

# Informality and the Expansion of Social Protection Programs: The Case of Mexico

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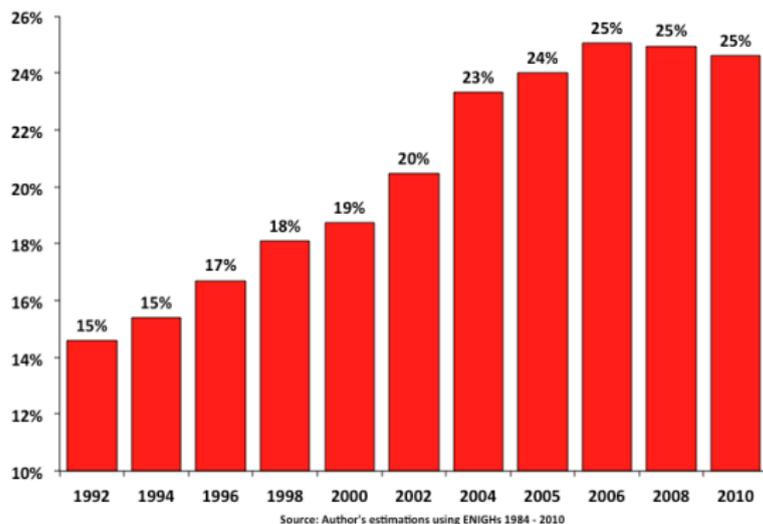
InterAmerican Development Bank &  
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# Outline of the Talk

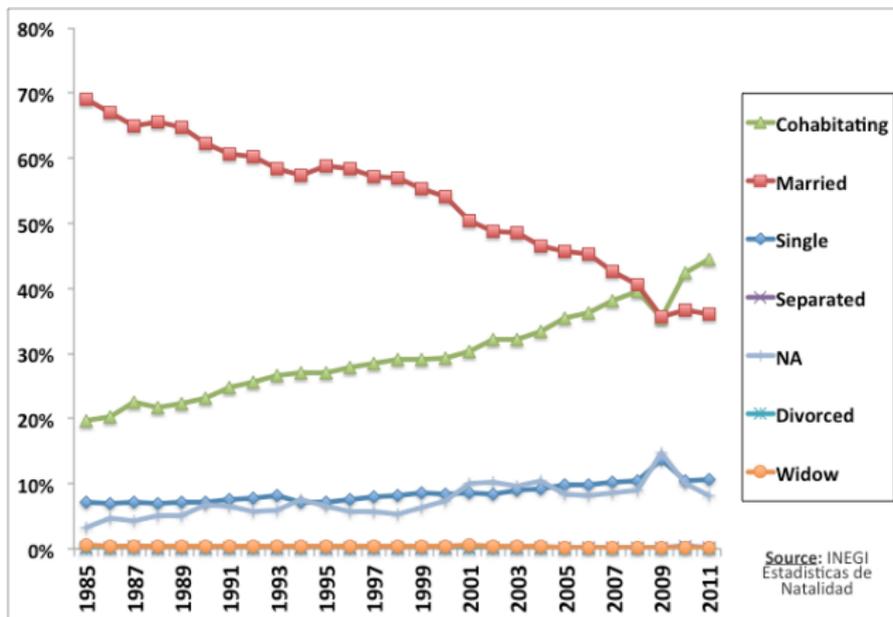
- 1 Demographic Trends
- 2 Social Protection in Mexico
- 3 Social Protection and Informality
- 4 Conclusions

