Graduate Labor Economics
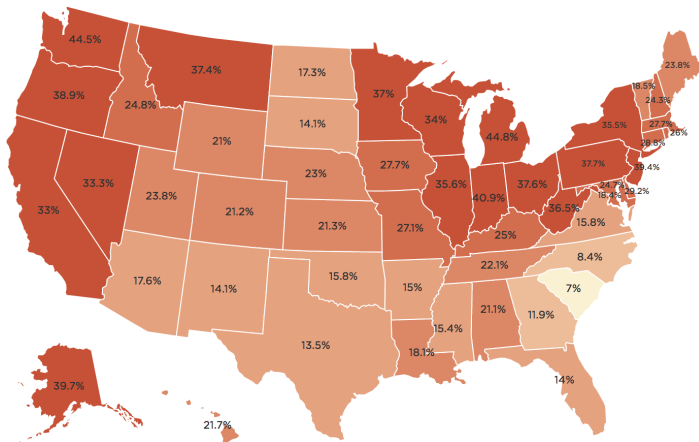
Lecture 8: Unions

Brendan M. Price[*]
Federal Reserve Board

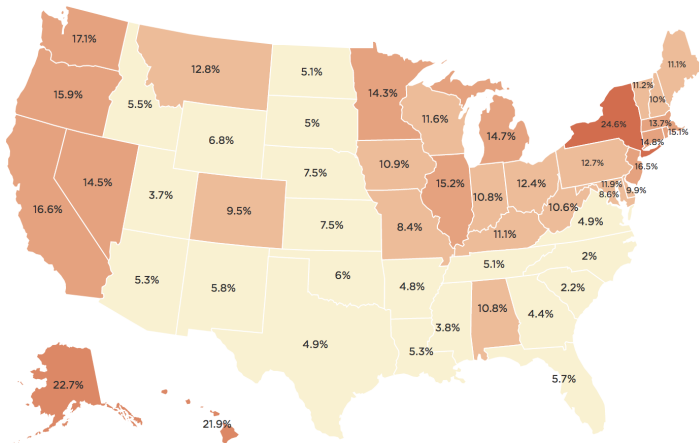# US union membership in 1964: about 29 percent

Percentage of Workers In Unions

Quoctrung Bui/NPR (2015); data from Hirsch, Macpherson, and Vroman

US union membership in 2014: about 11 percent

Percentage of Workers In Unions

Quoctrung Bui/NPR (2015); data from Hirsch, Macpherson, and Vroman

Background facts

- Steep declines in private sector unionization
  - Sectoral shifts
  - Technology, trade
  - Right-to-work laws

- Robust public sector unionization as of 2018
  - Private sector: 6.4 percent
  - Public sector: 33.9 percent
    (Source: BLS Union Members Summary)

- Union wage premium
  - Cross section: $\approx$15 percent
  - Likely biased by selection

Reading between the lines

- We'll use DiNardo and Lee (2004) to talk about writing

- How much can we extract from the intro alone?
  - Bird's eye view of the paper
  - Text and subtext

- Why this approach?
  - Short term: reading papers effectively
  - Long term: presenting and writing

P1. (S)he who commands the null commands the world.

DiNardo and Lee want us to have a particular prior.

It is widely understood that unions impose costs on employers: the most important way is by raising members' wages. They can also impose other costs on employers—by limiting discretion in hiring and firing, for example, and altering the structure of pay across skill groups. These constraints can lead employers to reduce employment, output, or most dramatically, to cease operation altogether. Indeed, these effects are often directly acknowledged by employers and employees alike. During union organizing drives, for example, firms routinely threaten to close a plant if the union drive is successful (Bronfenbrenner 1994), and employees seem to take these threats seriously: the risk of plant closure is cited as the leading cause of union withdrawal from organizing attempts.

P2. Frame it as a non-obvious empirical question.

Ambiguous theoretical relationships are one way to motivate empirics.

