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Mexico**

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The opacity with which firms do their transactions is perhaps one of the factors that may limit how much the productivity of microenterprises could increase. Based on a national survey carried out in Mexico, this paper examines the empirical validity of a prediction set derived from a theoretical model that analyzes the costs and benefits of being informal from a transactional point of view. The reason why they started the business, the ecosystem where they work, their expectations regarding local market growth, business size and the commercial networks in which they are engaged may explain why some firms are informal and others not.

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Transactional Informality among Microenterprises in Mexico

1. Introduction

Recent studies regarding labor productivity in Mexico suggest that its behavior is not homogeneous throughout the different business strata (Mckinsey, 2014). Differentiating enterprises by their size, technology and degree of compliance with labor regulations, the above-mentioned report states that big, modern and law-obeying enterprises reported - during the period 1999-2009- a five per cent increase per year in labor productivity. On the other hand small firms with little compliance regarding labor laws experienced a six per cent reduction per year during the same period of time. Since ninety five per cent of all economic units in Mexico are in this second business layer and they absorbed forty two per cent of all employment, the Mexican economy may be characterized by its low productivity and high labor informality.

Some authors suggest that labor informality is the result of a significant reduction in public investment that was not accompanied by an increase in private investment (Moreno-Brid and Ros, 2012). Others claim that technological changes of the last two decades have led to an increase in structural unemployment (Esquivel and Rodriguez, 2003). And finally authors like Anton, Hernandez and Levy (2013) suggest that labor regulation and social policies have increased the non-salary cost of formal workers. Regardless of the reason, it is widely accepted that labor informality may lead to a low productivity growth rate. Three reasons are usually provided to explain such causality. First, many of these informal workers are self-employed in low-skilled occupations. Second, most of them are employed in firms that do not invest in training, use obsolete

technologies and are unable to benefit from economies of scale and organization. And third, most of the firms where they work have little opportunities to innovate and are inserted in economic sectors characterized by a high degree of competition. Considering the last two reasons, labor-informality may not be the cause of low productivity; rather, it is the type of firm and activity where such workers are located that matters. Thus, the size and resources of those businesses that hire in an informal manner as well as the entrepreneurial skills of their owners and managers may be the real force that explains the low productivity growth rate.

Offering a complementary explanation for why informality may lead to low productivity growth, this paper focus instead in a concept denoted as transactional informality. This last concept describes the opacity with which firms conduct their transactions and hence their potential limitation to socialize their business performance. Among microenterprises –a business stratum where 95% of all economic units in Mexico are located- it is much more common to detect microbusinesses that do transactions in an opaque manner than economic units hiring workers in an informal manner.

This transactional informality increases the cost financial institutions may need to incur if they want to measure the flow of income-expenditure of productive units and thereby leads to more uncertainty regarding credit risk. In response to this situation, other credit instruments have been developed: loans by relatives and friends and banks' consumer credit, for example. Nonetheless, a business loan is not similar to a loan offered to the business' owner: among other things, regulations usually imply a higher interest rate. Further, the use of loans provided by relatives and friends usually has attached some

sort of reciprocity that could affect business productivity growth. In this sense, transactional informality affects the accessibility to finance and very likely total productivity.

Thus, transactional informality may affect the firms' likelihood of having access to loans provided by financial institutions and is a factor that could reduce the dynamism of the firms' productivity. This paper seeks to measure the determinants of transactional opacity, which will be measured by the type of proof of sale that the firm issues to its customers (invoices, sales receipts, or none).

For this purpose, this work is structured in the following way. Section II presents a model that, following Straub (2005), considers the costs and benefits of maintaining an informal firm vis-a-vis a formal one. This model will show that the decision to remain informal -from a transactional point of view- depends on the size of the firm, the tax rate, the fixed cost of issuing invoices, the relative profitability of institutional financing and, the commercial networks in which the firm is engaged. Subsequently we empirically test these results. For this purpose, sections III and IV describe the data, the empirical methodology used and its major results.

Finally, section V outlines our major conclusions. Overall, we cannot reject the claims derived from the theoretical model. In particular, the ecosystem in which the firm operates, the owner's expected profitability, the size of the firm and the commercial networks to which the entrepreneur belongs are factors that may influence his decision regarding informality. Further, three other results are worth mentioning. First, the initial

reason for opening a business affects the likelihood of becoming formal. This is true even after controlling for the number of years that the business has been in place. Second, if the government wants to induce formalization it might be maybe wiser to finance a program to teach micro entrepreneurs basic accounting rather than forcing them to register. Third, there is a potential benefit for creating incentives for formal business sectors of the economy to strengthen ties with microenterprises. While in the short term this could produce some inefficiencies, in the long run the benefits of formalization could surpass them.

