The Labor Market Effects of Part-Time Contributions to Social Security: Evidence from Colombia

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Workshop on Informality in the LAC region

June 12, 2023

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Outline

Motivation

- Flexible labor markets allow employers to readily adjust their workforce when faced with shocks.

- Policy makers may face a trade-off when designing labor market regulation between the need to maintain flexibility and market efficiency and the goal of providing protection and good quality jobs for workers.

- Regulation that introduces cost wedges across contract types can prevent firms from optimizing with negative impacts on employment, formality, and, potentially, wages.

- In this paper, we examine the effects on firms and workers of eliminating a tax wedge between formal part-time and full-time workers in Colombia (Decree 2616).

Research Question

- What were the effects of Colombia's 2616 Decree, which reduced the cost of formalizing part-time workers, on:
  - Worker entry to the formal sector,
  - Total formal employment,
  - Formal job flows (job creation and destruction), and
  - Wages.

- How we do it:
  - We leverage the reform's eligibility requirements (low-wage, minimum wage workers who had not been enrolled in the formal sector's pension system in the past) to estimate:
    1. the change in the probability of entering the formal pension system using a DDD design.
    2. the firm-level impact of the reform using between-firm variation in the demand of formal workers who have never had a formal job before their current employment.

Outline

Relative Costs of Part-time vs Full-time Formal Workers

- Two characteristics of the pre-reform tax schedule disincentived part-time formal employment:
  1. Lower bound on social security contributions proportional to the minimum monthly wage.
  2. Made low-wage workers who entered the formal sector ineligible for non-contributory healthcare.

- The reform addressed both:
  1. Lower bound on social security contributions proportional to the weekly monthly wage.
  2. Low-wage workers who entered the formal sector remain eligibile for non-contributory healthcare.

Relative Costs of Part-time vs Full-time Formal Workers

| | Cost of Hiring ($USD): | | |
| | 1 Full-time | 2 Half-time MW Workers | |
	MW Worker	Pre-2014	Post-2014
Monthly Wage	$185.00	$185.00	$185.00
Pension	$22.20	$44.40	$22.20
Health Care	$15.73	$31.45	$0
Educ. & Food Subsidy	$7.40	$14.80	$7.40
Labor Risk Premium	$0.93	$1.85	$0.93
Total Employer Contribution	$46.25	$92.50	$30.53
Worker Contribution	$14.80	$29.60	$7.4
Employer Tax Rate per Worker	25%	50%	12.5%
Worker Contribution Rate	8%	16%	4%

Eligibility Requirements

- Requirements for type 51:
  1. Part-time work (less than 6 days per week).
  2. $w_i \geq$ daily minimum $\cap$ $w_i \times 30 \leq$ monthly minimum wage
  3. Informally employed (subsidized health care)

Sample: Workers with wages below the monthly minimum

		Is $w_i X 30 <$ monthly minimum? Are $hrs_i < 40$	
		No	Yes
Health subsidy	Yes		
	No		

Outline

Data

- PILA: matched employer-employee administrative records on social security contributions.
  - Includes the universe of formal employment, and its dynamics, with detailed information on contract type.
  - It excludes all types of informal arrangements (though arguably the impact of the reform will be mostly on formal firms).
  - We focus on the set of firms in the PILA data that are active in the formal sector for at least one period between 2010 to 2013 and follow them up to December 2019.

- GEIH: monthly, cross-sectional household survey data with comprehensive information on sociodemographic characteristics and labor market outcomes for formal and informal workers.

Effects on New Formal Sector Entry

We evaluate whether changes in the formalization rate in Colombia are consistent with compliance with the decree's requirements.

- The targeted group was: 1) informal, 2) part-time workers, and 3) with monthly wages below the monthly minimum.

- We estimate how the probability of entering the pension system, for the first time, changed for the group targeted by the reform.

- To identify new contributions to the formal pension system, we:
  - Use self-reported data from GEIH on the cumulative history of contributions,
  - focus on a sample of workers in an early stage of their labor force participation.

Did the probability of **new** pension contributions increase among the eligible population after the reform?