Are the costs of unionization to employers large or small? Today, in the United States, arguments can be made for either case. On the one hand, conventional estimates suggest that there still exists a sizable union wage premium: demographically similar union workers are paid 15 percent or more than their non-union counterparts. To the extent that employers are sensitive to the price of labor, this may lead to large reductions in employment. On the other hand, there is a broad consensus that in the past three decades, union power in the United States has been on the decline. There has been a decrease in union membership and new organizing activity, high levels of managerial opposition, and increased use of permanent replacement workers. During the 1980s, prominent unions were accepting wage cuts, facing the pressures of the opening of international competition.

P3. Explain why it's a hard problem.

D&L are implicitly promising to solve this problem. They had better do so!

At least two important challenges hinder credible measurement of the causal impacts of unionization on employers. One limiting factor is the absence of large, representative data sets that track establishments over time that also provide information on union status. A second important concern is the fact that unionization is nonrandom. Depending on the correlation between factors associated with unionization and those associated with employment, output, and productivity, the observed correlation between union status and employer outcomes may overstate or understate the true effects of unions. Two competing phenomena may induce opposite selectivity biases. On the one hand, unions may tend to organize at highly successful enterprises that are more likely to survive and grow. On the other, a union organizing drive may be more likely to succeed when a firm is poorly managed, or has faced recent difficulties.

P4. Say what you do ... and highlight your strengths.

Writing is a persuasive act. Note the language D&L use to pitch their paper.

In this paper we present quasi-experimental evidence on the causal effect of unionization on employer business failures/dislocations, employment, output, productivity, and wages, using two large databases representative of US establishments at risk of being unionized. Our analysis is based on the fact that most new unionization occurs as a result of a secret ballot election. By law, if a majority of workers vote in favor of the union, the law requires the management to bargain "in good faith" with the recognized union. This process creates a natural set of comparisons between establishments that faced elections where the union barely won (say, by one vote) and those that faced elections where the union barely lost (by one vote). As in other regression-discontinuity designs, the comparison between near winners and near losers potentially eliminates any confounding selection and omitted variable biases, and allows us to devise credible and transparent estimates of the effect of unions on employer outcomes.

P5. Keep everything on a need-to-know basis.

Notice how D&L provide bare-minimal detail about data and data sources here.

We report several findings from analyzing data that span the 1984–2001 period, and combine information on elections from the National Labor Relations Board (NLRB), on contract expirations from the Federal Mediation and Conciliation Service (FMCS), on subsequent business survival, employment, and output from a commercial database based on telephone listings (InfoUSA), as well as on employment, wages, output, and productivity in the manufacturing sector from the US Census Bureau's Longitudinal Research Database (LRD).

P6. To sell a null result, show *something* happened.

Otherwise, readers might think there was no real treatment.

We first document that the outcome of an NLRB election has a substantial, binding impact on the collective bargaining process, even among close elections. Where they barely win the election, unions are able to maintain their legal recognition over long time horizons; where they barely lose, there is little evidence of subsequent attempts to organize the workplace. Furthermore, unions who barely win have as good a chance of securing a collective bargaining agreement with the employer as those who win the elections by wide margins. And, as expected, unions who barely lose an election have little chance of ever signing such an agreement. These facts show that—statistically speaking—employers face a minimal risk of ever entering collective bargaining negotiations after a union loses a closely contested election.

P7. Focus on effect sizes. What can you rule out?

When selling a null result, focus on confidence intervals.

This legally mandated shift in the bargaining position of the workers, however, does not lead to significant impacts on a number of employer outcomes. First, union effects on business survival are small—on the order of $-.01$ to $-.02$ on a mean survival rate of $.40$ over an average of eight years. Second, point estimates of the union impacts on employment, output, and productivity, are statistically insignificant; in the manufacturing sector, they range between -3 and 3 percent for production hours, between -4 and 4 percent for output, and between -2 and 0 percent for output per worker, over one- to fifteen-year horizons.

P8. Advance your preferred interpretation of the results.

It's important to tell your own story. Readers are free to disagree with it.

One interpretation of these results is that the true employment effects are moderately sized, but cannot be detected by our research design, due to sampling variability in our estimates. An alternative interpretation is that the effects are truly small (e.g., -2 or -3 percent). We favor the latter interpretation for the following reason: our estimates of union wage impacts are small—centered around zero—with enough precision to rule out a 2 percent wage increase for up to seven years after the election. This implies—provided that wage and employment outcomes remain on the employer's labor demand schedule—that the impacts on employment are likely to be small, even assuming relatively large labor demand elasticities.