Figure: % of Households Headed by Females



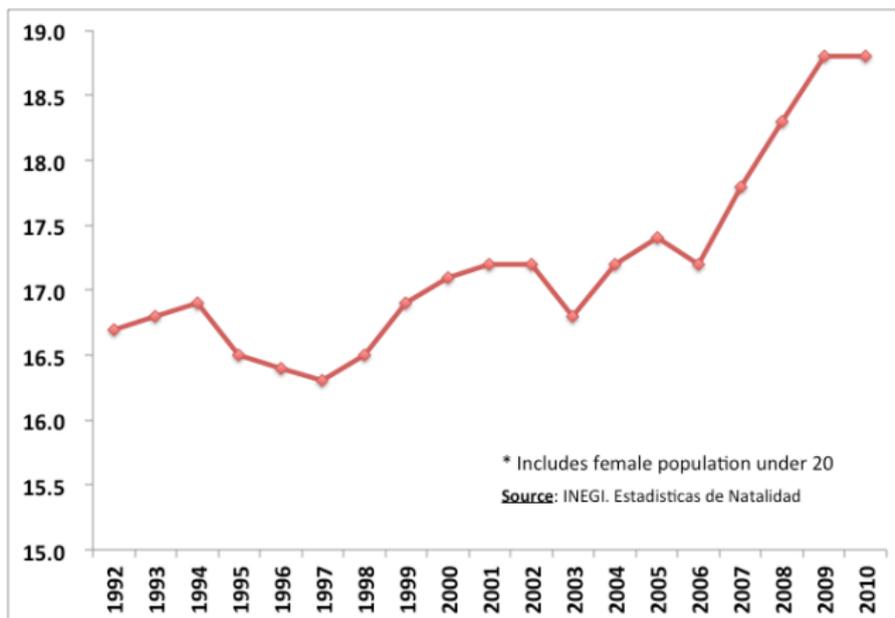
# Demographic Trends

Figure: % Births by Mother's Marital Status



# Demographic Trends

Figure: Teenagers births as % of Total Births



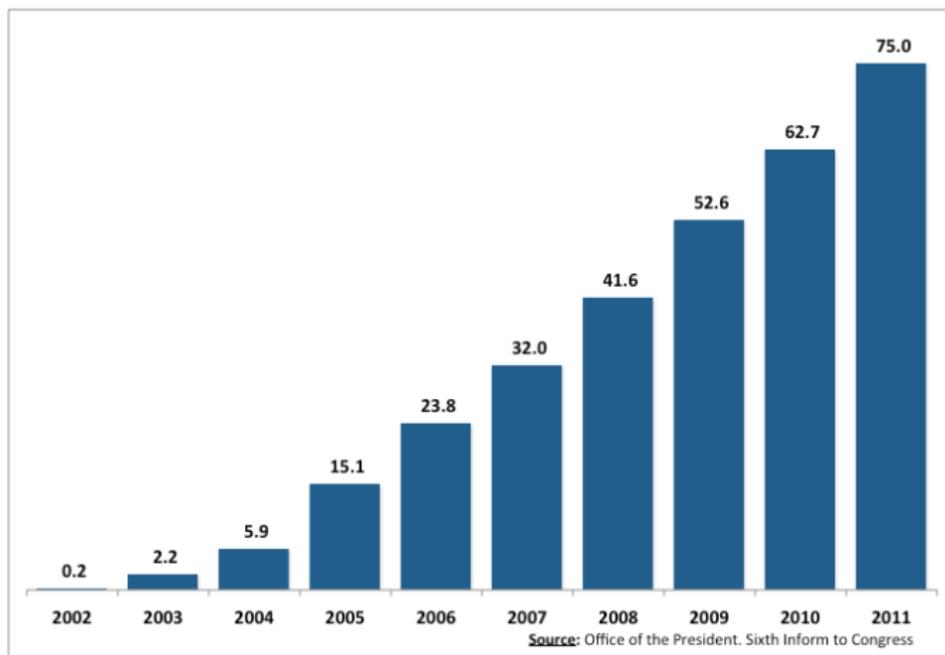
Mexico: Provision and Funding of Health Systems: IMSS (private sector), ISSSTE (public sector) Seguro Popular (Not Covered by IMSS or ISSSTE)

Compulsory Social Security (Bismarck's model)	National Healthcare Systems (Beveridge Plan: unrestricted)	Mixed Systems
<ul style="list-style-type: none"><li>• Three parties (government, employers, employees)</li><li>• Attention based on labor status</li></ul>	<ul style="list-style-type: none"><li>• Public (general taxes)</li><li>• Attention for everyone, notwithstanding labor status</li></ul>	Combination of systems
 Germany	 Spain	 Mexico
 France	 Sweden	
	 United Kingdom	

# Seguro Popular

- Started in 2002 as program and 2004 was converted to an entitlement
- Provides coverage of health services through public voluntary insurance
- Conditioned on no formal job, being self-employed and not being covered by any of the social security institutions (IMSS, ISSSTE)
- Basic coverage (275 medical procedures):
  - Basic health service
  - Third level surgeries
  - Provision of medicines (422)
- Seguro Popular did not involve a reform of the contributive Social Security systems.
- Federal government gives a direct subsidy to the States depending on the number of affiliates (Total: 45 bn Pesos in 2011)
- The benefit in current pesos of 2011 for covered households was equivalent to 4,000 pesos (Aprox. 300 USD)