II. A simple model

Consider the case of a businessman who has assets equal to A and wants to undertake a project for which he requires resources amounting to I , being $I > A$. The businessman has two potential sources of funding: from a financial institution that requires legal records and income statements, and from family funds or friends which require the use of social capital. Due to the difference in terms of length of repayment, liquidity disposal and reciprocity ties, we will assume that institutional funding is conducive to a higher productivity but is associated with a higher monetary cost.

If the entrepreneur wants to have access to loans from a financial institution, he needs to pay a fixed cost (denoted by C) associated to the registration process with the authority and a variable cost that appears as result of the payment of taxes to the government (the tax rate is denoted by τ). We will assume that if the firm issues and

receives invoices, there is a probability P_F that a financial institution will offer a loan and with the required effort, productivity may increase by P_A .

If the firm decides to remain opaque, no registration will be made nor taxes will be paid but it will have no access to loans from financial institutions. In this scenario, access to informal lending will depend on his personal reputation and it will be assumed that it is costly for informal lenders to learn about the credit history of the entrepreneur. Furthermore, as the number of informal lenders (measured by the parameter z) increases, the less likely such information will be learned. Thus, as parameter z rises, the entrepreneurs' marginal utility of putting no effort (denoted as β) on the project will also increase. Finally, since institutional funding is conducive to a higher productivity, we will assume that for equal effort, the impact of informal funding (P_B) on productivity is such that $P_A > P_B$.

Scenario 1: The firm provides invoices and pays taxes.

a) Incentives to put effort on the project:

To carry-out the project the firm requires financing that is acquired with a probability P_F . Regarding effort, the entrepreneur may benefit if effort is put in place: R_E is the profit rate of the project if the entrepreneur does not put effort and $(1 + P_A)R_E$, otherwise. On the other hand, total effort (denoted by βI) reduces the utility of the

entrepreneur. Finally, a tax rate τ is paid regardless of his decision concerning effort.

Thereby, he will exert effort in the project if:

$$(1 + P_A)P_F R_E I(1 - \tau) \geq P_F R_E I(1 - \tau) + \beta I$$

$$P_F P_A R_E I(1 - \tau) \geq \beta I \quad (i)$$

b) Incentives to lend:

The financial institution will lend an amount equal to $I - (A - C)$ if the project is perceived as profitable and if the firm has a good reputation. We will assume that the latter depends on the quality –measured by variable x - of the business network to which the firm belongs. The value of this quality is within the interval $(x, 1)$ where $x > 0$. Since the financial institution needs information regarding the financial situation of the firm and his standing in the business community, trade links with other formal enterprises will be useful for the entrepreneur: as trade links increases, the value of x will also increase. If the firms' reputation could be described by a uniform distribution, then as trade links increases, expected reputation would increase and its variance will decline². Denoting the expected reputation by n , the minimum expected rate of return required by the financial institution will be described by nR_F . In this regard, the financial institution will lend the amount required if:

$$nR_F I \geq I - (A - C)$$

² The expected reputation (n) would be equal to $0.5*(x+1)$ and its variance would be described by $(1/12)*(1-x)^2$.

Thus, as the entrepreneur has more linkages with formal enterprises, its expected reputation will increase and thereby its probability of obtaining funding from financial institutions. Since the profit rate of the microenterprise and of the financial institution comes from the profit rate of the project (R), it must hold that:

$$n(RI - R_E I) \geq I - (A - C)$$

$$n \left(RI - \frac{\beta I}{P_F P_A (1 - \tau)} \right) \geq I - A + C$$

$$I = \frac{A - C}{(1 - nR) + \frac{n\beta}{P_F P_A (1 - \tau)}} \quad (ii)$$

Assuming a competitive financial market, the entrepreneur's utility prior to the payment of taxes can be described by:

$$U^f(A) = (1 + P_A)RI - I$$

$$U^f(A) = ((1 + P_A)R - 1)I$$

$$U^f(A) = ((1 + P_A)R - 1) \left[\frac{A - C}{(1 - nR) + \frac{n\beta}{P_A P_F (1 - \tau)}} \right] \dots (*)$$

Scenario 2: The firm does not issue invoices and finances his project with loans provided by family members and/or friends.

a) Incentives to put effort:

