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REGIONAL FINANCIAL DEVELOPMENT AND MICRO AND SMALL ENTERPRISES IN PERU

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Académico de Economía

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Regional Financial Development and Micro and Small Enterprises in Peru

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Abstract

Empirical studies suggest that credit constraints prevent the development of Micro and Small Enterprises (MSEs). This study contributes to the analysis by exploring whether higher regional financial development affects the creation and growth of MSEs in Peru. Based on four cross-sectional databases, mainly the 2018 National Household Survey on Living Conditions and Poverty, this paper finds that there is a positive impact on entrepreneur profits; however, the effect is negative on the likelihood of running a business. Interactions between informality and financial frictions may explain this result. Informal financing emerges as an alternative in this context. This study addresses endogeneity issues by using the number of commercial bank branches per 1,000 inhabitants in 1995 as an instrument of the degree of regional financial development in 2018.

Keywords: Financial Development, Micro and Small Enterprises, Informal Finance, Instrumental Variables

JEL Classification: G20, O16, R11

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Desarrollo Financiero Regional y Micro y Pequeñas Empresas en Perú

Resumen

Numerosos estudios empíricos sugieren que las restricciones crediticias afectan el desarrollo de las Micro y Pequeñas Empresas (Mypes). Este documento contribuye al análisis explorando si un mayor desarrollo financiero regional influye en la creación y el crecimiento de las Mypes en Perú. Usando la Encuesta Nacional de Hogares 2018, este trabajo encuentra que existe un impacto positivo en las ganancias de los emprendedores; sin embargo, el efecto es negativo sobre la probabilidad de crear una MyPe. Interacciones entre informalidad y fricciones financieras pueden ayudar a explicar este resultado. Asimismo, el financiamiento informal surge como una alternativa en este contexto. Para tratar con problemas de endogeneidad, este estudio utiliza el número de oficinas de bancos comerciales por cada 1,000 habitantes en 1995 como instrumento del grado de desarrollo financiero regional en 2018.

Palabras claves: Desarrollo Financiero, Micro y Pequeñas Empresas, Financiamiento Informal, Variables Instrumentales

Clasificación JEL: G20, O16, R11

1 Introduction

Micro and Small Enterprises (MSEs) play a fundamental role in worldwide economies. According to UNIDO (2021), micro, small and medium-sized enterprises account for 90% of businesses, 60-70% of employment, and 50% of GDP worldwide. Therefore, they are an important source of job creation and income for large proportions of the population. In context of the Covid-19 pandemic, they are recognised as a key to an inclusive and sustainable recovery.

There exist two perspectives about the creation of MSEs. From the point of view of entrepreneurship, microentrepreneurs are innovative agents who recognize growth opportunities and crystallize these ideas in projects (Schumpeter, 1934; Kirzner, 1973). On the other hand, the MSEs are conceived as a response to economic vulnerability and as a tool to escape from poverty and unemployment (Reynolds, 1999).

Their development is inhibited by multiple factors such as lack of training, low adoption of technologies, institutional and legal factors, among others. According to Schiffer and Weder (2001), these obstacles are higher than in the case of medium or large firms. In particular, some studies find financing as one of the main constraints that MSEs face (Kerr and Nanda, 2009). Without external resources, MSEs cannot acquire the necessary inputs to start, maintain and expand their operations (ILO, 2015).

This study aims to explore the relationship between financial systems and MSEs in Peru. Specifically, the objective is to assess the effect of regional financial development on two variables: the probability of starting a business and profits. The analysis is empirical and relies upon four cross-sectional databases: i) the National Household Survey on Living Conditions and Poverty 2018 (ENAHO), ii) the National Census 1993, iii) the Financial Inclusion Opportunities Map 2018, and i) the Historical database for commercial banks 1995. To address endogeneity, this paper follows Guiso et al. (2004) and uses the number of commercial bank branches per 1,000 inhabitants in 1995 as an instrument for the degree of financial development in 2018. I can use this estimation strategy given the exogenous introduction of regulatory changes to the Peruvian financial

system in the 90s that heavily determined the actual financial development level in the country.

This paper finds that regional financial development has a positive impact on MSEs profits; however, surprisingly, the effect is negative on the probability of starting a business. There are some reasons for these results. In particular, it may be possible that informality and economic fragility exacerbates financial frictions. Another finding is that informal financing plays a significant role in both the creation and growth of MSEs.