Figure: Millions of Households Covered

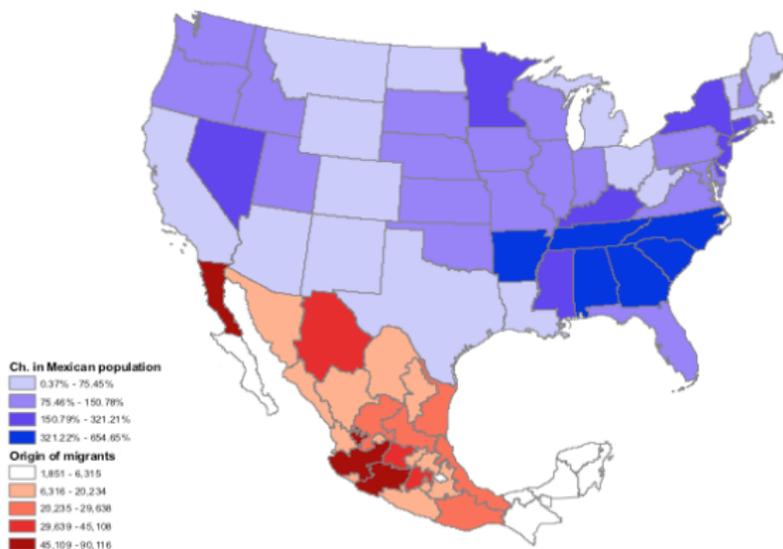


# Effects of Social Protection

- 50% of the employed urban population (villages >50K) is informal: i.e. not covered by IMSS/ISSSTE or self-employed.
- Providing health benefits to informal workers could make informality more attractive.
- SP may increase informality.
- 10% of formal workers will be informal the next quarter and 10% of informal workers will be formal the next quarter.
- SP provides a substantial benefit:
  - SP spending per enrolled person in 2009 represented 5% of the wage, which is similar to the cost of health insurance in the USA

# Effects of Social Protection: Labor mobility

Figure: Labor Mobility in Mexico but also in the US

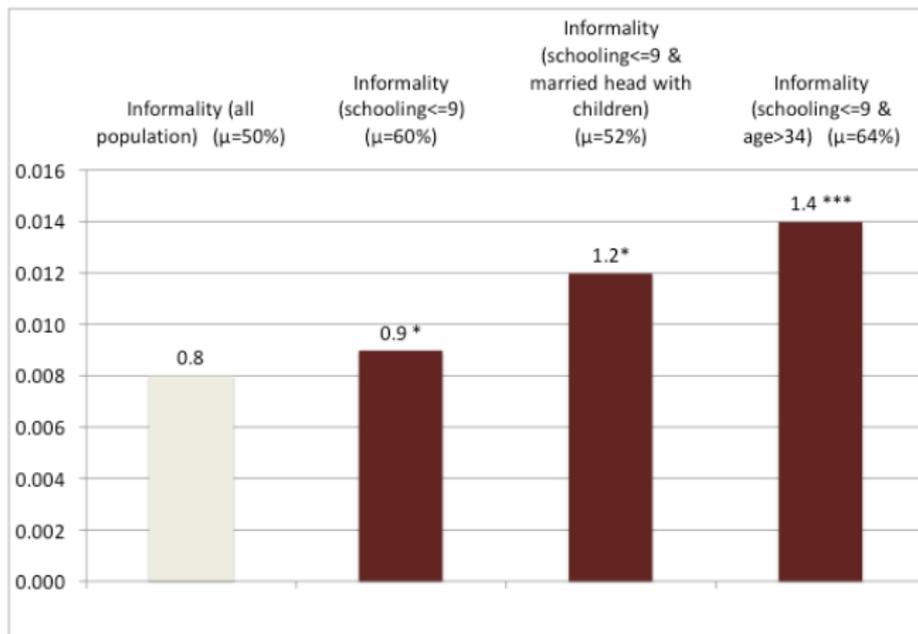


- Informality is a urban phenomenon. Restricted the analysis of population living in cities ( $>50K$  inhabitants)
- Definitions of formality and informality
  - 1 Formal:
    - Salaried (covered by social security IMSS, ISSSTE, other)
    - Self employed covered by social security (IMSS)
  - 2 Informal:
    - Illegal salaried workers
    - Self-employed not paying contributions to social security
- Informality is very heterogeneous and multiple causes (i.e. regulation, taxation, and inefficient provision of publicly provided goods.)
- How important is social protection (particularly Seguro Popular) in promoting illegal salaried work?

