Wagner & Winkler, 2013). However, the literature has also shown that institutional quality also matters in the performance of financial institutions. For example, Anginer et al. (2018) investigate the role of institutional environment in the capital and systemic risk nexus in banks and uncover that systemic risk could decline with an increase in capital and this effect is more pronounced for financial institutions with weak institutional environment. Essid et al. (2014) also examine the effect of institutional quality in ensuring banking stability. The authors conclude that better institutional environment, particularly, voice and accountability, political stability and the rule of law are essential factors to ensure banking stability. Similarly, Canh et al. (2021) document that a stronger institutional system is important to reduce bank credit risk due to a lower information asymmetry which could improve portfolio quality. Using 160 banks operating in the MENA region during 2004–2014, Alraheb et al. (2019) also show that institutional variables influence capital ratios. Specifically, their findings reveal that banks hold more capital when there is stronger political stability and control of corruption.

The literature also reveals that institutional factors are vital in the lending behavior of financial institutions. Awdeh and Hamadi (2019) argue that political instability might lead to information asymmetry and this could lead to a decline in lending activities. The higher information asymmetry in politically unstable countries could also imply higher adverse selection and borrower moral hazard problems which could induce financial institutions to reduce credit supply. El Hourani and Mondello (2019) confirm that political stability “greases the wheels” of bank credit supply. Awdeh and El-Moussawi (2021) argue that political stability could decrease uncertainty and insecurity and encourage financial institutions to grant more loans. Similarly, Sanga and Aziakpono (2022) state that political stability could give confidence to entrepreneurs and investors to create new business and expand their investment which in turn raises demand for financial intermediation. Hence, we hypothesize that political stability “greases the wheels” of MFI credit growth. Prior studies also document that the rule of law is an important determinant of bank credits. Gani and Rasul (2020) and Awdeh and El-Moussawi (2021) have examined the effect of institutional quality on bank credits and document that the rule of law “greases the wheels” of bank credits. Similarly, Bae and Goyal (2009) show that financial institutions reduce loan amounts when contracts are weakly

enforceable. When the rule of law is stronger, people abide by the rule of law and borrowers are less likely to engage in moral hazard problem which in turn encourages financial institutions to extend more loans.

Empirical research on the effect of rule of law on microfinance efficiency has also revealed that the rule of law (specifically, property rights and government integrity) influences MFI financial efficiency positively (Hussain et al., 2021). The higher financial efficiency of MFIs in countries with strong rule of law could also allow such MFIs to have more assets that can be supplied to the poor in the form of a loan. Therefore, we expect the rule of law to be positively associated with the credit growth of MFIs. Similarly, government effectiveness could “grease the wheels” of credit growth by introducing policies that can reduce information asymmetry including the establishment of public credit bureaus from which financial institutions can get information about borrowers’ credit history, thereby reducing adverse selection. The findings of Sanga and Aziakpono (2022) confirm this positive association between the two, suggesting that the ability of governments to formulate and implement appropriate policies encourages banks to grant more loans. Conversely, ineffective government could crowd out bank credit supply to the private sector as a result of public debt and reduce private sector development (Li and Skully, 1991 as cited in Sanga & Aziakpono, 2022). However, El Hourani and Mondello (2019) provide evidence that the effect of government effectiveness on credit supply could also be negative. Our a priori expectation is a positive association of government effectiveness with the credit growth of MFIs.

As to the impact of control of corruption on credit supply, Awdeh and El-Moussawi (2021) document that stronger control of corruption is related with higher bank lending in the MENA region. Corruption might affect bank lending negatively because it could reduce investment incentives (Murphy et al., 1993) and obviously increase transaction costs. However, Mendoza et al. (2015) provide evidence that corruption could also “grease the wheels” of firm performance by avoiding excessive bureaucracy. In the microfinance context, we postulate that corruption could “sand the wheels” of MFI credit supply to the poor since MFIs charge higher interest rate on loans and the corruption might substantially increase their costs and this could lead to lower investment incentives and demand for loan. The literature also reveals that regulatory quality is a crucial factor in the lending behavior of financial institutions. Sanga and Aziakpono (2022) assert that the ability of the government to develop and implement sound policies and regulations that promote the development of the private sector is an important stimulus for bank lending to the private sector. Gani and Rasul (2020) and El Hourani and Mondello (2019) have also revealed that regulatory quality is positively associated with bank credit supply. Therefore, we expect a positive relationship between regulatory quality and the credit growth of MFIs. Finally, Sanga and Aziakpono (2022) show that voice and accountability have a positive and significant effect on bank credit. The authors argue that freedom of expression and respecting fundamental rights of the society that allow country’s citizens to participate in selecting their government and pursue their economic and social ambitions might increase the demand for loans. Hence, our a priori expectation is a positive association of voice and accountability with the credit growth of MFIs.