This study contributes to the empirical literature for three reasons. It enriches the analysis of the importance of regional financial development on small businesses in a developing country. Second, the effect of informal financing on the creation and growth of MSEs is incorporated and quantified. Finally, this research is one of the few empirical analyses of the Peruvian economy that use an instrumental variable to deal with endogeneity.

The remaining of the paper is structured as follows. Section 2 briefly points out the mechanisms behind the impact of financial development. Section 3 discusses some of the main empirical studies in the field. Section 4 describes the databases and methodology used. Sections 5 and 6 show and discuss the results. Section 7 concludes.

2 Theoretical framework

Financial systems emerge to facilitate the allocation of resources, across space and time, in an uncertain environment (Merton and Bodie, 1995). Mobilizing and allocating household savings can be costly and difficult; however, financial systems can alleviate these costs through some mechanisms. This study will focus mainly on the credit market.

Credit intermediaries allow both ex-ante and ex-post information advantages (Levine, 1997). Suppose there is a fixed cost to acquire information about a production technology or monitor a project (Diamond, 1984). Without credit markets, investments would require individual payment of this fixed cost. In such an environment, every agent would duplicate efforts. Also, many savers who cannot afford this cost wouldn't be able to participate in the market. Hence,

financial intermediaries reduce acquisition and transactional costs, which increases the probability of new businesses carrying out several projects.

Second, financial institutions facilitate risk reduction, especially liquidity and idiosyncratic risk. Liquidity risk arises due to the uncertainties associated with converting assets into a medium of exchange. Informational asymmetries and transaction costs may intensify liquidity risk (Levine, 1997). Furthermore, Cristiano (2022) points out that even when a project has been carefully planned, there may be an element of surprise ex-post. Financial markets help diversify these risks. This advantage allows projects with a high expected return or riskier plans to access funds.

Finally, financial intermediaries allow the mobilization or pooling of family savings. As a result, projects that require significant amounts of money can be implemented. Also, the pooling of savings encourages innovation in entrepreneurs. An efficient financial system would be able to sustain radical innovations (Schumpeter, 1934). Additionally, according to Ghatak (2021), individuals who start poor can overcome their endowment barriers.

These benefits of financial systems for households and firms are fulfilled to the extent that intermediaries manage to overcome the financial frictions associated with the lender-borrower relationship. For this reason, they screen borrowers, to alleviate the problem of adverse selection; monitor, to alleviate moral hazard; obtain collateral; and threaten to restrict future loans, if there is no commitment (Ghatak, 2021). In this context, financial development is defined as the progressive elimination of the frictions associated with financial transactions that limit financial contracts and participation (Cermeño and Roa, 2013).

To sum up, the development of credit markets makes it possible for individuals and firms to more easily access external funds. In the case of small enterprises, numerous studies highlight the importance of distance in the provision of loans to small businesses (Petersen and Rajan, 2002; Samolyk and Avery, 2000; Alessandrini et al., 2009). Due to their higher risk and small-scale operations, MSEs generally do not access more integrated financial markets. Therefore, national financial markets alone may not be sufficient to alleviate financing constraints for entrepreneurs (Kerr and Nanda, 2009).

3 Literature review

Numerous empirical studies analyse the relationship between financial development and the real sector. At the macroeconomic level, under the assumption that the size of the financial system is positively correlated with the provision and quality of financial services (Goldsmith, 1969), research have focused on the aspect of financial deepening. King and Levine (1993) is one of the pioneering papers in the field. Their study concludes a positive correlation between financial development and economic growth in 80 countries in the period 1960-1989. However, the authors do not deal with endogeneity, which motivates subsequent studies to contribute with different empirical strategies. One of them is Beck et al. (2000), which uses a dynamic panel and a GMM estimation. The authors conclude that there is a positive impact of financial development on the economic growth of 77 countries in the period 1961-1995.

Based on a cross-industry analysis in 42 countries, Rajan and Zingales (1998) find that industries that are more dependent on external funding, such as the pharmaceutical industry, grow faster in countries with higher financial development. Their research does not use instrumental variables; however, they rely on the fact that the growth of a specific industry will not affect the financial development of the entire country. Fisman and Love (2004) reports an extension to this study and concludes that this positive effect occurs in the long term and not precisely in the short term.

