DO MICROENTERPRISES' SIZE AND STATUS MATTER TO ACCESS INFORMAL FINANCE?

¿El tamaño y el registro de las microempresas permite el acceso a los mercados financieros informales?

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Resumen

Las microempresas (MEs) cuando no obtienen los recursos que requieren por parte del sector financiero formal pueden obtenerlos a través de otros intermediarios informales. En este artículo analizamos si las MEs, de acuerdo a su tamaño y estatus de registro ante las autoridades, utilizan el sector financiero informal. Con una muestra de 400 MEs de la ciudad de Puebla (Mexico) durante 2006, encontramos que tanto las MEs informales como las formales utilizan créditos informales pero, aunque el estatus de la MEs tenga relevancia *per-se*, las medianas MEs informales piden créditos a prestamistas y familiares/amigos. Debido que las MEs formales, sin importar su tamaño, también utilizan el mercado financiero informal, los resultados indican la falta de crédito para las MEs.

Abstract

Formal microenterprises (MEs) when cannot obtain the resources they need through the formal financial sector may resort to other informal intermediaries. In this paper we analyze whether MEs, according to their size and

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registration, rely on informal financial lenders. Through a sample of 400 MEs drawn in the city of Puebla (Mexico) during 2006, we found that both informal and formal MEs resort to informal finance but, although MEs' status matters *per-se*, informal middle sized MEs rely on moneylenders as well as on loans from family and friends. As formal MEs, no matter their size, seek for funding in the fringe financial market too, the results suggest that credit for MEs is scarce.

1. Introduction

Informal economy consists of those activities that are performed in different economic sectors not recognized by the government (International Labour Organization [ILO], 2002). In Mexico, 27.6% of the employed population was engaged in the informal economy during 2006, and about 15.6% of economically active population in the country was self-employed in a micro-business (Instituto Nacional de Estadística y Geografía [INEGI], 2006). Also, during the past decade, micro and small enterprises (MSEs) contributed significantly to the economy as they produced about 52% of the GDP (Organisation for Economic Cooperation and Development [OECD], 2005: 279).

The motivations for engaging in informal self-employment, often by establishing MSEs, include pursuing higher incomes, complementing family income, or looking for economic independence (De Ferranti, Perry; Lederman; Maloney, 2002). The literature widely supports the advantages related to the establishment of microenterprises (MEs) as self-employment and income generators, highlighting their role as a safety net for the poorest, and as a mechanism that promotes gender equity and women empowerment (Berger & Buvinic, 1989; Mayoux, 2000).

Though both formal and informal MEs need credit, the former can access the formal financial market, the latter, lacking official registration, are excluded at the grassroots. In this regard, microfinance institutions (MFIs) constitute an alternate avenue to borrow; although to their own lending

procedures may restrict financing to young MEs (i.e. Banco Compartamos, one the largest MFI in Mexico lend to MEs after 2 years of operation). Regardless of MEs' registration-status, potential borrowers that could not obtain funds from the formal financial sector may resort to the informal counterpart (Bell, 1990). In Mexico, bank credit to the private sector was limited during the past decade, even prior to the 2007-2008 credit crunch; so, formal MEs could have also resorted to informal financial intermediaries during this period.

ME's financing needs may be related to various factors ranging from solving cash flow mismatch to investments in inventories and fixed assets; these in turn depend on the business sector the MEs belong to. Although business's detailed information may be found in financial statements, informal MEs typically lack formal accounting and documentation and the formal ones may be reluctant to provide confidential data. Therefore, because financial information cannot be observed, in this paper we focus on the size of the establishment where the MEs perform their business activities as a proxy of MEs' credit needs.

The first hypothesis of this paper posits that smaller informal MEs will rely on informal financial intermediaries but as soon as they are bigger they might tend to abandon such short-term oriented sources of funds. Conversely, our second hypothesis suggests that formal MEs will rely on the informal credit market with a lower likelihood because to some extent they are able to borrow from the formal financial intermediaries.

We tested these hypotheses through a sample of 400 formal and informal MEs drawn in the city of Puebla (Mexico) during 2006. A probit model with Huber-White robust standard errors was estimated in order to infer the role of establishment's size on the likelihood of formal and informal MEs to apply for a credit from informal intermediaries. In order to disentangle any difference between interest-free and high cost lenders, we used the same methodology for those MEs that applied for a loan from relatives or friends, and moneylenders.

The paper is organized as follows. After the introduction, the next section provides a literature review related to MEs formal and informal financing, as well as the econometric models to test our hypothesis. The third section presents model estimates and the discussion for each model. Finally, we present our conclusions.

2. Methodology
2.1. Informal economy: micro and small enterprises

In Latin America workforce participation in the informal economy accounts for 51% of nonagricultural employment where informal self-employment has the largest share (60%) and the remaining 40% is informal wage employment (ILO, 2002). In Mexico, informal economy participation has been estimated between 12 and 50% of GDP, and according to the ILO' statistics 55.6% of Mexican workers are employed in informal enterprises and home work (Ochoa, 2005). During the second quarter of 2009 the employment rate in the informal economy accounted for 28.1% of the employed population and women had a greater participation than men (29.2 *vs.* 27.5%) (INEGI, 2009).

Informal self-employment is a strategy aimed at increasing household income (De Ferranti *et al.*, 2002) and is often performed by establishing a ME that rely on rudimentary production methods and technologies with a low ratio of capital per worker (OECD, 2005). Recent estimates show that in Mexico during 2008 the presence of MEs was widespread; out of 3.6 million enterprises 95.6% were MEs, employing 46.6% of the workforce. The difference with respect to small enterprises is striking; they were just 3.4% of the total, but accounted for 12.3% of the workforce (Pavón, 2010). The decision to carry out informal activities cannot be separated from gender. In developing countries women have to bear the cost of social tasks like childcare and being engaged in the informal economy makes it easier for women to balance family duties and contributing to household income (Zuñiga, 2004; Valenzuela, 2005).