P9. Leave no stone unturned.

The paper would hold together without this analysis—but it's all the stronger for it.

We also explore whether the small wage effects are an artifact of union "threat effects"—whereby employers raise wages to avoid the threat of future unionization. We do so by complementing our regression-discontinuity analysis with an "event-study" analysis that assesses whether wages rise in response to an election, even if the union eventually loses. Point estimates are small (between 0 and 2 percent) and statistically insignificant, ruling out a 3 percent "union threat" effect, three years after the election.

P10. Don't oversell, don't undersell.

This short, punchy paragraph is appropriately caveated but still feels decisive.

Based on the evidence, we conclude that—at least in recent decades in the United States—the legal mandate that requires the employer to bargain with a certified union has had little economic impact on employers.

P11. Reconcile your findings with those in prior literature.

D&L hint at the importance of research design, while offering other explanations.

The small wage effects that we estimate may appear to be at odds with an enormous literature that has documented substantial union wage premiums. The differing results, however, may be explained by some important differences—other than in research design—in the nature of the data used. First, the modern union wage premium literature typically examines individual-level household survey data, rather than establishment-level data as we do here. Freeman and Kleiner (1990) argue that the latter is more appropriate for directly addressing the direct impacts of a workplace becoming unionized. Indeed, other establishment-level analyses find small or statistically undetectable wage effects (Freeman and Kleiner 1990; LaLonde, Marschke, and Troske 1996). Second, the data contain information on recent unionization (within the past twenty years), while most worker-level data sets possess little information on when the union was formed; estimates derived from those data naturally cannot isolate wage impacts that result from unionization that occurred in recent decades. As noted in Freeman and Kleiner, existing wage differences between union and nonunion workers today average the effects of unions of previous periods and the effects of unionization that occurs today.

P12. Stand on the shoulders of giants.

D&L are appealing to a prominent thinker to buttress their case.

Our results may also appear to be at odds with the standard "textbook" treatment of the neoclassical theory of union impacts, which emphasizes the notion of a union as an effective "monopoly" on labor services. There is, however, an older tradition in economics that argues—on a purely theoretical level—that most trade unions are unsuccessful monopolies. Indeed, in his essay, "The Impact of the Union," Friedman (1950) argued that the ability of unions to raise wage rates at that time was somewhat exaggerated, because most unions could not overcome market forces that would tend to keep wages aligned with competitive rates. In a published exchange with Paul Samuelson, Friedman explains his reasoning: "I think if [UAW leader Walter] Reuther were to disregard [pressures to moderate wage demands] and if he were to seek—and for the moment let us suppose he is temporarily successful—very radically raised wages, and if that had the effect of grossly reducing employment within the automobile industry you would find opposition building up that would break the union down. Knowing that in advance and being as smart as you and I, he would avoid such action."

P13. Don't reinvent the wheel.

When writing, follow the usual structure: your readers will expect and appreciate it.

The paper is organized as follows. Section II provides some background on the union recognition process and the industrial relations climate in the United States in recent decades. Section III describes different notions of the causal impact of unionization, the regression-discontinuity design for estimating direct impacts of unionization, as well as the identification strategy for assessing indirect, "union threat" effects. We describe the various data sets in Section IV, present the results in Section V, and discuss the findings in relation to the existing literature in Section VI. Section VII concludes.

What *doesn't* go in the introduction?

- Dirty laundry
  - Tricky data linkages
  - Imperfect "snapshot" outcomes
  - Sensitivity to functional form

- Extraneous detail
  - Full text of the National Labor Relations Act
  - Citation of every paper ever written about unions
  - 4,812 robustness checks

- The hard evidence
  - Specifications
  - Figures
  - Tables

The intro is a contract with the reader

- Writer's end of the bargain: deliverables
  - Secret ballot elections are a good source of variation
  - Close elections are as good as random
  - Close elections yield convincing null effects
  - These null effects are precise enough to be informative

- Reader's end of the bargain: due diligence
  - Is the research design sound?
  - Are the data adequate to implement it?
  - Do the results tell a coherent story?
  - Is the interpretation right?

