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Entrepreneurial Growth under Financial Inclusion: A Firm-Level Analysis of Microenterprises in Abeokuta Metropolis

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ABSTRACT

This study applies the Two-Stage Least Squares (2SLS) estimator to analyse the impact of financial inclusion on micro-firms' employment growth in the Abeokuta metropolis. A survey research design was employed to randomly select 384 owners and managers of microenterprises in the study area. The traditional Ordinary Least Squares (OLS) produces underestimated and overestimated impacts of financial inclusion indicators on firm employment growth due to endogeneity issues with the predictors. However, the observed 2SLS estimation outcomes show that when the financial inclusion of a microenterprise is instrumented with education level, efficient and consistent estimates are obtained. From the 2SLS analysis, a one percent increase in access to and availability of the formal financial system leads to a corresponding 1.13 percent and 1.76 percent decrease in the employment growth of the sampled firms at two significance levels (5% and 10%), respectively. The study then affirms that high access to and availability of formal financial products and services significantly slow down employment growth among microenterprises in the study area. These results imply that increasing levels of financial inclusion are not palatable for micro-firms in the study area due to the significant financial challenges they face. It is recommended that bespoke formal financial products and services be provided for micro-firms, including addressing the daunting financial challenges these firms face.

INTRODUCTION

The importance of financial inclusion is increasingly recognized among governments, and financial institutions, including international financial and development organizations like the International Monetary Fund (IMF), World Bank, African Development Bank, and others. With financial inclusion (FI), more previously financially excluded people and businesses can access and use financial products and services at affordable prices. Academics and industry stakeholders argue that FI offers gains to firms by decreasing liquidity or financial constraints, increasing investments and ensuring higher firm growth (Bricknell & Kertay, 2024; Nizam *et al.*, 2020; Chauvet & Jacolin, 2017). Broadly, at the macro level, FI is believed to enhance employment generation, poverty reduction, contribute to economic growth and promote income redistribution (Anastasia *et al.*, 2020; Park & Mercado, 2018b; Omar & Inaba, 2020).

Despite wide recognition and importance of financial inclusion to all economic agents including national economy micro, small scale enterprises, and smallholder farmers still face acute credit constraints in developing economies (Bricknell & Kertay, 2024; Global Findex, 2021; African Development Bank, 2019; Chandio & Jiang, 2018; International Monetary Fund, 2020; Osabohien *et al.*, 2020c; Mayorga *et al.*, 2024; World Bank, 2020). Even in rural areas of developed countries or among low-income-oriented micro businesses in these economies, the credit gap is still an issue. In particular, credit gap financing is more evident in Nigeria where a

large number of micro and small-scale enterprises record a lack of access to investible funds as a major business obstacle in the country (Anga *et al.*, 2021; Anastasia *et al.*, 2020; Ogidi & Pam, 2021; Agbim, 2020). Meanwhile, the credit financing gap that impedes a sustainable level of entrepreneurship and small-scale enterprises' growth and development in sub-Saharan Africa is a major financial inclusion concern in these countries, particularly economies where abject poverty is prominent (Triki & Faye, 2013).

In Nigeria, previous studies that focus on the relationship between financial inclusion and entrepreneurship growth and development (Anga *et al.*, 2021; Anastasia *et al.*, 2020; Ogidi & Pam, 2021; Ibekwe *et al.*, 2021; Anisiuba *et al.*, 2020) observed positive relationship between financial inclusion and entrepreneurial growth in the country. However, these previous studies suffer from certain empirical strategy flaws and weak measurements of variables, particularly regarding financial inclusion. For instance, given the data time, this study argues that macro-level data employed by Anga *et al.* (2021); Anastasia *et al.* (2020); Ibekwe *et al.* (2021), and Anisiuba *et al.* (2020) for financial inclusion analysis for microenterprises is a misplaced priority and purely an empirical flaw. This is because a study establishing the macroeconomic impact of financial inclusion needs sufficient long-time-series data on financial inclusion measures (Demirguc-Kunt *et al.*, 2017). Again, using total trade sector output by Anastasia *et al.* (2020) to measure retail and wholesale productivity as a proxy for entrepreneurial growth is

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less reliable for standard research that aims to establish the real impacts of financial inclusion on micro-firm growth. This poor measurement of variables could lead to wrong policy formulation on developing micro-firm productivity through financial inclusion. This study employs an Instrumental Variable (IV) regression estimator to correct the endogeneity issue which has been grossly overlooked by most previous studies in the field. This study conducted in Abeokuta, a metropolitan city in Ogun State, Nigeria is organised as follows. The first section introduces the background, the research problem, the main issue with the previous works, and the context for the study. In the second section, a review of the literature was conducted. This section is followed by a discussion of the methods adopted by the research in section three. Section four presents the results, interprets, and discusses the obtained findings from data analysis. The study concludes in section five and ends with recommendations.

