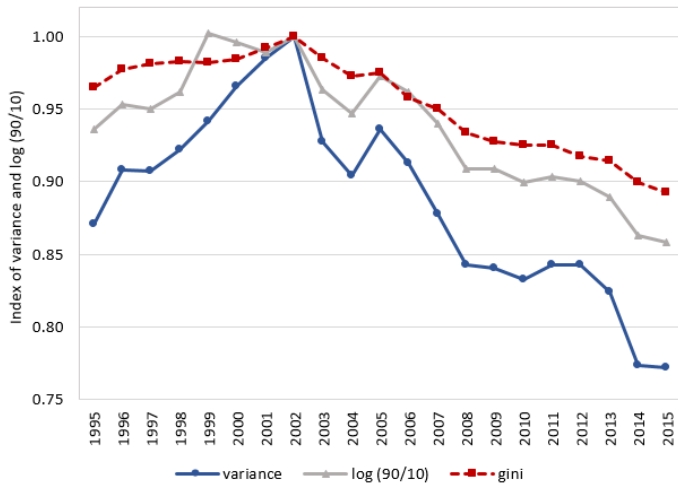


The Great Wage Inequality Decline in Latin AMerica

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Universidad de los Andes
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The fall of wage inequality



This Talk

1. Review key stylized facts
2. Emphasis on selected driving factors
 - ▶ Labor Supply
 - ▶ Firm Dynamics
3. Other factors not discussed
 - ▶ Minimum wages
 - ▶ Commodity boom and other macro shocks
 - ▶ Polarization and skilled biased technical change

Data and Sources

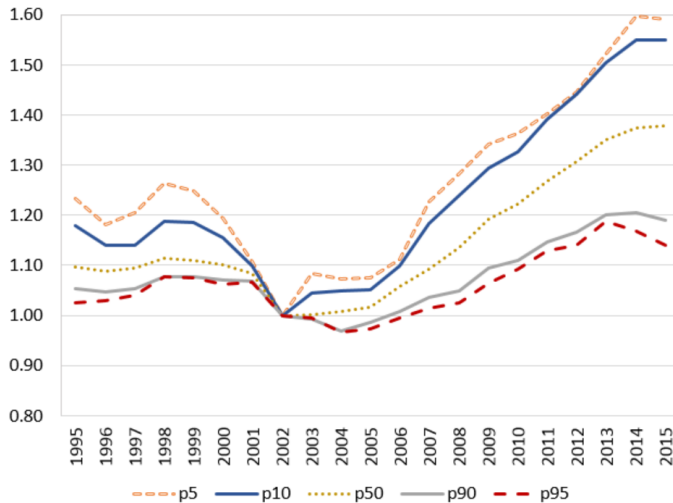
This presentation is based on joint work with

- ▶ Joana Silva, Marcela Eslava, Manuel Fernández-Sierra, Francisco Ferreira, Sergio Firpo, Alvaro García

Data

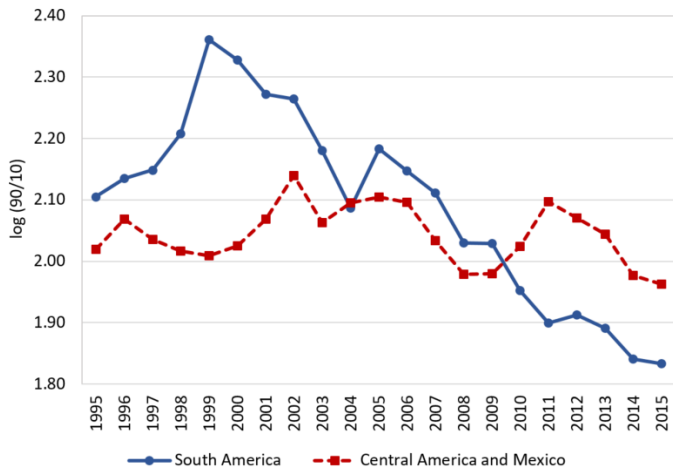
1. SEDLAC: Homogeneous household surveys for 16 countries
2. Matched employer-employee data for Brazil, Costa Rica, and Ecuador
3. Chilean manufacturing survey data (1996-2007)