As explained before, in this scenario the utility of not putting effort (βI) will be endogenous since $\beta = \beta(z)$, being "z" a parameter that measures how many individual moneylenders the entrepreneur has access to. Assuming that a credit bureau industry is not very well developed, as parameter z rises, the reputational cost of not putting effort will be lower. In this situation, he will exert effort only if:

$$(1 + P_B)R_E I \geq R_E I + \beta I$$

Thereby, the minimum rate of return necessary to put effort must be such that:

$$R_E \geq \frac{\beta(z)}{P_B} \quad \dots (iii)$$

b) Incentives to lend:

We will assume that the non-institutional lender will lend if $P_B R_F I \geq I - A$. Further, as in the previous scenario, the profit rate of the non-institutional lender and of the entrepreneur must come from the profit rate of the project (R). Thus, it must hold that:

$$P_B(RI - R_E I) = I - A$$
$$P_B \left(RI - \frac{\beta(z)I}{P_B} \right) = I - A$$

$$I = \frac{A}{1 + \beta(z) - R P_B} \dots (iv)$$

In this case, the entrepreneur's utility will be:

$$U^{Inf}(A) = (1 + P_B)RI - I$$

$$U^{Inf} = ((1 + P_B)R - 1) \left[\frac{A}{1 + B(z) - R P_B} \right] \dots (**)$$

Comparing the expected utility under both scenarios, (equations (*) and (**)) it is easy to prove that there is a critical value for the size of assets (A) after which is optimal for the entrepreneur to become formal³. Further, if the tax rate (τ) or the variable cost (C) associated with the process of becoming formal is reduced or if there are more linkages with formal firms, or if the probability of institutional financing (P_F) rises, so will the incentives to have a formal firm. However, if the number of informal lenders grows, the incentives to become formal will diminish.

III. The Data

We used the Mexican National Survey of Microenterprises of 2012 (*ENAMIN, 2012*) to examine the empirical validity of the claims just mentioned. This survey took place during the period from October 1, 2012 to January 13, 2013 and was designed to be

³ If we graph equations (*) and (**) in a space where we have U in the vertical axis and A in the horizontal, it is relatively easy to prove that the slope of equation (*) is bigger.

representative at the national level. The microenterprises are defined as those firms that have a maximum of 15 workers, or those engaged in transport, trade, services, construction or extractive industries with a maximum of 10 workers.

Within this entrepreneurial stratum, eighteen per cent of all the micro-business owners reported not having workers during the years 2011-2012 and forty four per cent reported having worked always alone. Among the 9,306 micro-businesses that had employees, sixty two percent reported that they only had one worker and twenty per cent had two. Further, sixty three per cent of these workers were members of the family or partners in the business. Thus, twenty three per cent of all microenterprises may be considered to have hired paid workers that did not belong to their family. Hired labor in an informal manner might not be the most relevant feature of microenterprises.

However, that is not the situation with respect to transaction-informality. This survey allows two ways to measure such informality. The first one measures what type of sales slips do microenterprises issued and the second one how firms keep track of their transactions. Only eight per cent of the total sample issued legal invoices and only fifteen per cent made use of the services of an accountant. In general, transactional informality appears to be very high in the microenterprise sector. Even though both variables could be used to measure how formal microenterprise transactions are, the type of sales slips issued by microenterprises might be a better instrument to socialize the business results and increase their likelihood of having access to finance. Thus, to measure the determinants of transactional opacity we will be use as dependent variable the type of sales slip that firms issue. The survey asks which type of sales slip does the firm issue and

allows for three different answers: none, receipts with no legal value, and invoices⁴. Being our dependent variable discrete and with three possible values, we sorted the answers in an ascending manner to indicate the degree of transaction formality (see table 1). For consistency, all discrete variables will be sorted following the same rule.

Possibly one of the reasons for choosing to operate in an informal manner –from a transactional point of view- is related to the causes that drove owners to open the business. For example, if it was opened while looking for a job, maybe the owner is not going to spend resources to learn basic accounting, to know how to fill up tax forms, nor is going to hire an accountant or paid-workers. In this regard, it is possible that microenterprise owners were not looking to open a firm; they were looking for an occupation. To consider such situation, thirteen possible responses were provided in the survey to the question regarding the reason for starting the business. We merge these possible answers in five categories and sorted them according to its entrepreneurial signaling.

Issuing invoices requires that businesses comply with two basic features: having a mailing address and have registered with a municipal, state or federal authority. Filling invoices requires some knowledge of the tax system - or the hiring of an accountant- and surely a minimum scale of sales that warrants from a cost-benefit analysis the payment of taxes⁵. Since these procedures are costly, how accounting was made, whether the firm is

⁴ The survey allowed another possible answer: “I do not want to answer”. Only 0.7% of the sample chose this. For simplicity, we decided to merge those answering this option with those that chose the answer “none”. Having four sets of answers or three did not make any statistical difference. For simplicity we chose to aggregate.