Unionization elections

1. Pro-union workers contact a labor union

2. Workers hold "card drive" ($\geq$30 percent buy-in)

3. National Labor Relations Board (NLRB) steps in
   - Decide if there is a "community of interest"
   - Define the "bargaining unit"

4. NLRB holds an on-site election, simple majority rule

5. Workers + employer can file appeals, election can be re-run

6. If union victory: NLRB certifies the union
   - Exclusive collective bargaining agent
   - Employer must negotiate "in good faith"

A bounding argument

"[E]mployers always have the option of voluntarily recognizing a union without an NLRB election—which does occur, but much less frequently. In these cases, it is plausible that the union and management are not too far apart on issues such as wages and benefits, seniority pay scales, or grievance procedures. . . . Thus, our sample of elections may be biased in favor of finding union effects—at least, compared with voluntary recognition cases, which our data exclude."

The regression discontinuity (RD) design

- Standard RD setup

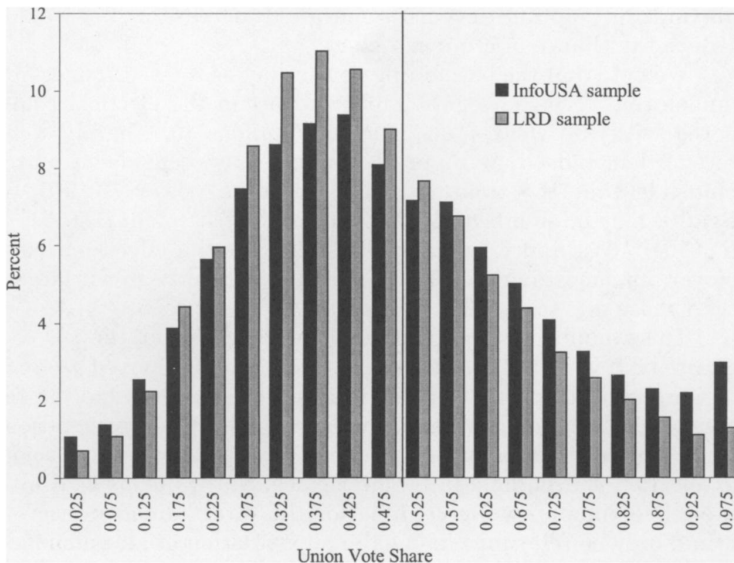$$y = X\gamma + D\beta + \varepsilon$$
$$D = \mathbb{1}[V > 1/2]$$
$$V = X\delta + u$$

- The usual identification logic

$$\lim_{\Delta \to 0^+} \mathbb{E}[y \mid V = 1/2 + \Delta] - \lim_{\Delta \to 0^-} \mathbb{E}[y \mid V = 1/2 - \Delta] = \beta$$
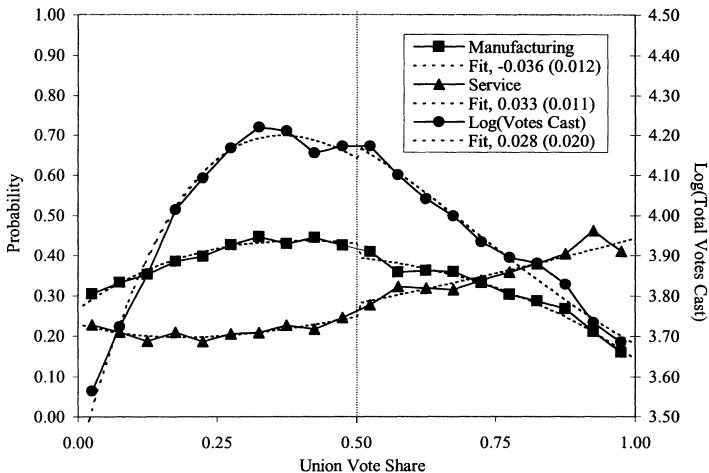
- What could go wrong?

This graph serves many functions. What are they?