LITERATURE REVIEW

The issue of financial inclusion is more important to micro and small enterprises and entrepreneurship at large. The reason is that most poor people or less privileged adults often engage in these kinds of businesses. Thus, improved access to an array of savings and risk mitigation products can help these theoretically financially excluded segments to be more active economically and contribute significantly to the economic growth of a country (Triki & Faye, 2013). An entrepreneur is a person with the ability to transform his/her potential into the creation of business opportunities to earn a living while his/her productive effort is regarded as entrepreneurship. By and large, entrepreneurship is viewed in this study as those operated by microenterprise operators. In this manner, microenterprises are defined here as firms that employ not more than five (5) employees. This approach is similar to the business classification method by the World Bank (2014).

In Nigeria, some strategies for financial inclusion have been designed by Regulatory Authorities, Development Organisations, and non-governmental organisations (NGOs) to promote and extend financial products and services to poor people, entrepreneurs, and micro and small-scale enterprises. According to Central Bank of Nigeria (2012), these strategies include Bank Verification Number (BVN), Digital Financial Services (DFS) initiatives, Agent Banking framework, National Collateral Registry, Know Your Customer (KYC) framework, Micro, Small and Medium Enterprises Development Fund (a sum of ₦220 billion), Financial Literacy and Capital Market Literacy, a 5-year financial inclusion targets for commercial banks (2016 – 2020), innovative insurance, and the passage of Pension Reform Act 2014 premised on the belief that millions of Nigerians in the informal sector will be financially included through pension contribution and investment. Further, the seemingly numerous literature on financial inclusion measurement is yet to recommend a standard or comprehensive measurement

approach for financial inclusion. It has been argued over time that such a standard measure is required to account for the coverage of financial inclusion and monitor the progress of policies on financial inclusion at both macro and micro levels. Even with few attempts that have been made to the development of financial inclusion measures efforts have largely been made at the macro level for cross-country comparisons (Amidzic *et al.*, 2014; Camara & Tuesta, 2014; Sarma, 2008; Sarma, 2010; Sarma, 2012; Sarma & Pais, 2011; Omar & Inaba, 2020) and for regions in Brazil (Banco Central Do Brasil, 2011) or country-focused analysis (Anastasia *et al.*, 2024; Mayorga *et al.*, 2024). The most intuitive idea on the financial inclusion measurement is provided by Sarma (2012).

Sarma proposed that financial inclusion can be better understood if viewed with a multidimensional lens by taking into consideration three important dimensions of financial inclusion. To achieve his objective, Sarma developed the Composite Financial Inclusion Index (CFI). The CFI index by Sarma outlined these three important dimensions of financial inclusion. These include accessibility, availability and usage of financial services by members of a country's population. The Supply-Leading Hypothesis (SLH) is the theory underpinning the current study. SLH was pioneered by Schumpeter (1911) and derived more recognition from the works of McKinnon (1973) and Shaw (1973) who empirically confirmed a link between finance and economic growth. According to the principle of SLH, the economic growth of a country is facilitated by the level of financial development due to its role in the real sector. This implies that high financial development enhances or promotes the growth of an economy. At the micro level, greater financial inclusion of microenterprises would contribute to developing a country's formal financial sector and consequently improve the productivity and growth of micro and small businesses. When a country's financial system deepens, the supply of financial products and services will also increase. Thus, better accessibility of formal financial products and services by underserved and excluded segments of the informal sector is critical to promoting micro-firm productivity in developing countries like Nigeria.