$new\_pension_{i,t} = \alpha_1 eligible\_pt_{i,t} + \alpha_2 informal_i + \alpha_3 eligible\_pt_{i,t} \times informal_i$

$+ \alpha_4 eligible\_pt_{i,t} \times Post_t + \alpha_5 informal_i \times Post_t$

$+ \alpha_6 eligible\_pt_{i,t} \times informal_i \times Post_t + \alpha_7 X_{i,t} + \gamma_{o \times s \times c \times t} + \epsilon_{i,t}$

Dependent Variable: **New** contributor to the pension system

|	coef.	(s.e.)
eligible_pt	-0.024	(0.010)
informal	-0.170	(0.004)
eligible_ptXinformal	-0.020	(0.019)
eligible_ptXpost	-0.032	(0.013)
informalXpost	-0.082	(0.005)
eligible_ptXinformalXpost	0.054	(0.024)
No. of Workers	137,196	

Includes industryXlocationXoccupationXtime fixed effects, with narrowly defined industries (60) and occupations (83). Controls include indicators for educational attainment, marital status, gender, number of children under the age of 10, and an interaction of these last two controls.

Measuring Firm's Exposure to the Reform

- The reform's firm-level impact is a function of demand for those workers who are eligible for the lower cost contracts.
- High costs and low enforcement made part-time formal workers almost non-existent before the reform so we cannot directly measure firm's demand for such contracts.
- Instead, we proxy for it using the share of the firm's 2013 employees who had never held a formal job before.

Figure 4: Formal Employment Growth, relative to 2013, for firms by share of first-time formal workers
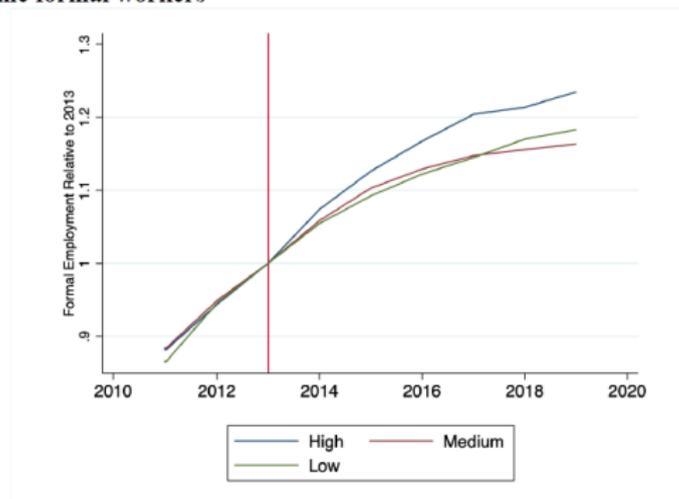
Notes: This figure shows the evolution of firms' formal employment (relative to 2013) for a balanced sample of firms (with at least one formal employee in all quarters from January 2010 to December 2019). We group firms into three groups: (i) firms in the top quartile of share first-time formal workers in 2013 (High) (ii) firms in the middle two quartiles of the distribution of the share of first-time formal workers in 2013 (Medium) and (iii) firms in the bottom quartile of the distribution of the share of first-time formal workers in 2013 (Low). To define these quartiles, we first drop firms that in 2013 did not have a single employee who had never held a formal job before.

- Let HighFTFj be an indicator variable equal to 1 if firm j belongs to the top quartile of the distribution of the share of first-time formal workers in 2013, and zero otherwise.

$$y_{j,t} = \beta HighFTF_j \times Post_t + x'_{j,t}\alpha + \lambda_j + \gamma_{s(j)\times t} + \delta_{c(j)\times y(t)} + \varepsilon_{j,t} \quad (3)$$

Table 6: Mean Growth Rate Firms with High Shares of First-Time Formal Workers vs. Firms with Medium Share of First-Time Formal Workers

	Formal Workers	Full-time Formal Workers	Formal Hires	Formal Separations	Mean Wage	Total Formal Workdays
HighFTF X Post	0.055	0.050	0.089	-0.015	0.016	0.062
	(0.017)	(0.017)	(0.035)	(0.050)	(0.008)	(0.018)
No. Obs.	951,352	951,352	951,352	951,352	951,352	951,352

Note: This table contains the estimated coefficients on the interaction term from the "High share of first-time formal workers" and post-reform indicator ($\hat{\beta}$) in equation (3). We use a Poisson specification estimated using pseudo maximum likelihood. All specifications include firm, sector-year-month and city-year fixed effects. We cluster standard errors at the firm level.