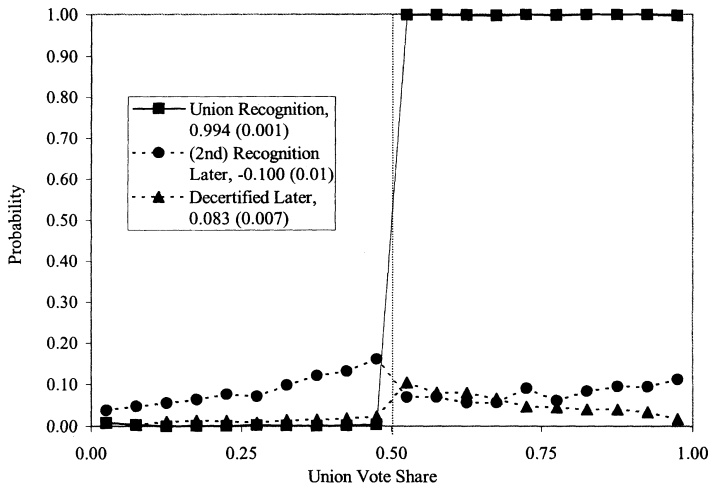(DiNardo and Lee, 2004, Figure 2)

23

Covariates evolve smoothly through the cutoff (whew)
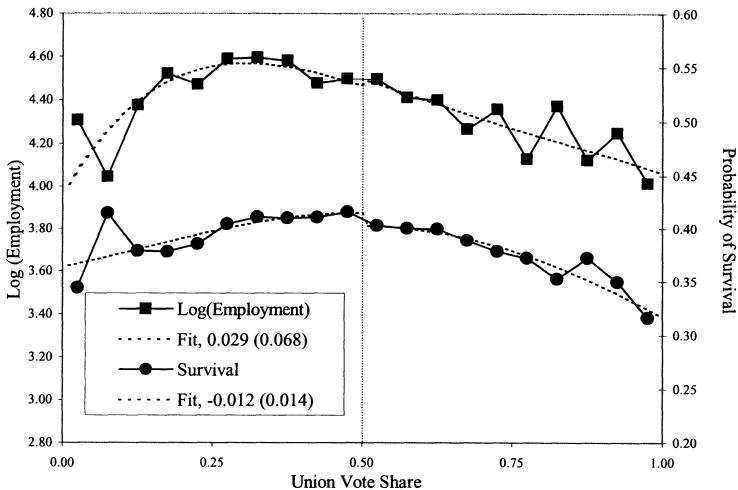

(DiNardo and Lee, 2004, Figure 6a)

Electoral outcomes have binding effects on union status
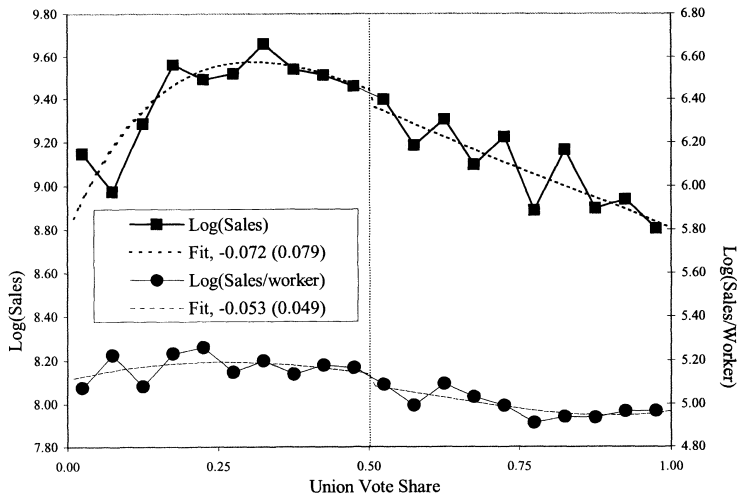

(DiNardo and Lee, 2004, Figure 3)

