The Effect of Prevailing Wage Laws on Informal Construction Employment

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Background

- Hinkel and Belman (2021): prevailing wage requirements add, at most, 6% to the cost of affordable housing construction

- Suggest the "net" cost could be lower
  - At least part of the cost could be the cost of doing business legally

- *Research Question:* do prevailing wage requirements entice better behavior and adherence to labor and employment law?

Definition and Impacts of Informality

- Informal employment: (a) misclassification of employees as independent contractors and (b) off-the-books employment

- Rampant in construction, along with other illegal practices (e.g., Ormiston, Belman, and Erlich 2020; Ormiston, Belman, Brockman, and Hinkel 2020; Juravich, Ormiston, and Belman 2021)

- Effects on markets, workers, and governments

Literature Review: Regulatory Quantity and Quality

- Distinguishing between regulatory *quantity* and *quality* and firm decisions (Johnson et al. 1997; Enste 2010; Ulyssea 2018)

- Higher regulatory quantity *increases* informal employment (Johnson et al. 1998; Friedman et al. 2000; Enste 2010)

- But higher regulatory quality *lowers* informal employment (Dabla-Norris et al. 2008; Almeida & Carneiro 2006)

Theory Summary

- Assume construction firms face two distinct choices for each project: (1) to operate formally, or (2) to operate informally
  - If firms choose informality, assume they pay no payroll or revenue taxes (Ulyssea 2018)

- Informal firms face detection probability, $\rho > 0$, by regulators
  - If detected, the outcome is that informal firms face a cost imposed by regulators, c

- Expected cost of detection for informal firms: $\mathbf{E(D)_{ip}} = \mathbf{\rho c}$, by firm (i) and project (p)

Theory Summary

- PW: prevailing wage requirement
  - PW = 1: subject to PW requirements. PW = 0: *not* subject to these requirements.

- For firms choosing to operate informally, indexed by firm and project, we have:
  - $\rho_{ip} \mid PW = 1 \; > \; \rho_{ip} \mid PW = 0$

- As ρ increases, the expected cost of detection, E(D), also increases. All else equal, this *lowers* the profits of informal construction firms.

Theory Summary

- Meanwhile, profits of formal construction firms remain unaffected by this. Since formal firms are following the law, their probability of evasion detection is 0.

- *Summary:* prevailing wage requirements increase the probability of evasion detection, lowering profits of firms choosing to operate informally
  - Conversely, since formal firms face a probability of evasion detection of 0, this is unchanged by prevailing wage requirements

- *Hypothesis 1:* The presence of state prevailing wage laws is negatively associated with informal employment.

Hypotheses 2 and 3

- Simply comparing states with prevailing wage laws and states without them does not tell the full story

- Thieblot (1995, 1999) developed methodology for measuring PW strength
  - States with higher scores (i.e., stronger laws) should have lower informality
  - *Hypothesis 2: States with stronger prevailing wage laws will have lower rates of informal construction employment than states with weaker laws.*

- Coverage thresholds: lower thresholds => more project covered by

Hypothesis 4

- Breadth of coverage: wider varieties of projects covered by prevailing wages should be associated with lower informality
  - Certified payroll requirements are applied to more projects
  - *Hypothesis 4: States with more types of projects covered will have lower rates of informal construction employment than states with fewer project types covered.*

Sample

- 2010-2019 state-level data from all 50 states
- Six state repeals during this period
  - In 2010, 33 states had prevailing wage laws, and 17 did not; by 2019, 27 states had prevailing wage laws, and 23 did not

- Study compares annual household employment data from the American Community Survey (ACS) against payroll records from the Bureau of Economic Analysis (BEA) over this 10-year period
  - Sample reduction (results were robust)

Measuring Informal Employment

- Measuring informal employment involves a hurdle: its measurement
  - Concealed from direct governmental oversight
  - Direct measurement is *impossible* with existing data

- This study takes an indirect approach (Bohn & Owens 2012; Abraham, Haltiwanger, Sandusky, & Speltzer 2013; Ormiston et al. 2020)
  - Compares annual household employment data from the ACS against official firm employment data from the (BEA) for 2010-2019

Measuring Informal Employment

- Bohn and Owens (2012) use the following equation:
  - *Informal Employment$_{st}$ = Total Workforce$_{st}$ – Official Employment$_{st}$*
  - Indexed by state (s) and year (t)
  - Total workforce: total amount of self-reported wage-and-salary employment (ACS)
  - Official employment: total W-2 jobs from official employer records (BEA)
  - Calculate **Informal Rate** = *Informal Employment/Total Workforce*