# Key Results

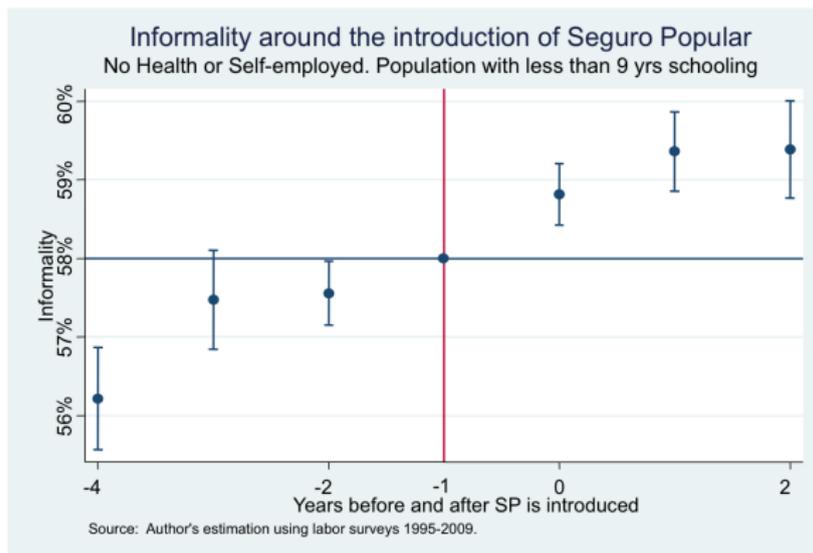
- SP did not significantly increase overall informality in the urban areas of Mexico.
  - Using use labor force surveys to measure informality and wages in Mexico's urban areas
  - Linear probability model
- For workers with 9 years of education or fewer, informality increased by 0.9 percentage points (1.5%) after the introduction of SP.
- No impact of SP on self-employment.
- Impact of SP on informality estimated by other papers ranges between no effect (Campos-Vasquez and Knox, 2008, Barros, 2009, Aguilera, 2011) and a small effect (Bosch and Campos-Vazquez, 2010, Aterido, Hallward-Driemeier, Pages, 2010).
- SP has at most a small effect on informality.

Figure: % Births by Mother's Marital Status



# SP.- Effect on Informality

Figure: Balanced Panel 3 years pre-post introduction of SP

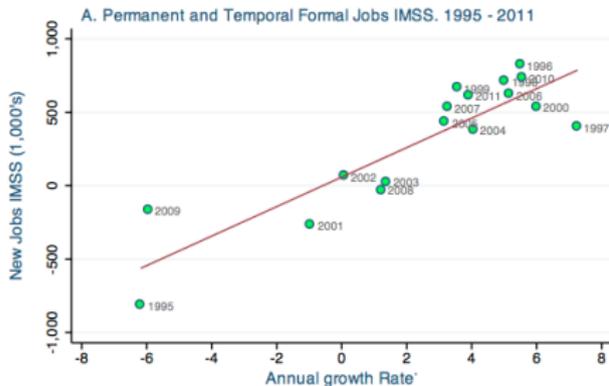


# Why did SP have such a small impact on informality?

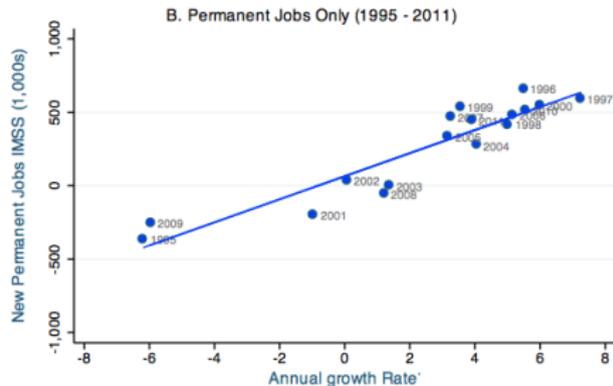
- Health benefits are only one of the reasons why someone works in the formal or the informal sector.
- Informality: choice or exclusion? Previous literature shows that self-employment is likely to be a choice.
- SP had no effect on self-employment.
- Health benefits are probably not a key determinant of whether someone works formally or informally.