⁵ During the period in which the information was collected, a special tax regime (denoted as *Repeco*) was in place for small firms with the purpose of making easier the tax payment. This tax system was administered by each State and had

registered and whether it was operating in an establishment are factors that could determine which of the three possible sales slips the microenterprise issued. Finally, since the special tax regime could distort the decision to issue invoices, we included a dummy variable (denoted as *repeco*) to capture such situation. This variable took a value of one if the firm was legally allowed not to issue invoices, otherwise took a value of zero.

Finally, according to the theoretical model built in the previous section, an additional variable that could explain the incentives for a firm to become formal from a transactional point of view is whether it has (or wishes to have) commercial links with formal firms. As table 2 shows, a small number of microenterprises sold goods and services to the formal sector. On the other hand, 90% of the micro businesses that bought inputs from the formal sector of the economy did not issue invoices when selling their goods and services. Thus, there are two variables that need to be considered: from whom you buy inputs and merchandise, and to whom you sell your goods and services.

IV. Methodology and Estimates

Given that the dependent variable has a particular sorting, we use an ordered probabilistic approach. Within this setting, we first examine if the assumption of parallel lines could be rejected, which implies that the estimators are equal for all categories of

as special features that firms were not required to issue invoices. To apply to this regime, the firm had to be registered with a local or federal authority, only sold goods and services to the general public (and not to other firms nor to the government) and had annual sales below two million pesos. Considering these three requirements, only 10% of our sample could have been registered in this special tax regime. Notwithstanding such small figure, in our empirical section we will keep track of such possibility.

the dependent variable. Using the likelihood ratio test, such assumption was rejected. Thereby, all results presented in this section are the result of using a generalized ordered probabilistic approach. On the other hand, since there might be a potential endogeneity between the type of proof of sales being issued and the type of clients that bought the goods and services provided by microenterprises, we used a generalized ordered probit estimation.

As explained before, our first null hypothesis is that transactional informality tends to be associated with an ecosystem in which the firm is inserted. Such ecosystem may be described by four variables that were sorted in an ascending manner to indicate the formality of the firm daily operation. The first variable to consider is why the business was started. One of the typical reasons that may explain why microenterprises are established is for survival. In case of a negative shock to income generation (a dismissal for example), people may start a business as a mean to generate an income as they seek for a job. If this strategy is perceived as transitory, it is unlikely that the owner will have incentives to spend resources to become a formal firm. To consider such possibility, thirteen possible responses were provided in the survey to the question regarding why was the business started. We merged these possible answers in five categories and sorted them according to its entrepreneurial signaling. We expect that this variable –denoted as *motive* –will have a positive correlation with our dependent variable –denoted as *sales slip*. However, it is possible that the reason why the business was opened does not have an influence on the actual situation of the firm’s formality. To consider such possibility, we also included in our estimation the number of years the business has been in place (denoted as *age*).

The other variables to be considered in the ecosystem are: how accounting is done (denoted as *accounting*), whether the institution is registered with any state authority (denoted as *register*), and whether the microbusiness is established in a fixed place (denoted as *address*). Finally, we included a dummy (denoted as *repeco*) to capture the influence of the special tax regime on the type of sales slip that was issued.

Becoming a formal firm is a costly process. Thus, in addition to the ecosystem, we need to consider as another explanatory variable the owner's expected profitability of the microbusiness. Assuming that an expected higher economic growth rate may lead to a greater consumer purchasing power, business owners may be more willing to pay the costs of becoming more formal. To consider such possibility, we used the state-level GDP growth rate of 2011 (labeled as *growth2011*) as a proxy for the expected profitability of firms. In this regard, we expect to find a positive correlation between this variable and the dependent variable (*sales slip*).

As table 3 suggests, the hypotheses mentioned before cannot be rejected: firms with owners that appear to be entrepreneurs, established in a more formal ecosystem and with higher growth expectations are more likely to offer invoices. However, since those variables describing the ecosystem (*accounting*, *registered* and *address*) could be endogenously determined, we present two estimations in table 3, being the difference that in the first estimation we do not include them as explanatory variables. A simple comparison suggests that the sign of the estimated coefficients and marginal impacts as well as its statistical significance do not vary. The only difference is with regard to the dummy variable *repeco*. Given the features of this special tax regime, there is a positive

correlation between *repeco* and the three ecosystem variables. Thus, when we do not include these three variables, the ecosystem is described by such dummy variable. Thus, as it takes the value of one, it is more likely that firms will become more formal. However, if the three variables describing the ecosystem are included, the fiscal regime discouraged firms' formalization.