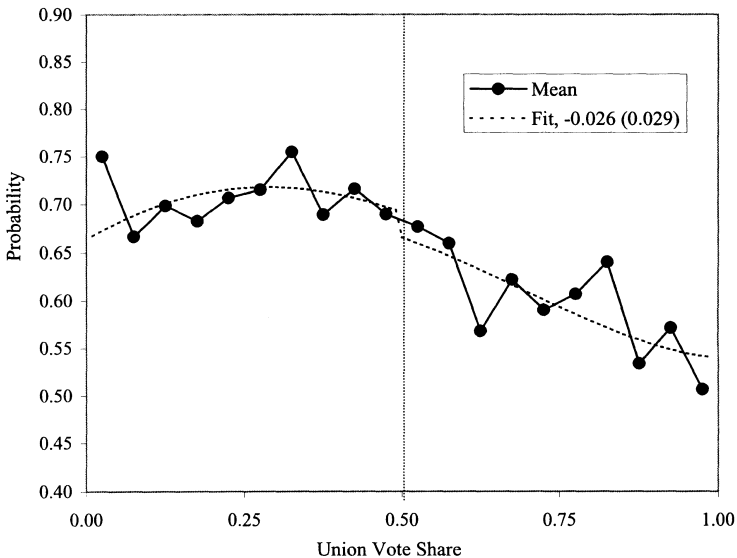# Null effects on employment, survival, . . .

(DiNardo and Lee, 2004, Figure 4)

. . . sales, and productivity

(DiNardo and Lee, 2004, Figure 5)

Also no survival effect in the manufacturing sample (LRD)
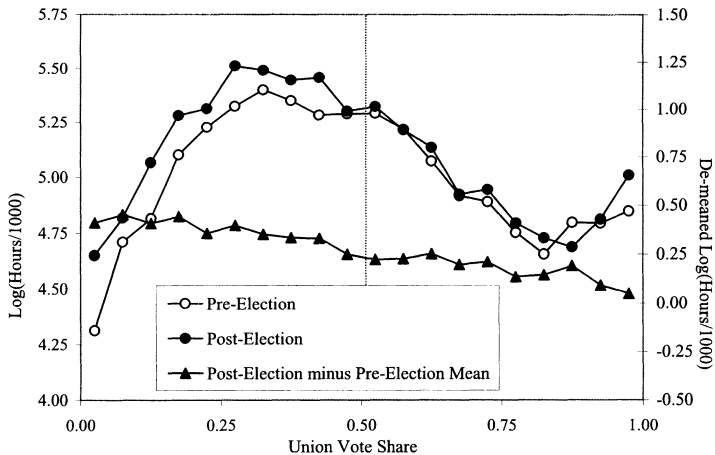

(DiNardo and Lee, 2004, Figure 7)

Switch to tables for formal estimates

OLS AND REGRESSION-DISCONTINUITY ESTIMATES, IMPACT OF UNION RECOGNITION ON BUSINESS SURVIVAL, LRD SAMPLE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Union won	−0.089	−0.092	−0.078	−0.073	−0.046	−0.041	−0.027	−0.026	−0.021	−0.025	−0.021
	(0.013)	(0.013)	(0.013)	(0.013)	(0.022)	(0.023)	(0.029)	(0.029)	(0.028)	(0.028)	(0.028)
Vote share	—	—	—	—	−0.130	0.182	0.499	0.379	0.552	0.120	−0.062
					(0.055)	(0.134)	(0.398)	(0.732)	(0.720)	(0.721)	(0.730)
(Vote share)^2	—	—	—	—	—	−0.322	−1.110	−0.630	−1.405	−0.533	0.143
						(0.130)	(0.946)	(2.670)	(2.618)	(2.615)	(2.638)
(Vote share)^3	—	—	—	—	—	—	0.516	−0.210	0.862	0.415	−0.551
							(0.617)	(3.886)	(3.804)	(3.797)	(3.818)
(Vote share)^4	—	—	—	—	—	—	—	0.365	−0.106	−0.133	0.331
								(1.947)	(1.905)	(1.902)	(1.907)
Log(Votes cast)	—	—	0.061	0.065	—	—	—	—	—	0.059	0.064
			(0.008)	(0.008)						(0.008)	(0.008)
Year dummies?	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes
Industry dummies?	No	No	No	Yes	No	No	No	No	No	No	Yes
R^2	0.0084	0.0614	0.0729	0.0893	0.0094	0.0106	0.0107	0.0107	0.0637	0.0743	0.0907

(DiNardo and Lee, 2004, Table 1)

29

Difference out pre-election outcomes (why?)

