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The Law and Labor Strife in the United States, 1881–1894

JANET CURRIE AND JOSEPH FERRIE

This article examines the effects of state-level legal innovations governing labor disputes in the late 1800s. This was a period of legal ferment in which worker organizations and employers actively lobbied state governments for changes in the rules governing labor disputes. Cross-state heterogeneity in the legal environment provides an unusual opportunity to investigate the effects of these laws. We use a unique data set with information on 12,965 strikes to show that most of these law changes had surprisingly little effect on strike incidence or outcomes. Important exceptions were maximum hours laws and the use of injunctions.

Evaluating the role of the legal environment in shaping economic outcomes is often difficult, because of either the lack of microlevel data or the absence of sufficient heterogeneity in laws across jurisdictions. These problems are most severe in recent data, because confidentiality rules limit the availability of data and the imposition of federal law standardizes the legal environment across states. Studies using historical data have overcome these difficulties in examinations of the impact of maximum hours laws, compulsory school attendance laws, banking regulations, mortgage foreclosure moratoria, and regulation of natural resources.[1]

Surprisingly, the same historical approach has not been applied to one of the most contentious areas of legislative intervention in the economy: the regulation of disputes between workers and employers. In this article, we

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[1] On maximum hours laws, see Landes, "Effect"; Goldin, "Maximum Hours Legislation"; and Atack and Bateman, "Whom Did Protective Legislation." On compulsory school attendance laws, see Angrist and Krueger, "Does Compulsory Schooling"; and Margo and Finegan, "Compulsory Schooling Legislation." On banking regulations, see Rockoff, "Free Banking Era." On mortgage foreclosure moratoria, see Alston, "Farm Foreclosures." On regulation of natural resources, see Libecap, "Economic Variables" and "Bureaucratic Opposition."

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explore the relationships among laws governing collective bargaining disputes, strike incidence, and strike outcomes. For this purpose, we have assembled information about the outcomes and characteristics of 12,965 labor disputes that took place in the United States between 1881 and 1894, and about the legal environment in each state and year.

This was a period of legal ferment in which worker organizations and employers actively lobbied state governments to have the rules of the bargaining game changed in their favor. Indeed, legal developments sometimes followed pitched battles involving state and federal troops, loss of life, and property damage. Organized labor lobbied for the legalization of unions, abolition of the blacklist, and passage of maximum hours laws, while employers applauded the use of the injunction against striking workers and the passage of laws restricting the use of intimidation and boycotts.

We do not aim to test a particular theory of strikes, but we do find strike theory to be useful in interpreting our results. In particular, strike theory suggests that we should not necessarily expect collective bargaining laws favored by labor to have prolabor effects on strike outcomes or those favored by employers to have pro-employer effects. Instead, we need to look at how each law is likely to have affected the cost of any given strike or uncertainty about strike outcomes. In terms of strike theory, our results suggest that maximum hours laws reduced the uncertainty surrounding possible strike outcomes, whereas the use of the injunction increased it.

LABOR LAW IN THE LATE NINETEENTH CENTURY AND ITS LIKELY EFFECTS ON STRIKE ACTIVITY

A nascent trade union movement had appeared in the United States as early as the 1830s, embracing roughly 26,000 workers.[2] But these organizations were locally isolated and focused mainly on craftsmen-proprietors: as John Commons et al. note, "it was only during the sixties that labor organizations began to think and act on a lasting national basis."[3] By the middle of the 1880s, more than 700,000 workers, both skilled and unskilled, were members of national labor organizations, with most of this growth occurring over just the previous ten years.[4] With the appearance of large organizations of workers, state legislatures and courts were increasingly called upon to intervene in labor disputes and to develop new legal means to do so.[5]

[2] Lebergott, "American Labor Force," p. 220.

[3] Commons et al., *History* (1918), p. 43.

[4] Lebergott, "American Labor Force."

[5] Though the federal Sherman Anti-Trust Act of 1890 was later an important antiunion and antistrike tool, the federal government played only a small role in shaping labor law during the period that we examine. The Sherman Act was first employed against labor in 1894 in the prosecution of Eugene Debs in the Pullman case, but the case was eventually decided on other grounds (*In re* Debs, 158 U.S. 564, 15 Sup. Ct. 900).

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The first aspect of the employment relation addressed was the length of the workday. States passed legislation to regulate the hours of women and children throughout the nineteenth century, but they were more cautious in regulating the hours of men.[6] No argument could be made for regulating the hours of men on purely social grounds as had been made for women and children. And courts had held that the freedom of contract prevented states from dictating the maximum number of hours employees could work each week.[7] Three strategies emerged in response to these constraints.

The first was regulation of employees' hours when the state was a direct party to the labor contract, as when states employed workers themselves or hired contractors who in turn hired workers. New York passed such legislation in 1870.[8] The second was regulation of specific industries, particularly those in which worker fatigue could result in injury to the workers themselves or to others because the work involved heavy machinery. New York's maximum hours legislation for railroad workers in 1888 and 1892 fits into this category.[9] The third approach was prescribing a maximum number of hours that employees could be forced to work "in the absence of any agreement to the contrary." Since most labor contracts specified both a wage and a work schedule, this last provision was relatively toothless, but may have signaled at least some concern on the part of the state for workers' interests. Five of the states we examine below had at least one of these types of legislation on the books before 1880 (Connecticut, Illinois, Maine, New Hampshire, and New York), and all of the states we examine except Delaware had such laws by 1890.

The explicit legalization of unions by state legislatures came relatively late in the nineteenth century. Throughout much of the period, the court's approach to organized labor was based on the doctrine of conspiracy in English common law.[10] In England, the *Journeyman Tailors* case (8 Mod., 11) in 1721 established that attempts to raise wages by forming "combinations" were criminal conspiracies. Initially, in two cases in Pennsylvania and two in New York, U.S. state courts followed this precedent and held that trade unions were illegal combinations, criminal conspiracies designed to accomplish an illegal end—raising the wages of their members.[11]

[6] Goldin, "Maximum Hours Legislation."

[7] Stimson, *Handbook*, p. 43.

[8] Friedman, *History*, pp. 493–94.

[9] Ibid.

[10] This doctrine had its roots in the Statute of Laborers of 1349 (22nd Edward III) which specifically forbade groups of workers from striking to raise their wages, and made any attempt to do so a criminal conspiracy. The statute, designed in the wake of the Black Death to set wages and prevent laborers from raising their wages by refusing to work, was later embodied in the Elizabethan Statute of Artificers (5th Elizabeth, Ch. 4).

[11] These cases were the *Philadelphia Cordwainers* case (1806), *People v. Melvin* (2 Wheeler Criminal Cases, NY, 262, 1809), the *Journeyman Cordwainers* of Pittsburgh case (1811), and *People v. Fisher* (14 Wendell, NY, 1, 1835).

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These early American decisions were made in inferior courts. When the first superior court decision was rendered, in 1842 in *Commonwealth v. Hunt* (15, 4 Met., 111), the Massachusetts supreme court discarded the *Journeyman Tailors* precedent and established for the first time the *per se* legality of labor combinations and strikes.[12] The result was a sharp reduction in the number of union conspiracy trials in the 1850s and early 1860s.[13] However, after the Civil War labor unrest increased, and many strikers again faced prosecution under anticonspiracy laws. Unions made the repeal of the conspiracy doctrine one of their highest priorities.[14] Before 1880 the only states in our sample that had passed laws recognizing the right of unions to exist were New Jersey, New York, and Pennsylvania; by 1893 five other states had done so.