Among the empirical studies that evaluate the effect of financial development on firms, Guiso et al. (2004) is one of the most influential. Considering that the distance to financial intermediaries is a key factor in financing small businesses (Brevoort, Holmes, and Wolken, 2009), the paper examines the effect of regional financial development. This is defined as the probability of a household being shut off from the credit market. Using the structure of the banking market in 1936 as an instrument, the authors find that financial development enhances the likelihood of an individual starting his/her enterprise and promotes profit growth.

Beck et al. (2015) enriches the analysis by including an assessment of the role of informal financing sources for microenterprises in rural China. The study uses

a survey of 2,000 households in 2009, 27% of which are owners of MSEs. Interestingly, the authors conclude that wealthier households located closer to financial institutions are more likely to run businesses. Also, accessing informal credit is associated with a higher level of profits. Unfortunately, their estimation strategy does not adequately control for selection bias.

Precisely, to overcome this issue, some researches have been using quasi-experimental techniques based on information from potential and new borrowers. For instance, Coleman (1999) exploits a survey conducted among 445 households in 14 villages in Northeast Thailand in the period 1995-1996. The design of this survey allows the author to identify control and treatment villages, which leads to quantifying the impact of a microfinance program more precisely. His results show that the effect of the credit program is not statistically significant onvariables such as physical assets, production, and sales. Coleman (2006) extends and refines this analysis by finding differences in impact for program committee members.

Other studies such as McKernan (2002) rely on large data sets across villages with and without credit services (Tedeschi, 2008). Specifically, the paper employs a survey conducted in 87 rural Bangladeshi villages in 1991-1992 to estimate the effect of credits on profits. The author reports a positive impact of participation in Grameen Bank and concludes that non-credit services such as vocational training or information on health also matter. Similar research on the impact of microcredit programs can be found in Armendariz de Aghion and Morduch (2005).

Finally, few empirical studies analyse the effect of higher financial development at the regional, firm, or household level in Peru. Aguilar (2013) examines the impact of the expansion of microcredit on the growth rate of regional GDP per capita. Assuming that the reverse causality between financial development and economic growth occurs only in the current period, the author uses as instruments the first lags of the variable in levels. The author concludes that microfinance expansion has a positive impact on the regional economic growth. On the other hand, Tedeschi (2008) uses a panel data set from a Peruvian Micro Finance institution (Mibanco) to test for the impact of credit on microenterprise

profits. After controlling for selection bias, the author finds that an average microentrepreneur who borrows earns significantly higher enterprise profits.

Finally, Copestake et al. (2005) employs panel data sets of clients and non-clients to address selection bias. The authors perform a difference-in-difference estimation and conclude that the PROMUC programs does not have a statistically significant impact on business sales or profits.

4 Data and methodology

This paper uses four databases: i) the National Household Survey on Living Conditions and Poverty 2018 (ENAHO), ii) the 1993 National Census, iii) the 2018 Financial Inclusion Opportunities Map, and iv) the Historical database for Commercial Banks.

The first database is a survey conducted by the National Institute of Statistics and Information (INEI). It collects annual nationwide information of individuals on income, occupation, and access to statal services. The second database is the Population and Housing Census 2013, also conducted by the INEI. I will use it mainly for the construction of the instrumental variable. The third database is provided by the Superintendence of Banking, Insurance, and Private Pension Funds (SBS), institution responsible for the regulation and supervision of the Peruvian financial system. This database shows indicators of access and use of financial services at the national and regional levels. Finally, the Historical Commercial Banks Database from the SBS contains information on branches, credits, and some financial indicators for the period 1980-2000 Like ii),I will use this database only for constructing the instrumental variable[1].

Based on this information, this study carries out a cross-section analysis for 2018 and estimates two models. The first model is as follows:

$$\Pr(MSE)_{ir} = \alpha + \beta FD_r + \delta X_{ir} + \varepsilon_{ir}$$

Where MSE_{ir} is a dummy variable equal to 1 if individual i of region r is the owner of an MSE and 0, otherwise. FD_r is the variable of interest and captures the financial development of region r. Specifically, it is measured as the ratio of credits over GDP. X_{ir} refers to other regressors defined in detail in Table 1.