Empirically, many studies have been conducted on the direction of the relationship between financial inclusion and entrepreneurship growth in different continents and across countries. From Latin America, Mayorga *et al.* (2024) employed panel model regression to analyse longitudinal data drawn from 21,825 Colombian manufacturing microenterprises on the relationship between financial inclusion and firm growth. The study found that financial inclusion positively and significantly influences micro firms' growth in Columbia. In the Middle East, Zreik, Marzuki, and Iqbal (2023) used a qualitative approach to analyse the effects of microfinance on Chinese small business owners and discovered that microcredit is very important for supporting micro-business owners in marginalized Chinese communities. The research study highlights the significance of financial inclusion through

microfinance to small business owners in China. In Africa, Bricknella and Kertay (2024) employed content analysis to analyse primary data obtained through focus group discussions and in-depth interviews on the impact of financial inclusion on entrepreneurship in South Africa. The study establishes that greater accessibility of financial services promotes entrepreneurship activities in the study area. The work of Bricknella and Kertay reinforces the evidence provided by Anthanasius-Fomum and Pieter (2023) who found through quantile and ordered logit model regressions that financial inclusion when measured by access to financial services and savings practices has positive and noticeable impacts on the annual profits of micro firms in Eswatini.

In the context of Nigerian microenterprise, Anga *et al.* (2021) uncovered through Error Correction Model (ECM) analysis of time series data that there is a positive relationship between financial inclusion and the performance of the SME sector. This research study implies that financial inclusion promotes entrepreneurship in Nigeria. However, such evidence is macro-data based and may not accurately reflect real financial inclusion at the micro level. The study by Anastesia *et al.* (2020) also used macro secondary data and the ECM approach to estimate the effects of financial inclusion on entrepreneurship growth in Nigeria and found that commercial bank branches have positive and significant consequences for the output growth of retail and wholesale subsectors in Nigeria. However, even though education (e.g. financial education) tends to influence the economic behaviour of potential credit users to access and use formal services as established by Mayorga *et al.* (2024) no study from available literature has treated education as a possible cause of endogeneity issue that can lead to misleading and biased result between financial inclusion and development of micro-businesses particularly in developing countries like Nigeria.

Consequent to the development, this study considers the possible incidence of endogeneity concern in the statistical estimation process using an IV estimator. Again, this study attempts to fill the void in most past Nigerian studies on macro data usage. As stated earlier, macro data employed by Anga *et al.* (2021); Anastesia *et al.* (2020); Ibekwe *et al.* (2021), and Anisiuba *et al.* (2020) for financial inclusion analysis for microenterprises is a misplaced priority and purely an empirical flaw. As a result, this study uses primary data via a structured questionnaire to capture financial inclusion and growth of entrepreneurship at the micro level. To overcome the entrepreneurship growth measurement issue, this study follows the approach of Fowowe (2017) which had earlier been employed by Dinh *et al.* (2012), and Aterido *et al.* (2011) to measure microenterprise growth by using a three-year employment growth variable before the current research survey year.

MATERIALS AND METHODS

This study causal effect of financial inclusion on

entrepreneurship growth specifically microenterprises growth in Nigeria within the Supply Leading Hypothesis (SLH) framework. The study adopts a survey research design. This research design allows a researcher to gather opinions and perceptions of units of analysis on certain measured variables of interest in a research study. The study area in focus is Abeokuta Metropolis. The study city, Abeokuta, is the capital of Ogun State, Nigeria. The ancient city is a commercial centre with a large number of microenterprises including both formal and informal small outlets.

Relatively, this study specifically focuses on formal microenterprises in the study area. In this study, formal microenterprises in the selected environment are those little capital-based (between 1 naira and 5 million naira) businesses registered with the Corporate Affairs Commission (CAC) and obtained business certificates as evidence. In other words, the total number of all formal microenterprises in the study area represents the population.

However, in terms of the figure, the population size is unknown and infinite. This situation led to the researchers' decision to use a sample size formula for an unknown population size as recommended by Krejcie and Morgan (1970). Consequently, a sample size of 384 microenterprises was determined. These microenterprises are represented by firm owners or managers where appropriate. The study uses a systematic random sampling technique to select every fifth microenterprise approach during the observational data collection process. In line with the study's goal, an empirical financial inclusion-induced growth model based on the Supply-Leading Hypothesis is stated below.

$$EMG_i = \alpha + \beta_1 FIC_i + \epsilon_i \quad \dots\dots\dots(2)$$

Where;

EMG = Employment growth;

$EMG_i = (EMG_n - EMG_{(n-3)}) / EMG_n$;

EMG_n = firm employment level three years ago (2021)

and $EMG_{(n-3)}$ = firm employment level in the current year (2024)

α = model intercept;

FIC = Financial Inclusion;

β_1 = slope coefficient of FIC;

ϵ = error term;

i = individual microentrepreneur.