Accordingly, this study tests the following hypotheses:

**Hypothesis (H1):** *Political stability “greases the wheels” of credit growth of microfinance institutions.*

**Hypothesis (H2):** *Rule of law “greases the wheels” of credit growth of microfinance institutions.*

**Hypothesis (H3):** *There is a significant positive relationship between government effectiveness and the credit growth of microfinance institutions.*



**Hypothesis (H4):** *Corruption “sands the wheels” of credit growth of microfinance institutions.*

**Hypothesis (H5):** *The regulatory quality of a nation has a significant positive relationship with the credit growth of microfinance institutions.*

**Hypothesis (H6):** *Voice and accountability in a nation has a significant positive association with the credit growth of microfinance institutions.*

## **2.2. MFI Specific determinants of credit growth**

One of the firm-specific drivers of credit growth is capitalisation. The capital crunch hypothesis implies that if capital is low and there is capital adjustment difficulty, financial institutions could lower their loan supply to meet capital requirements. Conversely, banks with higher capitalisation could expand credits more since their capital surplus allows them to absorb more loan losses and still fulfill the minimum capital requirement. Several studies have empirically confirmed this hypothesis (Gambacorta & Shin, 2018; Tehulu, 2021). However, Cucinelli (2016) documents a negative relationship indicating that capitalization could also be associated with risk aversion, the negative relationship implying that financial institutions with higher capitalization are more risk averse. The liquidity of MFIs is another factor that could affect loan supply positively (Hessou & Lai, 2018). A higher liquidity ratio implies the availability of more free cash flows which allow banks/MFIs to grant more loans.

The literature on lending behavior also shows that portfolio risk is one of the important determinants of credit growth. Tehulu (2021) argues that a higher portfolio risk could lead to lower cash flow which results in lower loanable funds that in turn leads to lower credit supply. Large financial institutions can have easier access to loanable funds (Brendea & Pop, 2019) to support their credit expansion. Consequently, the relationship between size and credit supply of financial institutions could be positive (El Hourani & Mondello, 2019). A higher profitability could contribute to loan growth positively as financial institutions might use retained earnings for funding loans (Hessou & Lai, 2018; El Hourani & Mondello, 2019). However, Tehulu (2021) reveals that profitability is negatively associated with the credit growth of MFIs suggesting that more profitable MFIs make a balance between financial sustainability and social impact, while less profitable MFIs focus more on their social missions and grant more loans.

## **2.3. Macroeconomic factors and credit growth**

The literature shows that macroeconomic factors, viz. economic growth, GDP per capita, inflation and employment matter in the lending behavior of financial institutions. Empirical studies reveal that the growth of loans tends to be pro-cyclical (El Hourani & Mondello, 2019; Tchakoute Tchuigoua et al., 2020; Tehulu, 2021). Several explanations have been suggested for cyclicity in lending behavior. One theory of pro-cyclicity is over-optimism (Berger & Udell, 2004). During an expansion, financial institutions may underestimate their risk exposure and ease their credit standards, in part, since the observed loan performance problems are low during an expansion, and then rise dramatically during the downturn (Ibid). A higher economic growth could also imply higher income, more consumption and investment opportunities which leads to an increase in the demand for loans (Tehulu, 2021). The pro-cyclicity of loan demand translates into pro-cyclicity of credit growth. However, prior research also argues that credit growth could be counter cyclical. According to these views, higher economic growth could improve firms' profitability and this could make it possible to rely more on internal funds, reducing credit demand during upturns (Kiss et al., 2006). Similarly, households and firms might increase debt levels to smooth consumption and finance assets at times when their income is temporarily below expected levels during downturns (Ibid). These could lead to a counter cyclicity of credit growth.

The catch-up phenomenon is also an important macroeconomic variable that could influence the loan growth of financial institutions. The catch-up effect or theory of convergence, which is grounded, in part, on the law of diminishing marginal returns, implies that poorer economies tend

to grow more rapidly and, therefore, have higher credit growth than wealthier economies and all nations will converge in terms of income per capita over time.<sup>2</sup> In their study of “Credit growth in central and eastern Europe: Trend, Cycle or Boom”, Kiss et al. (2006) confirm that the credit growth in new member states is largely explained by the catching-up process. Other macro-economic factors that influence the credit growth of MFIs are inflation and employment. Like GDP growth, employment and inflation could be positively associated with demand for loan. These positive relationships with demand for loans could contribute to the positive associations of inflation and employment with the credit growth of financial institutions. Hence, this study also considers macroeconomic factors as potential determinants of lending behavior.

