

Bank Account Ownership by Micro-entrepreneurs in Mexico

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Research question

- Focusing on micro-entrepreneurs, does financial inclusion change when the benefits of being informal increase?
 - Key definitions:
 - **Financial inclusion** means whether the individual has at least one of the following types of bank accounts: savings, checking, payroll, fixed term deposit, or investment fund account.
 - **Micro-entrepreneurs** are people who report to be self-employed or employer.
 - **Being a formal micro-entrepreneur** means he/she complies with all fiscal obligations, in particular, issues formal invoices for all sales; collects the corresponding VAT; delivers the revenue collected to the tax authority; and, pays the corresponding income tax which depends on the sales with formal invoice.

For micro-entrepreneurs, the decision of being formal is endogenous to the decision of having a bank account.

- On one side, **formal micro-entrepreneurs are more likely to participate in the financial system** because they have the required documents to do so.
 - For example, they have certificate of incorporation of the firm, formal registration of the firm with the fiscal authority, previous tax returns, income receipts, expenses receipts, etc.
- On the other side, **micro-entrepreneurs with bank account are more likely to formalize.**
 - Their resources at the bank are protected; they are more likely to save, to accumulate wealth and, therefore, to survive and grow.

Strategy:

- **Natural experiment:** in 2014 the VAT at the border strips increased from 11% to 16%.
 - Border strips are defined as the 20 km strip at each border and the whole states of Baja California, Baja California Sur and Quintana Roo.
- **Difference-in-differences.**

Border strips with preferential VAT rate before 2014 (regions in orange)



Source: Own elaboration.

Hypothesis

- **The rise in the VAT rate increased the benefits of being an informal micro-entrepreneur, therefore; to avoid being detected evading taxes, the probability of having a bank account decreases.**
 - For micro-entrepreneurs, informal revenues increase, that is, sales without VAT increase. Such sales must be in cash.
 - By law, since 2009 the financial system shares information related to bank accounts and cash deposits with the fiscal authority.
 - Therefore, micro-entrepreneurs reduce their bank deposits.
- The change in the VAT DOES NOT affect the fiscal obligations of salaried workers, either formal or informal ones.
 - For these groups the probability of having a bank account does not change.

Contribution to the literature

- The most important articles in this literature are:
 - Monteiro and Assuncao (2006); Dabla-Norris and Koeda (2008); Gatti and Honorati (2008); Fajnzylber et al. (2009); McKenzie and Sakho (2009); De Mel et al. (2013); Allet et al., 2016; Bosch et al., 2015; Aguilar y Valles, 2015; Vázquez, 2015; Peña et al. 2014.
- The main contributions of this document are:
 - It focuses on bank account ownership, instead of credit access.
 - It explains why in Mexico people with income do not have a bank account.
 - **In 2015, among adults in working-age that have a job and positive labor income, 47.11% do not have a bank account.**
 - It accounts for potential endogeneity between financial inclusion and informality.
 - The characteristics of the natural experiment allow us to study the consequences of informality from other perspectives.

Data

- ENIF: National Financial Inclusion Survey 2012 and 2015 (2018 coming soon!)
 - Advantages
 - Focuses on financial inclusion topics.
 - The first survey took place before the change in the VAT rate and the second survey after.
 - It is possible to distinguish between micro-entrepreneurs, formal salaried workers and informal salaried workers.
 - Disadvantages
 - Is not a firm survey, it is a household survey: it does not include characteristics of the firm or business.
 - Most probably I am only capturing small firms not a representative sample of firms.
 - Is not a panel dataset.
 - Questionnaire changed between surveys.
 - I have few observations at the border strips.

Methodology

Treatment group A (municipal level)



Treatment group B (state level)



Treatment group B (divided by labor status)



 Control group

 Treatment group

Methodology

Linear Probability Model

$$\begin{aligned} P(Y_{im} = 1 | X_{im}) \\ = Z_{im}\beta + \delta_1 Norte_{im} + \delta_2 Sur_{im} + \delta_3 I(t = 2015)_i \\ + \delta_4 I(t = 2015)_i * Norte_{im} + \delta_5 I(t = 2015)_i * Sur_{im} \\ + \theta_s + \varepsilon_{im} \end{aligned}$$

- Coefficients of interest are δ_4 and δ_5 .

Control variables

- Control variables are important because groups are different in many aspects.

Individual characteristics

- Age
- Gender
- Schooling
- Marital status
- If head of household
- Real labor income
- Whether he/she
 - has informal savings.
 - thinks the bank branch is far away.
 - is not interested in the financial system.
 - does not trust in the financial system.
 - does not have necessary documents to participate in the financial system.

Household characteristics

- Number of children and elderly people in the household
- Number of adults in the household

Location related characteristics

- Percentage of the state population who is poor
- Percentage of the state labor force that has social security.
- Dummy variables for size of the locality
- Fixed effects at the state level.

