DIFFERENCES IN EFFICIENCY BETWEEN FORMAL AND INFORMAL MICRO-FIRMS IN MEXICO

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Context

- Microfirms represent the majority of business activity and employ more workers than any other kind of firm.
- There may an expression of the entrepreneurial capacity of the society.
- But… they are associated with informal activities in developing countries.
- The study differentiates between formal and informal microfirms.

The research questions

- Are there efficiency differences between formal and informal micro firms?
- If so, What explains these differences between them?

- **Why to start a microfirm?**

  - Owning a business and being your own boss are desirable characteristics in developed countries.

  - In contrast, micro-firms are associated to with unregulated activities, involved in informal subsistence activities in developing countries. (Lagarda and Urquidy, 2007).

  - Voluntary entrance?
    - Pecunary benefits.
    - Low salaries (susbistence way).
    - Complementary activity.
      - →do they want to return to be salaried workers?

- **What kind of obstacles do microfirms face?**
  - Regulations can inhibit individual activity (labor regulations)
  - Availibility of capital and credit restrictions.
- **What are the characteristics of micro-firms?**
  - Low working capital
  - Low wages
  - Most of them do not employ staff
  - *Most of them are informal.*
  - But… is the informality a problem?
    (hidden entrepreneurship, job inestability)

- What are the causes of informality?
  - Goverment failures.
  - Tax morale.
  - Weak institutions.
  - Structural problema. (economic growth)

- How to measure it?
  - Number of employees.
  - Registration before government agencies.
  - Bussines mobility
  - The firm´s accounts

- **Efficiency is important…**

  - Economic growth is considered as coming from the creation of highly efficient formal firms.

  - But… most micro-firms are too small and informal.

  - The informal micro-firms are less efficient. (La Porta and Shleifer, 2014)

  - The differences in productivity are bigger between small firms than bigger ones. (Benjamin and Mbaye, 2012; Castany, 2007).

- What are the possible reasons to explain differences in efficiencies?
  - Human capital
  - Education
  - Labor experience
  - Capital and labor endowments
  - Access to credit
  - Market strategies
  - Marital status

- Data
  - Mexico
  - National Micro Firm Survey (ENAMIN), 2008,2010,2012
  - It covers up to 6 people in trade, service and construction sector, and up to 16 people in manufacturing sector.
  - The survey interviews 30,000 owners. Cleaning (missing values) the database, the sample is reduced to 12,000

- Data
  - Informality criterio:

    "*In your activity or bussines… using a notebook or a notepad to keep accounts*

    or

    →accounts are not kept"

  - Output

    "What is the amount of income generate by the business in the past month for the following ítems?

  - Capital

    "If you had to sell the tool, equipment, machinary, furniture, equipment, land, vehicles and property that have been used in your trade or business, for how much would you sell them?"

  - Labor

    Number of employees in the business, including the owner

- Education

  It is the educational level; zero (uneducated) to nine (PhD)

- The age of firm

- The motivation for starting a firm:

  “What was the main reason for which you started this business or activity?”

- Financing

  “Where did you get the money to start this business or activity?”

Descriptive statistics

Variable		Mean		Mean		Mean
		Full Sample		Formal		Informal
Output	Mexican pesos	15.650		36.196		9.129
Capital	Mexican pesos	64.110		184.062		26.037
Labour	N. Workers	1,69		2,31		1,49

Variable		Mean		Mean		Mean
		Full Sample		Formal		Informal
Output	Dollars	1,202.9		2,782.1		701.7
Capital	Dollars	4,927.7		14,147.6		2,001.3
Labour	N. Workers	1.69		2.31		1.49

Methodology

- Efficiency is obteined by Distance Function Approach (DFA)

Stochastic frontier model

$$Y_i = \beta_0 + \beta_1 K_i + \beta_2 L_i + \delta X_i + \varepsilon_i$$

Y_i = the log of output expressed in Mexican pesos of micro-firm “I

K_i = log of capital that includes tools, equipment, machinery, etc.

L_i= log of the number of workers, including owners

X_i = vector of control variables, such as geographical region and sector of the economy.

$$\varepsilon_i = \upsilon_i + \mu_i$$

υ_i = the measurement and specification error

μ_i = the non−negative (in)efficiency

- Once the stochastic frontier model has been estimated, it is possible to obtain an efficiency measure for micro-firms, μ_i, which is renamed as variable E_i

$$E_i = \theta' Z_i + w_i$$

Z_i, = variables that affect efficiency (owner education, age of business, financing, and motivation for starting the business.)