### 3. Data and methodology

#### 3.1. Data and sampling

We use a panel dataset of 131 MFIs across 31 SSA countries during 2004–2018. The dataset for MFI specific factors is obtained from the MIX Market database,<sup>3</sup> while the dataset for macroeconomic and institutional quality variables is taken from the database of World Bank development and governance indicators, respectively. To control for the effect of the global financial crisis, we divide the time horizon into three sub-periods: the years 2004–2007, the pre-crisis period, the second period—2008 and 2009 (the global financial crisis period) and the third period from 2010 to 2018 (the post-crisis period).

#### 3.2. Modeling credit growth

In this study, we build on Tehulu (2021)<sup>4</sup> and model the credit growth of MFIs as a function of MFI specific, macroeconomic and institutional factors. Our main variables are the institutional factors. Six factors, namely, Voice and Accountability (VACC), Political Stability and Absence of Violence (PSAV), Government Effectiveness (GOVE), Regulatory Quality (REGQ), Rule of Law (RLAW) and Control of Corruption (CCOR) are included to test the relationship between credit growth and institutional quality. Accordingly, our econometric model is as follows:

$$CG_{i,c,t} = \alpha_0 + \beta_1 CG_{i,c,t-1} + \psi_1 VACC_{i,c,t} + \psi_2 PSAV_{i,c,t} + \psi_3 GOVE_{i,c,t} + \psi_4 REGQ_{i,c,t} + \psi_5 RLAW_{i,c,t} + \psi_6 CCOR_{i,c,t} + \phi_1 CTAR_{i,c,t-1} + \phi_2 LIQ_{i,c,t-1} + \phi_3 RISK_{i,c,t-1} + \phi_4 PROF_{i,c,t-1} + \phi_5 LNTA_{i,c,t} + \phi_6 LSCA_{i,c,t-1} + \phi_7 SSCA_{i,c,t-1} + \pi_1 GDPG_{i,c,t} + \pi_2 INFL_{i,c,t} + \pi_3 EMPR_{i,c,t} + \pi_4 CUPP_{i,c,t} + \gamma_1 BGFC_t + \gamma_2 AGFC_t + (\eta_i + \varepsilon_{i,c,t}) \quad (1)$$

where CG is the outcome variable (credit growth).  $CG_{i,c,t-1}$  is the lagged outcome variable;  $\beta_1$  is a measure of credit growth persistency;  $\psi_m$  ( $m = 1, 2, 3, \dots, 6$ ),  $\phi_k$  ( $k = 1, 2, 3, \dots, 7$ ) and  $\pi_j$  ( $j = 1, 2, \dots, 4$ ) are the coefficients of institutional, MFI specific and macroeconomic factors, respectively, to be estimated,  $\alpha_0$  is the intercept,  $\gamma_1$  and  $\gamma_2$  are time fixed effects and  $(\eta_i + \varepsilon_{i,c,t})$  is the decomposition of the error term that contains the fixed effects. The rest are as described in Table 1.

##### 3.2.1. Variables and hypotheses

**3.2.1.1. Dependent variable.** The dependent variable is credit growth measured as the rate of growth in Gross Loan Portfolio (GLP) where GLP is all outstanding principals due from all outstanding client loans. The MIX Market dataset is available in USD. Consequently, we have converted the USD to local currency<sup>5</sup> so as to deal with distortions that any significant changes in currency value during the period under consideration might cause. Then, we have calculated the credit growth as the percentage change in GLP in the current year relative to the GLP in the previous year.<sup>6</sup>

**3.2.1.2. Explanatory variables.** The World Bank World Governance Indicators (WGI) use six institutional factors as a measure of institutional quality. These institutional factors include Voice and Accountability (VACC), Political Stability and Absence of Violence (PSAV), Government Effectiveness (GOVE), Regulatory Quality (REGQ), Rule of Law (RLAW) and Control of Corruption (CCOR) and each are