Furthermore, relying on three dimensions of financial inclusion as previously established in the literature review section equation (2) can be expanded in equation (3) as:

$$EMG_i = \alpha + \beta_2 ACC_i + \beta_3 AVL_i + \beta_4 FAG_i + \epsilon_i \quad \dots\dots\dots(3)$$

Where;

ACC = Accessibility (financial inclusion dimension);

AVL = Availability (financial inclusion dimension);

FAG = Firm Age (control variable);

β_2 - β_4 are slope coefficients of the three dimensions of financial inclusion and β_2 = slope coefficient of control variable.

Consequent upon equation (3), the study adopts educational level as an appropriate instrumental variable

to correct for possible endogeneity issues in an expanded equation (3). Without this practice, all slope coefficients in equation (3) will yield biased and unrealistic estimates as there is the possibility of a correlation between the predictor (financial inclusion) and education level as part of the residuals in equation (3). Hence, equation (4) is instrumented as:

$$EMG_i = \alpha + \beta_5 ACC_i + \beta_6 AVL_i + \beta_7 FAG_i + \beta_8 EDL_i + \beta_9 FAG_i + \epsilon_i \quad \dots\dots\dots(4)$$

Where

EDL = Education Level (the instrumental variable)

The instrumented equation (4) with educational level is intuitive for two reasons. First, it corrects the endogeneity issue in financial inclusion as the main predictor of the study through the instrumental variable (EDL). Second, the equation accounts for all covariates that would have obscured the causal relationship between financial inclusion and the growth of microenterprises in the study area. Furthermore, the study adopts a two-stage least squares method (2SLS) to estimate instrumental variables in equation (4). The first stage is to clean up by regressing each of the endogenous variables in equation (4) on other predictors, the instrumental variable (EDL) and the control variable (FAG) being the study covariate. The procedures are contained in the following equations 5 to 6.

$$ACC_i = \alpha + \beta_{10} AVL_i + \beta_{11} EDL_i + \beta_{12} FAG_i + \epsilon_i \quad \dots(5)$$

$$AVL_i = \alpha + \beta_{13} ACC_i + \beta_{14} EDL_i + \beta_{15} FAG_i + \epsilon_i \quad \dots(6)$$

The econometric estimations of equations 5 and 6 yielded predicted values of ACC and AVL (ACC) and (AVL) which represent the exogenous parts of ACC and AVL, respectively. In the second stage, the researchers replace ACC and AVL as the main dimensions of financial inclusion in equation 3 (OLS Model) with (ACC) and (AVL) to estimate equation 8 (Instrumental Variable Model).

$$EMG_i = \alpha + \pi(ACC)_i + (\rho AVL)_i + \beta_{16} FAG_i + \epsilon_i \quad \dots(8)$$

The researchers determine if endogeneity occurs in realistic terms by comparing β_2, β_3 , and β_4 in equation 3 with π and ρ (causal effects) in equation 8. This comparison is conducted through the Hausman Test (Hausman, 1978). All statistical estimations are performed at three levels of significance (1%, 5% and 10%) with empirical expectation that $\beta_2, \beta_3, \beta_4, \pi, \rho$, and δ yield positive coefficients.

RESULTS AND DISCUSSIONS

Presentation of Results

This sub-section showcases the estimation outcomes of Instrumental regression. Information in Table 1 presents inferential estimations of the study through traditional OLS and two-stage regression (IV) analyses.