Although the term informal economy is not a synonym for criminal economy (Hussmanns, 2004), it is a fact that the boundaries between illegal and legal but underground activities are difficult to draw accurately (OECD *et al.*, 2002); nevertheless, most activities in the informal economy are legal (Swedish International Development Cooperation Agency [SIDA], 2004). In this paper we refer to the subcategory of informal enterprises as "[those that are] characterized as informal because they rarely comply with all the regulations that apply to their trade, for example concerning registration (…)" (SIDA, 2004:12).

Even though formal MSEs may enjoy the benefits associated with contracts enforcement by the government (Schreiner & Woller, 2003), when the

procedures to join the formal sector are cumbersome, costly, or when the country's legal framework is de facto ineffective, people will have fewer incentives to opt joining the formal economic sector (de Soto, 1987; Johnson, Kaufmann, Shleifer, Goldman & Weitzman, 1997; Friedman, Johnson, Kaufmann, & Zoido-Lobaton, 2000; Djankov, La Porta, Lopez-de-Silanes & Shleifer, 2002). Therefore, informal MSEs avoid formal requirements like official registration and bear the cost of informality such as exclusion from accessing government programs or formal funding sources. In fact, business registration is one of the requirements to apply for bank loans (Pavon, 2010) since it alleviates information problems for lenders as potential borrowers must get through the processes of government authorizations and regular tax declarations.

2.2. Credit rationing

The literature has extensively analyzed credit rationing as a consequence of adverse selection and moral hazard problems (Jaffee & Russell, 1976; Stiglitz & Weiss, 1981). In order to reduce asymmetric information, lenders can monitor borrowers, rely on borrower's reputation based on his/her past performance in debt contracts or, call for collaterals (Bester, 1985; Besanko & Thakor, 1987; Manove, Padilla & Pagano, 2001).

However, because monitoring is costly, credit rationing persists (Allen, 1983; Williamson, 1987), but borrowers with good credit history can get loans on better terms (Diamond, 1989; Berger & Udell, 1995).

A common practice to ameliorate adverse selection and moral hazard problems is requiring collaterals in credit contracts (Leeth & Scott, 1989; Coco, 2000). Because the collateral's value surpasses the loan, it works as a useful guarantee when reducing the cost of enforcing the debt and lender's loss in case the debtor fails to fulfill his/her obligations (Picker, 1992). Accordingly, personal collaterals are preferred to business collaterals because those enterprises whose owners might have to bear a higher cost in case of default are more likely to be disciplined (Voordeckers & Steijvers, 2006; Brick & Palia, 2007). However, in most developing countries lack of credit history, collaterals, high transaction costs (Nenova, Thioro Niang & Ahmad, 2009), and a weak legal framework to ensure the loan's recovery (Fleisig & de la Peña, 2002) are related to the reluctance of the formal financial sector to provide credit to small borrowers.

2.3. MSEs and the financial sector

Because incipient businesses are financially constrained by the banking sector, MSEs' start-up capital is gathered mostly through personal savings (Heino, 2006). Lack of capital hampers investments that in turn lead to the creation of small, often informal, microenterprises that achieve lower revenues because of being established in markets with low entry barriers and high competition level (Bates, 1997). In Mexico, a recent analysis of MSEs' financing (Pavón, 2010) reported that during the last decade most of the credit was provided through suppliers' trade credit and to a lesser extent from commercial banks. The latter was seldom used because of high interest rates and institutional obstacles to access credit.

Because MSEs are characterized by a small scale of operations associated with cash transactions and self-financing (OECD, 2005), when business operations require injecting additional working capital, funds can be obtained mostly through informal intermediaries. Lack of fixed assets, besides hindering labor productivity, can also motivate ME owners to rely on short term loans to avert such shortage (Cotler & Woodruff, 2008). Recent findings acknowledge that remittances have been used for the same purpose in rural (Chiodi, Jaimovich & Montes-Rojas, 2012) as well as in urban areas (Woodruff & Zenteno, 2007), suggesting that migration could ease financial constraints. Microfinance has been thought as an alternative mechanism to finance MEs (often informal) but people also allocate such loans for consumption purposes rather than productive investment (Zapata Martelo *et al.*, 2004), thus hindering microbusinesses' economic sustainability and leading owners into indebtedness (Karim, 2011).

2.4. Informal financial market for MSEs

Because of the difficulties in gathering information related to informal economy and businesses therein (Roubaud, 1995), the extant literature has focused on MSEs without making a clear cut difference between their formal and informal status. This gap needs to be addressed because, on one hand, those MSEs formally registered when applying for funds, might be either receiving the amount needed or being credit rationed. However, on the other hand, informal MSEs do not fulfill the requirements of the credit application, being excluded from the formal credit market at the grassroots.