**Table 1. Description of variables\***

Variables	Description	Formula
Credit Growth (CG): Dependent Variable	It is the growth rate of Gross Loan Portfolio	$(GLP_t/GLP_{t-1})-1$
Voice and Accountability (VACC)	Represents “perceptions of the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media”	Estimate ranges from -2.5 (weak) to 2.5 (strong) governance performance
Political Stability and Absence of Violence (PSAV)	Reflects “perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism”.	
Government Effectiveness (GOVE)	It measures “perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies”.	
Regulatory Quality (REGQ)	Measures “perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development”.	
Rule of Law (RLAW)	Represents “perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence”.	
Control of Corruption (CCOR)	Measures “perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as ‘capture’ of the state by elites and private interests”.	
Capitalisation (CTAR)	“Total equity compared to assets”	Total Equity/Total Assets
Risk: Portfolio at risk > 30 days (%) (RISK)	Measures “the portion of loans greater than 30 days past due, including the value of all renegotiated loans (restructured, rescheduled, refinanced and any other revised loans) compared to gross loan portfolio”.	(Outstanding balance, portfolio overdue > 30 days + Renegotiated loans)/Gross loan portfolio
Profitability-Return on Assets (PROF)	Represents “Net operating income (less of taxes) compared to average assets”.	(Net operating income, less Taxes)/ Average assets
Liquidity: Non-earning liquid assets as a % of total assets (LIQ)	“Total cash and cash equivalents compared to total assets.”	Cash and cash equivalents/Total assets
Size (LNTA)	The size of MFIs measured as the natural logarithm of total assets (USD)	LN(Total Assets)

(Continued)

**Table1. (Continued)**

Variables	Description	Formula
Scale Dummies ( <i>LSCA</i> & <i>SSCA</i> )	These are indicator variables representing the magnitude of the gross loan portfolio	Takes one for large ( <i>LSCA</i> ) and small ( <i>SSCA</i> ), otherwise zero; Large: > 8 million (USD); Medium: 2 million—8 million (USD); Small: < 2 million (USD)
GDP growth (annual %) ( <i>GDPG</i> )	“Annual percentage growth rate of GDP at market prices based on constant local currency”	
Inflation, consumer prices (annual %) ( <i>INFL</i> )	It is measured by the consumer price index and reflects “the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services”.	
Employment Rate ( <i>EMPR</i> )	Employment ratio is the proportion of a country’s population that is employed. Ages 15 and older are generally considered the working-age population.	Employment to population ratio, 15+, total (%)
Catch-up Phenomenon ( <i>CUPP</i> )	It indicates the level of institutional and economic development of a country	Natural logarithm of GDP per capita (current US\$)
Pre-crisis Dummy ( <i>BGFC</i> )	A dummy variable that takes 1 if the year is within the pre-crisis period (Prior to 2008), otherwise zero	
Post-crisis Dummy ( <i>AGFC</i> )	A dummy variable that takes 1 if the year is after the crisis period (Post 2009), otherwise zero	

\*Our description of variables is mostly based on the World Bank and MIX Market definitions since the dataset are obtained from the same.

measured on a scale that ranges from −2.5 (weak) to 2.5 (strong) governance performance. This is in line with recent empirical research (e.g. Sanga & Aziakpono, 2022) that also uses the six institutional quality dimensions in examining the effect of institutional quality on financial deepening (bank credit) in Africa. We do not prefer to use a single index for measuring the overall institutional quality because the effects of different institutional factors on credit growth could be different as reflected in our findings and the literature. The definition of the variables is summarized in Table 1. The study controls for MFI specific factors namely capitalisation, risk, profitability, liquidity and size of MFIs. Capitalisation (CTAR) is measured by capital-to-asset ratio. Risk (RISK) represents the amount of loans greater than 30 days overdue as a percentage of total gross loan portfolio. The study uses the return on assets as a measure of profitability (PROF). Liquidity (LIQ) enters the regression equation as liquid assets scaled by total assets. The size (LNTA) of MFIs is measured by the natural logarithm of total assets.

Given the absolute gross loan portfolio could be correlated with the size of MFIs and could cause spurious correlations between credit growth and size, Tehulu (2021) suggests the inclusion of scale dummies to resolve the problem. Hence, large scale (*LSCA*) and small scale (*SSCA*) dummies are also included in our credit growth model. The study also controls for the effects of demand factors captured by four macroeconomic factors, viz. GDP growth (*GDPG*), Inflation (*INFL*), Employment ratio (*EMPR*) and GDP per capita (*CUPP*). Given that microfinance loans are too small to affect macroeconomic variables, we believe that the endogeneity problem could not be a concern regarding the nexus between macro-economic factors and credit growth (Wagner & Winkler, 2013). Finally, to control for global financial crisis time fixed effects, we include two dummies that take 1 for the pre-crisis (*BGFC*) or post-crisis (*AGFC*) period, otherwise zero.