Summary Statistics

	Treatment Group (North and South fringe)	Treatment Group (North fringe)	Treatment Group (South fringe)	Control Group
<u>Mean</u>				
Age	37.7	38.2	38.0	38.1
Number of children and elderly in the household	1.2	1.2	1.4	1.4
Number of adults in the household	2.3	2.3	2.5	2.5
Years of education	10.0	10.0	9.9	9.9
<u>% of the Sample</u>				
Men	58.37	58.35	58.43	53.39
Married	61.20	62.39	58.43	61.45
Head of the household	60.14	59.02	62.75	55.97
Formal salaried worker	49.76	50.08	49.02	38.08
Informal salaries worker	23.70	23.61	23.92	30.18
Business owner	26.53	26.31	27.06	31.74
State level labor market formality	42.31	42.46	41.97	30.70
N	848	593	255	4,420

	Treatment Group (North and South fringe)	Treatment Group (North fringe)	Treatment Group (South fringe)	Control Group
State level poverty	32.89	30.89	37.54	47.02
Earnings of less than 3,000 MXN	24.29	22.77	27.84	40.54
Earnings from 3,000 a 4,999 MXN	29.83	30.02	29.41	29.91
Earnings from 5,000 a 7,999 MXN	22.88	22.60	23.53	17.26
Earnings from 8,000 a 12,999 MXN	15.09	15.85	13.33	7.76
Earnings from 13,000 a 20,000 MXN	5.54	5.56	5.49	2.99
Earnings above 20,000 MXN	2.36	3.20	0.39	1.54
Not interested in access to financial institutions	38.80	40.47	34.90	40.02
Do not trust in financial institutions	17.81	16.86	20.00	18.48
Do not have the necessary documentation	25.71	23.95	29.80	27.69
Do save informally	56.37	51.77	67.06	57.33
The bank is far away	1.89	1.69	2.35	1.76
Localities of 100,000 residents or more	59.43	54.97	69.80	46.83
Localities from 15,000 to 99,999 residents	18.28	23.10	7.06	16.72
Localities from 2,500 to 14,999 residents	10.97	10.62	11.76	16.56
Localities of less than 2,500 residents	11.32	11.30	11.37	19.89
N	848	593	255	4,420

Percentage of individuals with bank account

	2012				2015				
	Total	Formal-salaried	Informal-salaried	Micro entrepreneurs	Total	Formal-salaried	Informal-salaried	Micro entrepreneurs	
Non-border states	42.27	73.70	22.12	26.42	50.92	78.84	30.36	35.94	⇒ 9.52
N	2,134	772	624	738	2,286	893	728	665	
Border states	47.38	74.75	24.91	30.73	56.39	79.06	36.42	31.25	
N	1,220	499	285	436	1,284	640	324	320	
Border fringe	50.76	76.47	25.25	30.00	56.86	79.11	32.14	37.39	⇒ 7.39
N	396	187	99	110	452	225	112	115	
North Border fringe	55.40	81.48	25.35	36.11	54.60	74.03	32.47	39.29	
N	278	135	71	72	315	154	77	84	
South Border fringe	39.83	63.46	25.00	18.42	62.04	90.14	31.43	32.26	
N	118	52	28	38	137	71	35	31	

-2.13

OLS Results

	Treatment defined at the municipal level	Treatment defined at the state level		Treatment defined at the municipal level	Treatment defined at the state level
I(t=2015)	0.065*** (0.030 , 0.101)	0.054*** (0.021 , 0.087)	Earnings from 3,000 a 4,999 MXN	0.0554*** (0.024 , 0.087)	0.0526*** (0.025 , 0.080)
Northern	-0.134 (-0.368 , 0.100)	-0.127 (-0.329 , 0.0759)	Earnings from 5,000 a 7,999 MXN	0.114*** (0.076 , 0.153)	0.126*** (0.093 , 0.159)
Southern	-0.309*** (-0.528 , -0.089)	-0.274* (-0.592 , 0.043)	Earnings from 8,000 a 12,999 MXN	0.227*** (0.182 , 0.273)	0.220*** (0.180 , 0.260)
I(t=2015)*Northern	-0.090** (-0.162 , -0.02)	-0.047** (-0.095 , -0.0007)	Earnings from 13,000 a 20,000 MXN	0.281*** (0.221 , 0.342)	0.287*** (0.236 , 0.338)
I(t=2015)*Southern	0.125** (0.018 , 0.231)	0.022 (-0.039 , 0.084)	Earnings above 20,000 MXN	0.251*** (0.166 , 0.337)	0.252*** (0.182 , 0.323)
Micro entrepreneur	-0.336*** (-0.369 , -0.304)	-0.346*** (-0.375 , -0.318)	Number of children and elderly	-0.003 (-0.0134 , 0.007)	-0.002 (-0.011 , 0.006)
Informal salaried worker	-0.380*** (-0.412 , -0.348)	-0.381*** (-0.409 , -0.353)	Number of adults in the household	0.004 (-0.00539 , 0.014)	-0.001 (-0.010 , 0.007)
Women	0.065*** (0.039 , 0.093)	0.073*** (0.050 , 0.096)	Not Interested in financial system	0.042*** (0.0192 , 0.067)	0.042*** (0.022 , 0.063)
Age	-0.003 (-0.010 , 0.004)	-0.003 (-0.009 , 0.003)	Do not trust in financial institutions	0.119*** (0.089 , 0.150)	0.112*** (0.085 , 0.138)
Age-squared	0.00004 (-4.4E-05 , 1E-04)	0.00004 (-2.6E-05 , 0.0001)	Do not have the required documents	-0.008 (-0.0346 , 0.017)	-0.009 (-0.032 , 0.013)
Married	-0.0000330 (-0.025 , 0.025)	0.00346 (-0.018 , 0.025)	Informal savings	0.045*** (0.022 , 0.070)	0.037*** (0.016 , 0.058)
Head of household	0.0331** (0.004 , 0.062)	0.0322** (0.007 , 0.057)	Bank branch is far away	0.049 (-0.0273 , 0.127)	0.020 (-0.043 , 0.084)
Years of education	0.0170*** (0.014 , 0.020)	0.0165*** (0.014 , 0.020)	Constant	0.939*** (0.323 , 1.56)	0.656** (0.097 , 1.21)
			N	5268	6924
			R-squared	0.318	0.317
			State Fixed Effects	Yes	Yes
			Locality size indicators	Yes	Yes
			Formality and poverty indicators	Yes	Yes