However, even in jurisdictions where the interpretation of anticonspiracy laws left workers free to strike, workers accused of intimidating other workers or organizing boycotts continued to be prosecuted under anticonspiracy laws. Many states formalized this practice into statutes outlawing intimidation and boycotts. Between 1887 and 1897 six states also limited the behavior of employers by banning blacklisting of workers who joined unions or went on strike.[15]

Finally, the late 1880s and early 1890s saw a sharp rise in the use of the injunction against striking workers. Both federal and state equity courts had issued injunctions to prevent injury to property during labor disputes throughout the nineteenth century. But it was not until courts recognized that the right of employers to conduct business was a form of "property at risk of injury" in a work stoppage that injunctions were routinely issued to bar work stoppages altogether, to prevent certain forms of behavior by striking workers (such as boycotting or aggressive picketing), or to end stoppages by requiring that workers return to work. The injunction was seen as a powerful weapon against labor stoppages: unlike conspiracy prosecutions which took time and required at least a modicum of evidence, injunctions could be granted after a brief hearing and a mere assertion that harm to a firm's commerce was imminent. Victoria Hattam notes that "The AFL and other

[12] Stimson, *Handbook*, pp. 203–04.

[13] Friedman, *History*, pp. 486–87.

[14] Hattam, *Labor Visions*, pp. 20, 72, and 140–41.

[15] For example, New York's conspiracy law (in 1887) was actually a change to allow prosecution of employers who blacklisted workers joining unions: "Any person or persons, employer or employers of labor, and any person or persons of any corporation or corporations on behalf of such corporation or corporations, who shall hereafter coerce or compel any person or persons, employe or employes [sic], laborer or mechanic, to enter into an agreement, either written or verbal, from such person, persons, laborer, or mechanic, not to join or become a member of any labor organization, as a condition of such person or persons securing employment or continuing in the employment of any such person or persons, employer or employers, corporation or corporations, shall be deemed guilty of a misdemeanor" (*Laws of the State of New York*, Chap. 688, p. 897, 24 June 1887). The New York Workingmen's Assembly strongly supported passage of this legislation.

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union leaders understood all too well the demoralizing impact of the injunction and renewed their efforts to check the courts' power."[16] She describes a 20-year campaign by organized labor to neutralize the injunction as a legal weapon.

This overview has emphasized statutes that established maximum hours, legalized unions, outlawed intimidation or boycotts on the part of unions, and outlawed the use of blacklists on the part of employers. In addition, courts acted by issuing injunctions against striking workers. What effects would we expect these actions to have on labor disputes?

The occurrence of strikes has long been a puzzle to economists. Factors that change the balance of power in a negotiation are predicted to change the outcome of negotiations, but not to lead to a breakdown in negotiations. The reason is that strikes reduce the size of the pie to be divided between the two parties, and thus any resolution arrived at after a strike could be dominated by a division that occurred without a strike. Faced with this dilemma, Sir John Hicks concluded that strikes were simply "mistakes."[17] However, this does not imply that strikes will occur randomly—simple economics suggests that even mistakes should be less frequent when they are more costly.

More recent theories of strikes emphasize asymmetric information.[18] The idea is that the strike can actually play a productive role by transmitting information that could not be credibly transmitted in any other way. Suppose for example that the firm knows the true state of profits, but workers do not. Then, if wages are contingent on profits, the firm has an incentive to report a bad state of the world. Workers can force the firm to report honestly by striking when the firm announces a bad state. If profits really are bad, then the firm will be willing to take the strike. If profits are really good, then it will be costly for the firm to lose production and it will not announce a bad state. Once again, factors that reduce the cost of any given strike are likely to increase the probability that the strike-as-truth-elicitation-device is used. Although these models are often cast in terms of union ignorance about profits, imperfect knowledge about the firm's more general bargaining position yields the same predictions.

These models imply that laws that reduce the cost of any given strike are likely to increase strike incidence, whereas those that reduce the uncertainty surrounding the state of the world (and hence likely strike outcomes) should reduce strike incidence. If there are many states of the world, and it is the workers who lack information, then a model of this type will generate a "concession curve" in which the gains to the union fall with the length of the

[16] Hattam, *Labor Visions*, p. 163.
[17] Hicks, *Theory*.
[18] For a review of this literature, see Kennan, "Economics."

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strike. Thus, factors that increase uncertainty will also increase the length of strikes, and result in more negative outcomes for labor.

These simple models yield a set of predictions for the effects of the laws we consider. First, maximum hours laws will increase the cost of a given strike under certain assumptions. Suppose, for example, that some employers follow the example set by these laws even when they are not legally bound to do so and others do not. Then employees in low-hours jobs will be afraid of losing those jobs and thus be less likely to strike. If there are fixed costs of employment, then employers honoring maximum hours laws might choose to hire fewer, better quality workers, who will be more costly to replace in the event of a strike. Maximum hours laws might also reduce the uncertainty surrounding strike outcomes (at least when hours of work were the main area of contention) leading to fewer strikes, or strikes of shorter duration, with better outcomes for labor.

The legalization of unions would be expected to reduce the costs of strikes to workers (by eliminating the possibility of being charged with conspiracy), but might increase the cost of strikes to employers if employers respond to higher union wages by hiring better quality workers. Currie and Sheena McConnell argue that the legalization of public sector employee unions after 1960 reduced strike activity by reducing the uncertainty surrounding the collective bargaining rights of these employees.[19] One might expect the legalization of unions in the 1880s to have had similar effects. On the other hand, if some employers did not recognize the legitimacy of the union's position, then uncertainty about the employer's bargaining position could be increased, thereby increasing strike activity.

Finally, laws outlawing intimidation, boycotts, and blacklisting were directly aimed at reducing the costs of strikes to employers and employees, while injunctions were used to limit the cost of any given strike by forcing employees back to work. Thus, cost arguments suggest that these laws ought to have been associated with increased strike activity. One caveat is that the imposition of injunctions was often accompanied by violence, which presumably increased the costs of striking to both workers and firms.

The information model, however, suggests that laws outlawing intimidation, boycotts, and blacklisting ought to have reduced the uncertainty surrounding strikes outcomes, while the occasional use of the injunction would have increased it. Thus, the former laws should be associated with reductions in strike activity or improved labor outcomes, and injunctions should be associated with increased strike activity or worse outcomes for labor.

[19] Currie and McConnell, "Impact."