### 3.3. Data analysis technique

In light of the dynamic nature of our model, we apply the Arellano-Bover/Blundell-Bond two-step Generalized Method of Moments (GMM) Windmeijer bias-corrected standard errors to estimate the parameters. The two-step system GMM is preferred over the difference GMM since the former is more efficient than the latter. Given the dataset has several missing values and the GMM also uses differencing, model efficiency is necessary to allow us to incorporate most of the potential determinants and ensure the validity of our hypotheses testing as the omission of relevant variables could inflate standard errors and make hypotheses testing invalid. Given the two-step standard errors are severely downward biased, the study uses Windmeijer bias-corrected standard errors to resolve the bias (Roodman, 2007).

Nevertheless, the over-identifying restrictions must be valid, and there should not be second-order autocorrelation in the idiosyncratic errors in order for the two-step system GMM to allow us to obtain unbiased and consistent estimates of the parameters. As shown in Table 3, the Sargan test results reveal that the overidentifying restrictions are valid (the residuals are uncorrelated with the instruments). We have also confirmed that there is no second-order autocorrelation in the idiosyncratic errors. Moreover, we find that our credit growth models have high explanatory power as reflected by the significance values of the Wald test (Prob > chi2 = 0.0000 in all cases).

## 4. Results and discussions

### 4.1. Descriptive statistics

The descriptive results are summarized in Table 2. Table 2 shows that the credit growth of MFIs is rapidly growing at an average rate of 38% every year. The standard deviation, however, reveals that there is significant variation in credit growth among the MFIs. The mean values of all the six

Table 2. Descriptive statistics					
Variables	Obs.	Mean	Std. Dev.	Min.	Max.
Credit Growth	1135	0.3765545	0.7572647	-0.9474	10.6053
Voice and Accountability	1324	-0.3964577	0.5939794	-1.7	0.72
Political Stability and Absence of Violence	1324	-0.5329381	0.7427723	-2.5	1.2
Government Effectiveness	1324	-0.6364653	0.4252322	-1.75	0.64
Regulatory Quality	1324	-0.5069184	0.3866671	-1.68	0.7
Rule of Law	1324	-0.5903021	0.4170509	-1.72	0.35
Control of Corruption	1324	-0.6322885	0.4151969	-1.53	0.76
Capitalisation	1271	0.3350419	0.4061091	-1.5337	1.0000
Risk	1031	0.0824762	0.1016014	0	0.97
Profitability	1149	-0.0079609	0.1031569	-0.8507	0.3577
Liquidity	1040	0.2135976	0.1904877	0.0001	0.7909
Size*	1276	15.91601	1.929068	10.14624	22.17605
GDP growth	1324	0.0566245	0.0308277	-0.0813044	0.3362937
Inflation	1324	0.0786817	0.0691938	-0.0897474	0.4439128
Employment Rate	1324	0.6885373	0.1114593	0.3646	0.8782
GDP per Capita*	1324	6.588874	0.6870069	4.854657	8.988131