	OLS			
	All	Formal salaried	Informal salaried	Micro entrepreneur
I(t=2015)	0.0542*** (0.0169)	0.0303 (0.0276)	0.0431 (0.0305)	0.0768** (0.0315)
Northern	-0.127 (0.103)	-0.133 (0.149)	0.0424 (0.215)	-0.164 (0.199)
Southern	-0.274* (0.162)	-0.225 (0.238)	-0.00370 (0.338)	-0.426 (0.307)
I(t=2015)*Northern	-0.0479** (0.0240)	-0.0249 (0.0351)	-0.0391 (0.0506)	-0.124** (0.0482)
I(t=2015)*Southern	0.0225 (0.0315)	0.0768 (0.0500)	0.0346 (0.0634)	-0.0273 (0.0557)
Micro entrepreneur	-0.346*** (0.0143)			
Informal salaried	-0.381*** (0.0142)			
N	6924	2852	1913	2159
R-squared	0.32	0.13	0.14	0.17
State Fixed Effects	Yes	Yes	Yes	Yes
Locality size indicator	Yes	Yes	Yes	Yes
Formality and poverty indicators	Yes	Yes	Yes	Yes

Conclusions

- When the VAT rate increased from 11% to 16%, the probability of having a bank account:
 - decreased 9 percentage points for people who live in the northern border strip.
 - decreased 12.4 percentage points for micro-entrepreneurs who live in the northern border.
 - does not change for salaried workers, in a statistically significant sense.
- The bank account ownership in 2015 for micro-entrepreneurs in the northern border strip was 39.29%. If the VAT rate had not changed, bank account ownership would have been $39.29+9=48.29\%$. **Bank account ownership would have increased from 2012 to 2015 33%; in the rest of the country increased 36%.**

Thank you!

Annex

Access to banking services at the municipal level

(Points of access per 100,000 adults)

	Acceso			
	Total Sucursales		Cajeros	
	2012	2015	2012	2015
Franja Fronteriza Sur	17.43	16.23	64.90	73.06
Grupo de Control	18.58	18.91	42.60	45.51

-1.54 5.25

	Acceso			
	Total Sucursales		Cajeros	
	2012	2015	2012	2015
Franja Fronteriza Norte	17.77	16.29	74.64	68.77
Grupo de Control	18.58	18.91	42.60	45.51

-1.81 -8.79

Use of banking services at the municipal level

(Number of debit cards per 100,000 adults)

	Usos			
	Banca		EACP	
	2012	2015	2012	2015
Franja Fronteriza Sur	83,446.72	106,160.90	0.00	38.13
Grupo de Control	103,436.22	132,571.90	139.46	965.36

-6,421.49 -787.76

	Usos			
	Banca		EACP	
	2012	2015	2012	2015
Franja Fronteriza Norte	111,183.19	136,320.21	0.00	0.00
Grupo de Control	103,436.22	132,571.90	139.46	965.36

-3,998.65 -825.89

OLS Results
(alternative specifications)

	I(t=2015)*Northern	N	R-squared
Without Border States in the South	-0.0909**	5,013.00	0.3158
Without Border States in the South and only localities of 100,000 residents or more	-0.140***	2,396	0.3428
Only for Northern States and their neighbours^{1/}	-0.116**	1,497	0.3502
Only for Northern States and for States which have similar average percapita income than the Northern States^{2/}	-0.130***	2,029	0.3539

1/ Includes northern states, Sinaloa, Durango, Zacatecas, San Luis Potosí and Veracruz.

2/ Includes northern states, San Luis Potosí, Jalisco, Colima, Aguascalientes, Querétaro y Ciudad de México.