- Problem: ignores all workers who claim to be self-

Solution

- New equation: *Total Informal Employment$_{st}$ = (Total Workforce$_{st}$ – Official Employment$_{st}$)* **+ *Informal Self-Employment$_{st}$***

- Informal self-employment: proxy using income underreporting rates of self-employed workers (Alm and Erard 2016; Ormiston et al. 2020)
  - Relaxes assumption that every tax filer is following the law; incorporates workers who operate legally in some work and illegally in other work
  - Multiply construction self-employment (in the ACS) by 44%; BEA

Models

- Hypothesis 1: the presence of state prevailing wage laws is negatively associated with informal employment
  - Model: $IE_{st} = \beta_0 + \beta_1 PW_{st} + \beta_2 IENC_{st} + \boldsymbol{\beta_2 X_{st}} + \boldsymbol{\beta_3 Y_{st}} + \alpha_s + \phi_t + \mu_{st}$
  - IE: informal employment
  - PW: indicator with a value of 1 if a state (s) had a prevailing wage law in year t, and 0 otherwise (obtained from Wage and Hour Division website)
  - IENC: non-construction informal employment
  - X: vector of state-aggregated construction industry controls
  - Y: vector of state political and legislative controls
  - α and ϕ: state and year fixed effects

Models

- X: state construction union density (Hirsch & Macpherson 2003), year-to-year construction employment growth, average firm size, year-to-year changes in building permits, and proportion employed in building (i.e., residential) construction

- Y: state minimum wage, project labor agreement (PLA) preemption, fair scheduling preemption, paid leave preemption

Models

- Hypothesis 2: states with stronger prevailing wage laws will have lower rates of informal construction employment than states with weaker laws

    - Model: $IE_{st} = \beta_0 + \beta_1 Weak_{st} + \beta_2 Average_{st} + \beta_3 Strong_{st} + \beta_4 IENC_{st} + \boldsymbol{\beta_5 X_{st}} + \boldsymbol{\beta_6 Y_{st}} + \alpha_s + \phi_t + \mu_{st}$

    - Same as before, except prevailing wage dummy is replaced by measures of prevailing wage strength

    - **Weak**: 1-6 points; **Average**: 7-11 points; **Strong**: 12+ points

- Hypotheses 3 and 4: same model as above, except measures of strength are replaced by each portion of the

Hypothesis 1 Results

TABLE 1

Effect of Prevailing Wage Laws on Informal Construction Employment

Variables	OLS	Log Odds	GLM
Prevailing wage	-0.022***	-0.157***	-0.113**
	(0.008)	(0.046)	(0.046)
Non-construction informal employment	-0.726***	-3.986***	-4.168***
	(0.203)	(1.253)	(1.149)
Union density	-0.020	-0.179	-0.129
	(0.058)	(0.371)	(0.317)
Employment growth rate	-0.187***	-0.957*	-1.211**
	(0.067)	(0.497)	(0.476)
Average firm size	-0.014***	-0.092***	-0.088***
	(0.004)	(0.024)	(0.021)
Percent employed residential	0.698**	2.547	4.388*
	(0.330)	(2.452)	(2.297)
Building permits	0.018	0.077	0.085
	(0.013)	(0.080)	(0.066)
Minimum wage	0.006	0.064	0.030
	(0.008)	(0.049)	(0.042)
Fair scheduling preemption	-0.013*	-0.080*	-0.089**
	(0.007)	(0.042)	(0.038)
Paid leave preemption	-0.011*	-0.068*	-0.061*
	(0.006)	(0.040)	(0.032)
Project labor agreement preemption	-0.013**	-0.062	-0.070*
	(0.007)	(0.044)	(0.036)
Constant	0.260***	-0.612	-1.076*
	(0.080)	(0.593)	(0.549)
N	460	459	460
R^2	0.710	0.667	

Estimated coefficients in bold. Robust standard errors in parentheses. State and year fixed effects included in all models.

*Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level.