\*Size and GDP per Capita are in natural logarithm

**Table 3. Institutional Quality and MFI Lending Behavior: GMM Results (Outcome Variable: Credit Growth)**

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Credit Growth (Log)	0.128*	0.120	0.143**	0.125	0.129*	0.129	0.130	0.138*	0.121*	0.127
Voice and Accountability	-0.145		-0.097							
Political Stability	-0.264	-0.324**		-0.158					-0.323**	-0.324**
Government Effectiveness	0.104				0.291					
Regulatory Quality	0.250					0.185				
Rule of Law	0.553*	0.625**					0.299		0.724***	0.547*
Control of Corruption	-0.080							0.155		
Capitalisation	0.547**	0.602**	0.624***	0.538**	0.706***	0.722***	0.707**	0.659**	0.542**	0.460*
Risk	-0.576	-0.567	-0.567	-0.729	-0.540	-0.653	-0.610	-0.619	-0.410	-0.375
Profitability	-1.385***	-1.311***	-1.399***	-1.363***	-1.324***	-1.276***	-1.296***	-1.316***	-1.100***	-1.067***
Liquidity	0.033	0.034	0.020	0.059	0.034	0.023	0.027	0.040	-0.022	-0.014
Size	0.263***	0.281***	0.297***	0.282***	0.328***	0.301***	0.327***	0.317***	0.314***	0.319***
Large Scale	-0.248**	-0.252**	-0.301***	-0.249**	-0.254**	-0.232*	-0.249**	-0.260**	-0.310**	-0.284**
Small Scale	0.310***	0.334***	0.391***	0.366***	0.357***	0.347***	0.396***	0.365***	0.406***	0.443***
GDP growth	1.459	1.524*	1.639**	1.816**	1.439*	1.534*	1.433*	1.616**	2.273***	1.741**
Inflation	-0.010	0.007	0.270	0.269	0.146	0.298	0.211	0.318	-0.068	-0.031
Employment Rate	-1.417	-1.480	-0.871	-0.722	-1.805	-1.111	-1.532	-1.211	-1.088	-0.908
Catch-up	-0.302	-0.268	-0.163	-0.112	-0.320	-0.268	-0.320	-0.212	-0.259	-0.254
Pre-crisis Dummy	0.147*	0.124*	0.173**	0.194***	0.155**	0.196***	0.150*	0.182**	0.111	0.106
Post-crisis Dummy	-0.054	-0.066	-0.036	-0.059	-0.045	-0.036	-0.045	-0.035	-0.081	-0.076
Constant	-1.002	-1.552	-3.244	-3.466	-1.821	-2.335	-2.009	-2.878	-2.376	-2.699
Wald Test	chi2(20) = 137.02 Prob>chi2 = 0.0000	chi2(16) = 101.64 Prob>chi2 = 0.0000	chi2(15) = 104.76 Prob>chi2 = 0.0000	chi2(15) = 98.78 Prob>chi2 = 0.0000	chi2(15) = 214.69 Prob>chi2 = 0.0000	chi2(15) = 120.21 Prob>chi2 = 0.0000	chi2(15) = 108.52 Prob>chi2 = 0.0000	chi2(15) = 101.66 Prob>chi2 = 0.0000	chi2(16) = 99.07 Prob>chi2 = 0.0000	chi2(16) = 100.27 Prob>chi2 = 0.0000
Sargan Test <sup>a</sup>	Prob>chi2 = 0.9302	Prob>chi2 = 0.9448	Prob>chi2 = 0.9446	Prob>chi2 = 0.9417	Prob>chi2 = 0.9534	Prob>chi2 = 0.9304	Prob>chi2 = 0.9394	Prob>chi2 = 0.9552	Prob>chi2 = 0.3410	Prob>chi2 = 0.1985
AR(1) <sup>b</sup>	Prob > z = 0.0039	Prob > z = 0.0059	Prob > z = 0.0034	Prob > z = 0.0041	Prob > z = 0.0038	Prob > z = 0.0041	Prob > z = 0.0047	Prob > z = 0.0036	Prob > z = 0.0072	Prob > z = 0.0080
AR(2) <sup>b</sup>	Prob > z = 0.1269	Prob>z = 0.1445	Prob>z = 0.1499	Prob > z = 0.1712	Prob > z = 0.1527	Prob > z = 0.1624	Prob > z = 0.1514	Prob > z = 0.1524	Prob > z = 0.1616	Prob > z = 0.1654
Observations	632	632	632	632	632	632	632	632	632	632
No. of groups	131	131	131	131	131	131	131	131	131	131
No. of instruments	109	105	104	104	104	104	104	104	78	61

<sup>a</sup>Sargan test of over-identifying restrictions where H0: overidentifying restrictions are valid. <sup>b</sup>Arelano-Bond test for zero autocorrelation in first-differenced errors where H0: no autocorrelation. \*\*\* show significance at 1% level; \*\* indicate significance at 5% level and \* reflect significance at 10% level.

institutional quality measures exhibit negative values indicating that the institutional quality of SSA countries is weak. Nevertheless, the minimum and maximum values as well as the standard deviations reflect differences in institutional quality among African countries. This raises an important empirical question: Do the disparities in institutional quality measures lead to fluctuations in the credit growth of MFIs? Hence, in the subsequent section, we address the question whether the variations in credit growth are linked to differences in the institutional quality of the countries the MFIs operate in.

Table 2 also shows that the values of the MFI-specific and the macroeconomic factors have significant variations as reflected by their standard deviation, minimum and maximum values. Hence, in the next section, we also discuss whether these variables are also the determinants of MFI credit growth as they constitute our control variables.

#### 4.2. Econometric results

The econometric results are summarized in Table 3. Given that the six institutional quality proxies might have some correlation, omission of any of the six institutional factors could also make the coefficient estimates of the included institutional factors biased as the effect(s) of the omitted variable(s) will be attributed to the effect of the included variables. Accordingly, Model 1 includes all the six institutional quality proxies. Model 2 replaces Model 1 by eliminating the less relevant variables as they might inflate the standard errors of the coefficients of the other variables and make our hypothesis testing invalid. In alternative regressions (Model 3–8), we also run separate regressions introducing one institutional variable at a time as there might also be a multicollinearity problem (Alraheb et al., 2019). Finally, Models 9 and 10 replace Model 2 to test robustness of the results when reducing the number of instruments for any possibilities of biases associated with the instrument count.