[1] The SBS delivers information for “commercial banks”, “development banks” and “statal banks” for the period 1980-2000. This study will only use commercial banks information to capture the degree of financial development in 1995.

Although the definition of MSE varies from country to country (UNIDO, 2020), this study identifies that an MSE owner is an agent who runs a business with less than 50 workers[2]. The analysis includes independent workers with non-paid workers, who represent 83% of all entrepreneurs, and employers, which make up 17% of all MSEs. Around 86% of MSEs are informal, i.e. do not have the Taxpayer Registration at the National Superintendency of Tax Administration (SUNAT). Agricultural sector comprises 63% of MSEs, whereas commerce and services, 31%. Women conduct 38% of MSEs.

This study uses a financial development indicator at the regional level[3] for three reasons. First, unfortunately, the 2018 National Household Survey on Living Conditions and Poverty does not contain information on access to formal credit at the individual level[4]. The individual is only required to provide general information about savings accounts or credit cards in a formal institution of the financial system. However, the survey does include a question about savings in in small local savings groups[5]. This study will assume that entrepreneurs that save money in these groups can also access informal credit from them. This assumption allows us to examine the effect of informal finances on the MSEs dynamics. Second, numerous empirical studies highlight that the financial development that is relevant for MSEs is the one related to local financial markets, given MSEs higher financial fragility and higher risk (Petersen and Rajan, 2002; Alessandrini et al., 2014). To contribute to this field, this paper chooses this level of analysis. Third, using a regional financial development variable gives us the advantage of closely following Guiso et al. (2004) methodology. Particularly, it is possible to instrumentalize the degree of financial development. I will explain the choice of the instrument in detail in Section 4.

The paper includes regressors at the individual, household and regional levels. First, age influences the probability of starting a business (Azoulay et al., 2020). I include AGE2 to capture the nonlinear effects of this variable. In addition,women are more likely not to be enterprise owners, due to the lack of decision- making autonomy within the family and, in some cases, legal barriers (Awartani and Millis, 2018). Therefore, the dummy FEMALE is equal to 1 if the individual is female, and 0 otherwise. Finally, at the individual level, this study includes the categorical variable EDUCATION, since the educational level of the individual

[2] The National Household Survey on Living Conditions and Poverty (module 500) does not include information of sales.
[3] Regional refers to administrative regions in Peru (departments).
[4] From 2020, the survey *does* include a question about credit access at the individual level.
[5] *Juntas* in Spanish.

impacts the probability of being an entrepreneur through two channels: managerial ability and outside options (Lee,1999).

At the household level, this paper incorporates the variable SIZE, defined as the number of household members. Furthermore, it includes CHILD, the number of people under 18 years of age who live in the household, following Gulyani and Talukdar (2010). A higher number of dependent members in the household is expected to increase the probability of starting a business.

At a more aggregate level, this study includes URBAN, a dummy that takes the value of 1 if the geographical conglomerate is urban, and 0 if it is rural. Likewise, assuming that the probability of starting an MSE is related to demand factors, this study includes DENSITY, measured as the regional population density. Besides this, to capture the effect of outside options for entrepreneurship, this research includes E_CHANGE, referring to the average growth of the employed population in the last five years (2014-2018). Table 1 details the definition, level, and source of information for each variable.

In addition, to assess the probability of starting a business, this study examines the effects on MSE profits. Then, I estimate a second model defined as follows (Model 2):

$$LPROFIT_{ir} = \alpha + \beta FD_r + \delta X_{ir} + \varepsilon_{ir}$$

Where $LPROFIT_{ir}$ is the logarithm of the value of the annual profits of entrepreneurs i in region r. FD_r is, again, the variable of interest and measures the degree of financial development of region r. X_{ir} are the same covariates included for Model 1.

Table 2 summarizes the main statistics. Our sample consists of 69,325 individuals. 24% are owners of an MSE. The average ratio of credits (% GDP) among regions is 25%. Lima, the capital of Peru, is the region with the highest financial development. The average age of the individuals surveyed is 44 years old. Finally, 71% of the surveyed population have no education, primary education or secondary education.