The Growth of Wages at the Bottom



Source: Messina, J and J. Silva. *WBEP 2021*

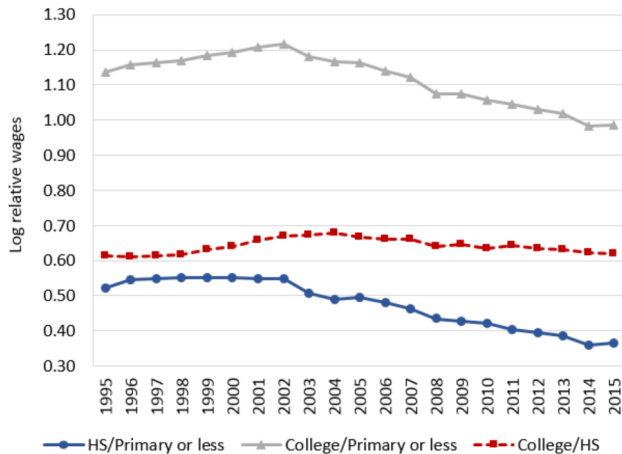
Geographic Heterogeneity



Source: Messina, J and J. Silva. *WBEB 2021*

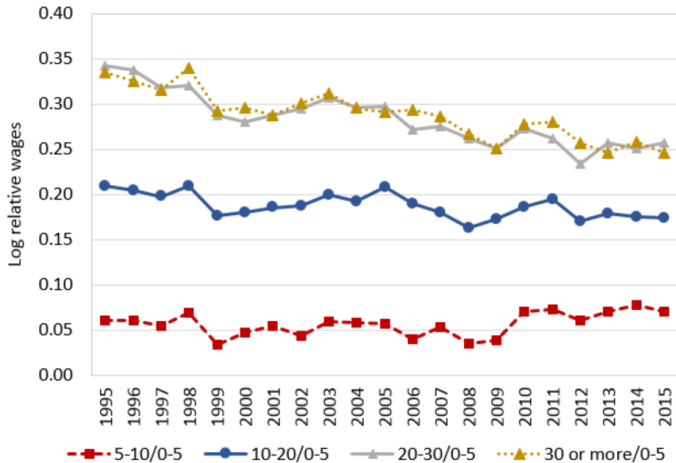
The Reduction of the Schooling Premium

Composition-Adjusted Schooling Premiums



The Reduction of the Experience Premium

Composition-Adjusted Experience Premiums



The Roles of Education and Experience

Oaxaca-Blinder Decomposition Results

	Argentina (1995-2013)		Brazil (1990-2013)		Chile (1990-2013)	
	Est.	[S.E]	Est.	[S.E]	Est.	[S.E]
Log (90/10)						
Overall	-0.091	[0.016]	-0.850	[0.017]	-0.290	[0.021]
Composition	0.056	[0.007]	0.282	[0.016]	0.249	[0.011]
Education	0.054	[0.007]	0.302	[0.016]	0.211	[0.010]
Experience	0.001	[0.001]	-0.003	[0.001]	0.051	[0.002]
Sex	0.002	[0.001]	-0.017	[0.001]	-0.013	[0.001]
Wage Structure	-0.147	[0.018]	-1.132	[0.028]	-0.538	[0.023]
Education	-0.271	[0.113]	-1.153	[0.121]	-1.685	[0.086]
Experience	-0.282	[0.044]	-0.825	[0.095]	-0.497	[0.055]
Sex	-0.049	[0.009]	-0.042	[0.008]	-0.033	[0.007]
Constant	0.454	[0.139]	0.888	[0.230]	1.677	[0.120]

Notes: Standard errors calculated via bootstrap with 500 replications.