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TABLE 1
DATE OF PASSAGE OF STATE LAWS DEALING WITH LABOR AND STRIKES, THROUGH 1894

State	Unions Legal[a]	Maximum Hours[b]	Intimidation Illegal[c]	Boycotts Illegal[d]	Blacklists Illegal	Injunction Used[e]
Connecticut	no law	1 Jan. 1867	29 Mar. 1878	29 Mar. 1878	no law	no
Delaware	no law	no law	no law	no law	no law	no
Illinois	no law	1 May 1867	13 Feb. 1863	1 Jul. 1887	1 Jul. 1887	1886
Indiana	25 Feb. 1893	10 May 1889	14 Apr. 1881[f]	no law	9 Mar. 1889	1893
Maine	no law	1 Jan. 1871	13 Mar. 1889	13 Mar. 1889	no law	no
Maryland	8 Apr. 1884	1 Apr. 1886	no law	no law	no law	no
Massachusetts	14 Mar. 1888	3 May 1890	14 May 1875	no law	31 May 1892	1888
Michigan	6 Jun. 1883	5 Jun. 1885	27 Mar. 1867	no law	no law	no
New Hampshire	no law	3 Jul. 1847	29 Sep.1887	29 Sep. 1887	no law	no
New Jersey	9 Mar. 1877	8 Apr. 1887	no law	no law	no law	1894
New York	17 Feb. 1870	26 Apr. 1870	30 Jun. 1882	30 Jun. 1882	24 Jun. 1887	no
Ohio	14 Apr. 1892	1 May 1886	no law	no law	no law	1887
Pennsylvania	8 May 1869	24 Mar. 1887	no law	no law	no law	1888
Number of changes[g]	5	7	4	4	4	6

[a] Laws declaring that collective action to raise wages was *not* an actionable conspiracy, or laws preventing the discharge of workers because of union membership, or laws establishing procedures for unions to incorporate.
[b] Laws specifying the maximum length of the workday either in the absence of any specific agreement to the contrary, or in specific industries, or in the employment of the state.
[c] Laws preventing the use of threats or force to prevent workers from practicing their trade.
[d] Anti-intimidation laws that were written to include the intimidation of customers, anticonspiracy laws that were written to prevent collective action that was directed at preventing trade or business, or laws that specifically outlawed boycotts.
[e] The earliest year for which a citation could be found in Frankfurter and Greene (*Labor Injunction*), Oakes (*Law*), Petro ("Assumptions"), or Witte ("Early American Labor Cases") to indicate that an injunction had been issued and sustained by a federal or state court in a labor dispute.
[f] Repealed 9 March 1889.
[g] Number of these laws passed in the period we examine (1881 through 1894).
Source: See note 20 in the text.

THE DATA

We have drawn information about the labor law in effect in each state between 1881 and 1894 from published state statutes, proceedings of state legislatures, and compilations of judicial decisions in labor disputes brought before the courts.[20] Table 1 summarizes the legal environment in each state in terms of these categories. A date indicates that the relevant law was passed at that time, while "no law" indicates that there was no law in effect as of 1894. The table illustrates both the tremendous heterogeneity in state legal environments and the difficulty in identifying "packages" of laws that tended to go together. For example, several states both recognized unions

[20] These sources are described in detail in a data appendix available from the authors or on-line at http://www.econ.nwu.edu/faculty/ferrie/papers/strikelaw1.pdf.

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and outlawed the intimidation of strikebreakers. Table 1 also shows that in several large states, laws banning intimidation and boycotts were passed simultaneously, which makes it difficult to identify the separate effect of these laws. Since both laws were intended to place limits on workers' right to organize, we have grouped them together in our empirical work. Finally, the table illustrates some changes in the legal environment that occurred after the Haymarket Riot of 1886. Between 1887 and 1894 four states adopted maximum hours laws for at least some groups of workers. Eight states had such a law prior to 1886. Illinois, one of the states hardest hit by the strike wave of 1886, passed an innovative law outlawing both boycotts and blacklisting in 1887.

The data that will allow us to assess the effects of these laws are drawn from two sources: the *Third Report* and *Tenth Report* of the U.S. Commissioner of Labor. The reports describe strikes in the years 1881 to 1886 and in 1887 to 1894, respectively. Investigators combed through newspaper reports and other contemporary sources in order to compile an initial list of strikes. They then conducted interviews in each location where a strike was reported to obtain detailed information about each strike, as well as information about other strikes.[21] For each strike, the reports include the beginning and ending dates of the strike, the industry, the location, the number of male and female workers in the firm before the strike, the number of workers involved, the hours of work before and after the strike, whether the strike was authorized by a union, and whether replacement workers were used. The *Third Report* also recorded workers' wages before and after strikes and firms' employment levels after strikes. Compared to recent strike data sets, this is a very rich source of information about industrial disputes.

We coded information about 13,302 strikes in 13 states drawn from three broad regions: the Midwest (Illinois, Indiana, Michigan, and Ohio); New

[21] By way of comparison, recent strike data are compiled from newspaper reports, and only include strikes involving over 1,000 workers, although prior to 1981, the Bureau of Labor Statistics used survey data and attempted to collect information about all strikes. Edwards (*Strikes*) and Griffin (*Strikes*) both contain extensive discussions of the reliability of the Commissioner of Labor's data collection procedures. A recent re-examination of the data from the *Third Report* and the *Tenth Report* for Terre Haute, Indiana, however, finds that only half of the strikes for which there exists a record were included (Bailey, "Commissioner"). The strikes that were omitted appear no different (in size, industry, or duration) from those that were included. A second problem with the reports is that the *Third Report* used the enterprise as the unit of observation (that is, related strikes at different plants were counted as separate strikes). The *Tenth Report* used a broader definition of a strike that counts strikes that began at roughly the same time over similar issues as a single dispute. It is not clear how religiously the new definition was applied in the *Tenth Report*. We find many instances in which apparently related strikes were nonetheless coded as separate strikes. Hence, we have chosen to treat the data from the two reports in the same way, and to rely on the inclusion of year effects to capture systematic differences in strike prevalence associated with changes in reporting conventions over time. See Card and Olson ("Bargaining Power") for additional discussion of these issues. These data have also been used by Rosenbloom ("Strikebreaking") to study the use of strikebreakers, and by Friedman ("Politics") to study the impact of unions.

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England (Connecticut, Maine, Massachusetts, and New Hampshire); and the Middle Atlantic states (New Jersey, New York, Pennsylvania, Delaware, and Maryland). These states were chosen because they experienced almost 90 percent of all reported strikes and because they exhibit great variation in labor law. We excluded firms with under six prestrike employees because we felt that strikes in firms this small were likely to be less accurately reported than strikes in larger firms. We also excluded one firm that reported a prestrike wage of greater than $10 per hour. These exclusions leave us with a sample of 12,965 strikes.

We focus on six measures of strike outcomes: the percentage changes in wages, employment, and hours; whether strike replacements were used; the fraction of workers replaced conditional on the use of replacements; and the unconditional mean fraction of the workforce replaced. We also examine two measures of strike cost: strike duration and the number of working days lost. In general, increases in wages, smaller poststrike employment losses, reductions in hours, reduced use of strike replacements, and shorter strikes could all be regarded as positive outcomes for labor. Reduced strike lengths represent a Pareto improvement in that they are also a benefit to employers. Note that wage and employment changes are only available for the 1881 to 1886 period while antiblacklist laws and injunctions generally came into effect only after 1886.[22] Therefore, it is not possible to assess the effects of these two types of laws on post-strike wage and employment outcomes. In addition to these measures, we examine the extent to which strikes were authorized by unions as one indicator of how the legal environment might have influenced the composition of our sample.