In Mexico, the reprivatization of the Mexican banking system in 1991 coupled with the 1994 macroeconomic crisis saw, at the beginning of the last decade, an earnings-oriented-participation of foreign ownership in the Mexican banking sector that, paired with a small fraction of credit as a percentage of GDP, contributed in limiting credit access to the private sector (Garrido & Garcia, 2010; Espinosa & Cardenas, 2011). Thus, in order to reduce financial constraints, besides resorting to accumulated savings for financing business activities, owners usually merge business and household's finance. Other financing alternatives include resorting to microfinance institutions (MFIs), borrowing from relatives/friends, participating in rotating savings and credit associations (ROSCAs), or relying on other informal financial intermediaries representing the only funding sources left (Mansell, 1995; Robinson, 2001; Woodruff, 2001; Berensmann *et al.*, 2002; Isaksson, 2002; Armendariz & Morduch, 2005; Velez-Ibañez, 2010). Borrowing from relatives and friends who provide interest-free loans based on reciprocity motives and secured by bonds of trust and reputation –known as social collateral– with the borrower (Van Bastelaer, 2000) is the cheapest source. Among informal finance intermediaries that charge high interest rates, moneylenders and pawnbrokers secure their credit through valuable personal or business collaterals. The former avoid cosigners, post-dated checks and other payable documents because of the transaction cost involved (Raccanello, 2008), but prefer real estates, vehicles, and jewelry; the latter accept a wide array of goods (e.g. electric/electronic equipment, household appliances, and jewelry). Repayment of informal loans is of paramount importance for lenders and borrowers; a failure could entail severe economic problems for relatives and friends and damage personal relationships (Aryeetey, 1995). In case of default, pawnbrokers simply became owners of the pawned asset but moneylenders, besides collateral seizure, could impose harsh physical punishment to the debtor (Dalla Pellegrina, 2008). In Mexico MFIs although belonging to the formal financial sector charge high interest rates and recent evidence shows that such financing does not provide the benefits as expected (Angelucci, Karlan & Zinman, 2015; Raccanello & Saucedo, 2015).

Despite the temporary financial needs alleviation, the Mexican experience, similar to those in other countries, suggests that such informal sources negatively impact MSEs' growth (Tybout, 1983; Evans and Jovanovich, 1989; Hernández-Trillo, Pagán & Paxton, 2005). In fact, informal loan characteristics may not suit

MSEs' financial needs because "[t]hey do not satisfy the requirements of potential entrepreneurial borrowers. For many expanding micro businesses, informal loans often have too short a maturity period, excessive interest rates, and insufficient loan amounts" (Aryeetey, 1996: 34). Also, because of their small scale of operation, MSEs may not constitute a viable market segment for formal financial intermediaries as the small loan amounts needed and increasing administrative costs for providing credit lead to higher interest rates and exacerbate adverse selection (Atieno, 2001; Cotler, 2009).

Beyond feasibility, because family is often deeply involved in MEs, the decision to choose a financial sector would be predominantly related to business but also to household factors. Research focused on credit sector households' selection found that an increase in wealth has a strong positive effect on loan demand (Crook, 2006). When economic agents hold sufficient wealth, they tend to rely only on the formal sector, but when it is lower they start resorting to both credit sectors (Madestam, 2014). In fact, less wealthy households are more likely to face restrictions in the formal credit sector (Gine, 2011); thus, a positive demand for informal loans seems to be a consequence and not a cause of underdevelopment of credit markets (Casolaro, Gambacorta & Guiso, 2006).

According to previous findings, lower household wealth would be correlated with smaller sized MEs that would be eager to rely on informal finance intermediaries. Conversely, larger MEs could avoid formal funding, probably because of their expensive and short-run loans and look for other financing options. At the same time, informal MEs would be more prone to resort to informal intermediaries than formal MEs because the former are excluded from the formal financial sector but the latter, although they might be rationed, could receive the needed funds. In this case the role of the establishment's size might be ambiguous as formal MEs could still rely on informal finance intermediaries as "lenders of last resort".

2.5. Data, hypothesis and estimation
2.5.1 Data

The data for this study have been obtained by administering a questionnaire to 400 randomly selected ME owners in the downtown of Puebla

(Mexico) between February and April of 2006. The city of Puebla, besides being one of the most important in Mexico, has been chosen because one of the authors was affiliated to a well-known university in the metropolitan area and could reassure respondents about information provided for the research. The questionnaire aimed at gathering information related to three aspects: business characteristics, socioeconomic characteristics of the owners, and ME financing through formal and informal intermediaries (lenders, loan amounts, motives) during 2005.

Out of 400 MEs, the owners confirmed not having registered the activity in 64 cases (16% of the sample). Such percentage is quite lower than those reported by Mexican official statistics but no attempt to verify it was made in order to avoid information denial that would have compromised our study. Nevertheless, as most of the MEs were located in downtown Puebla the likelihood of being formal could be higher than the average as government controls might be more common than in the suburbs. Most MEs were engaged in non-food retailing (39.5%), in the food retail sector (abarroteros, food-stands; e.g. taquerías) (35%), and the remaining in the service sector (25.5%). Depending on the activity, between 78% and 89% were formal businesses. When the activity began, as acknowledged by the literature, start-up capital for the large majority of the businesses (76%) was financed through savings (52%), paid leave (17%), and loans from family and/or friends (15%).

Most formal and informal MEs had just two employees (including the owner) –40.2% and 43.8% respectively– and seldom had more than five –3.3% and 6.3%. About four out of ten employees in MEs (44%) belong to the owner's family, and seven out of ten (71%) do not receive health benefits required by law.

MEs average gross monthly revenues are low; about 70% earn less than 10 000 MXN (929.4 USD)[1] and only 5% achieve gross monthly revenues over 20 000 MXN. Additionally, informal MEs achieved lower revenues; about 84% received less than 10,000 MXN monthly vs. 68% for formal MEs.

According to the survey, only 20% of MEs have a bank account and during 2005 41% of MEs obtained at least one loan mostly from the informal financial sector (74.4%). It is noteworthy mentioning that MEs seem to be

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[1] United States Dollar -USD- = 10.76 Mexican pesos -MXN- at the time of survey.

relying on just one financial sector; the percentage of those receiving a loan from both sectors is negligible (table 1). Out of 236 MEs that did not obtain any loan, most of them (79%) did not apply for a credit either. About 92% of credit denials (45 out of 49 cases) were imputed to the formal financial sector; because the informal counterpart seldom denies loans, it might be working as a valuable "lender of last resort".