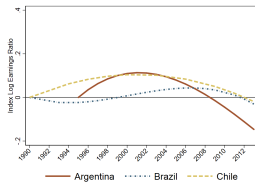
The Role of Labor Supply

- ▶ How are premiums and relative supply trends connected?
- ▶ Educational upgrading and schooling premium
- ▶ Changes in the experience structure across education groups and experience premiums
- ▶ Fernández-Sierra and Messina (2018) do Katz and Murphy (1992) decomposition to disentangle supply/demand forces. Nested CES Production function with three levels
 1. Level 1: Unskilled (HS completed or less) and college workers
 2. Level 2: Two types of unskilled workers (HS dropouts and HS completed)
 3. Level 3: Each education group is composed of 4 experience groups

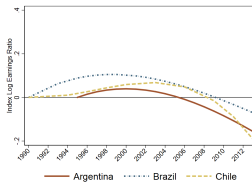
Decline in Relative Demand for Experience

Experience Premiums among Unskilled (Non College)

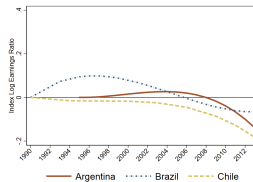
(a) $[\geq 30]/[0 - 9]$



(b) $[20 - 29]/[0 - 9]$

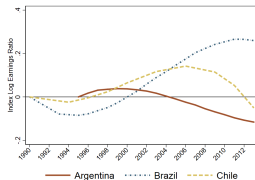


(c) $[10 - 19]/[0 - 9]$

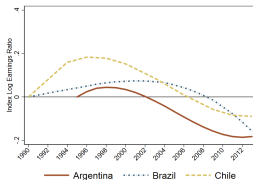


Experience Premiums among Skilled (College)

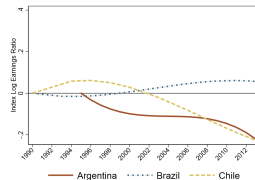
(d) $[\geq 30]$ vs. $[0 - 9]$



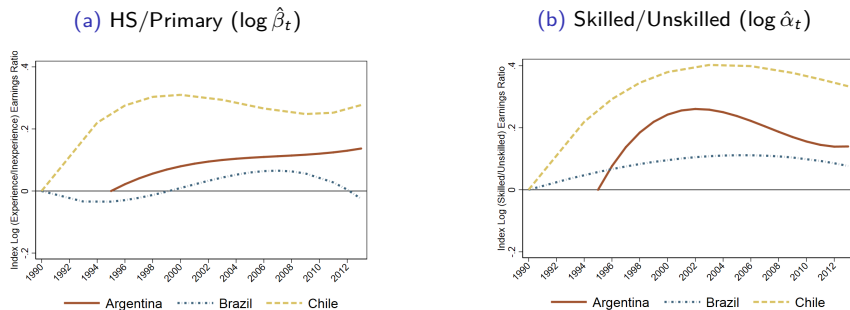
(e) $[20 - 29]$ vs. $[0 - 9]$



(f) $[10 - 19]$ vs. $[0 - 9]$

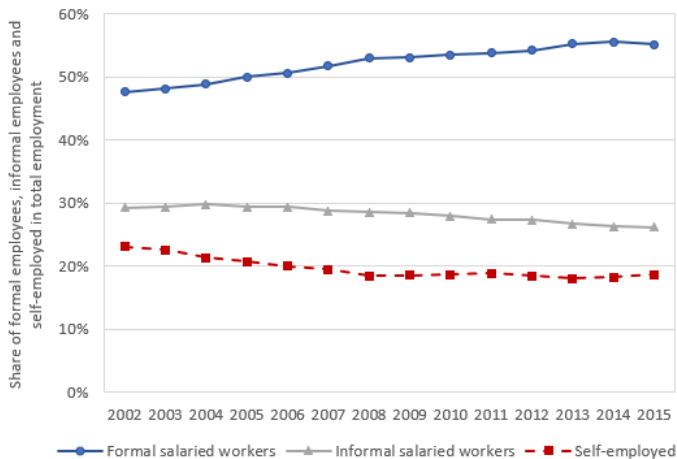


The Decline in the Relative Demand for College-Educated



Source: Fernández-Sierra, M. and Messina, J. *JDE* 2018

Increasing Formalization coupled with...