Table 2 describes the strike-level data. Our measure of the extent to which strike activity was union-authorized appears in column 1. Strikes were most likely to be union-authorized in New York, and in the building trades, tobacco, and food processing and brewery industries. Columns 2 and 6 of Table 2 show the distribution of prestrike employment and the changes in employment that occurred following strikes. Columns 3 to 5 give the fraction of strikes in which strike replacements were employed, the fraction replaced conditional on strikebreakers being used, and the overall mean percentage replaced.

The use of strikebreakers was very common, especially in Delaware and in some industries (printing, publishing, and telegraph; food processing and brewing; transportation; and the residual category) in which strikebreakers

[22] Table 2 shows that where measures of strike outcomes are available in both reports, there is continuity between the information contained in the *Third Report* (1881 to 1886) and the *Tenth Report* (1887 to 1894). Nevertheless, possible changes in reporting conventions between the two reports provide a further justification for the inclusion of year dummies in our regression analysis as discussed later. We use nominal wages since we focus on percentage wage changes following strikes, so that the relevant time interval (the duration of the strike) is usually quite short.

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TABLE 2
STRIKE CHARACTERISTICS IN EACH STATE, YEAR, AND INDUSTRY

	Number of Strikes	Percentage of Strikes Authorized (1)	Mean Employment before Strike (2)	Fraction Using Strike Breakers (3)	Fraction Replaced if Replacements Used (4)	Mean Fraction Replaced (5)	Mean Percentage Change in Employment (6)	Mean Hours before Strike (7)	Mean Percentage Change in Hours (8)	Mean Wage before Strike (9)	Mean Percentage Change in Wage (10)	Median Strike Duration (11)	Median Days Lost (12)
All strikes	12,965	0.650	387	0.417	0.246	0.103	−1.60	58.3	−0.611	1.91	2.27	7	765
By state													
Connecticut	517	0.342	283	0.426	0.195	0.083	−0.051	60.4	−0.442	1.51	1.27	5	735
Delaware	39	0.615	268	0.615	0.307	0.109	−20.7	56.5	−2.46	1.61	−8.03	17	2,635
Illinois	1,587	0.681	743	0.400	0.279	0.112	−0.396	58.9	−1.46	2.00	1.60	7	990
Indiana	308	0.597	408	0.328	0.280	0.092	−2.89	58.7	−0.705	1.78	1.01	7	888
Massachusetts	2,392	0.565	336	0.470	0.204	0.096	−2.90	58.5	−0.271	1.74	2.90	7	852
Maryland	164	0.732	308	0.494	0.247	0.122	−3.02	58.5	−0.349	1.67	1.52	10	1,175
Maine	119	0.580	360	0.462	0.189	0.087	−5.48	59.8	−0.667	1.61	2.58	8	1,575
Michigan	273	0.553	297	0.487	0.300	0.146	−2.51	58.9	−0.740	1.71	1.82	10	1,000
New Hampshire	85	0.459	314	0.335	0.204	0.072	−4.74	59.1	−0.772	1.66	1.24	9	1,470
New Jersey	490	0.682	304	0.429	0.264	0.113	−5.39	58.4	−0.710	1.91	2.23	7	873
New York	3,962	0.825	190	0.384	0.281	0.108	−0.656	57.1	−0.642	2.21	5.62	6	256
Ohio	1,075	0.572	327	0.392	0.220	0.086	−4.14	59.3	−0.440	1.77	0.723	12	1,314
Pennsylvania	1,954	0.517	664	0.434	0.225	0.098	−0.760	58.7	−0.333	1.76	0.593	11	2,000
By year													
1881	503	0.531	268	0.384	0.280	0.108	−0.652	62.5	−1.04	1.89	5.40	7	990
1882	434	0.551	371	0.364	0.266	0.097	−0.556	59.9	−0.190	2.01	3.37	7	1,137
1883	468	0.607	308	0.429	0.289	0.124	−2.35	58.1	−0.015	1.92	2.16	10	1,000
1884	424	0.597	347	0.417	0.268	0.118	−3.52	59.6	−1.16	2.04	−1.65	11	1,014
1885	622	0.566	392	0.391	0.277	0.108	−2.87	59.4	−0.138	1.83	1.58	14	1,694
1886	1,860	0.662	310	0.420	0.278	0.117	−1.05	59.9	−1.69	1.88	2.29	11	1,035
1887	1,355	0.633	420	0.445	0.235	0.105	—	58.9	−0.426	—	—	6	700

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TABLE 2—continued

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1888	813	0.679	376	0.439	0.246	0.108	—	57.8	−0.260	—	—	7	720
1889	922	0.672	454	0.425	0.225	0.096	—	57.7	−0.493	—	—	6	644
1890	904	0.612	457	0.402	0.217	0.087	—	58.5	−0.923	—	—	7	900
1891	1,515	0.731	287	0.393	0.253	0.099	—	56.9	−0.497	—	—	6	483
1892	1,182	0.690	295	0.409	0.226	0.092	—	56.1	−0.296	—	—	6	525
1893	1,150	0.681	403	0.462	0.226	0.104	—	57.4	−0.305	—	—	7	560
1894	813	0.627	805	0.400	0.199	0.080	—	57.1	−0.063	—	—	7	725
By industry													
1	2,901	0.627	330	0.404	0.180	0.08	−2.70	59.9	−0.129	1.60	2.81	7	980
2	965	0.456	374	0.512	0.259	0.13	−1.95	60.9	−0.636	1.63	2.35	7	780
3	803	0.783	206	0.435	0.265	0.12	−1.16	58.5	−1.37	1.92	1.31	10	630
4	238	0.857	586	0.567	0.305	0.18	−0.860	72.1[a]	−4.00	1.96	7.50	4	190
5	1,100	0.497	822	0.307	0.212	0.07	−2.91	57.9	−0.364	1.78	−1.96	14	3,150
6	275	0.635	385	0.465	0.182	0.09	−1.60	59.1	−0.570	2.16	2.23	12	1,350
7	1,379	0.546	458	0.442	0.195	0.09	−0.542	59.8	−0.338	1.94	1.37	10	1,600
8	334	0.763	167	0.664	0.322	0.23	−3.95	58.1	−0.218	2.16	3.94	6	300
9	255	0.188	266	0.486	0.367	0.19	7.29	59.4	−0.693	1.51	2.30	3	325
10	627	0.349	1,088	0.555	0.257	0.14	0.666	65.1	−0.424	1.96	5.98	3	588
11	2,567	0.836	250	0.335	0.284	0.11	−0.938	53.9	−0.940	2.64	4.89	5	228
12	257	0.618	315	0.377	0.167	0.06	−0.829	55.7	−0.106	2.11	−0.798	14	2,390
13	502	0.731	153	0.420	0.280	0.12	0.215	55.1	−1.09	2.28	2.09	7	366
14	762	0.870	189	0.412	0.362	0.15	−3.50	54.4	−0.467	1.67	4.11	14	600

[a] The median was also 72.