Based on these results we may evaluate some types of intervention that have as a goal the reduction in transactional opacity. One very frequently used by authorities is to ask microbusinesses to register with the authority. Been in a context where all explanatory variables take their average value, data from table 4 suggest that this intervention will slightly increase the probability that firms will submit invoices or sales notes. However, opposed to this intervention, one that promotes the use of book notes among micro-entrepreneurs to collect their data for their private knowledge would diminish significantly the probability of not issuing any type sales slip.

Now, as the firm becomes bigger it becomes less likely it will close just because the owner found a job. Thereby, the bigger the firm the less likely it will be considered a transitory activity and therefore the greater the likelihood the entrepreneur will become a formal institution. To examine this hypothesis, we use two variables to measure its size. One first variable is the microbusiness average number of workers in 2011 (a variable denoted as *employment*). The second variable is *sales per worker*, a variable that measures total sales divided by the number of workers plus the owner. In this regard, we expect to find a positive correlation between the dependent variable and the variable used to measure firm size, a sign that is consistent with our theoretical framework.

The introduction of variable *employment* involved the loss of 66% of observations because in the vast majority of microbusinesses the owner worked alone. Even though this could imply some sort of bias, it is interesting to consider this variable because this subsample will include those microenterprises that were more likely to be businesses rather than transitory occupations. To avoid having this potential bias, we introduce sales per worker as another proxy for firms' size since in this case we only lose ten per cent of the sample but at the cost of using data that it is not very trustful. Notwithstanding the differences in the sample size and in the quality of the data that arises with either proxy for size, the estimations reported in table 5 suggest that size influence the likelihood of being a formal firm.

One last variable that our model suggests could influence the decision to become formal was the commercial networks to which the entrepreneur belongs. In this regard, as linkages with formal businesses are developed, reputation is being developed and thereby the incentives of microenterprise to become formal may also increase.

Thus, the interaction of micro-entrepreneurs with other formal buyers of their goods and services or formal sellers of their inputs may influence the optimal level of informality. To examine such a possibility we considered the destination of the goods and services offered by the microenterprise: public in general; trade or small factory; government, trade or big factory. On the other hand, we also considered the type of firm who was supplying inputs to the microenterprises: trade or small factory and big factory. Both variables denoted as *input seller* and *sales buyers* were ordered in ascending manner following the possible degree of formality of buyers and sellers.

One method of examining the importance of networks can be seen in table 6, which includes as explanatory variable the input seller: those who sold merchandise to the microenterprise. As describe before, this variable took two possible values corresponding to whether microenterprise bought from small or big enterprises. Three estimation results are shown in table 6: with no proxy for size and using independently the two proxies –before mentioned- for size. Further, to consider the possibility of sectorial differences we also included dummies to describe if the firm belonged to the trade sector (*duc*) or the manufacturing sector (*dum*) –being the service sector the default state. As we can notice, regardless of the sample size, microenterprises are more likely to be formal when their supplier is bigger.

To analyze if it matters to whom microenterprise were selling their goods and services, it is necessary to consider that selling to big factories or to the government may require that the microbusiness issues formal invoices. Given this potential endogeneity it is necessary to use instrumental variables and thereby accept the assumption of parallel lines. To come up with a good instrumental variable, we assumed that to produce a sufficient quantity of goods with a given quality –requirements more likely to be asked by the government or by big firms- it is necessary for the microbusiness to have a productive capacity in good shape and good quality management. Thereby, it is possible to assume that relatively bigger microenterprises are more likely to sell goods and services to formal firms. In this respect, we will use as an instrument a variable that measures the size of the microbusiness. Even though all our results are similar if we use either proxy for size, once again we report two estimations. As results shown in table 7 suggest, we cannot reject

the possibility that the commercial network in which the firm is engaged affects the opacity of its transactions. In particular, as buyers of the goods and services produced by the microenterprise are bigger (and very likely formal firms), the likelihood that microenterprises will also become more formal will increase.

V. Conclusions

Informality is a common feature among less developed countries and is both, cause and consequence of a precarious institutional framework and widespread poverty; a combination that is not optimal for economic growth. Perhaps this explains why it is so difficult to eliminate.