Table 1
Financing sectors

	All	
During last year did you receive any loan?	**%**	**Observations**
No, because:	59.00	236
I did not apply for a loan	79.24	187
Loan application has been rejected	20.76	49
Yes	41.00	164
Total	**100**	**400**
If you applied for a loan, to which sector did you resort to?	%	Obs.
Informal sector	74.39	122
Formal sector	23.17	38
Both sectors	2.44	4
Total	**100**	**164**

Source: Survey results.

Based on the survey we had detailed information for 180 loans; only 21% were granted by the formal financial sector (banks and microfinance institutions) while the large majority (79%) was obtained from the informal sector. In the formal sector, banks are the predominant formal lending institutions (89% of the sector), and family and friends account for the largest share (63%) among informal lenders (table 2).

Table 2
Loans

	All		
Loan provided by the formal sector	**%**	**Observations**	**Sector %**
Banks	**18.89**	**34**	**89.47**
Microfinance institutions [a]	**2.22**	**4**	**10.53**
Total	**21.11**	**38**	**100**
Loan provided by the informal sector	**%**	**Obs.**	**Sector %**
Relatives or friends [b]	49.44	89	62.68
Moneylenders	18.33	33	23.24
ROSCAs	8.89	16	11.27
Pawnbrokers	2.22	4	2.82
Total	78.89	142	100
Total	100	180	

[a] In Mexico MFIs are regulated and supervised by the financial authority and subject to the corresponding legal framework, thereby they are part of the formal financial sector.
[b] Trade credit is embedded in the category.
Figures in table 1 and 2 do not match because those MEs that relied on the formal financial sector received just one loan from banks/MFIs but those who resorted to informal financial intermediaries had more than one.
Source: Survey results.

The largest share of loans (86.1%) was given to formal MEs, mainly from relatives and friends (51.6%), banks (18.7%) and moneylenders (16.1%). The same funding sources are also the ones on which informal MEs rely, but formal MEs tend to receive slightly more credit (avg.: 19 216 MXN) than informal MEs (avg.: 16 852 MXN). According to the survey, banks finance working capital (35.3%), business expansion (20.6%) and branch opening (17.7%) and the informal financial sector, represented mostly by relatives/friends and moneylenders, extends loans for working capital (44.9 and 30.3% respectively), debt repayment (25.8 and 27.3%) and for branch opening (16 and 24.2%).When interviewing owners, we realized that suppliers' representatives are thought as friends –sometimes the rep was a family member– because they are in charge of granting trade credit. In such cases, we could not disentangle the different categories, and this is why 'trade credit' is embedded into the 'relatives and friends' category.

2.5.2. Hypotheses

Our hypotheses posit that smaller sized informal MEs will resort to informal financial intermediaries but as soon as they expand they will tend to abandon these short-term oriented sources of funds. However, being able to access formal financial institutions, we expect that formal MEs will rely on informal lenders with a lower likelihood than informal MEs.

Because informal MEs lack accounting information and formal MEs do not share private financial information, we use the establishment size as a proxy for MEs credit needs. Contrary to MEs's financial information, whose reliability could be doubtful, establishment size is a reliable variable that might summarize financial information of the business. Despite the limitations imposed by such a relatively static measure, since store sizes adjusts slowly, we recognize the benefits attached to a real and continuous variable that will allow estimating a MEs' threshold size beyond which the needs of MEs, according to their status, could change. We recognize that store size may be correlated to the sector the ME belongs to (i.e. food shops, because managing inventories, will probably have a larger store than a shoemaker). This will put some limitations for the model estimation that will be discussed below.

In order to test our hypotheses, we estimated three probit models with robust standard errors (Huber-White) because of the presence of heteroskedasticity. The first model includes all MEs that applied for at least one loan from any informal financial intermediaries (1), the second and the third refer to MEs that applied for a credit to the most common informal lenders only; this is, relatives and friends (2) and moneylenders (3). As relatives and friends habitually provide interest-free loans, in case of need MEs should be looking for a credit from them with a higher likelihood rather than moneylenders who charge high interest rates. Accordingly, in model (1) the dependent variable *ME applied for informal financing* takes value of 1 if the ME applied to any informal lenders (family/friends, moneylenders, pawnbrokers or ROSCAs) for a loan and 0 if it did not. In model (2) and (3) the dependent variable takes value of 1 if the ME applied for a loan from relatives/friends (*ME applied to relatives/friends*) and moneylenders (*ME applied to moneylenders*) respectively, 0 otherwise. MEs do not rely on both formal and informal financial sources, except in 4 out of 400 observations; because our sample did not include any of those MEs that borrowed from the formal financial

sector, models have been estimated with 358 observations (table 1). This will allow us to focus on MEs that resorted to the informal financial sector only.

Model's independent variables are described next. The educational level of the ME owner (or the more educated partner in case of partnership) is represented by five dummy variables; *primary* takes value of 1 if the owner has education up to primary school level, 0 otherwise. Similarly, we defined secondary for *secondary* school level, high school (high school) *uncompleted bachelor* (uncompleted undergraduate degree) and *graduate* (completed undergraduate or beyond- base category). In order to avoid lack of variability, in model (3) *primary* and *secondary* have been grouped into the variable *secondary or less*.

Those MEs that are linked to the formal financial markets may have a lower likelihood to resort to informal finance; accordingly, *business bank account* takes value of 1 if the ME has a bank account, 0 otherwise. As the owner could use a personal bank account for business motives, the dichotomous variable *owner bank account* takes value of 1 if the ME's owner has a bank account, 0 otherwise.