Notes: The fraction replaced is conditional on strike replacements being used. Poststrike employment and wage data (columns 6, 9, and 10) are available only for 1881 to 1886. The industry codes are as follows: 1 = clothing, textiles, and shoes, 2 = miscellaneous, 3 = cooperage, wooden goods, and furniture, 4 = food preparation and brewing, 5 = mining industry, 6 = machines and machinery industries, 7 = metals and metallic goods, 8 = printing, publishing, and telegraph, 9 = public way or works constructions, 10 = transportation industry, 11 = building trades including construction of carriages and transportation equipment, 12 = glass and pottery, 13 = stone quarrying and cutting, and 14 = tobacco.

Sources: U.S. Commissioner of Labor, *Third Annual Report* and *Tenth Annual Report*.

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were used in over half of all strikes. When strike replacements were used, typically about a quarter of the prestrike workers were replaced. Overall, approximately 11 percent of striking workers were replaced, although this proportion was as high as 23 percent in the printing, publishing, and telegraph industry. Column 6 shows the difference between poststrike and prestrike employment. As noted previously, poststrike employment appears only in the *Third Report*, so it is unavailable after 1886. Except in Delaware, the overall employment effect of strikes was small. Hence, the main threat to striking workers was that they would be replaced, not that their establishments would be "down-sized" or shut down.

Columns 7 through 10 of Table 2 show the mean hours worked and wages before the strike, and the mean percentage change in hours and wages after the strike. The average strike was accompanied by a very small change in hours. A 0.6 percent reduction in hours at an establishment with a 58 hour week is a reduction of less than half an hour. The strike wave of 1886 was associated with somewhat larger average percentage reductions in hours—at the mean of 60 hours per week, a 1.7 percent reduction amounts to an average reduction of 1 hour per week. Columns 9 and 10 indicate that strikes in the early years of the sample were also associated with modest increases in wages (except in Delaware). The largest percentage wage increases were in New York (5.6 percent) and in the food processing and breweries industry (7.5 percent).

The final two columns of Table 2 show median completed strike durations and numbers of working days lost (calculated as the product of employment before the strike and the number of strike days). We show the medians because the distributions are skewed to the right by a few particularly long or large strikes. Because of the skewed distribution of strike lengths or sizes, we will use the logarithms of these variables as the dependent variables in our regression analysis.[23] The median strike lasted seven days and involved 765 working days lost. The median duration reached a peak of 14 days in 1885, and then declined back to six or seven days after 1886. The median number of working days lost shows a similar temporal pattern. In New York, where most strikes were union-authorized, the median strike was short and involved relatively few days lost.

Table 3 shows how the same measures of strike outcomes and costs vary with the legal environment. Since we know the date each strike began, we can group strikes according to whether a particular type of law was in effect on the day the strike began. Strikes were more likely to be authorized by unions in jurisdictions where unions were legal, maximum hours legislation

[23] Recall that Ordinary Least Squares regression assumes that errors are normally distributed. If instead, errors follow a distribution that is skewed to the right, taking logs can make them appear more "normal."

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TABLE 3
MEAN STRIKE CHARACTERISTICS AND OUTCOMES BY LEGAL ENVIRONMENT

	Number of Strikes	Percentage of Strikes Authorized (1)	Mean Employment before Strike (2)	Fraction Using Strike Breakers (3)	Fraction Replaced if Replacements Used (4)	Mean Fraction Replaced (5)	Mean Percentage Change in Employment (6)	Mean Hours before Strike (7)	Mean Percentage Change in Hours (8)	Mean Wage before Strike (9)	Mean Percentage Change in Wage (10)	Median Strike Duration (11)	Median Days Lost (12)
All strikes	12,965	0.650	387	0.417	0.246	0.103	−1.60	58.3	−0.611	1.91	2.27	7	765
Unions legal													
Yes	8,775	0.683	343	0.425	0.245	0.104	−1.15	57.8	−0.477	1.99	3.10	7	630
No	4,190	0.580	478	0.399	0.247	0.099	−2.10	59.3	−0.895	1.82	1.38	7	1,098
Maximum hours legislation													
Yes	8,800	0.703	407	0.406	0.259	0.105	−0.821	58.0	−0.732	2.02	3.44	7	616
No	4,165	0.538	344	0.439	0.219	0.096	−2.59	58.9	−0.356	1.77	0.822	7	1,190
Intimidation or boycotts illegal													
Yes	9,007	0.683	341	0.412	0.251	0.103	−1.07	58.0	−0.672	1.99	2.80	7	566
No	3,958	0.574	490	0.427	0.234	0.100	−2.33	59.1	−0.475	1.80	1.56	10	1,500
Blacklists illegal													
Yes	3,516	0.768	254	0.391	0.246	0.096	—	56.2	−0.322	—	—	5	270
No	9,449	0.606	436	0.427	0.245	0.105	—	59.1	−0.719	—	—	7	1,050
Injunction used													
Yes	3,358	0.580	478	0.474	0.212	0.100	—	58.2	−0.318	—	—	7	1,050
No	9,607	0.674	355	0.397	0.260	0.103	—	58.3	−0.713	—	—	7	686

Note: Columns 6, 9, and 10 use 1881 through 1886 only.
Source: See Table 2.

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existed, intimidation of strikebreakers or the use of boycotts were illegal, blacklists were banned, and the injunction had not yet been used against labor (column 1).

Similar patterns hold for the size of striking firms (column 2): smaller firms were more likely to have strikes in jurisdictions with legal unions, laws outlawing boycotts, intimidation, and blacklists, and no history of antilabor injunctions. Maximum hours laws, however, are an exception to this pattern: they were associated with somewhat larger prestrike employment levels.

The third column of Table 3 shows that employers were more likely to use strikebreakers in jurisdictions in which the injunction had been used. However, conditional on strikebreakers being used, a smaller fraction of workers were replaced in these jurisdictions. Overall, as column 5 shows, liberal labor laws (legal unions, maximum hours laws, and illegal blacklists, and no recent use of the injunction against labor) were associated with a slightly higher probability of being replaced, as were laws outlawing intimidation and boycotts.

Columns 6, 8, and 10 of Table 3 indicate that although wage gains were higher in jurisdictions with liberal labor laws and in those that outlawed intimidation and boycotts, there was little variation across legal environments in poststrike employment losses in the 1881 to 1886 period, or in hours changes over the whole period. The prestrike wage differential between striking firms in union-legal jurisdictions and striking firms in other jurisdictions was approximately 10 percent ($1.99 versus $1.82) as shown in column 9. Wages were also higher for striking firms in jurisdictions with maximum hours laws and in jurisdictions in which intimidation and boycotts had been outlawed. However, they were lower in jurisdictions in which the injunction had been used. These data indicate that most strikes resulted in 1 percent to 3 percent increases in wages. Wage increases were highest in jurisdictions with legal unions and maximum hours legislation, and where boycotts and intimidation of strikebreakers were illegal.

Turning to strike length and days lost in columns 11 and 12, the outlawing of intimidation, boycotts, and blacklists was associated with reduced strike duration. These laws were also associated with reductions in the number of strike days lost, as were legal unions and maximum hours laws.

In summary, Table 2 suggests that there were large variations in all our measures of strike length, days lost, and outcomes by state, year, and industry. Table 3 indicates that there was also a great deal of variation in these measures across different legal environments. On the whole, liberal labor laws were associated with lower strike lengths and days lost, higher poststrike increases in wages, and a greater probability of workers being replaced.