# Formal jobs and Economic Performance

Figure: Economic Growth and New Formal Jobs



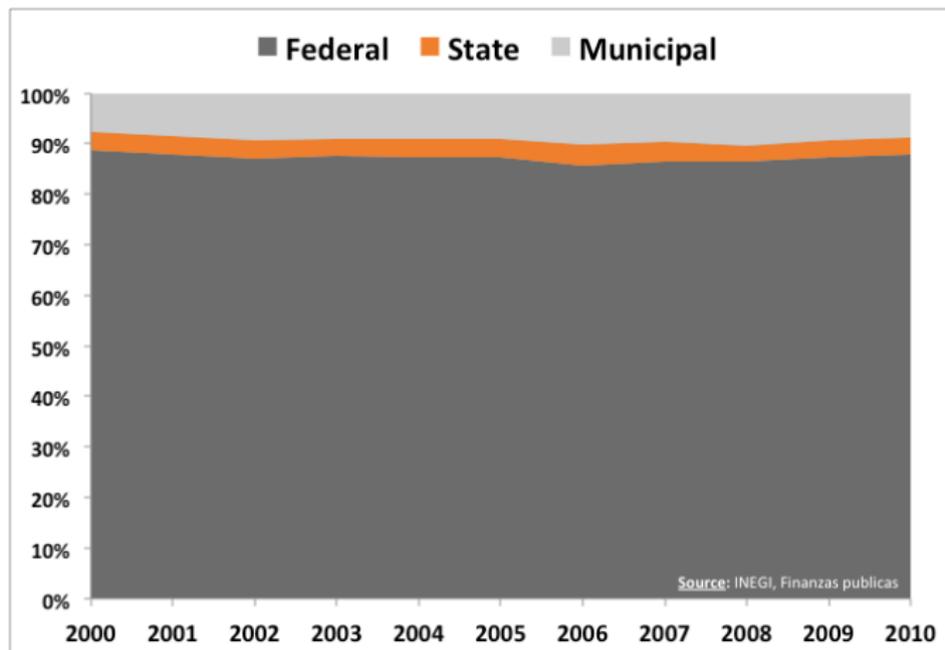
Source: INEGI, Indicadores Economicos de Coyuntura  
\*Includes permanent and temporal



Source: INEGI, Indicadores Economicos de Coyuntura  
\*Includes permanent and temporal

# Informality & Local Institutional Capacity

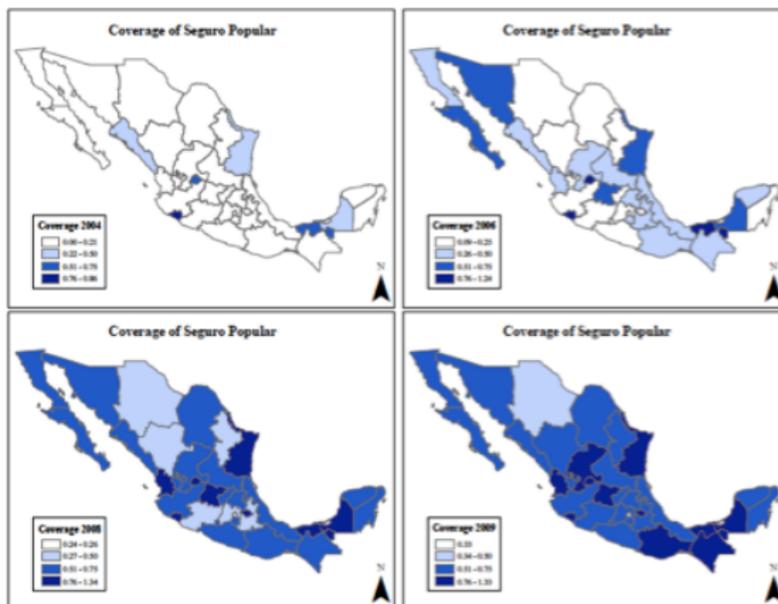
Figure: Collection of Taxes by Level of Government



# Conclusions

- SP did not affect overall informality.
- SP increased informality among less educated workers, but the effect was small.
- Health benefits are likely not the key reason why people work formally or informally.
- Policy lesson for SP: SP likely had a globally positive impact since it increased health coverage with very limited effects on informality in the labor market.
- Informality is closely related to
  - Skill formation slow
  - Inefficiency of the school system
  - Rigidity of labor and capital markets
- Mexican family is under stress and this likely has major implications for child development and skill development

Figure: Introduction of SP by State



# Summary Statistics

1995 - 2010

Variable	Obs.	Mean	Std. Dev.	Min.	Max
No Health Services or self-employed	951,354.	0.5044	0.500	0	1
Salaried and no health services	951,269.	0.5039	0.500	0	1
Self-employed	953,866.	0.1712	0.377	0	1
No contract	698,742.	0.3536	0.478	0	1
Small firm (< 5 employees)	943,659.	0.4233	0.494	0	1
Gender (Male=1)	1,581,968	0.4681	0.499	0	1
Years of Sch.	1,581,272	6.3489	6.219	0	24
Age	1,581,968	34.8716	14.095	15	69
Married	1,581,968	0.4936	0.500	0	1
Children in Household	1,581,968	3.8342	7.519	0	125
Growth electricity mun.	1,389,814	0.7690	24.129	-0.993	1,075.317
Hospitals pc	1,562,106	0.0001	0.00012	0	0.002
<b>Economic Sector</b>					
Construction	1,581,968	0.0515	0.221	0	1
Manufacture	1,581,968	0.1123	0.316	0	1
Commerce	1,581,968	0.1314	0.338	0	1
Services	1,581,968	0.2764	0.447	0	1
Other	1,581,968	0.0296	0.169	0	1
Not specified	1,581,968	0.0019	0.044	0	1