Source: Messina, J and J. Silva. *WBER 2021*

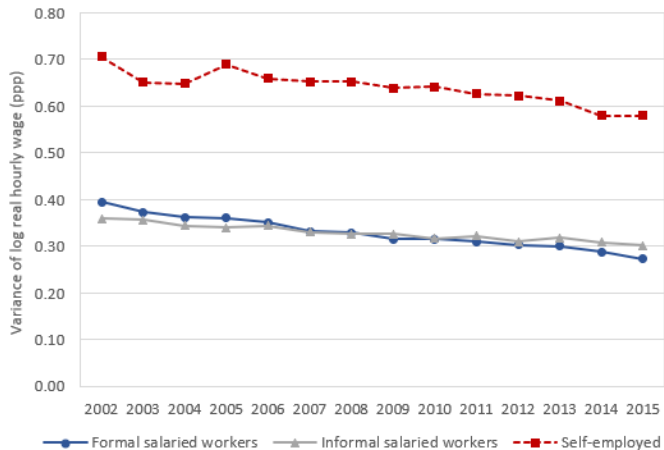
...a Reduction of Wage Gaps Across Sectors...

Wage Gaps Across Formal and Informal Workers, 2002-2015

	Unadjusted	Adjusted	
	(1)	(2)	(3)
Informal employee	-0.582*** (0.00438)	-0.380*** (0.00414)	-0.339*** (0.00408)
Self-employed	-0.795*** (0.00457)	-0.588*** (0.00436)	-0.434*** (0.00441)
2015	-0.0840*** (0.00348)	-0.152*** (0.00325)	-0.146*** (0.00314)
2015*Informal employee	0.0465*** (0.00520)	0.0727*** (0.00484)	0.106*** (0.00464)
2015*Self-employed	0.0973*** (0.00544)	0.0930*** (0.00506)	0.115*** (0.00488)
Individual characteristics	No	Yes	Yes
Sector-occupation dummies	No	No	Yes
Country fixed effects	Yes	Yes	Yes
Observations	620,397	619,562	619,560
R-squared	0.219	0.327	0.396

Source: Messina, J and J. Silva. *WBER 2021*

...and within-group Inequality Declines



Source: Messina, J and J. Silva. *WBER 2021*

Variance Decompositions

- ▶ Decompose (log) wages into worker observable characteristics (z_{it}) including education (3 categories), age in 5-year bins, gender, and their interactions; and those of her job ($\alpha_{S(i,t)}$) (e.g. industry, occupation, formality status):

$$\log(w_{it}) = z_{it} + \alpha_{S(i,t)} + \varepsilon_{it}$$

- ▶ The variance of $\log(w_{it})$ is obtained as:

$$\text{var}(\log w_{it}) = \text{var}(z_{it}) + \text{var}(\alpha_{S(i,t)}) + 2\text{cov}(z_{it}, \alpha_{S(i,t)}) + \text{var}(\varepsilon_{it})$$

- ▶ Changes over time can be easily computed as changes in each sub-component

Between and Within Worker Characteristics

Total and Within-Skill-Groups Wage Variance in Latin America, 1995–2015

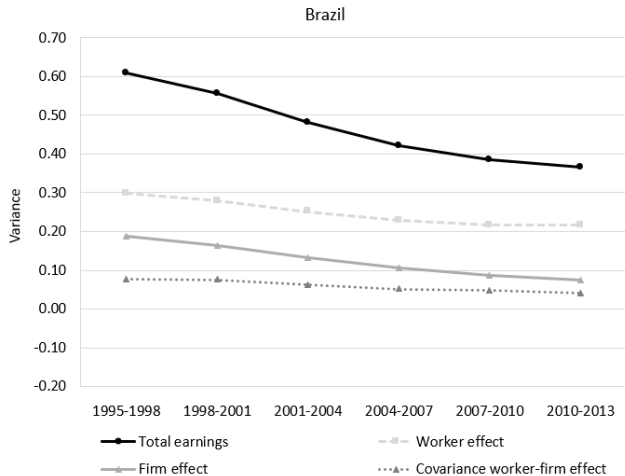
	Contribution of the component to the level of wage inequality			Contribution of the change in the component to the change in wage inequality	
	(1) 1995	(2) 2002	(3) 2015	(2)-(1) 1995-2002	(3)-(2) 2002-15
Between-skill-groups component	29 (0.155)	28 (0.212)	25 (0.146)	24 (0.056)	34 (-0.066)
Within-skill-groups component	71 (0.379)	72 (0.557)	75 (0.429)	76 (0.178)	66 (-0.127)
Total wage variance	100 (0.534)	100 (0.768)	100 (0.575)	100 (0.234)	100 (-0.193)