As a result of the relative scarcity of information, economic studies on informality are usually centered on labor informality with a focus on social protection, and more recently, on their possible links with productivity. However, as we mentioned in this paper, if we leave aside the characteristics of economic units in which these laborers - hired in an informal manner- work, the connection between informality and productivity is not very tight. Offering a complementary explanation for why informality may lead to a low productivity growth rate, this paper focus instead in a concept denoted as transactional informality. This last concept describes the opacity with which firms conduct their transactions and hence their potential limitation to socialize their performance. Among microenterprises –a business stratum where 95% of all economic units in Mexico

are located- it is much more common to detect microbusinesses that do transactions in an opaque manner than economic units hiring workers in an informal manner.

This transactional informality increases the cost financial institutions may need to incur if they want to measure the flow of income-expenditure of productive units and thereby leads to more uncertainty regarding credit risk. In response to this situation, other credit instruments have been developed: loans by relatives and friends and consumer credit, for example. However, a business loan is not similar to a loan offered to the owner of the business. Further, the use of loans provided by relatives and friends usually has attached some sort of reciprocity and increases the risks faced by the family unit. In this sense, transactional informality affects the accessibility to finance and also total productivity growth rate.

A cost-benefit model is built to show that there are different factors that can induce a microenterprise to remain informal from a transactional point of view. The reason for starting a business, the ecosystem in which the firm operates, the owner's expected profitability of the microbusiness, the size of the firm and the commercial networks to which the entrepreneur belongs, are all factors that may influence its decision regarding informality. With the use of the 2012 national survey of microenterprises in Mexico we are not able to reject that the factors before mentioned help explain the decision regarding what kind of sale receipts are issued by microenterprises.

Five results are worth mentioning. First, the initial reason for opening a business affects the likelihood of becoming formal. This is true even after controlling the number of years that the business has been in place. Assuming the stated reason is not biased by the performance of the microenterprise this may be an element in search for building leading indicators of firms' formality. Second, it is not always clear why governments fight informality: to get more taxes, to fight illegal operations or to defend the rule of law. During the period in which the ENAMIN was implemented there was a special tax regime for a specific type of micro and small firms. Maybe this tax regime brought more revenues for local and state governments but our results suggest that there was a drop in the incentives to become formal. Fourth, if a government wants to induce formalization it is maybe wiser to finance a program to teach micro entrepreneurs basic accounting rather than force them to register. Finally, the theoretical model and our empirical estimates suggest there is a potential benefit of creating incentives for more formal business sectors of the economy to strengthen ties with microenterprises. While in the short term this could produce some inefficiencies in the longer term the benefits of formalization could surpass them.

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Table 1**Basic Variables**

Variable	Definition	Possible values of variable				
		1	2	3	4	5
Sales slip	¿Sales receipt delivered to buyers or goods and services provided to microenterprises? 1. None 2. Receipt 4. legal invoice	20,689	2,253	2,033	na	na
Motive	Reason for opening a business: 1. other reason 2. Only way of making money; had neither proper education nor opportunities of getting a job. 3. To complement family income; jobs do not paid sufficiently; need a flexible schedule. 4. Family tradition; overqualified for a job. 5. Had money and found an opportunity; wanted to used professional career or technical expertise.	4,015	1,583	12,543	4,122	2,712
Accounting	In this business, accounting is 1. Refuses to answer 2. Do not carry any accounting 3. Uses a cashing machine provided by the Treasury 4. Uses a notebook 5. Hires an accountant	91	15,580	775	4,641	3,888
Registered	The business is registered wiith... 1. none 2. with a state authority	21,267	3,708	na	na	na
address	The business is an fixed address? 1. No 2. Yes	16,476	8,499	na	na	na
Na: Does not apply						

Table 2

Commercial Links of Microenterprises

	They buy from			
Issuance of sales slip	General public	trade or small factory	Government, trade or big factory	Total
None	0	5,936	9,584	15520
receipt	0	411	1,366	1,777
Legal invoice	0	307	1,091	1,398
Total	0	6,654	12,041	18,695
	They sell to			
Issuance of sales slip	General public	trade or small factory	Government, trade or big factory	Total
None	17,585	515	1,195	19,295
receipt	1,846	101	166	2,113
Legal invoice	1,323	125	360	1,808
Total	20,754	741	1,721	23,216