- Results

DFA

	2012	
OUTPUT		
Capital	0.286***	0.252***
	(0.00505)	(0.00533)
Labour	0.780***	0.710***
	(0.0200)	(0.0201)
Northeast	-0.0481	-0.0343
	(0.0439)	(0.0433)
Northwest	0.174***	0.183***
	(0.0375)	(0.0370)
West	0.193***	0.173***
	(0.0361)	(0.0356)
East	0.106***	0.119***
	(0.0391)	(0.0385)
Northcentral	0.130***	0.128***
	(0.0390)	(0.0384)
Southcentral	0.120***	0.138***
	(0.0440)	(0.0434)
Southeast	0.146***	0.153***
	(0.0376)	(0.0371)
Manufacturing	-0.145***	-0.121***
	(0.0279)	(0.0276)
Commerce	0.0959***	0.0882***
	(0.0222)	(0.0220)
Formal =1		0.462***
		(0.0260)
Constant	6.623***	6.863***
	(0.0594)	(0.0598)

OLS

	2012
EFFICIENCY	
Education	0.0293***
	(0.00317)
Firm age	0.00359**
	(0.00142)
Formal =1	0.0298***
	(0.00343)
Motivation	0.0149***
	(0.00348)
Financing	0.0194***
	(0.00552)
Constant	0.456***
	(0.00509)

Oaxaca-Blinder decomposition method

- Two equations of efficiency are estimated to obtain the returns enabled by the characteristics of both groups of firms.
- Vectors Z_{fo} and Z_{in} represent the micro-firms' characteristics or endowments

$$\bar{E}_{fo,i} = \bar{Z}_{fo,i}\beta_{fo,i} + u_{fo,i}$$

$$\bar{E}_{in,i} = \bar{Z}_{in,i}\beta_{in,i} + u_{in,i}$$

- It is decomposed the average efficiency differential between formal and informal micro-firms using two components

$$\bar{E}_{fo,i} - \bar{E}_{in.i} = \left(\bar{Z}_{fo,i} - \bar{Z}_{in,i}\right)\beta_{fo,i} + \bar{Z}_{in,i}\left(\beta_{fo,i} - \beta_{in,i}\right)$$

The first is referring to the differential in characteristics

The second part refers to the efficiency differential

Oaxaca-Blinder decomposition

	Output	Efficiency
Informal	8.596***	0.500***
	-0.014	-0.00161
Formal	9.833***	0.542***
	-0.0249	-0.00267
Difference	-1.237***	-0.0429***
	-0.0285	-0.00312
Endowments		
Total	-0.890***	-0.0122***
	-0.0241	-0.00151
Capital	-0.507***	
	-0.0172	
Labour	-0.262***	
	-0.0138	
Education	-0.0781***	-0.00859***
	-0.0102	-0.00133
Firm age	-0.00977***	-0.00147***
	-0.00325	-0.000442
Motivation	-0.0140***	-0.00183***
	-0.00448	-0.000603
Financing	-0.00243*	-0.000262*
	-0.00132	-0.00015
Regions	-0.0163***	
	-0.00405	

Returns	Output	Efficiency
Total	-0.347***	-0.0308***
	-0.0294	-0.00342
Capital	0.775***	
	-0.153	
Labour	-0.0787***	
	-0.0302	
Education	-0.224***	-0.0190*
	-0.0776	-0.00996
Firm age	0.120**	0.0210***
	-0.0558	-0.00729
Motivation	-0.00222	-0.00112
	-0.017	-0.00224
Financing	0.00227	0.000383
	-0.00692	-0.000909
Regions	0.177**	
	-0.0825	

Conclusions

- The majority of output differences are due to endowment differences between groups, in that the characteristics of formal firms are superior to their informal counterparts.
- The efficiency analysis is carried out the endowment return has more weight in the explanation of the gap between groups.
- The education variable explains the majority of the output differences between formal and informal firms.
- The age of the firm is another variable that helps to explain the efficiency differences between groups.
- The motivation variable plays an important role in clarifying the differences.
- The financing variable has less statistical weight, but it is significant in the econometric model.

Thanks!