The results show that institutional quality is an important factor in the credit growth of MFIs. We find new and interesting evidence that political stability “sands the wheels” of credit growth of MFIs. The result is statistically significant at 5% level. The negative relationship between political stability and credit growth implies that MFIs operating in countries with stronger political stability might be more risk averse due to regulatory pressures and reduce credit growth in their attempt to fulfill regulatory requirements. Given the possible low regulatory compliance in politically unstable countries (Damania et al., 2004), MFI managers in such economies might be less risk averse and violate regulations such as liquidity and capital requirements to grant more loans in order to attain financial sustainability and/or social missions. So, regulatory pressures and the resulting MFI managers’ risk aversion could explain the negative association of political stability with the credit growth of MFIs. The second channel could be through capital. Alraheb et al. (2019) document a positive association of political stability with capital which suggests that the target capital of MFIs operating in politically stable countries is higher than those operating in politically unstable countries. Consequently, given the same level of actual capital at time  $t-1$ , the lower target capital at time  $t$  in the latter allows MFIs in such economies to have more capital buffer relative to their target capital that could allow them to expand credits more. The positive association of capital surplus (capital buffer)<sup>7</sup> with credit growth documented in the literature (Berrospide & Edge, 2010; Thibaut & Mathias, 2014) also reinforces this view.

The results also show that the relationship between voice and accountability and credit growth is negative, though statistically insignificant. On the other hand, the results reveal that the relationship between credit growth and regulatory quality/government effectiveness is positive, but not statistically significant. The study uncovers that the rule of law “greases the wheels” of credit growth of MFIs, as expected, indicating that when people abide by the rule of law, MFIs expand credits more as borrowers are less likely to engage in moral hazard problems. The result is statistically significant at 5% level. The study establishes that strong rule of law has a vital role in the credit supply of MFIs. This finding is in line with the findings of Gani and Rasul (2020) and Awdeh and El-Moussawi (2021) that document a positive association of the rule of law with bank

credit supply. Awdeh and El-Moussawi (2021) argue that financial institutions reduce credit supply when the rule of law is weaker because contract enforcement (e.g. loan recoveries) might be more difficult in such institutional environment. Our findings also support the findings of Sanga and Aziakpono (2022) which show that the quality of contract enforcement, property rights and courts are essential factors for financial institutions to extend more loans.

The positive association of rule of law with the credit growth of MFIs suggests that governments need to strive for a stronger rule of law to expand credits more in the poverty alleviation endeavors as weak law enforcement might invite borrowers for moral hazard problems and discourage MFIs from lending more. As to control of corruption and credit growth nexus, the result is not statistically significant and fails to support Awdeh and El-Moussawi (2021) who provide evidence of a positive association of control of corruption with credit supply of banks in the MENA region. In light of our results and prior literature, we can infer that the relationships between institutional factors and credit growth could, in part, depend on the region where the financial institutions are located and/or on whether the financial institutions are banks or MFIs. Given institutional quality (especially, political stability and rule of law) is an important determinant of MFI credit supply, our findings also suggest that regulatory bodies also need to consider the role of institutional environment in the credit growth of MFIs to deal with a possible credit crunch.

Regarding our control variables, our findings reveal that MFI specific and macroeconomic factors also matter in the credit growth of MFIs. In all regression models (Model 1–10), capitalisation is positively associated with the credit growth of MFIs. This result is in line with the findings of prior studies which show that the credit supply of banks/MFIs is linked to their capital positively (Gambacorta & Shin, 2018; Tehulu, 2021). MFIs with higher capitalisation have higher potential for larger borrowings given institutional and retail depositors and creditors are more willing to deposit in or lend to highly solvent MFIs. Hence, such MFIs could expand credits more by increasing their loanable funds using deposit and non-deposit borrowings. On the other hand, MFIs with poor capitalisation have a higher degree of insolvency and thus, might limit their loan supply since such MFIs are constrained to expand their assets. The positive relationship of capital with credit growth suggests that if MFIs operating in countries with weak institutional quality increase their capitalisation, it could help them not only to improve resilience by absorbing any losses resulting from risk taking behavior but also to expand credits more.