Table 1. Variables: definition, level and source of information

Variable	Definition	Level	Source of Information
Dependant			
MSE	=1 if employer or independent worker, with less than 100 workers	Individual	National Household Survey on Living Conditions and Poverty 2018
LPROFIT	Ln (annual net profit)	Firm	National Household Survey on Living Conditions and Poverty 2018
Regressors			
FD	Ln (credit as % of GDP x 100)	Regional*	Financial Inclusion Opportunities Map 2018
FINFORMAL	=1 if access to informal credit, 0 otherwise.	Individual	National Household Survey on Living Conditions and Poverty 2018
AGE	Age	Individual	National Household Survey on Living Conditions and Poverty 2018
FEMALE	=1 if female, 0 if male.	Individual	National Household Survey on Living Conditions and Poverty 2018
EDUCATION	=1 if no education and basic education, =2 if primary education, =3 if secondary education, =4 if tertiary education excluding university, =5 if tertiary education including university or graduate degrees.	Individual	National Household Survey on Living Conditions and Poverty 2018
SIZE	Number of household members	Household	National Household Survey on Living Conditions and Poverty 2018
CHILD	Number of members < 18 years	Household	National Household Survey on Living Conditions and Poverty 2018
URBAN	=1 if urban, 0 if rural.	Geographical Conglomerate	National Household Survey on Living Conditions and Poverty 2018
DENSITY	Population density	Regional*	Censal information 1993
E_CHANGE	Employment growth rate (average 2014-2018) x 100	Regional*	National Household Survey on Living Conditions and Poverty 2018
Instrument			
FD_95	Number of branches of commercial banks per 1,000 inhabitants	Regional*	Censal information/ Historical database 1995

* Regional refers to administrative regions (departments).

Finally, Table 3 shows the correlations. Surprisingly, the higher regional financial development, the lower the probability of becoming an entrepreneur. However, there is a positive correlation between regional financial development and profits.

Table 2. Summary statistics

Variable	Mean	Std. Dev.	Min	Max
MSE	0.24	0.43	0	1
LPROFIT	8.12	1.6	2.5	13.0
FD	3.28	0.6	2.0	4.3
FINFORMAL	0.04	0.2	0	1
AGE	44.24	15.9	18	98
FEMALE	0.47	0.5	0	1
EDUCATION	3.05	1.1	1	5
SIZE	4.15	2.0	1	21
CHILD	1.33	1.4	0	12
URBAN	0.61	0.5	0	1
DENSITY	251	1,127	2	6,816
E_CHANGE	1.05	0.7	-0.29	3.05

Table 3. Correlations

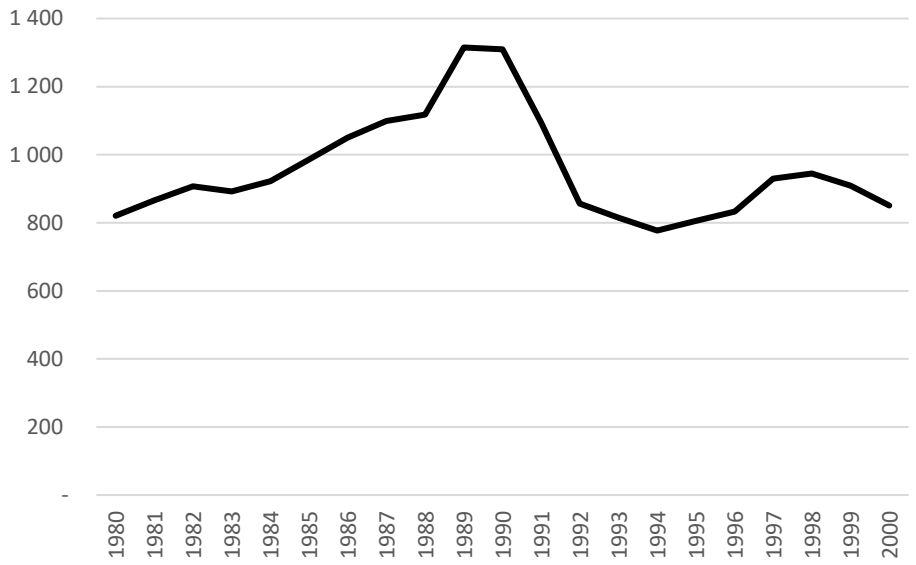
	MSE	LPROFIT	FD	FINFORMAL	AGE	FEMALE	EDUCATION	SIZE	CHILD	URBAN	DENSITY	E_CHANGE
MSE	1.00											
LPROFIT	-0.05	1.00										
FD	-0.18	0.22	1.00									
FINFORMAL	-0.04	0.12	0.12	1.00								
AGE	0.06	-0.16	-0.06	-0.08	1.00							
FEMALE	-0.10	-0.15	0.03	0.07	-0.02	1.00						
EDUCATION	-0.15	0.36	0.20	0.13	-0.38	-0.10	1.00					
SIZE	0.08	0.08	0.10	0.04	-0.36	-0.05	0.11	1.00				
CHILD	0.13	-0.01	-0.01	0.01	-0.39	-0.03	0.01	0.78	1.00			
URBAN	-0.30	0.36	0.33	0.15	-0.12	0.12	0.40	0.11	-0.04	1.00		
DENSITY	-0.08	0.07	0.34	0.05	-0.02	0.01	0.08	0.03	-0.02	0.15	1.00	
E_CHANGE	-0.08	0.13	0.19	0.04	-0.06	0.01	0.08	0.01	-0.02	0.15	0.01	1.00