Table 1: Two-stage Least Squares Regression (Instrumental Variable) Estimation

Predictor / Statistic	Traditional OLS (DV: EMG)	Second-stage OLS Regression		
		DV: ACC	DV: AVL	DV: EMG
ACC	0.17** (0.08)		-0.12*** (0.04)	
AVL	-0.70*** (0.12)	-0.24*** (0.08)		
FAG				
2	-1.12*** (0.20)	0.91*** (0.11)	0.81*** (0.08)	-0.06 (0.37)
3	-1.96*** (0.36)	0.82*** (0.22)	0.69*** (0.15)	-4.48*** (0.58)
EDL		0.19*** (0.04)	0.09*** (0.03)	
Constant	1.24*** (0.11)	-0.78*** (0.12)	0.63*** (0.08)	0.81*** (0.19)
(ACC)				-1.13*** (0.27)
(AVL)				-1.76*** (0.27)
No. of obs.	342	342	342	342
Model Fitness F(5, 336)	34.54***	35.68***	33.90***	55.33***
R-squared	0.34	0.35	0.34	0.44
Endogeneity test				
Durbin (score) chi2(1)		61.41***	49.47***	
Wu-Hausman F(1, 336)		73.53***	56.82***	
Instrument Validity F(1, 337)		20.68***	10.20***	

Notes: (1) Variables such as ACC (Accessibility) and AVL (Availability) are the endogenous predictors; (2) FAG (Firm Age) as a categorical control variable (covariate) is measured on three levels with “young firm” (less than 3 years) coded as 1 (the reference group), “mature firms” (above 3 years to 6 years) coded as 2 and “senior firms” (7-10 years) coded third category; (3) Standard errors are contained in the parentheses; (4) Significance levels are represented ***(1%), **(5%) and *(10%) respectively.

Source: Authors’ Computations from STATA 12.1 Outputs (2025)

Interpretation and Discussion of Results

Furthermore, Table 3 reveals the outcome of the 2SLS estimations performed with 342 observations after system adjustments. At the initial stage, traditional OLS was performed to estimate Equation 3 on the impacts of financial inclusion on employment growth in microenterprises that ply their trade in the Abeokuta metropolis. The results show that ACC (accessibility) positively and significantly impacts the employment growth of micro-firms in the study area. That is, a 1% increase in access to formal financial services and usage increases micro-firm employment growth by 0.17% and 0.66% respectively at three significance levels. Again, the positive impact of the accessibility (ACC) is significant at two significance levels (5% and 10%) among the selected microenterprises is obtained at all three significance levels. In contrast, the standard OLS estimation shows that the availability (AVL) of formal financial services has a negative but significant impact on the micro-firm employment growth (EMG) at the three significance levels. The result indicates that when AVL increases by 1% the employment growth of the study area micro-firms decreases by 70 per cent.

Firm age (FAG) with three sub-indicators (new firm, growing or matured firm) is used as a control variable in Equation 3 and Table 1 reveals that in the traditional OLS estimation, new firms (reference category coded “1”) significantly employ more workers during the research period than the growing firm (coded “2”) and mature firm (coded as “3”) by 1.12% and 1.96% respectively. One intriguing outcome of the estimated traditional OLS is the high magnitude of the impacts of financial inclusion measures on firm employment growth. This incidence may be associated with a lack of adequate information from observational data on the true exogeneity of conditions of interest (financial inclusion). In other words, if caution is not taken, this result may mislead the policymakers about the real effects of financial inclusion on microenterprises growth in Nigeria using the study area as the frontier. Therefore, an efficient estimation is required for informed policy-making decisions on financial inclusion among micro-firms in Nigeria via the use of education as an instrumental variable. The analysis is critical to ascertain if financial inclusion measures (accessibility, availability and usage of formal financial services) used by the study have high correlations with unobserved factors (error term) – an incidence of endogeneity.

Consequently, the study uses “education” as an instrumental variable in Equations 5 and 6 where each predictor serves as an outcome variable explained by a set of other predictors, instrumental variable (education) and

the control variable (firm age). These analyses represent the first stage of the 2SLS estimation. However, the significant results of Durbin (score) and Wu-Hausman in columns 3 and 4 of Table 1 confirm that the relationship between financial inclusion and employment growth of microenterprises in the study area is endogenous. This indicates a high correlation between financial inclusion and error terms in equations 3-5 specified in the methodology section. However, the instrumental validity tests show that the instrument used in each of the two equations under the first-stage estimation is valid in two cases as F-statistic values are greater than 10 being the threshold. Thus, the 2SLS technique will produce more efficient and consistent estimates than the traditional OLS. Therefore, financial inclusion measures were then instrumented and new predicted values were created through the first stage. Subsequently, the predicted scores are then used to represent scores for the predictors in the second stage of the 2SLS procedure.