The Role of Job Characteristics

Variance Decomposition Across Industry-Occupation-Formality Cells and Skills

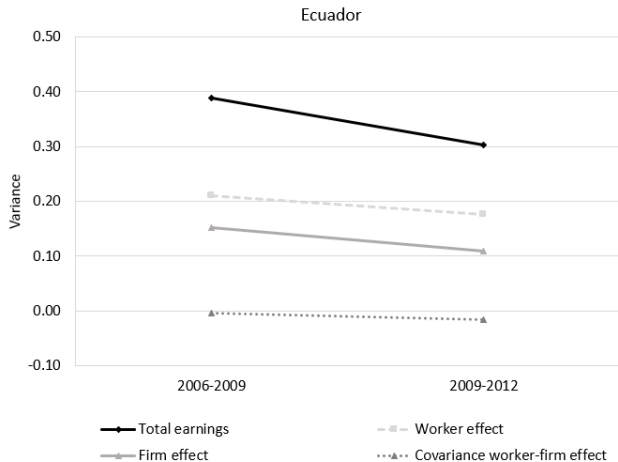
	Contribution of the component to the level of wage inequality			Contribution of the change in the component to the change in wage inequality	
	(1) 1995	(2) 2002	(3) 2015	(4) 1995-2002	(5) 2002-15
a. Decomposition: Sector-Occupation					
Total Variance	100 (0.584)	100 (0.604)	100 (0.450)	100 (0.020)	100 (-0.154)
Variance in sector-occupation	17 (0.103)	19 (0.114)	15 (0.067)	53 (0.010)	31 (-0.047)
Variance in skill-groups	15 (0.187)	11 (0.068)	10 (0.046)	-96 (0.019)	14 (-0.022)
2*Cov(sector-occupation, skill-groups)	10 (0.057)	9 (0.057)	9 (0.041)	0 (0.000)	10 (-0.016)
Residual	58 (0.338)	61 (0.366)	66 (0.296)	143 (0.028)	45 (-0.070)
b. Decomposition: Sector-Occupation-Formal Status					
Total Variance	-	100 (0.604)	100 (0.450)	-	100 (-0.154)
Variance in sector-occupation-formal status	-	25 (0.153)	22 (0.099)	-	35 (-0.054)
Variance in skill-groups	-	10 (0.060)	8 (0.038)	-	15 (-0.022)
2*Cov(sector-occupation-formal status, skill-groups)	-	9 (0.055)	10 (0.042)	-	8 (-0.013)
Residual	-	56 (0.337)	55 (0.271)	-	42 (-0.065)

The Role of Workers and Firms. Brazil



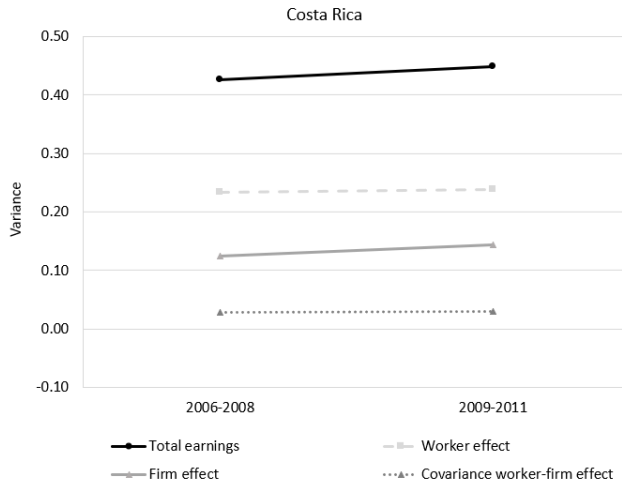
Source: Messina, J and J. Silva. *WBER 2021*