(DiNardo and Lee, 2004, Figure 8b)

And now for 60 point estimates

LEAST-SQUARES REGRESSION-DISCONTINUITY ESTIMATES OF UNION EFFECTS, LRD SAMPLE

| Dependent variable	Coefficient on won election									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Contract expiration	0.220	0.252	0.198	0.191	0.202	0.198	0.181	0.182	0.181	0.179
	(0.021)	(0.011)	(0.016)	(0.017)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
	[4733]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]
Log(Hours)	0.009	−0.318	−0.260	−0.203	0.085	0.097	−0.024	0.015	0.018	0.028
	(0.087)	(0.036)	(0.063)	(0.063)	(0.080)	(0.080)	(0.056)	(0.051)	(0.050)	(0.049)
	[4733]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]
Log(Output)	0.079	−0.347	−0.293	−0.254	0.067	0.080	−0.043	−0.010	−0.004	0.011
	(0.094)	(0.042)	(0.072)	(0.073)	(0.090)	(0.091)	(0.055)	(0.050)	(0.050)	(0.049)
	[4730]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]
Log(Output/ worker)	0.072	−0.028	−0.032	−0.051	−0.018	−0.016	−0.019	−0.019	−0.018	−0.015
	(0.063)	(0.029)	(0.048)	(0.048)	(0.060)	(0.061)	(0.035)	(0.034)	(0.034)	(0.034)
	[4730]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]	[28785]
Log(Assets/ worker)	−0.121	0.122	0.020	−0.020	−0.059	−0.048	−0.136	−0.090	−0.064	−0.029
	(0.108)	(0.049)	(0.082)	(0.082)	(0.102)	(0.103)	(0.104)	(0.093)	(0.075)	(0.072)
	[3379]	[20346]	[20346]	[20346]	[20346]	[20346]	[20346]	[20346]	[20346]	[20346]
Log(Wage)	0.015	−0.039	−0.041	−0.044	−0.005	−0.002	−0.026	−0.018	−0.018	−0.016
	(0.025)	(0.011)	(0.019)	(0.020)	(0.024)	(0.024)	(0.017)	(0.016)	(0.016)	(0.015)
	[4733]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]	[28796]
	+/−									
Sample	5%	All	All	All	All	All	All	All	All	All
Polynomial terms	0	0	1	2	3	4	4	4	4	4
Dependent variable	Level	Level	Level	Level	Level	Level	De-meaned	De-meaned	De-meaned	De-meaned
Include base mean?	No	No	No	No	No	No	No	Yes	Yes	Yes
Year dummies	No	No	No	No	No	No	No	No	Yes	Yes
Industry dummies	No	No	No	No	No	No	No	No	No	Yes

(DiNardo and Lee, 2004, Table 2)

Threat effects?

- Another story: employers raise wages pre-election
  - "Buying off" the workers
  - Wage effect already "priced in"
  - Could explain lack of post-election raises