Hypothesis 2 Results

TABLE 2

Effect of Prevailing Wage Law Strength on Informal Construction Employment

Variables	OLS	Log Odds	GLM
Strong prevailing wage law	-0.026**	-0.208***	-0.141**
	(0.011)	(0.067)	(0.071)
Average prevailing wage law	-0.025***	-0.169***	-0.134**
	(0.009)	(0.059)	(0.053)
Weak prevailing wage law	-0.019**	-0.092**	-0.091**
	(0.008)	(0.045)	(0.041)
Non-construction informal employment	-0.723***	-3.944***	-4.160***
	(0.205)	(1.264)	(1.152)
Union density	-0.017	-0.164	-0.111
	(0.058)	(0.371)	(0.316)
Employment growth rate	-0.189***	-0.950*	-1.218**
	(0.068)	(0.499)	(0.484)
Average firm size	-0.014***	-0.091***	-0.087***
	(0.004)	(0.024)	(0.022)
Percent employed residential	0.723**	2.673	4.531**
	(0.332)	(2.477)	(2.311)
Building permits	0.018	0.080	0.086
	(0.013)	(0.080)	(0.066)
Minimum wage	0.006	0.065	0.030
	(0.008)	(0.049)	(0.042)
Fair scheduling preemption	-0.011	-0.068	-0.076**
	(0.007)	(0.043)	(0.038)
Paid leave preemption	-0.012**	-0.076*	-0.064**
	(0.006)	(0.040)	(0.032)
Project labor agreement preemption	-0.013*	-0.053	-0.067*
	(0.007)	(0.046)	(0.038)
Constant	0.252***	-0.659	-1.124**
	(0.082)	(0.603)	(0.556)
N	460	459	460
R^2	0.711	0.668	

Estimated coefficients in bold. Robust standard errors in parentheses. State and year fixed effects included in all models.

Hypotheses 3 and 4

TABLE 3

Effect of Prevailing Wage Strength: Individual Components

Variables	OLS	Log Odds	GLM
Coverage threshold	-0.013**	-0.054	-0.066**
	(0.006)	(0.038)	(0.032)
Breadth of coverage	-0.003	-0.031	-0.012
	(0.005)	(0.033)	(0.031)
Setting of prevailing wage rate	-0.002	-0.015	-0.011
	(0.002)	(0.015)	(0.014)
Other factors	-0.002	0.010	-0.009
	(0.006)	(0.034)	(0.033)
Non-construction informal employment	-0.720***	-3.954***	-4.158***
	(0.203)	(1.266)	(1.148)
Union density	-0.024	-0.193	-0.150
	(0.057)	(0.367)	(0.312)
Employment growth rate	-0.184***	-0.936*	-1.189**
	(0.067)	(0.494)	(0.473)
Average firm size	-0.015***	-0.096***	-0.093***
	(0.004)	(0.024)	(0.022)
Percent employed residential	0.693**	2.618*	4.325*
	(0.330)	(2.478)	(2.263)
Building permits	0.018	0.080	0.087
	(0.013)	(0.080)	(0.065)
Minimum wage	0.007	0.066	0.035
	(0.008)	(0.049)	(0.041)
Fair scheduling preemption	-0.013*	-0.078*	-0.089**
	(0.007)	(0.044)	(0.040)
Paid leave preemption	-0.013**	-0.077*	-0.069**
	(0.006)	(0.040)	(0.033)
Project labor agreement preemption	-0.010	-0.047	-0.056
	(0.007)	(0.047)	(0.038)
Constant	0.268***	-0.599	-1.024*
	(0.081)	(0.608)	(0.542)
N	460	459	460
R²	0.711	0.668	

Estimated coefficients in bold. Robust standard errors in parentheses. State and year fixed effects included in all models.

*Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level.

Summary

- State prevailing wage laws associated with **2.2% reduction** in informality

  - Construction workers are **10.7% to 14.5% less likely** to be employed informally in prevailing wage states

- Even having a weak law is enough to significantly curb informality

  - Weak laws associated with **1.9% reduction** in informality

  - Construction workers are **8.7% to 8.8% less likely** to be employed informally in states with weak laws

- Consistent with prior research outside of construction, which has found that increases in regulatory quality

Limitations

- Study's measurements of informality are best regarded as approximations
  - Assuming 44% of all self-employment activity is informal is subject to error
- Methodology cannot capture all types of fraud in construction
  - Example: a firm agrees to pay prevailing wage rates to payroll company, and indicates on certified payroll form that they did so
  - Then, payroll company only pays a fraction of the prevailing wage rate, leaving the rest for the contractor
- Contractors may respond to certified payroll requirements

Implications

- Prevailing wage laws benefit law-abiding construction firms
  - Can help correct market distortions caused by low-bid requirements
  - Make formal employment (and doing business legally) a better business decision

- Also benefit construction workers
  - Incentivizes playing by the rules and providing key labor law protections to workers

APPENDIX

Literature Review: What Explains Informality?