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EFFECTS ON STRIKE INCIDENCE

In addition to strike outcomes conditional on a strike having taken place, it is possible that law changes had an impact on strike incidence, and on the composition of striking firms. In order to examine incidence, we construct state-year-level measures of strike activity by calculating state-year measures of the number of strikes, the number of strikers, and the number of days lost due to strikes from our strike-level data. Table 4 examines aggregate strike activity using OLS models of the form

$$STRIKE_{st} = a + bLAWS_{st} + cSTATE_s + dYEAR_t + eTREND_{st} + u_{st} \quad (1)$$

where *STRIKE* is one of our three measures of strike activity (the number of strikes, the number of workers involved, and the number of strike days lost), *LAWS* is a vector referring to the five law variables discussed previously, *STATE* is a vector of state dummies intended to control for fixed characteristics of states that might be related to strike activity (such as the average population over our period, the average level of economic activity over the time period, or the industrial composition of the state in a base year), *YEAR* is a vector of year dummies to control for factors that are common across states in a given year (such as the effect of a national recession), and *TREND* refers to a state-specific time trend. These state-specific trends allow, for example, for population growth or industrialization that proceeded at different rates across states. The subscript *s* refers to the state, while the subscript *t* refers to the year.

Table 4 suggests that the legal environment had little effect on aggregate-level strike activity.[24] In Table 5 we adopt a different approach and look at how the *prestrike* characteristics of individual striking manufacturing firms in 1881 and 1891 differed from the characteristics of the average firm in the Censuses of Manufacturers in 1880 and 1890. We use data from the 1880 and 1890 Censuses of Manufacturers in order to compare our striking firms to the average manufacturing firm in each state. The characteristics we examine are prestrike employment, the fraction female, and the number of prestrike hours worked. We use information on striking firms from 1881 and 1891 because data for striking firms in 1880 are not available. For comparability with the census data, the models examining employment and the

[24] We also graphically examined the relationship between aggregate strike incidence and the imposition of specific laws for each state, with similar results. The figures are available on-line at http://www.econ.nwu.edu/faculty/ferrie/papers/strikelaw2.pdf and from the authors. The legalization of unions was preceded by a fall in our measures of strike activity and followed by a temporary rise, and the imposition of a maximum hours law was preceded by a rise in strike activity and followed by a temporary fall in strike activity. There were no clear patterns for laws banning boycotts, intimidation, or blacklisting, or for the use of the injunction. The states that experienced no change in their laws during the 1881 to 1894 period (Connecticut and Delaware) had cycles in strike activity at least as pronounced as those associated with legal changes in the other states.

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TABLE 4
THE EFFECTS OF THE LAW ON AGGREGATE STRIKE ACTIVITY

Independent variable	Number of Strikes (1)	Number of Strikers (000s) (2)	Number of Strike Days (000s) (3)
Intercept	-1.92	-10.3	549
	(0.032)	(0.389)	(0.553)
Unions legal	24.1	6.78	397
	(0.973)	(0.619)	(0.967)
Maximum hours legislation	-31.4	-4.22	249
	(1.24)	(0.377)	(0.593)
Intimidation or boycotts illegal	10.43	9.06	204
	(0.290)	(0.568)	(0.342)
Blacklist illegal	15.9	23.8	39.3
	(0.515)	(1.74)	(0.077)
Injunction used	-26.1	0.613	-562
	(1.02)	(.054)	(1.33)
Observations	182	182	182
R-squared	0.784	0.754	0.688
Mean of dependent variable	71.2	27.6	769

Notes: *t*-statistics are in parentheses. All regressions also included indicators for each state and year as well as state-specific time trends.

fraction female exclude strikes in mining, printing, publishing, telegraph, public ways or works construction, transportation industries, building trades, and stone quarries. In 1890 hours are available for a somewhat different set of industries (agricultural implements; boots and shoes; carriages and wagons; cheese, butter, and condensed milk; flouring and grist mill; leather; paper; slaughtering and meat packing; and wholesale slaughtering excluding meat packing).[25]

[25] The number of firms and the numbers of male and female wage earners by state for 1880 and 1890 are given in the 1900 Census of Manufacturers (U.S. Bureau of the Census, *Twelfth Census*, table 1, pp. 982–88). The average employment per establishment and fraction female in the labor force were calculated for each state directly from these figures. Average daily hours of labor were not reported in the published volumes of the 1880 Census of Manufactures. These data were, however, collected as part of the census, and Atack and Bateman have retrieved them from the manuscript schedules of the census for a sample of firms (Atack and Bateman, *State Sample*). Comparable figures for daily hours in 1890 were obtained from the published returns of the 1890 Census of Manufacturing (U.S. Census Office, *Eleventh Census*, table 8, pp. 654–738). In 1890 hours were reported only for a subset of industries, however. From this subset, nine industries were selected that covered most of employment in manufacturing (agricultural implements; boots and shoes; carriages and wagons; cheese, butter, and condensed milk; flouring and grist mill; leather; paper; slaughtering and meat packing; and wholesale slaughtering excluding meat packing). Average daily hours were calculated by taking the establishment-weighted average of the reported figures for these nine industries (similar results were produced using employment as weights). The set of industries drawn from the Atack and Bateman sample was restricted to the nine industries used in 1890 for this calculation. For both 1880 and 1890, the average daily hours figure used was the figure for May to November if the strike occurred in that period and the figure for November to May if the strike occurred then.

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TABLE 5
DIFFERENCES BETWEEN STRIKING FIRMS AND THE AVERAGE MANUFACTURING FIRM IN 1881 AND 1891

Independent variable	Employment (1)	Fraction Female (2)	Hours (3)
Intercept	140	-0.118	0.916
	(0.885)	(2.05)	(0.396)
Unions legal	-165	0.013	-2.94
	(1.40)	(0.306)	(1.81)
Maximum hours legislation	-37.5	-0.039	4.69
	(0.346)	(0.979)	(3.12)
Intimidation or boycotts illegal	-306	-0.019	-1.82
	(0.992)	(0.168)	(0.475)
Blacklist illegal	50.2	0.135	-6.85
	(0.157)	(1.16)	(1.71)
Injunction used	-18.1	0.065	-0.730
	(0.154)	(1.52)	(0.450)
Observations	1041	1041	1192
R^2	0.163	0.413	0.569
Mean of dependent variable	244	-0.026	-3.01

Notes: *t*-statistics are in parentheses. All regressions also included state, year, city, and industry dummies. Columns 1 and 2 include strikes only from industries 1, 2, 3, 4, 6, 7, 12, and 14. Column 3 includes strikes only from industries 1, 4, 6, 7, and 11.