- Look at how (log) wages evolve pre/post-election

$$w_{it} = \alpha_i + \gamma_t + \sum_{k=-6}^{11} D_{it}^k \delta_k$$

- "Renormalize" time around election date

- Focus on cases where union goes on to lose election

No evidence of threat effects
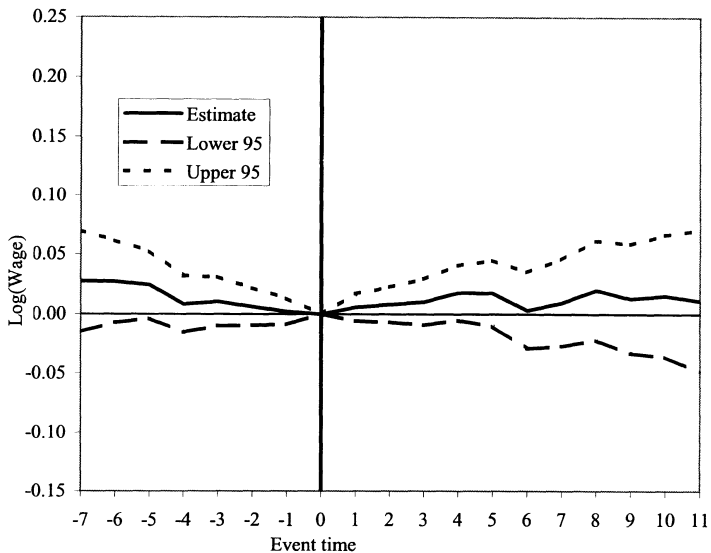

(DiNardo and Lee, 2004, Figure 10a)

Interpretation

- Null result is pretty surprising: what explains it?
  - Noise (i.e., not really a null)
  - "Young" unions are weak unions
  - Unions focus on working conditions, not wages
  - Close elections don't deliver a "mandate"

Lee and Mas (2012)

LONG-RUN IMPACTS OF UNIONS ON FIRMS: NEW EVIDENCE FROM FINANCIAL MARKETS, 1961–1999[*]
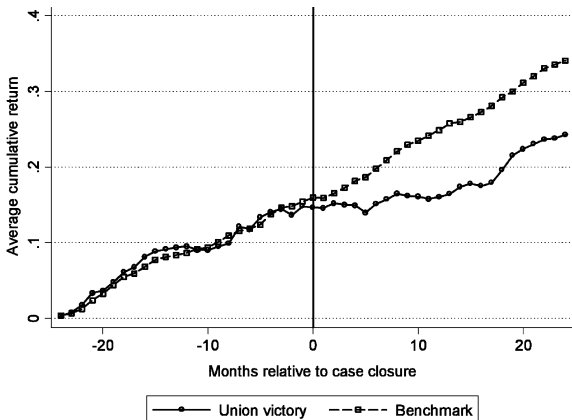
DAVID S. LEE AND ALEXANDRE MAS

We estimate the effect of new private-sector unionization on publicly traded firms' equity value in the United States over the 1961–1999 period using a newly assembled sample of National Labor Relations Board (NLRB) representation elections matched to stock market data. Event-study estimates show an average union effect on the equity value of the firm equivalent to $40,500 per unionized worker, an effect that takes 15 to 18 months after unionization to fully materialize, and one that could not be detected by a short-run event study. At the same time, point estimates from a regression discontinuity design—comparing the stock market impact of close union election wins to close losses—are considerably smaller and close to zero. We find a negative relationship between the cumulative abnormal returns and the vote share in support of the union, allowing us to reconcile these seemingly contradictory findings. *JEL* Codes: J01, J08, J5, J51.

A motivating example
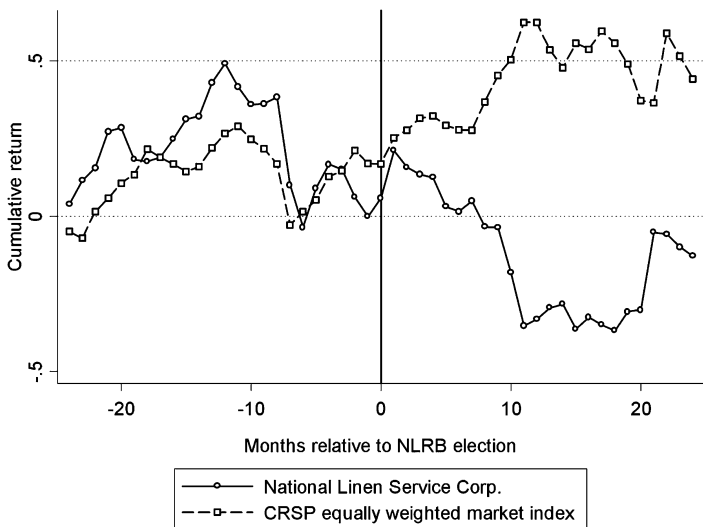
(Lee and Mas, 2012, Figure 1)

Unionization leads to slower growth in stock-market returns

(Lee and Mas, 2012, Figure 2)