Because household's wealth may be related to the financial sector MEs are resorting to, we include those assets that might be used as collateral. Accordingly, *own house* is a dichotomous variable that takes value of 1 if the ME's owner owns his house/apartment, and 0 otherwise. *Local* is a dichotomous variable that takes value of 1 if the establishment where the ME is located is property of the ME's owner. *Transport* is a dichotomous variable that takes value of 1 if the ME has a motor vehicle (motorcycle, car or a small truck), 0 if it has none.

MEs often resort to the informal financial sector when the *formal financial sector denied a loan*, in this case the variable takes value of 1, 0 otherwise.

Informal microenterprise takes value of 1 if the ME is not officially registered and 0 otherwise; *size* and *size squared* indicate the size of the store (in square meters) and its square respectively. *Informal microenterprise**size is the interaction of the two previous variables and represents the size of informal MEs; as well, in order to analyze a non-linear behavior for informal MEs we included its square (*informal microenterprise**size squared). We did not add interactive effects according to the size (and size squared), the status of the ME and the sector it belongs to because a so fine disaggregation would have provoked for some variables to have low variability jeopardizing estimations.

Business's average gross monthly revenues are incorporated into the model through five dummy variables; *revenues lower than* 4 000 takes

value of 1 if ME's has monthly revenues up to 4 000 MXN, 0 otherwise. Similarly, we defined revenues 4 001-7 000 (4 001-7 000 MXN), *revenues 7 001-10 000* (7 001-10,000 MXN), revenues 10 001-15 000 (10 001-15 000 MXN), *revenues* 15 001-20 000 (15 001-20 000 MXN), and *revenues higher than* 20 000 (more than 20 000 MXN) which represents the base category.

The number of MEs' employees receiving health benefits according to law is represented by the variable *employees with medical insurance*; also, *familiar employees* accounts for the number of relatives working in the ME, and employees stands for the number of employees working in the ME. The variable *partners* embodies the number of financial partners in the ME; if the owner is the sole person to have invested in the ME the variable takes value of 0.

The sources for financing start-up capital are incorporated into the model through *formal start-up financing and informal start-up financing*; the former variable takes value 1 if start-up was financed through funds obtained from formal financial markets, and 0 otherwise; the latter takes value of 1 if the funds for start-up were obtained solely through the informal financial market, and 0 otherwise. The base category consists of those cases in which the ME was not opened by the actual owner.

The business sector where the ME performs its activities is represented by three dummy variables; *food sector*, which takes value of 1 if the business is part of the food retail sector, and 0 otherwise. Similarly we defined service sector and retail/trade sector (base category) for service and (non-food) retail/trade sectors.

3. Discussion

In table 3, estimated coefficients under dF/dx heading represent the marginal change in the probability that a ME applied for a loan from informal lenders (model 1), relatives and friends (model 2) or moneylenders (model 3).

3.1. Applying to informal financial intermediaries

Estimates from model (1) show that MEs are less likely to resort to informal sources when holding a bank account (-23.6%). Likewise, possibly because owners may use their personal bank accounts for purposes linked to the micro-business, a similar smaller result was found. Hence, those MEs that have the option to access formal financial market have a rather low likelihood of relying on the informal counterpart; that is, MEs do not resort to both financial sectors simultaneously. In fact, those MEs whose credit application has been denied by the formal sector are more likely to rely on informal finance, a situation that reinforces the relationship between the two sectors.

Neither possessions related to owner's wealth, nor business revenues are associated with applying for a loan from informal intermediaries. However, regardless of the business sector MEs belong to, those micro-businesses that financed start-up through formal funding sources are less likely to rely on informal financial sources (-20.5%), suggesting that having accessed formal lenders in the past might circumvent resorting to informal intermediaries thereafter. When start-up investments were financed through informal financing we appreciate a small positive, although not significant, association with receiving funds from informal lenders.

Those MEs that are constituted as partnership, are more likely to look for informal loans but, the presence of employees receiving lawful health benefits as well as familial employee has an opposite, although statistically weak, effect (-5.1 and -4.4% per employee respectively). Business partnership allows extending informal financial linkages by increasing the intrinsic business informal network and related social ties, a phenomenon well documented in the Mexican business environment (Castañeda, 1998).

Table 3
Model estimations

	ME applied to informal lenders (1)			ME applied to relatives and friends (2)			ME applied to moneylenders (3)		
	dF/dx	Robust Std. Err.		dF/dx	Robust Std. Err.		dF/dx	Robust Std. Err.	
Primary	-0.094	0.083		-0.060	0.067				
Secondary	-0.080	0.075		0.009	0.074				
Secondary or less	-0.018	0.071	***				-0.016	0.011	***
High school	0.023	0.083	*	0.002	0.057		-0.001	0.005	
Uncompleted bachelor				0.056	0.071		-0.007	0.006	*
Business bank account	-0.236	0.048	***	-0.134	0.037	***	-0.012	0.009	***
Owner bank account	-0.104	0.059		-0.086	0.047	**	-0.009	0.008	
Own house	-0.030	0.049	**	-0.020	0.038		0.001	0.004	
Local	-0.004	0.051	**	0.048	0.039		-0.007	0.009	
Transport	-0.003	0.053	**	0.049	0.041		-0.006	0.006	
Formal financial sector denied loan	0.434	0.096		0.126	0.075	**	0.208	0.099	***
Informal microenterprise	-0.517	0.120	**	-0.376	0.091	**	-0.058	0.056	
Size	6.24E-03	2.92E-03	**	2.85E-03	2.18E-03		7.75E-04	5.55E-04	***
Size squared	-8.33E-06	1.93E-05		2.10E-06	1.37E-05		-3.83E-06	2.95E-06	**
Informal microenterprise*size	1.14E-01	4.70E-02		6.23E-02	2.38E-02	**	9.14E-03	4.19E-03	*
Informal microenterprise*size squared	-2.01E-03	8.26E-04		-8.99E-04	3.93E-04	**	-1.78E-04	8.06E-05	*
Revenues lower than 4 000	0.240	0.169		0.278	0.203		-0.006	0.007	