These regressions are estimated using the firm-level data and are of the form

$$CHAR_{sti} = a + bLAWS_{st} + cSTATE_s + dYEAR_t + eMSA_{sti} + fINDUSTRY_{sti} + u_{sti} \quad (2)$$

where *CHAR* is the difference between a firm's characteristic (such as the number of employees) and the average characteristic of firms in the same state and year, *MSA* is a vector of 18 controls for the firm's city, and *INDUSTRY* is a vector of 13 industry-level dummy variables. When we use the firm-level data, it is important to control for characteristics of cities and industries, because there may be systematic differences in the characteristics of striking firms in different cities and industries which have little to do with the legal environment. We cannot include state time trends in this model since there are only two years of data (1881 and 1891). The subscript *i* refers to the individual firm.[26]

Table 5 shows that the typical striking firm was about 244 workers larger than the typical manufacturing firm in the same state and year. It also had a slightly lower fraction of female employees and had lower weekly hours. Columns 1 and 2 show that the legal environment appears to have had little

[26] The major cities are: Boston-Cambridge, Brooklyn, Baltimore, Chicago, Cincinnati, Cleveland, Detroit, New York, Springfield (Illinois), Springfield (Massachusetts), Worcester, Fall River (Massachusetts), Indianapolis, Lynn, Newark, New Haven, Philadelphia, and Pittsburgh.

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effect on the prestrike size of striking firms or on the fraction of female employees at striking firms relative to the average. The largest changes in the composition of striking firms relative to other firms appear to have been in the prestrike hours of striking firms. Laws permitting unions and anti-blacklist laws were associated with increases in strike activity in firms with relatively low hours, whereas maximum hours laws increased strike activity at firms with relatively long hours.

Finally, in column 1 of Table 6 we use the firm-level data to examine the effect of the legal environment on the probability that a union authorized a particular strike. The estimating equation is

$$OUTCOME_{sti} = a + bLAWS_{st} + cSTATE_{s} + dYEAR_{t} + eTREND_{st} + fMSA_{sti} + gINDUSTRY_{sti} + hX_{sti} + iNUMSTR_{sti} + u_{sti} \quad (3)$$

where *OUTCOME* is union authorization of a strike, and the vector X includes all of the observable characteristics of the firm such as the log of prestrike employment in the firm, prestrike hours, and the fraction female in the firm, and *NUMSTR* is the total number of strikes in the same state-year-industry cell. This latter variable is included to control for any omitted variables that might be correlated with strike waves in a particular state, year, and industry. As we will show, these variables had important and interesting effects on strike outcomes. Unless otherwise noted, however, their exclusion does not affect the estimated coefficients on the law variables. We do not include the wage at the beginning of the strike since it is not available for the entire period.[27]

Note that we have used linear probability models in cases for which the dependent variable was a zero-one indicator. Logistic regression models produced very similar estimates, and we feel that the linear probability models are easier for readers to interpret and compare to models with continuous dependent variables estimated using Ordinary Least Squares.

Table 6 shows that although unions were much more likely to authorize strikes in firms with low fractions of female workers, and they were more likely to have authorized a given strike in years with many strikes (evidence of union-sponsored strike "waves"), we find relatively little effect of the legal environment. Legal unions made union authorization only marginally more likely, whereas previous use of the injunction in a state made union authorization of strikes less likely.

In summary, once we control for differences between states, years, or industries, there is little evidence of any systematic effect of the legal

[27] Results for the 1881 to 1886 subsample were similar whether or not wages were included, although including the wage caused the coefficients on size, hours, and the fraction female to fall in absolute value. This is to be expected, since firm size and wages are strongly positively correlated, while hours and fraction female are strongly negatively correlated with wages in these data.

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TABLE 6
UNION AUTHORIZATION, STRIKE LENGTH, DAYS LOST, AND THE LEGAL ENVIRONMENT

Independent variable	Union Authorized (1)	Log(Strike Length) (2)	Log(Strike Days Lost) (3)
Intercept	0.641	1.91	7.60
	(7.44)	(7.57)	(19.7)
Unions legal	0.045	0.076	-0.155
	(1.78)	(1.02)	(1.35)
Maximum hours legislation	0.011	-0.451	-0.369
	(0.457)	(6.12)	(3.24)
Intimidation or boycotts illegal	0.019	0.139	0.385
	(0.505)	(1.23)	(2.21)
Blacklist illegal	0.008	0.138	-0.056
	(0.019)	(2.72)	(0.666)
Injunction used	-0.073	0.211	0.250
	(2.81)	(2.72)	(2.09)
Log(prestrike employment)	-0.002	0.119	—
	(0.636)	(14.1)	
Prestrike hours	-0.112	-0.837	-0.733
	(1.74)	(4.43)	(2.51)
Fraction female	-0.475	-0.067	1.64
	(17.53)	(0.841)	(13.4)
Number of strikes in state-year-industry cells (00s)	0.021	-0.130	-0.210
	(2.51)	(5.24)	(5.49)
Observations	12,829	12,829	12,829
R^2	0.229	0.144	0.228
Mean of dependent variable	0.651	2.04	6.69
F-test for 5 laws	2.07	9.77	9.77
(p-value)	(0.066)	(0.0001)	(0.0001)

Notes: t-statistics are in parentheses. All regressions also included state, year, city, and industry dummies as well as state-specific time trends.

environment on aggregate strike activity. Moreover, striking firms do not appear to be selected differently in different legal environments in terms of size or the fraction female. The legal environment did, however, exert some impact on the selection of striking firms in terms of hours: laws legalizing unions and eliminating blacklists encouraged relatively low-hours firms to strike, whereas maximum hours laws encouraged relatively high-hours firms to strike. The law also affected unions' propensity to authorize a strike: union recognition increased the odds of union authorization whereas the use of the injunction decreased it.

In terms of the theory, these findings suggest that changes in the laws governing collective bargaining either had ambiguous effects on strike lengths and days lost, or were unsuccessful in reducing the uncertainty of the bargaining parties. We will be able to shed more light on these questions after examining the effects of the legal environment on strike outcomes.

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EFFECTS OF THE LEGAL ENVIRONMENT ON STRIKE OUTCOMES

In this section we turn to the strike-level data and examine the effects of the legal environment on strike lengths, days lost, and strike outcomes, given that a strike occurred. The models are of the form of equation 3. Columns 2 and 3 of Table 6 show models of strike length and the number of working days lost. Prestrike employment is not included in the model of the number of working days lost, since there is a mechanical relationship between the two variables—the larger the establishment, the more working days can be lost.

The estimates in columns 2 and 3 indicate that maximum hours laws were associated with both significantly shorter strikes and fewer days lost. In terms of the theory, these findings suggest that maximum hours laws reduced the union's level of uncertainty about employer intentions or likely strike outcomes, given that a strike had already occurred. Both strike length and the number of worker days lost in strikes were significantly higher in states where an injunction had previously been issued. The use of the injunction increased strike length and days lost by slightly more than 20 percent. This result may seem counter-intuitive, since the injunction was often used not just to prevent striking workers from engaging in specific activities (such as aggressive picketing or the distribution of leaflets) but also to force workers to return to work, with union leaders subject to contempt penalties for failure to comply. Strikes that were actually enjoined are likely to have been shorter than they would have been otherwise. However, by creating additional uncertainty about the likely outcome of the strike, the threat of an injunction apparently made it more difficult for parties to a dispute to settle.

Finally, evidence regarding the effects of banning intimidation, boycotts, and blacklists is mixed. Banning intimidation and boycotts increased the number of days lost, without increasing strike length. Banning blacklists increased strike length without seeming to affect the number of days lost. In both cases, the elimination of familiar strike weapons seems to have been associated with increasing uncertainty about the likely outcome of the strike, and thus with an increase in strike length or days lost.