To address the potential endogeneity, this study uses the Instrumental Variables method. Specifically, it follows the methodology used by Guiso et al. (2004), who rely on an exogenous change in the Italian financial regulation and use the structure of the regional banking markets in 1936 as an instrument for financial development in the 1990s. The history of the Peruvian financial system allows me to follow a similar strategy.

Until the end of the 80s, the Peruvian financial system was fragile and had excessive state participation (Morris, 1999). The control of interest rates, the direct assignment to specific productive sectors, and the lack of competitiveness

in the system prevailed. Thus, after a deep financial crisis, in the early 1990s, the country started an intensive financial reform. In particular, the introduction of the 1991 Banking Law modified the law maintained in the previous sixty years. It incorporated the following elements: financial deregulation through the elimination of controls in the allocation of credit, relaxation of limits on interest rates, raising of minimum capital to prevent insolvency situations, and the introduction of a legal framework on money laundering, among others. This process was materialized in the following years, as shown in Graph 1.

Graph 1. Number of Commercial Bank branches, Peru, 1980 – 2000



Source: Historical database for Commercial Banks (SBS-Peru)

This study takes advantage of this regulatory change and considers it an exogenous shock that determines the level of regional financial development in 2018. Specifically, I use the number of branches of commercial banks per 1,000 inhabitants in 1995 (variable FD_95). The instrument is *valid*, insofar as it captures a change to the degree of financial deepening that is not related to the demand for credit, but rather to solely regulatory reforms. Furthermore, it is *relevant*. Studies such as Bonaccorsi Di Patti and Gobbi (2001) find that the density of branches (the ratio of branches to population) existing in a province is positively associated with the credit availability for firms (particularly for small firms) located in that province. In this study, the correlation coefficient between FD_95 and FD is 0.74. Also, according to Table 4, the variable FD_95 is a

determinant of the degree of financial deepening in 2018. Therefore, this paper uses this variable as an instrument. I do not use other indicators of the structure of the regional financial system as additional instruments as proposed by Guiso et al. (2004) due to limited information availability.

Table 4. FD_95: instrument for regional financial development in 2018 (FD)

VARIABLES	FD
FD_95 (branches per 1,000 inhabitants)	17.36***
	(0.0572)
Constant	2.776***
	(0.00216)
Observations	69,325
R-squared	0.551

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5 Results

Table 5 shows the results for Model 1. Column 1 shows the result with a Probit estimation, before considering any instrument. First, the FD variable is statistically significant at 1% and, surprisingly, it has a negative sign, which implies that higher financial depth decreases the probability of being an entrepreneur. In contrast, the FINFORMAL variable, which captures the effect of informal financing, has a positive sign and is significant at 1%. I will discuss these results in Section 6.