The Role of Workers and Firms. Ecuador



Source: Messina, J and J. Silva. *WBER 2021*

The Role of Workers and Firms. Costa Rica



The role of between- and within-firm wage inequality

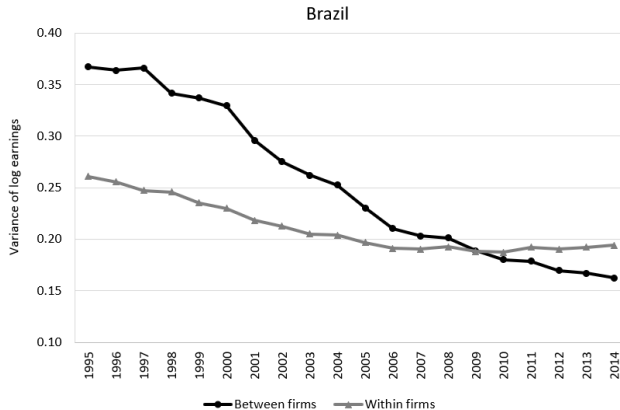
- ▶ How did intra-firm wage differences evolve as inter-firm wage differences changed?
- ▶ Following Song et al. (2018) and Alvarez et al. (2018) we can decompose wages as follows:

$$w_{ijt} = \bar{w}_t + (\bar{w}_{jt} - \bar{w}_t) + (w_{ijt} - \bar{w}_{jt}),$$

and take variances on both sides of the equation, obtaining

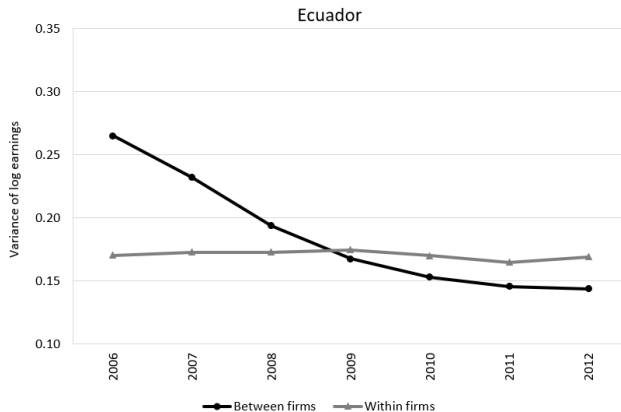
$$\begin{aligned} \text{var}(w_{ijt} - \bar{w}_t) &= \text{var}(\bar{w}_{jt} - \bar{w}_t) + \text{var}(w_{ijt} - \bar{w}_{jt}) \\ &\quad + 2\text{cov}(\bar{w}_{jt} - \bar{w}_t, w_{ijt} - \bar{w}_{jt}) \\ &= \text{var}(\bar{w}_{jt}) + \text{var}(w_{ijt} | i \in j) \end{aligned}$$

Changes Between and Within Firms. Brazil



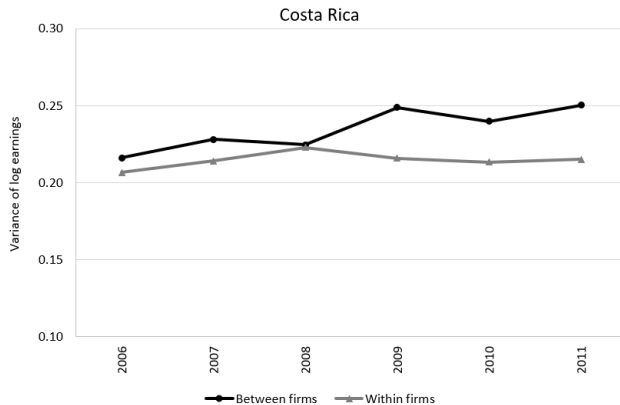
Source: Messina, J and J. Silva. *WBEB 2021*