Sources:

**Seguro Popular.** Comision Nacional de Proteccion Social en Salud. Annual information by village collapsed by nonrural units in the by municipality

**Oportunidades.** Coordinacion Nacional de Oportunidades. Annual information by village collapsed by nonrural units in the municipality

**Employment.** and sociodemographic variables. Authors' estimations using ENE (1995-2004) and ENOE (2005-2010)

## Endogeneity Analysis

Table II.B.1 Endogeneity Analysis. Informality as Predictor of Year of Introduction of SP

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Year SP <sup>A</sup>	Year SP <sup>A</sup>	Year SP <sup>A</sup>	Year SP <sup>A</sup>	Late SP <sup>B</sup>	Late SP <sup>B</sup>	Late SP <sup>B</sup>	Late SP <sup>B</sup>
Informality <sup>1</sup>	1.223*	1.232*	0.974	0.154	0.269	0.348	0.086	0.108
	[0.674]	[0.686]	[0.915]	[0.785]	[0.220]	[0.225]	[0.292]	[0.231]
Log Total Pop Mun			-0.230*	-0.204*			-0.068**	-0.034
			[0.127]	[0.112]			[0.040]	[0.033]
Doctors Per Capita			-163.359	-210.418*			-52.342	-91.077**
			[139.385]	[123.471]			[44.453]	[36.321]
Hospitals Per Capita			-5,284.214	35,155.537			2,477.716	7,974.162
			[33,150.889]	[28,649.062]			[10,572.511]	[8,427.628]
% No Electricity			-3.503	-0.537			-0.764	0.529
			[3.252]	[2.766]			[1.037]	[0.814]
Log GDP pc			0.189	0.332			0.080	0.083
			[0.322]	[0.298]			[0.103]	[0.088]
Gender			-4.376	-4.790**			-0.930	-0.827
			[2.857]	[2.288]			[0.911]	[0.673]
Age			0.056	-0.015			0.025	-0.000
			[0.062]	[0.048]			[0.020]	[0.014]
Years of Schooling			0.081	0.174*			-0.007	0.047*
			[0.113]	[0.088]			[0.036]	[0.026]
Log Population St.		0.392***				0.081*		
		[0.131]				[0.043]		
Governor PAN		-0.039				0.005		
		[0.246]				[0.081]		
Governor PRD		-0.360				-0.247**		
		[0.343]				[0.112]		
Constant	1.075***	-4.740**	2.335	3.166	0.43452***	-0.801	0.727	0.441
	[0.385]	[1.962]	[3.922]	[3.509]	[0.126]	[0.642]	[1.251]	[1.032]
State FE	NO	NO	NO	YES	NO	NO	NO	YES
Observations	211	211	195	195	211	211	195	195
R-squared	0.016	0.068	0.066	0.589	0.007	0.054	0.064	0.650

Standard errors in brackets and clustered. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Notes: A/ Dependent variable indicates the year of introduction with respect to 2000.

B/ Dependent variable is a dummy variable equal to zero if the municipality was covered before 2004, and equal to one if it was covered after this year.

Coefficients show the effect of the variable in explaining if the municipality is covered by Popular during the first three years of its functioning

NHSE: No health services or self-employed.

Sources: <sup>1</sup> INEGI Employment surveys 1995-2009/

<sup>2</sup> CONAPO, Mexican Population Council, Population estimates

<sup>3</sup> INEGI, Annual State Yearbooks 1995-2009

<sup>4</sup> CONAPO, Mexican Population Council, Marginalization Indexes <sup>5</sup> Center of Research for Development. Annual election in Mexico