Results (II)

Figure 5: Quarterly Growth Rate Firms with High Share of First-Time Formal Workers vs. Firms with Medium Share of First-Time Formal Workers

a) Formal Employment

b) Full-time Formal Employment

c) Total Formal Worker-Days

d) Mean Daily Wage
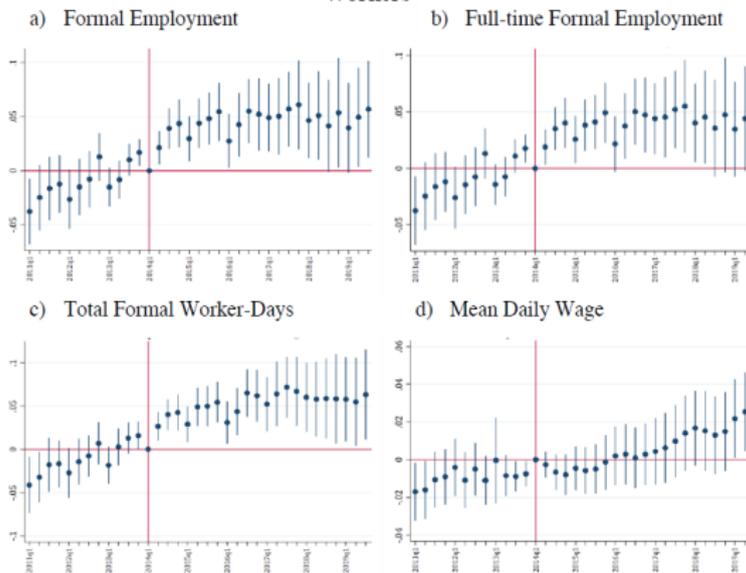
Note: Figure 5 plots the estimated $\hat{\beta}$ coefficients from a modified version of equation (3) where we substitute the post indicator variable with a set of quarterly dummies. The baseline period is the 4th quarter of 2013 when the reform was announced. The bars denote 95% confidence intervals. Each dot indicates percent difference in the outcome variable between the group of firms in the top quartile of share of first-time formal workers in 2013 and the group in the two middle quarters, in quarter t relative to the baseline time-period. The sample includes firms that were active during each quarter from January 2010 to December 2019. The period of analysis includes 2011 to 2019.

$$y_{j,t} = \beta_1 High\ FTF_j \times Post + \beta_2 High\ PT_{j(s,c)} \times Post_t + \quad (4)$$

$$\beta_3 Post_t \times High\ FTF_j \times High\ PT_{j(s,c)} + x'_{j,t}\alpha + \lambda_j + \gamma_{s\times t} + \delta_{c\times y(t)} + \varepsilon_{j,c,s,t}$$

Table 7: Mean Growth Rate Firms with High Shares of First-Time Formal Workers vs. Firms with Medium Share of First-Time Formal Workers by Industry-City Share of Part-time workers

	Formal Workers	Full-time Formal Workers	Formal Hires	Formal Separations	Mean Wage	Total Formal Workdays
HighFTF X Post	0.066	0.058	0.106	-0.005	0.011	0.074
	(0.027)	(0.027)	(0.052)	(0.057)	(0.013)	(0.027)
HighPT X Post	-0.005	-0.004	-0.025	-0.079	-0.022	-0.018
	(0.015)	(0.015)	(0.042)	(0.050)	(0.008)	(0.015)
HighPT X High FTF X Post	-0.029	-0.023	-0.028	-0.068	0.017	-0.021
	(0.034)	(0.034)	(0.072)	(0.110)	(0.016)	(0.036)
No. Obs.	887,103	887,103	877,599	877,024	886,680	887,103

Note: This table contains the estimated coefficients on the interaction terms from the "High share of first-time formal workers," "High share of part-time workers" in the firm's industry and city, and a post-reform indicator ($\hat{\beta}$) in equation (4). We use a Poisson specification estimated using pseudo maximum likelihood. All specifications include firm, sector-year-month and city-year fixed effects. We cluster standard errors at the firm level.

Outline

Conclusions, implications, and policy recommendations

- Our results indicate that the policy successfully increased new entries into the pension system that were focused on the targeted group: previously informal, part-time workers (5.4 pp).

- We find that the reform had a positive effect on total formal employment. After 2014, the year when the reform was implemented, formal employment is on average 5.5 percent higher, and wages 1.6 percent higher at firms that were better suited to take advantage of the reform: those with a high propensity to hire workers with no prior formal employment.

- Our findings are consistent with the reform targeting meaningful barriers to contributing to the pension system for part-time employees. Specifically, it mitigated the tax wedge generated by imposing a lower bound to contributions effectively tied to full-time employment

In principle, reducing the wedge in the fiscal cost of part-time vs full-time employment could result in firms substituting across these contracts.

We find evidence consistent with added flexibility being productivity-enhancing such that both full-time and part-time formal employment increase after the reform.

Worker protections and flexibility need not be at odds!