- Taxes (Friedman, Johnson, & Zoilo-Lobaton 2000)
  - Firms want to keep more profit for themselves
  - Weak regulations and enforcement fail to curb informality, allow it to continue
  - This incentivizes profit-maximizing firms to operate informally and avoid taxes

- Economic restructuring and workplace "fissuring" (Weil 2014)
  - Firms have shifted toward core competencies, away from activities not central to profitability (e.g., subcontracting)

Theoretical Model

- Consider a model where construction firms are heterogeneous
  - θ: productivity of each individual firm; function of k (capital) and λ (labor skill)
  - Product and labor markets are both competitive; formal and informal workers each supply one unit of labor, ℓ, at an identical opportunity cost (i.e., wage) of ω (Ulyssea 2018; Cuff et al. 2020)

- Define the output of a given firm, y, as a function of θ and ℓ

Theoretical Model

- Output is then given by $\mathbf{y(\theta, \ell) = \theta q(\ell),}$ where the function $\mathbf{q}$ is assumed to be increasing and concave (Ulyssea 2018)

- Assume construction firms face two distinct choices for each project: (1) to operate formally, or (2) to operate informally
  - If firms choose informality, assume they pay no payroll or revenue taxes (Ulyssea 2018)

- Informal firms face detection probability, $\mathbf{\rho > 0}$, by regulators
  - If detected, the outcome is that informal firms face a cost imposed by regulators, c

Theoretical Model

- Expected cost of detection: $\mathbf{E(D)_{ip} = \rho c}$, by firm (i) and project (p)

- The profit function of an informal construction firm, indexed by firm and project, is then the following (based on Ulyssea 2018):
  - $\Pi^{I}_{ip}(\theta) = \max\{\theta q(\ell) - \omega E(D)\}$

- Conversely, if a construction firm chooses to operate formally on a project, it elects to comply with regulations and pay all relevant taxes
  - Formal firms pay constant payroll tax on all workers, τ_w, and a revenue tax, τ_y

Theoretical Model

- However, given that formal firms are abiding by labor and employment law, they face no probability of evasion detection (i.e., $\rho = 0$); $\mathbf{E(D)_{ip} = 0}$ for formal firms

- Define profit function of a formal construction firm as follows (Ulyssea 2018):
  - $\mathbf{\Pi^F_{ip}(\theta) = max\{(1 - \tau_y)\theta q(\ell) - (1 + \tau_w)\omega\}}$

- Assuming construction firms are profit maximizers, I define the evasion decision as follows, based on Cuff et al. (2020):

  - ***Evasion Decision****: A construction firm with parameters (θ, ω) decides to evade labor market regulations and operate informally if and only if $\Pi^I_{ip}(\theta) \geq \Pi^F_{ip}(\theta)$.*

Prevailing Wage Laws

- Let PW denote a prevailing wage requirement
  - Let PW = 1 denote a project subject to these requirements and let PW = 0 denote a project not subject to these requirements

- For firms choosing to operate informally, indexed by firm and project, we have:
  - $\rho_{ip} \mid PW = 1 \; > \; \rho_{ip} \mid PW = 0$

- As ρ increases, the expected cost of detection, E(D), also increases. An increase in ρ lowers the profits of informal firms, directly following from equation (1):
  - $\delta \Pi^I_{ip}(\theta, \omega) / \delta \rho \; < \; 0.$

Prevailing Wage Laws

- We next note that the profits of formal firms remain unaffected by this since for formal firms, the probability of evasion detection is 0. Therefore, for formal firms:
  - $\delta\Pi^F_{ip}(\theta, \omega) / \delta\rho = 0$.

- Thus, all else equal, prevailing wage requirements increase the probability of evasion detection, thereby lowering profits of firms choosing to operate informally
  - Conversely, since formal firms face a probability of evasion detection of 0, their profits are unchanged by prevailing wage requirements

- *Hypothesis:* The presence of state prevailing wage laws is negatively associated with informal employment.