Table 5. Model 1 results. Creation of MSE and Financial Development

Model 1: Prob(MSE)		
VARIABLES	(1) Probit	(2) IV probit
FD	-0.196***	-0.325***
	(0.0172)	(0.0249)
FIN_INFORMAL	0.272***	0.285***
	(0.0427)	(0.0429)
AGE	0.0801***	0.0801***
	(0.00308)	(0.00309)
AGE2	-0.000631***	-0.000628***
	(3.18e-05)	(3.19e-05)
FEMALE	-0.135***	-0.131***
	(0.0172)	(0.0172)
PRIMARY EDUCATION	0.341***	0.349***
	(0.0333)	(0.0333)
SECONDARY EDUCATION	0.213***	0.237***
	(0.0362)	(0.0362)
TERTIARY EDUCATION - NO UNIVERSITY	-0.000582	0.0200
	(0.0430)	(0.0431)
TERTIARY EDUCATION - UNIVERSITY OR GRADUATE DEGREE	-0.162***	-0.134***
	(0.0432)	(0.0434)
SIZE	-0.0432***	-0.0392***
	(0.00661)	(0.00664)
CHILD	0.134***	0.128***
	(0.00924)	(0.00929)
URBAN	-0.578***	-0.538***
	(0.0169)	(0.0173)
DENSITY	-0.000033***	-0.000015*
	(7.55e-06)	(7.84e-06)
E_CHANGE	-0.0430***	0.00392
	(0.0129)	(0.0133)
Constant	-1.992***	-1.662***
	(0.0909)	(0.103)
Observations	69,325	69,325
Marginal effects		
FD	-0.0447***	-0.0739***
	(0.00377)	(0.00544)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The older the individual, the higher probability of becoming an entrepreneur. Also, men are more likely to run an enterprise than women. The labour participation gap that relegates women to income-generating activities could explain this result (Vaca, 2019). Additionally, the higher the educational level of an individual, the lower her/his probability of starting a business.

In terms of household level variables, a higher number of household members reduces the probability of starting a business. CHILD shows the expected sign, so a higher percentage of children in the household increases the probability of running an MSE. Additionally, if a household is located in an urban district, the probably of starting a business lower. A similar result is obtained for E_CHANGE, i.e., a higher employment growth discourages households to incubating an MSE.

Column 2 summarizes the results when financial development is instrumentalized. The conclusions reached above remain, except for the variable E_CHANGE, which becomes statistically non-significant.

Table 6 shows the findings for model 2. Thesample includes 16,644 individuals. This study assumes that each individual conducts an enterprise at the same time. Columns 1 and 2 show the Least Square and the IV Two-Stage Least Squares (2SLS) estimates, respectively.

Table 6. Model 2 results. MSE profits and Financial Development

Model 2: LPROFIT		
VARIABLES	(1) Least Squares	(2) IV 2SLS
FD	0.462***	0.731***
	(0.0291)	(0.0435)
FIN_INFORMAL	0.462***	0.401***
	(0.0723)	(0.0720)
AGE	0.0537***	0.0540***
	(0.00591)	(0.00594)
AGE2	0.000570***	-0.000578***
	(5.66e-05)	(5.70e-05)
FEMALE	-0.364***	-0.377***
	(0.0319)	(0.0316)
PRIMARY EDUCATION	0.184***	0.162***
	(0.0614)	(0.0621)
SECONDARY EDUCATION	0.595***	0.557***
	(0.0667)	(0.0675)
TERTIARY EDUCATION - NO UNIVERSITY	1.013***	0.976***
	(0.0823)	(0.0829)
TERTIARY EDUCATION – UNIVERSITY OR GRADUATE DEGREE	1.450***	1.384***
	(0.0857)	(0.0865)
SIZE	0.0312***	0.0216*
	(0.0120)	(0.0121)
CHILD	-0.0851***	-0.0763***
	(0.0162)	(0.0163)
URBAN	0.839***	0.764***
	(0.0363)	(0.0370)
DENSITY	-0.0000002	-0.000043***
	(1.30e-05)	(1.38e-05)
E_CHANGE	0.124***	0.0598**
	(0.0235)	(0.0245)
Constant	4.686***	3.973***
	(0.183)	(0.208)
Observaciones	16,644	16,644
R2	0.300	0.294

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results in both columns are very similar, so I will only refer to Column 2, which corrects identification issues. First, interestingly, the financial development variable has a statistically significant positive impact on profits. A 1% increase in the regional degree of financial deepening increases annual profits by 0.7%. Informal financing also has a positive impact on the level of profits of these firms.