From the second stage estimation, accessibility (ACC hat) of formal financial services is observed as a negative but significant predictor of growth in the worker additional employment by microenterprises in the study area. By implication, a 1% increase in access to the formal financial system will significantly lead to a corresponding 1.13% decrease in the employment growth of the sampled firms at three significance levels (1%, 5% and 10% respectively). The observed significant negative result contradicts the positive result obtained on accessibility under the traditional OLS. Again, it is shown in column 5 of Table 1 that the result obtained earlier from the classical OLS is overestimated. Thus, the standard OLS method yields misleading results on the impact of micro-firm workers’ employment on access to formal financial services in the study area.

Similarly, the second stage result in column 5 of Table 1 further reveals that the predicted score of formal financial services and products for availability produces a negative but significant impact on the worker employment growth among the population of microenterprises in the study area. It shows that a 1% increase in the rate of availability of formal financial services and products will significantly cause a 1.76% decrease in the employment growth of micro-firms in the Abeokuta metropolis. However, when compared, the result confirms that standard OLS produces an underestimated result on the true impact of formal financial system services availability on employment growth among micro-businesses in the study area. This evidence also corroborates biased and inconsistent estimation by the traditional OLS and thus buttresses the relevance of the 2SLS approach used by the current study. The test of overall model significance

shows in Table 1 that the 2SLS outperforms the standard OLS approach. Again, in terms of R-squared comparison, financial inclusion from the 2SLS model (second stage) explains 55.33% of the total variance in worker employment growth among microenterprises in the study area, whereas in the standard OLS, the total amount of variation explained was 34 per cent. Therefore, using 2SLS in this study is deemed appropriate and efficient.

In the real sense, the 2SLS estimation outcomes imply that accessibility and availability of formal financial services are negative but significant predictors of growth in the additional employment by microenterprises in the study area. This result is surprising and inconsistent with the study's prior expectations. This is because the study's theoretical foundation (Supply-Leading Hypothesis) attests to the positive contribution of financial development to the growth of an entity's economy. More so, such evidence contradicts previous findings by Bricknella and Kertay (2024); Mayorga *et al.* (2024); Zreik *et al.* (2023); Anga *et al.* (2021); and Anastesia *et al.* (2020); However, this unexpected result might not be unconnected with the likely insufficient account balance that cannot sustain a firm's operations for a long period or limits its expansion. Firms with enough money in the bank account or any financial institution account tend to desire expansion and modernization of operations that can ultimately lead to the employment of marginal workers. Thus, an increase in the number of accounts with different financial institutions without adequate cash balance or access to multiple loans may drain meagre financial resources of micro-firms and lead to loss of workers as salaries may not be sustained over time.

Again, numerous challenges often experienced by microenterprises in obtaining finance may prevent them from benefiting from the higher availability of formal financial products and services. When these financial challenges faced by micro-firms are not effectively addressed access to more available formal financial services may also drain their resources as many providers can request commitment balance in accounts owned by these micro-firms. More importantly, the failure of previous studies to instrument financial inclusion variables with user education in their respective estimations could have also contributed to the observed different results. However, state-wide or national datasets can be used to confirm these observed results among microenterprises at the state or national level.

CONCLUSION

This study uses a 2SLS regression estimator to examine 342 cross-sectional data on the relationship between financial inclusion and firm employment growth among microenterprises in the Abeokuta metropolis. The estimation results show that, in the absence of education as an instrument variable, a high correlation occurs between financial inclusion and other extraneous variables (captured by the stochastic term) if standard OLS is only applied. Based on the factual evidence from

2SLS analysis, this study affirms that high access to and availability of formal financial products and services significantly slow down employment growth among microenterprises in the study area. The methodological implication of this study is that efficient and consistent estimates of the relationship between financial inclusion and firm job growth are guaranteed when Instrumental Variable (IV) regression or 2SLS is considered. Again, this study provides a better opportunity for formal financial services to gain significant empirical insight into the appropriate financial inclusion dimensions that facilitate employment creation among micro-firms. It is recommended that bespoke formal financial products and services be provided for micro-firms, including addressing the daunting financial challenges these firms face.

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