Table 2

## Basic Results

COEFFICIENT	Sample 1 All		Sample 2 Schooling ≤ 9 yrs		Sample 3 Males		Sample 4 Married, Schooling ≤ 9 yrs, with children		Sample 5 Schooling ≤ 9, Age > 34	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Informal	Informal	Informal	Informal	Informal	Informal	Informal	Informal	Informal	Informal
Ind. SP	-0.004 [0.00363]	0.008 [0.006]	0.03756*** [0.00323]	0.00858* [0.005]	-0.00953** [0.004]	0.009 [0.006]	0.007* [0.004]	0.012* [0.006]	0.021*** [0.003]	0.014*** [0.005]
Schooling		-0.021*** [0.001]		-0.029*** [0.001]		-0.013*** [0.00054]		-0.020*** [0.001]		-0.016*** [0.001]
Age		-0.019*** [0.001]		-0.017*** [0.001]		-0.017*** [0.001]		-0.003*** [0.001]		-0.015*** [0.002]
Age <sup>2</sup>		0.001*** [0.000]		0.001*** [0.000]		0.001*** [0.000]		0.001*** [0.000]		0.001*** [0.000]
Male		-0.020*** [0.005]		-0.080*** [0.007]		0.000 [0.000]		0.000 [0.000]		-0.136*** [0.007]
Married		-0.019*** [0.002]		-0.011*** [0.002]		-0.085*** [0.003]		0.000 [0.000]		0.001 [0.002]
Children		0.003*** [0.000]		0.003*** [0.000]		0.002*** [0.000]		0.002*** [0.000]		0.001*** [0.000]
Electricity Growth		-0.0001*** [0.000]		-0.0001*** [0.000]		-0.0001*** [0.000]		-0.0001*** [0.000]		-0.0001*** [0.000]
Constant	0.519*** [0.0019]	0.832*** [0.028]	0.582*** [0.002]	0.853*** [0.031]	0.515*** [0.002]	0.74*** [0.028]	0.531*** [0.002]	0.880*** [0.047]	0.698*** [0.001]	1.367*** [0.047]
Economic Sector FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Year FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Observations	1043323	898682	608788	518014	630167	540996	179873	152016	214505	183234
Number of municipalities	350	318	350	318	350	318	350	317	350	318
R-squared	0.000	0.123	0.001	0.125	0.000	0.116	0.000	0.124	0.000	0.113

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1% Standard errors clustered by municipality

Notes: Linear probability model. Informal is self-employed or no health benefits through the employer.

Informality is measured as no health services or self-employed

Source: Authors' estimations using ENE (1995-2004) and ENOE (2005-2009)

Table 3

## Basic Results 2. Sub-Samples

COEFFICIENT	Sample 1 All		Sample 2 Schooling <=9 yrs		Sample 3 Males		Sample 4 Married, Schooling <=9 yrs, with children		Sample 5 Schooling <=9, Age >=34	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Informal	Informal	Informal	Informal	Informal	Informal	Informal	Informal	Informal	Informal
Indicator SP	-0.003 [0.004]	0.008 [0.006]	0.033*** [0.004]	0.010** [0.005]	-0.009** [0.004]	0.009 [0.006]	0.007 [0.005]	0.013** [0.006]	0.021*** [0.004]	0.019*** [0.005]
Ind. Oportunidades	-0.001 [0.004]	0.006 [0.010]	0.007** [0.003]	-0.008 [0.010]	0.001 [0.004]	0.011 [0.011]	0.001 [0.005]	0.010 [0.012]	0.003 [0.004]	-0.002 [0.001]
Gender		-0.015*** [0.006]		-0.080*** [0.008]		0.00000 [0.00000]		0.000 [0.000]		-0.133*** [0.008]
Age		-0.019*** [0.001]		-0.017*** [0.001]		-0.022*** [0.001]		-0.003** [0.001]		-0.017*** [0.002]
Age <sup>2</sup>		0.001*** [0.000]		0.000*** [0.000]		0.000*** [0.000]		0.000*** [0.000]		0.000*** [0.000]
Schooling		-0.021*** [0.001]		-0.030*** [0.001]		-0.014*** [0.001]		-0.020*** [0.000]		-0.017*** [0.001]
Children		-0.001*** [0.000]		0.000 [0.000]		-0.000 [0.000]		0.000*** [0.000]		-0.000 [0.000]
Ln population		0.010 [0.063]		-0.062 [0.044]		-0.004 [0.065]		-0.076 [0.052]		-0.094** [0.041]
Electricity Growth		-0.0001*** [0.000]		-0.0001*** [0.00001]		-0.0001*** [0.000]		-0.0001*** [0.000]		-0.0000 [0.000]
Hospitals pc		-152.523 [93.417]		-121.545** [53.23561]		-163.725* [91.939]		-130.077* [76.860]		-93.690* [48.649]
Constant	0.506*** [0.003]	0.684 [0.818]	0.565*** [0.002]	1.692*** [0.579]	0.503*** [0.003]	0.811 [0.841]	0.518*** [0.003]	1.816*** [0.680]	0.684*** [0.002]	2.019*** [0.555]
Sector FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Year FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Observations	951354	826862	545851	470203	574529	497890	161312	138222	191168	165507
Number of mn	160	148	160	148	160	148	160	147	160	148
R-squared	0.000	0.121	0.001	0.125	0.000	0.110	0.000	0.123	0.001	0.113

\* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

Standard errors clustered by municipality

Notes: Linear probability model. Informal is self-employed or no health benefits through the employer

Source: Authors' estimations using ENIE (1995-2004) and ENSOE (2005-2009)

Table 4

## Basic Results 3. Different Definitions of Informality

COEFFICIENT	No Contract (Schooling <=9 years)		Self-Employed (Schooling <=9 years)		Small Firm (< 5 employees, Schooling <=9 years)	
	(1)	(2)	(3)	(4)	(5)	(6)
Indicator SP	0.070*** [0.007]	0.016 [0.010]	0.003 [0.002]	0.001 [0.003]	0.041*** [0.004]	-0.000 [0.004]
Ind. Oportunidades	-0.002 [0.005]	0.009 [0.028]	0.008*** [0.002]	0.001 [0.003]	0.014*** [0.003]	-0.006 [0.005]
Schooling		-0.040*** [0.001]		-0.011*** [0.000]		-0.028*** [0.001]
Age		-0.026*** [0.001]		0.011*** [0.000]		-0.008*** [0.000]
Age <sup>2</sup>		0.000*** [0.000]		-0.000*** [0.000]		0.000*** [0.000]
Male		-0.049*** [0.007]		-0.024*** [0.005]		-0.099*** [0.006]
Married		-0.063*** [0.003]		0.017*** [0.002]		-0.000 [0.002]
Children		0.003*** [0.000]		0.001*** [0.000]		0.007*** [0.000]
Electricity Growth		-0.000 [0.000]		-0.000*** [0.00001]		-0.000*** [0.000]
Constant	0.441*** [0.004]	1.170*** [0.030]	0.208*** [0.001]	-0.209*** [0.01110]	0.500*** [0.002]	0.461*** [0.019]
Sector FE	NO	YES	NO	YES	NO	YES
Year FE	NO	YES	NO	YES	NO	YES
Observations	42427	36194	60990	51915	60454	514329
Number of mn	350	318	350	318	350	318
R-squared	0.004	0.156	0.000	0.115	0.002	0.149

\* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

Standard errors clustered by municipality

Notes: Linear probability model. Informal is self-employed or no health benefits through the employer

Source: Authors' estimations using ENE (1995-2004) and ENOE (2005-2009)

Table 5

## Basic Results 4. Transitions

COEFFICIENT	(1) Transition Formal to Informal	(2) Transition Formal to Informal	(3) Transition Non- Employed to Informal	(4) Transition Non- Employed to Informal	(5) Transition Informal to Formal	(6) Transition Informal to Formal	(7) Transition Non- Employed to Formal	(8) Transition Non- Employed to Formal
Ind. SP	0.003 [0.004]	0.002 [0.004]	0.006* [0.003]	0.002 [0.002]	-0.001 [0.002]	-0.003 [0.003]	-0.000 [0.002]	-0.009 [0.002]
Schooling		-0.010*** [0.001]		-0.018*** [0.001]		0.004*** [0.000]		0.018*** [0.001]
Age		-0.008*** [0.001]		-0.004*** [0.000]		-0.001*** [0.000]		0.004*** [0.000]
Age <sup>2</sup>		0.000*** [0.000]		0.000*** [0.000]		0.000 [0.000]		-0.000*** [0.000]
Male		0.013*** [0.003]		-0.034*** [0.002]		0.019*** [0.002]		0.034*** [0.003]
Married		-0.026*** [0.002]		-0.004*** [0.001]		-0.010*** [0.002]		0.00374*** [0.001]
Children		0.000*** [0.000]		0.000*** [0.000]		-0.000 [0.000]		-0.000*** [0.000]
Electricity Growth		0.001* [0.000]		-0.000** [0.000]		-0.000** [0.000]		0.000** [0.000]
Constant	0.112*** [0.003]	0.165*** [0.016]	0.170*** [0.00196]	0.050*** [0.004]	0.086*** [0.00184]	0.047*** [0.006]	0.110*** [0.002]	-0.048*** [0.004]
Economic Sector FE	NO	YES	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	158744	142488	568140	508924	240526	215899	568140	508924
Number of mn	332	302	332	304	332	303	332	304
R-squared	0.000	0.094	0.014	0.663	0.001	0.050	0.022	0.346

Standard errors clustered by municipality in brackets

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Notes: Linear probability model. Informal is self-employed or no health benefits through the employer