Table 3

	Estimation 1		Estimation 2	
	Coefficient (P> z)	Marginal Impact (P> z)	Coefficient (P> z)	Marginal Impact (P> z)
State 1: sales slip=1				
Motive	0.237 (0.000)	- 0.031 (0.000)	0.119 (0.000)	-0.008 (0.000)
Accounting			1.208 (0.000)	-0.087 (0.000)
Registered			1.173 (0.000)	-0.085 (0.000)
Address			0.470 (0.000)	-0.034 (0.000)
growth_2011	0.045 (0.000)	- 0.005 (0.000)	0.031 (0.000)	-0.002 (0.001)
age	0.010 (0.000)	- 0.001 (0.000)	0.003 (0.046)	-0.000 (0.047)
repeco	1.636 (0.000)	- 0.307 (0.000)	- 0.513 (0.000)	0.031 (0.000)
State 2: sales slip= 2				
Motive	0.307 (0.000)	0.011 (0.000)	0.138 (0.000)	0.008 (0.000)
Accounting			2.366 (0.000)	0.078 (0.000)
Registered			1.249 (0.000)	0.080 (0.000)
Address			- 0.007 (0.903)	0.034 (0.000)
growth_2011	0.052 (0.000)	0.002 (0.001)	0.045 (0.000)	0.002 (0.001)
age	0.016 (0.000)	0.000 (0.011)	0.005 (0.034)	0.000 (0.056)
repeco	1.451 (0.000)	0.156 (0.000)	- 0.796 (0.000)	-0.029 (0.000)
State 3: sales slip=3				
Motive		0.019 (0.000)		0.000 (0.000)
Accounting				0.008 (0.000)
Registered				0.004 (0.000)
Address				-0.000 (0.903)
growth_2011		0.003 (0.000)		0.000 (0.000)
age		0.001 (0.000)		0.000 (0.042)
repeco		0.150 (0.000)		-0.002 (0.000)
	<p>1. We included a constant in the estimation. We do not report its parameter or significance. 2. N= 24,975; Prob>chi2 = 0.0000; Pseudo R2= 0.065</p>		<p>1. We included a constant in the estimation. We do not report its parameter or significance. 2. N= 24,975; Prob>chi2 = 0.0000; Pseudo R2= 0.352</p>	

Table 4

Expected Probability of Sales Receipt under different Scenarios			
Assuming Estimation 2 of Table 4			
	None (p38=1)	Receipt (p38=2)	Legal Invoices (p38=3)
Independent Variables take average value	0.908 (z=392.9)	0.087 (z= 38.4)	0.003 (z=6.4)
Independent variables take average value but the business is registered	0.820 (z=113.1)	0.169 (z=24.1)	0.010 (z=6.4)
Independent variables take average value but owner of business keeps accounting in a notebook	0.729 (z= 160.0)	0.203 (z= 44.7)	0.066 (z=19.6)
Independent variables take average value but business hires an accountant	0.488 (z= 59.9)	0.175 (z=22.7)	0.335 (z= 38.3)

Table 5

	Estimation 1		Estimation 2	
	Coefficient (P> z)	Marginal Impact (P> z)	Coefficient (P> z)	Marginal Impact (P> z)
State 1: Sales slip=1				
Motive	0.137 (0.000)	- 0.017 (0.000)	0.099 (0.000)	-0.006 (0.000)
Accounting	1.193 (0.000)	- 0.154 (0.000)	1.147 (0.000)	-0.079 (0.000)
Registered	0.953 (0.000)	- 0.123 (0.000)	1.314 (0.000)	-0.090 (0.000)
Address	0.641 (0.000)	- 0.082 (0.000)	0.465 (0.000)	-0.032 (0.000)
growth2011	0.022 (0.068)	- 0.002 (0.068)	0.031 (0.001)	-0.002 (0.001)
age	0.005 (0.056)	- 0.000 (0.056)	0.003 (0.096)	-0.000 (0.097)
Employment	0.229 (0.000)	-0.029 (0.000)		
sales per worker			0.246 (0.000)	-0.017 (0.000)
repeco	- 0.388(0.001)	0.046 (0.000)	- 0.681 (0.000)	0.038 (0.000)
State 2: Sales slip = 2				
Motive	0.135 (0.000)	0.015 (0.000)	0.129 (0.000)	0.006 (0.000)
Accounting	2.232 (0.000)	0.125 (0.000)	2.255 (0.000)	0.071 (0.000)
Registered	0.915 (0.000)	0.111 (0.000)	1.452 (0.000)	0.086 (0.000)
Address	0.096 (0.247)	0.081 (0.000)	- 0.022 (0.720)	0.032 (0.000)
growth2011	0.042 (0.003)	0.002 (0.119)	0.043 (0.000)	0.002 (0.001)
age	0.005 (0.124)	0.000 (0.069)	0.005 (0.048)	0.000 (0.113)
Employment	0.232 (0.000)	0.026 (0.000)		
sales per worker			0.276 (0.000)	0.016 (0.000)
repeco	-0.650 (0.000)	-0.039 (0.002)	- 0.947 (0.000)	-0.035 (0.000)
State 3: Sales slip=3				
Motive		0.001 (0.000)		0.000 (0.000)
Accounting		0.029 (0.000)		0.007 (0.000)
Registered		0.011 (0.000)		0.004 (0.000)
Address		0.001 (0.250)		-0.000 (0.720)
growth2011		0.000 (0.005)		0.000 (0.001)
age		0.000 (0.135)		0.0000 (0.058)
Employment		0.003 (0.000)		
sales per worker				0.000 (0.000)
repeco		-0.007 (0.000)		-0.002 (0.000)
	1. We included a constant in the estimation. We do not report its parameter or significance. 2. N= 9,306; Prob>chi2 = 0.0000; Pseudo R2= 0.354		1. We included a constant in the estimation. We do not report its parameter or significance. 2. N= 22,671; Prob>chi2 = 0.0000; Pseudo R2= 0.361	