For Model 2, this study finds that the older the entrepreneur, the higher the profits she/he generates. Similarly, the higher the entrepreneur educational level, the higher the MSE profits. Being a female owner reduces the profits. Related to household variables, the MSE profits increase when the household has more members. However, if these members are predominantly children, the entrepreneur profits decrease. MSEs in urban areas have higher profits than MSEs in rural areas. The DENSITY variable has a negative sign, which could be related to a high degree of competition for the business in dense areas. The variable that captures the growth in the number of employed population (E_CHANGE) is positive and significant at 5%.

6 Discussion of results

In general, the empirical literature finds a positive effect of financial development on variables such as sales, profits, and the probability of running a business (Beck et al., 2015; Guiso et al., 2004; Copestake et al., 2001).

This study finds that the financial development variable has a statistically significant positive impact on profits. However, according to the marginal effect results of Table 5, on average, a 1% increase in the degree of regional financial development reduces the probability of becoming an entrepreneur by 0.07. This conclusion is quite controversial since we expect that higher financial development increases the creation of firms.

There are two possible explanations for this result. First, the Peruvian economy has a high degree of informality and business fragility. According to the National Institute of Statistics and Information of Peru, more than 75% of MSEs do not have the necessary legal registration to operate. In this context of informality, one would expect that financial frictions such as adverse selection are further exacerbated, making it even more unlikely that entrepreneurs rely on formal financing to start a business. Therefore, it makes sense that informal sources become a good alternative in this context. Related to our findings, one can point out two theoretical models that identify higher financial development with a smaller number of entrepreneurs. Franjo et al. (2020) suggest that the elimination of financial frictions also reduces the gains of informal entrepreneurship, which can explain the decrease in the number of individuals

running an MSE in Peru, most of them informally. On the other hand, De Meza and Webb (1999) propose that the more people become entrepreneurs, the higher probability that the improving welfare intervention reduces the number of entrepreneurs. These mechanisms can partially help us understand the results obtained.

A second explanation is that there are issues of endogeneity that are not fully solved. This study uses the method of instrumental variables closely following the methodology of Guiso et al. (2004). However, it could be that the indicator of financial development is correlated with some unobserved determinant of entrepreneurship. According to Reynolds (1999), in some developing economies, MSEs are created as a response to economic vulnerability and to escape from poverty and unemployment. Usually, regions more financially developed are also regions with a higher proportion of dependent workers. Therefore, the negative sign can be related to the fact that there are still some endogeneity issues that are not completely controlled.

The ideal scenario would be to have a database that allows identifying, for example, who households/ firms were discouraged from borrowing or who had a loan application rejection. Precisely, studies such as Tedeschi (2008) take advantage of a panel data set from a Peruvian MFI that allows her to control bias in order to test for the impact of credit on microenterprise profits. Additionally, one can use data of current and incoming borrowers; however, Karlan (2001) has described several sources of potential bias. Finally, it should be highlighted that methodologies that consider a policy shock, as done by Banerjee and Duflo (2014), could be incorporated into future research.

7 Conclusions

This study aimed to assess the impact of regional financial development on the development of MSEs in Peru. Theoretically, financial systems reduce transaction and information costs and facilitate the allocation of resources (Levine, 1997). Likewise, empirical literature emphasizes financial restrictions as one of the main barriers to the emergence and development of firms (Rajan and Zingales, 1998; Guiso et al., 2004; Kerr and Nanda, 2009), mainly MSEs.

Based on a sample of 69,325 households from the Peruvian National Household Survey on Living Conditions and Poverty 2018, this study finds that higher regional financial development does not have positive effects on the creation of new MSEs, even more, it has a negative effect. However, a higher regional financial development does affect the profits of existing 16,644 firms. In contrast, informal financing does have a positive impact on both the creation and growth of MSEs. These results hold even when an instrument for the financial development variable is used.

Three conclusions follow from our findings. First, formal financial systems play a significant role in the growth of on-going MSEs. They provide the necessary funds for expanding operations and implementing new projects. Funding to existent MSEs reduces asymmetries of information. Second, informal lenders emerge as an alternative where financial frictions create natural entry barriers to formal financing. Finally, the decision of becoming an entrepreneur in an economy with high levels of informality is complex and depends not only on the access to the funds required to operate a business.

Therefore, it is crucial to deepen the analysis of financial frictions in the case of MSEs, especially in developing countries. In particular, it is necessary to analyse how the interaction between informality and financial frictions determines the creation and growth of enterprises. Also, future research can improve estimation techniques in order to overcome potential endogeneity.

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