Changes Between and Within Firms. Ecuador



Source: Messina, J and J. Silva. *WBER 2021*

Changes Between and Within Firms. Costa Rica



Source: Messina, J and J. Silva. *WBER 2021*

Labor Market Power and Inequality: Recent Evidence for Emerging Economies

Authors	Context	Methodology	Estimate
Amodio & Roux (2021)	[COL] Manuf. survey	IV (RER shocks)	$\varepsilon_{N_w} \approx 2.5$
Felix (2022)	[BRA] Admin. data	Structural approach	$\varepsilon_{N_w} \approx 1.0$
Tucker (2017)	[BRA] Admin. data	IV / Manning (03)	$\varepsilon_{N_w} < \infty$
Tortatolo & Zarate (2020)	[COL] Manuf. survey	PF Approach	<i>Avg. Markdown</i> $\in [1.11 - 1.30]$
Casacuberta & Gandelman (2021)	[URY] Manuf. survey	PF Approach	<i>Avg. Markdown</i> $\in [1.13 - 1.36]$
Amodio et al (2022)	[PER] Manuf. survey	IV estimates	Wage-HHI elasticity ≈ -0.10
Brook et al. (2021)	[CHN] Manuf. survey	PF approach	<i>Avg. Markdown</i> : 1.03
	[IND] Manuf. survey	PF approach	<i>Avg. Markdown</i> : 1.01

Open questions:

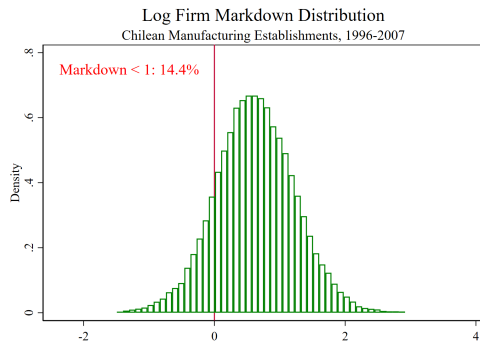
- ▶ How about trends in markdowns/monopsony power?
- ▶ How does informality affect monopsony power?
- ▶ Is monopsony power different across high- and low-skilled workers?

Markdown Distribution

- ▶ Wedge between MRPL & wages

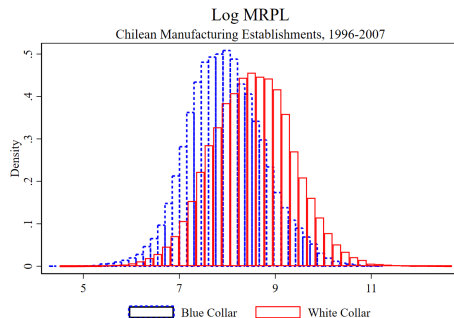
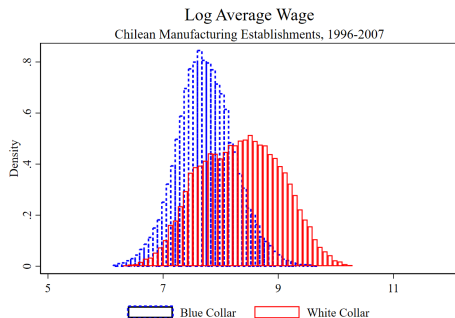
Results:

- ▶ Mean/SD: 2.25/1.50
- ▶ In the US: Yeh et al (2022): 1.53/0.71
- ▶ Markdowns < 1: 14.4%
- ▶ In the US: Yeh et al (2022): $\approx 11\%$



Source: "Markdowns and Wage Inequality" Eslava, M., García, A. and Messina, J *In Progress*

Markdowns, wages, and the marginal revenue product of labor



- ▶ Negative correlation between wages and markdowns → Firms exerting monopsony power
- ▶ $\text{Corr}(\text{markdowns}, \text{wages})$: -0.18 (blue-collar) and -0.40 (white-collar)
- ▶ Markdowns compress wage distribution more for white-collar workers

Summary. The Great Wage Inequality Decline

1. Wage inequality decline was a regional phenomenon (Costa Rica was the only exception).
2. Very rapid growth of wages at the bottom - among low-skilled workers
3. Skill (education and experience) premiums fell
4. Labor supply trends contributed to the decline (especially across less educated workers)
5. Still, much of the decline took place across workers with similar skills
6. Increasing formalization and narrowing of informal/formal wage gaps also contributed to the decline

Some Lessons from Administrative Data

1. In Brazil and Ecuador, where wage inequality fell, differences across firms narrowed over time
2. In Costa Rica, where wage inequality increased, these differences widened.
3. In the three countries most of the observed changes in wage inequality were accounted for by changes between rather than within firms.
4. Markdowns seem to be an important driver of wage-setting in the region

⇒ *Need to incorporate firm heterogeneity in thinking about drivers*