ConclusiOn. Table 3.

|	ME applied to informal lenders (1)			ME applied to relatives and friends (2)			ME applied to moneylenders (3)		
	dF/dx	Robust Std. Err.		dF/dx	Robust Std. Err.		dF/dx	Robust Std. Err.	
Revenues 4 001-7 000	0.088	0.155		0.246	0.197		-0.012	0.011	*
Revenues 7 001-10 000	0.102	0.150		0.253	0.196		-0.006	0.007	
Revenues 10 001-15 000	0.005	0.140		0.076	0.173		-0.001	0.008	
Revenues 15 001-20 000	0.039	0.163		0.262	0.230		-0.004	0.007	
Employees with medical insurance	-0.051	0.029	*	-0.021	0.022		-0.006	0.005	***
Familiar employees	-0.044	0.027	*	-0.027	0.021		0.002	0.003	
Employees	-0.024	0.023		-0.021	0.018		0.002	0.002	**
Partners	0.064	0.038	*	-0.015	0.028		0.003	0.003	
Formal start-up financing	-0.205	0.063	***	-0.182	0.053	***	-0.013	0.010	**
Informal start-up financing	0.047	0.106		-0.058	0.053		0.003	0.012	
Food sector	-0.042	0.057		0.025	0.046		-0.011	0.008	***
Service sector	0.002	0.063		0.056	0.054		-0.007	0.006	*
	N = 358 Wald chi2(28) = 86.91*** Pseudo R2 = 0.2564 Log pseudolikelihood = -170.794 Correctly classified: 76.82%			N = 358 Wald chi2(28) = 70.14*** Pseudo R2 = 0.1968 Log pseudolikelihood = -158.537 Correctly classified: 77.37%			N = 358 Wald chi2(27) = 124.13*** Pseudo R2 = 0.4453 Log pseudolikelihood = -110.103 Correctly classified: 93.30%		

Source: Authors' estimations.

According to estimates businesses that hire employees with lawful bene-fits rely less often on informal loans, suggesting that more solid businesses might avoid informal credit markets.

Finally, informal and formal MEs, have a different pattern in resorting to informal intermediaries. In order to understand how likelihood behaves according to store size, in figure 1 we report the probabilities for establish-ment size up to 75 square meters through model estimates.

An informal ME is less likely to apply to informal intermediaries com-pared to formal MEs but, as soon as it expands it starts being in need for funds at a positive but decreasing rate that is resumed by an inverted "U" shape behavior. Thus, although informal MEs avoid applying for a loan from informal lenders(-51.7%), this situation wanes as soon as they reach 5m^2, suggesting that even minuscule MEs are in need of funds. Informal MEs between 19 and 41m^2, *ceteris paribus*, always resort to informal finance but when size surpasses 30m^2 the likelihood start decreasing; eventually becoming negative only for those establishments above 55m^2, confirming our first hypothesis. Though, formal MEs are linearly[2] positively associated with applying for loans to the informal sector (+0.62% per additional square meter) and formal larger sized MEs see a higher probability of relying on such financial sources. As figure 1 clearly shows, formal MEs sized between 5 and 52m^2 have a lower likelihood of relying on informal lenders compared to informal MEs. Since in this range we find about 82% of formal MEs and about all informal MEs, our second hypothesis cannot be rejected. However, according to estimates, formal MEs show a very high positive likelihood to apply for a loan that still increases with size.

These results suggest that informal finance intermediaries start playing an important role in providing funds for informal ME as soon as they ex-pand; nonetheless, they may be suitable only for small and middle-sized MEs, because such sources do not seem very appealing for larger informal MEs. Furthermore, formal MEs resort to informal financial lenders too, but the reasons behind such decision probably reside in the financial sector lending policy because they could look for funds after being, fully or par-tially, credit rationed by the formal banking system.

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[2] The coefficient of the variable *size squared* is significantly equal to zero.
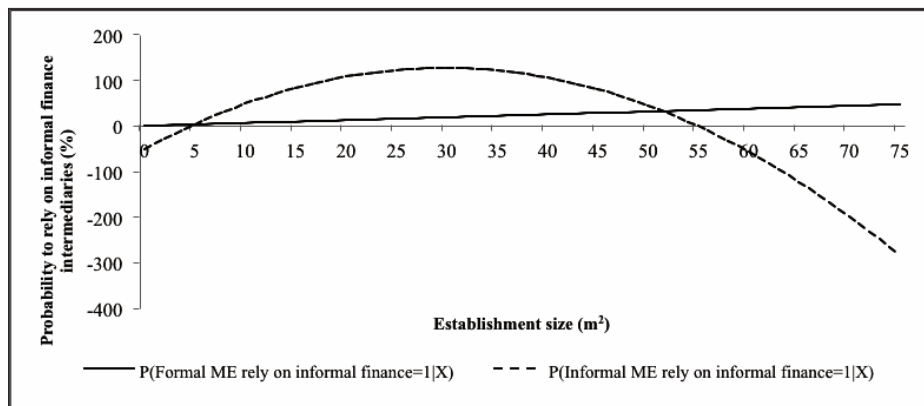
Source: Authors.