Furthermore, Table 3 reveals that other MFI specific factors including profitability, size and scale of MFIs are significantly related with MFI credit growth. The empirical results also show that economic growth is pro-cyclical, while the other macroeconomic factors do not have significant effects on MFI loan growth. Although prior empirical research uncovers a negative effect of GDP per capita on credit growth (Tehulu, 2021), it is statistically insignificant in our case, suggesting that the inclusion of institutional factors has absorbed the predictive power of GDP per capita (catch-up phenomenon) due to the correlation between the level of economic development and institutional factors. The pre-crisis dummy has a positive and statistically significant coefficient and reveals that the credit growth before the crisis was 12% to 20% higher relative to the credit growth during the global financial crisis. Nevertheless, the post-crisis credit growth does not significantly differ from the credit growth during the crisis indicating the persistent effect of the global financial crisis on the credit growth of MFIs. Finally, in light of the possibility of biases associated with the instrument count, we have also made robustness tests to check the sensitivity of the results to reducing the number of instruments. In this respect, given that the appropriate empirical model is Model 2 (Table 3) as it eliminates irrelevant variables from the model and improves model efficiency, we re-run Model 2 and checked the validity of the results by reducing the number of instruments. We find that the results are robust (Model 9 and 10 in Table 3).

## 5. Conclusions

Institutional quality has gained popularity in explaining the performance of financial institutions. Nevertheless, studies that examine the relationship between credit growth and institutional quality



are scant in financial institutions in general and missing in the context of Microfinance Institutions (MFIs). Thus, the purpose of this article is to examine the effect of institutional quality on the credit growth of MFIs in SSA. To this end, the paper uses a panel dataset of 131 MFIs across 31 SSA countries spanning 2004–2018 and applies the Arellano-Bover/Blundell-Bond two-step Generalized Method of Moments (GMM) Windmeijer bias-corrected standard errors to estimate the parameters. The study reveals that institutional quality is an important factor in the credit growth of MFIs. We uncover new and interesting evidence that political stability “sands the wheels” of credit growth of MFIs, suggesting that MFIs operating in countries where there is stronger political stability tend to be more risk averse and limit credit supply. On the other hand, the rule of law “greases the wheels” of credit growth of MFIs, indicating that when people abide by the rule of law, MFIs expand credits more as borrowers are less likely to engage in moral hazard problems. While the relationship between credit growth and regulatory quality/government effectiveness is positive, it is not statistically significant. Similarly, voice and accountability and control of corruption do not have significant effects on the credit growth of MFIs.

### ***The empirical results have the following useful policy and theoretical implications***

In light of the negative relationship between credit growth and political stability, we suggest that MFIs operating in countries with political instability ought to hold adequate capital buffer to absorb any anticipated and unforeseen loan losses and improve their resilience as less risk aversion may lead to excessive credit growth and build-up of systemic risk that could eventually lead to MFI insolvency. This policy implication is highly relevant particularly when we consider the fact that financial institutions operating in countries with less political stability also hold lower capital relative to those operating in countries with more political stability as documented in prior empirical research. Our study also supports the notion that regulators and supervisory authorities monitor financial institutions in weaker institutional environments more closely. Given the vital role of strong law enforcement in the credit supply of MFIs, the study also advises governments to strive for a stronger rule of law to expand credits more in the poverty alleviation endeavor as weak law enforcement might invite borrowers for moral hazard problems and discourage MFIs from lending more.

Furthermore, our findings show that, apart from MFI specific and macroeconomic factors, institutional quality is also an important determinant of MFI credit supply. Hence, regulatory bodies also need to consider the role of institutional quality in the credit growth of MFIs to deal with a possible credit crunch. Moreover, this study also contributes new evidence to the literature on the institutional quality and credit growth nexus in financial institutions in the context of MFIs. Finally, we suggest that future research shall use larger or global dataset and undertake a time-varying analysis to test whether the nexus between institutional factors and credit growth of MFIs is stable across different time periods or not. Our dataset is small (131 MFIs during 2004 to 2018) and such sensitivity analysis will significantly increase the number of instruments relative to the number of groups (MFIs) and could result in a bias associated with the instrument count.

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### **Notes**

1. Institutional quality is a broad concept that captures voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption and measures how strong/weak a nation's institutions are in shaping behavior.
2. <https://www.investopedia.com>
3. <http://www.mixmarket.org>. This dataset is now available under the World Bank database.
4. For additional details on our econometric model, please read Tehulu (2021).
5. We use the official exchange rate (LCU per US\$, period average) to convert the USD to local currency.
6. See, Tehulu (2021) why this technique is a superior technique in measuring credit growth while using

cross-country data in comparison to other approaches such as logarithm of loans and loan to asset ratio.  
 7. Capital surplus or capital buffer is the excess of actual capital at time  $t-1$  and the target capital at time  $t$ .

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