Table 6

	Coefficient (P> z)	Coefficient (P> z)	Coefficient (P> z)
State 1: Sales slip=1			
Motive	0.092 (0.000)	0.080 (0.000)	0.109 (0.000)
Accounting	1.135 (0.000)	1.088 (0.000)	1.155 (0.000)
Registered	1.223 (0.000)	1.294 (0.000)	0.996 (0.000)
address	0.512 (0.000)	0.474 (0.000)	0.717 (0.000)
growth2011	0.029 (0.003)	0.031 (0.002)	0.020 (0.000)
age	0.005 (0.009)	0.005 (0.037)	0.008 (0.006)
input seller	0.405 (0.000)	0.320 (0.000)	0.356 (0.000)
Employment			0.230 (0.000)
sales per worker		0.220 (0.000)	
repeco	-0.646 (0.000)	- 0.741 (0.000)	- 0.495 (0.001)
duc	-0.401 (0.000)	- 0.340 (0.000)	- 0.615 (0.000)
dum	-0.054 (0.468)	- 0.074 (0.347)	- 0.111 (0.281)
State 2: Sales slip = 2			
Motive	0.099 (0.000)	0.083 (0.001)	0.102 (0.001)
Accounting	2.339 (0.000)	2.245 (0.000)	2.247 (0.000)
Registered	1.33 (0.000)	1.323 (0.000)	1.028 (0.000)
address	0.074 (0.287)	0.022 (0.764)	0.238 (0.019)
growth2011	0.045 (0.001)	0.046 (0.001)	0.043 (0.009)
age	0.006 (0.029)	0.007 (0.027)	0.007 (0.063)
input seller	0.436 (0.000)	0.368 (0.000)	0.426 (0.000)
Employment			0.216 (0.000)
sales per worker		0.288 (0.000)	
repeco	- 1.000 (0.000)	- 0.975 (0.000)	- 0.853 (0.000)
duc	-0.916 (0.000)	- 0.953 (0.000)	-0.937 (0.000)
dum	-0.195 (0.023)	- 0.174 (0.068)	- 0.187 (0.105)
	Notes: 1. We included a constant in the estimation. 2. N= 18,695; Prob>chi2 = 0.000; Pseudo R2= 0.342	Notes: 1. We included a constant in the estimation. 2. N= 17,708; Prob>chi2 = 0.000; Pseudo R2= 0.348	Notes: 1. We included a constant in the estimation. 2. N= 7,289; Prob>chi2 = 0.000; Pseudo R2= 0.354

Cuadro 7

Ordered Probit with Instrumental Variables

Dependent Variable: p38

	Coefficient (P> z)	Coefficient (P> z)
Motive	0.059 (0.000)	0.124 (0.000)
Accounting	0.646 (0.000)	
Registered	0.681 (0.000)	
Address	0.254 (0.000)	
growth2011	0.017 (0.001)	0.016 (0.000)
Age	0.003 (0.002)	0.008 (0.000)
Input seller	0.235 (0.000)	0.413 (0.000)
Buyer	0.259 (0.000)	0.401 (0.000)
Repeco	- 0.295 (0.000)	0.959 (0.000)
Duc	- 0.301 (0.000)	-0.209 (0.000)
Dum	- 0.093 (0.020)	- 0.148 (0.000)
Buyer		
Employment	0.052 (0.000)	0.048 (0.000)
Constant	1.113 (0.000)	1.118 (0.000)
	Notes: 1. We included a constant in the estimation. 2. N= 19,916; Prob>chi2 = 0.000;	Notes: 1. We included a constant in the estimation. 2. N= 19,916; Prob>chi2 = 0.000;