Figure 1
Formal and informal MEs likelihood to rely
on informal intermediaries

In order to understand how establishment size is related with the decision of applying for a credit to different lenders who may provide interest-free loans or charge high interest rates, we estimate the same model for MEs that applied for a loan to relatives and friends (2) and moneylenders (3) separately.
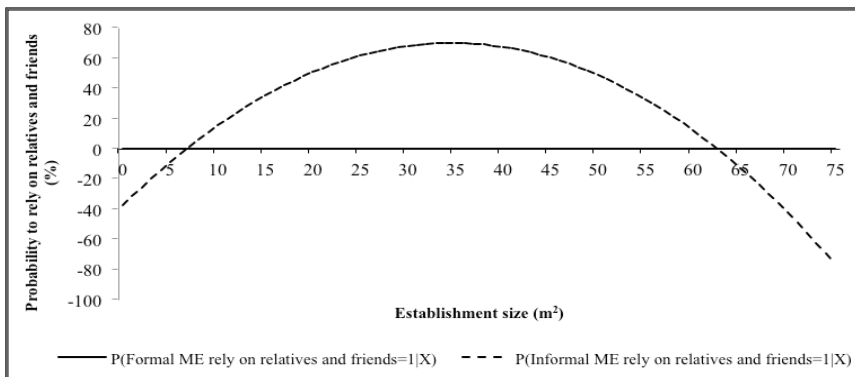
3.2. Applying to relatives and friends

Model (2) focuses on MEs' loans application to relatives and friends only; estimates are similar to those found when addressing all informal loans without differentiating lenders but some important differences arise.

ME's formal finance access, through business or owner's bank account, as well as having relied on formal start-up financing, still prevents resorting to relatives and friends for a loan.

Because of the intimate social ties, relatives and friends are the most preferred funding sources as they do not charge any interest rate, nor they ask any collateral, although some sort of reciprocity is expected (Zapata Martelo *et al.*, 2004). The situation above has been considered in the model through controlling for the number of familial employees. We would have expected this variable to be significant and positively related to the likelihood of applying for a credit from relatives and friends because of being engaged in such business, but, on

the contrary, the change in probability for any such employee was found to be negative and not statistically significant.

Model (2) estimates account that, *ceteris paribus*, formal MEs' store size is un-related to apply for credit from relatives and friends (figure 2 solid line). That is, formal MEs do not resort to a rather small but cheap source of funding probably because not matching with business's financial needs. However, informal MEs' likelihood follows a quadratic behavior according to store size, similar to that we previously observed. As represented by the dashed line in figure 2, *ceteris paribus*, informal MEs avoid seeking funds from relatives and friends when being very small –up to $7m^2$ the likelihood to apply for a loan is negative– but increasing with size, reaching 70.2% when the establishment is about $34.6m^2$, and diminishing thereafter. It is important to consider that from $62m^2$ on the likelihood of relying on relatives and friends for loans is again nega-tive. According to this inverse "U" shape behavior, very small and very big sized MEs avoid resorting to relatives and friends. While smaller MEs might not need funds, when MEs are bigger, intimate social circles might not have enough capi-tal to finance them and owners, being aware of it, could explore other sources of funding. Again, when comparing formal and informal MEs, figure 2 exhibits that formal MEs have a lower likelihood to resort to family and friends for a loan when they are between 7 and $63m^2$, than informal MEs; according to our survey, more than 80% of all formal MEs fall into the interval.
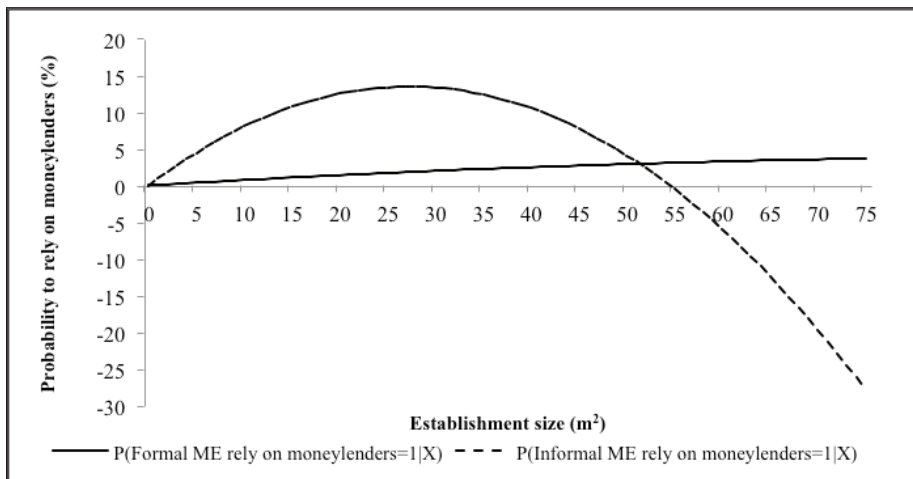

Source: Authors.

Figure 2
Formal and informal MEs likelihood to rely on relatives and friends

3.3. Applying to moneylenders

Finally, model (3) casts no doubt on the role of moneylenders for MEs, as they look like "lenders of last resort" when MEs do not have a bank account but especially when formal financial sector denied a loan (20.8%). A similar result was previously found in Merida (Yucatan State, Mexico), as households rationed by the formal financial sector were resorting to informal intermediaries (Raccanello, Bello, Anand & Lopez Mena, 2009).

Contrary to estimates in previous models, lacking registration does not prevent MEs from applying for a loan from moneylenders. Perhaps, this is because of the intrinsic business nature of loan sharks who may fulfill credit demand regardless of business as soon as a satisfactory guarantee to secure repayment is provided. Nevertheless, when considering the interaction between variables related to registration status and size, for informal MEs the likelihood to borrow from moneylenders follows a flatter pattern similar to those found in the previous models (figure 3-dashed line). Thus, informal MEs whose size is up to 27m^2 have an increasing probability at diminishing rate to apply for a loan, and MEs are less likely to apply when they are above 55m^2.

Source: Authors.

Figure 3
Formal and informal MEs likelihood to rely on moneylenders

Though, small-sized informal MEs are prone to apply for a credit from moneylenders, compared to applying for a loan from relatives and friends, they are also somehow more careful in doing so (the probability raises up to 13.5% only at 27m2) possibly because of the high cost of the loan, as well as the hard consequences for the defaulting debtor. Informal MEs with a store size above 55m2 have a negative and diminishing likelihood to resort to moneylenders because their size could push owners to look for other –cheaper– financing schemes. Of course, such big sized MEs could decide whether it would be convenient to join the formal economy in order to access the formal financial sector that could provide resources at better conditions instead of meeting short run costly interest payments; however, evidence shows that this seldom occurs as less than 10% of informal MEs moves to the formal sector (Pavon, 2010). Estimates account that formal MEs have a small but positive likelihood to apply for a credit from moneylenders; at 75m^2 probability is still under 5%, suggesting that such businesses might resort to high-cost credit only when in urgent, or even desperate, need of funds. It is noteworthy mentioning that the likelihood follows a quadratic relationship much flatter than those found for informal MEs as the coefficient of *size squared* is significant but very small.

Despite lower probability levels, 80% of formal MEs –smaller than 52m^2 in size– still have a lower likelihood of resorting to moneylenders than informal MEs. As for previous estimated models, most of the MEs' revenues level are not related to applying for a loan from moneylenders; except for those MEs who earn between 4 001 and 7 000 MXN per month have a lower likelihood to do so (-1.4%), compared to those who earn more than 20 000 MXN. Generally, these results show that MEs belonging to a broad range of revenues may resort to informal intermediaries. We found that owner's basic education level is related with a lower likelihood to obtain a loan from loan sharks when compared to those whose have graduate studies, but this finding is not robust in other models.

Furthermore, those MEs that hired employees with lawful health benefits are negatively correlated with resorting to moneylenders (-0.6% per every employee) but for every worker in the ME, it is more likely to applying for a loan (0.2% per employee). Broadly, the same discussion related to employees with lawful health benefits presented in model (1) still holds, but the number of employees has a tiny effect of the overall likelihood that MEs resort to moneylenders as they hire few personnel.

Additionally, we observe that also in this case, those MEs that could finance start-up investments accessing formal financial sector show a slightly lower probability (-1.1%) to borrow from moneylenders. Because a similar result was observed in all previous models, we wonder whether those MEs that have been financed at start-up through formal financial sector might be having some peculiarities promoting some sort of financial diligence that allow them avoiding having to rely on informal intermediaries. Though, as our data does not allow clarifying such relationship, we have included it in our future research agenda.

Finally, those MEs involved in the food and service sectors show a small but significant lower likelihood to resort to moneylenders (-1.1 and -0.7% respectively) than those in the non-food retailing sector. As those MEs in the food retailing business have a faster inventory turnover, they have a lower demand for loans to finance their stock, than those in the service sector, a result already highlighted by other scholars (Fafchamps, 1997; Datar, Epstein & Yuthas, 2009).

4. Conclusions

In this study we focused on MEs that in Mexico contribute to an important share of GDP and absorb about half of the workforce. As previous research has often ignored those MEs belonging to the shadow economy due to the lack of information, through a purposely designed survey, we evaluated several MEs features according to their registration status. As businesses need working capital, we analyzed whether formal and informal MEs rely on informal intermediaries for a loan. We found that MEs mostly resort to relatives and friends or moneylenders while formal bank access was somehow limited for most MEs. Since loan needs are justified by several reasons linked to the business's financial situation, and most MEs lack or are reluctant to provide their accounting information, we relied on ME's store size as a proxy of business's loan needs.

Findings from this study confirm that having been rationed by formal financial sector is one of the paramount reasons to resort to the informal financial sector. Also, our estimations support the idea that both informal and formal MEs resort to informal finance but, although MEs' status matters *per-se*, the pattern they follow is very different according to the store's size. While

informal middle sized MEs rely on the informal intermediaries, smaller and bigger sized MEs do not. However, formal MEs, no matter their size, seek for funding in the fringe financial market too. The pattern shown by informal MEs is analogous when focusing on specific informal intermediaries such as relatives and friends as well as moneylenders. In the same vein, it is quite different when compared to those shown by formal MEs who comparatively are more likely to resort to moneylenders but not so much to relatives and friends.

Although previous research shown that moneylenders, contrary to relatives and friends, charge high interest rates to borrowers that could harm business profits leading MEs into a deadly spiral (Valenzuela & Solares, 1998), our results suggest that formal MEs could avoid borrowing from relatives and friends because not meeting their financial needs. The fact that even formal MEs do seek loans in informal financial channels, although with a lower likelihood than informal MEs, is a symptom of the lack of funding in one of the most important and employment generating sector of the country that underlines its own weakness to continue growing and achieving sustainability. As our data is dated back even before the credit crunch that started during the last decade, the drying of bank finance, as well as relatives and friends channels, makes us infer that MEs' growth could have been severely undermined as moneylenders probably constituted the ultimate financing source left.

Our contribution to the body of knowledge related to both formal and informal MEs financing aims at partially filling the gap, as the latter are often under-represented in most of the research in Mexico as well as in other countries. Because of the widespread lack of information in comparing businesses according to their registration status, we hope that future research based on case studies will unveil other differences between formal and informal MEs.

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