Table 7 explores further the effect of legislation on strike outcomes. These models use the same variables as those in Table 6. The one exception is that in models of the percentage change in employment, we exclude prestrike employment, and similarly we exclude prestrike wages and prestrike hours in regressions on the percentage changes in wages and hours, respectively. Our purpose was to avoid incorporating a purely mechanical relationship between changes and levels. Regressions including these prestrike variables produced estimates similar to those shown here.[28] No states had antiblacklist

[28] The only exception is that the fraction female has a positive effect on the percentage change in employment when prestrike employment is included.

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TABLE 7
STRIKE OUTCOMES AND THE LEGAL ENVIRONMENT

Independent variable	Percentage Change in Hours (1)	Percentage Change in Wage (2)	Percentage Change in Employment (3)	Strike Replacements Used (4)	Fraction Replaced given Replacements Used (5)	Mean Fraction Replaced (6)
Intercept	0.271	−1.40	3.73	0.136	0.581	0.186
	(0.324)	(0.491)	(0.936)	(1.39)	(7.66)	(4.56)
Unions legal	−0.146	4.05	−2.31	0.056	−0.037	0.002
	(0.278)	(1.46)	(0.572)	(1.96)	(1.75)	(0.143)
Maximum hours legislation	−0.178	5.82	0.767	−0.083	0.025	−0.016
	(0.645)	(4.32)	(0.393)	(2.91)	(1.18)	(1.36)
Intimidation or boycotts illegal	−0.345	−0.970	−1.99	0.006	0.007	0.000
	(0.817)	(0.706)	(1.03)	(0.147)	(0.218)	(0.024)
Blacklist illegal	−0.145	—	—	0.062	0.010	0.022
	(0.705)			(2.92)	(0.629)	(2.47)
Injunction used	0.202	—	—	0.022	0.037	0.018
	(0.696)			(0.718)	(1.60)	(1.46)
Log(prestrike employment)	0.019	−0.313	—	0.016	−0.078	−0.030
	(0.600)	(2.59)		(4.90)	(32.99)	(21.94)
Prestrike hours	—	10.78	−5.14	0.101	0.007	0.020
		(4.17)	(1.42)	(1.38)	(0.142)	(0.657)
Fraction female	−0.272	−3.43	−0.577	−0.112	−0.113	−0.069
	(0.908)	(2.75)	(0.327)	(3.62)	(4.99)	(5.36)
Number of strikes in state-year-industry cell (00s)	0.023	1.98	−1.64	−0.063	−0.026	−0.030
	(0.249)	(2.13)	(1.24)	(6.51)	(3.33)	(7.60)
Observations	12,829	4,147	4,269	12,829	5,352	12,829
R^2	0.037	0.123	0.048	0.057	0.260	0.090
Mean of dependent variable	0.596	2.32	−1.58	0.417	0.245	0.102
F for laws	0.504	6.69	0.486	4.05	1.56	1.60
(p-value)	(0.774)	(0.0002)	(0.692)	(0.001)	(0.169)	(0.157)

Notes: t-statistics are in parentheses. All regressions also include state, year, city, and industry dummies as well as state-specific time trends. Columns 2 and 3 use 1881 through 1886 only. The dependent variable in column 4 is binary (1 = replacements used, 0 = no replacements used).

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laws between 1881 and 1886, and the injunction was not used in this period, so we excluded these law variables from the analysis of changes in wages and changes in hours, which we observe only between 1881 and 1886.

Recall that strike theories that rely on asymmetric information predict that factors that raise the cost of any given strike will also be associated with poorer outcomes for workers, if it is primarily the workers who lack information. Conversely, factors that reduce the costs of any given strike should be associated with better worker outcomes. The results in column 2 of Table 7 support the theory: we find that maximum hours laws, which reduced strike lengths and days lost, were associated with a wage increase of 6 percent after strikes. Maximum hours laws were also linked to reductions in the probability that strikebreakers were used, without any change in the fraction replaced.

On the other hand, laws banning blacklists, which increased strike lengths, were associated with increases in the use of strikebreakers of 6 percent without any change in the fraction replaced conditional on replacement. The net effect was a 2 percent increase in the probability of being replaced. Laws banning intimidation and boycotts also had a negative impact on labor outcomes following strikes: these laws were associated with a marginally significant increase in the mean fraction of workers replaced by strikebreakers.

Laws legalizing unions had no significant effect on strike lengths or days lost, and are estimated to have had only weak effects on strike outcomes. For example, laws legalizing unions increased the probability that strikebreakers were used, but reduced the fraction replaced conditional on strikebreakers being used. Hence, on balance, as column 6 shows, the legalization of unions had no significant effect on a striking worker's overall probability of being replaced.

It is remarkable that the existence of maximum hours laws for some groups of male workers had such significant effects on strike outcomes, since, as discussed above, many of these laws appear to have been relatively toothless. However, Claudia Goldin found that the passage of maximum hours laws for women also reduced hours for men.[29] She attributes some of this effect to a general sentiment among workers in favor of shorter hours. It is possible as James Heckman and Brooks Paynor have suggested, that the law affects labor markets not so much through enforcement as through the establishment of new social norms.[30]

Finally, in view of the importance that has been attached to the use of the injunction by authors such as Hattam, it is surprising that we do not find a sig-

[29] Goldin, "Maximum Hours Legislation."

[30] Heckman and Paynor ("Determining the Impact") make this argument with regard to the effects of Civil Rights legislation on the employment of blacks in southern textile mills.

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nificant injunction effect on strike outcomes.[31] Obviously, injunctions were used to alter strike outcomes in specific cases. But our results suggest that the mere threat that an injunction could be imposed had little effect on strike outcomes, though it increased strike lengths and the number of days lost.

CONCLUSIONS

One might expect collective bargaining laws favored by unions to provide unions an advantage in labor disputes, and those favored by employers to give the advantage to employers. However, strike theory suggests that we need to look more closely at whether laws reduce either the cost of conducting a given strike, or uncertainty about the "state of the world" and likely strike outcomes. Legal changes that affect one side's bargaining strength but not the cost of conducting strikes or uncertainty may well have important effects on collective bargaining outcomes more generally, but there is no reason to expect them to affect either strike incidence or strike outcomes. Therefore, an important caveat to our work is that we cannot tell whether changes such as the legalization of unions improved labor's general collective bargaining position using our sample of strikes.

This article is intended not as a test of a specific strike theory (such as that conducted by David Card and Craig Olson) but as an exploration of the effects of legal structure on strike activity.[32] Nevertheless, strike theory provides a useful lens for interpreting our findings. Most legal changes at this time, including the legalization of unions, had little effect on strike incidence, strike lengths, days lost, or strike outcomes. This suggests that they also had little effect on uncertainty. Our most remarkable result is that maximum hours laws reduced strike lengths and days lost and improved strike outcomes for labor. This result suggests that they reduced uncertainty about the likely outcome of strikes once they had occurred. For example, the passage of maximum hours laws for some groups of workers may have made it more likely that other workers would be successful in striking for lower hours. A second interesting finding is that the use of the injunction increased strike lengths and days lost without giving either side an advantage in terms of strike outcomes. An obvious interpretation is that the possibility of legal intervention raised the uncertainty associated with strike outcomes, making it more difficult for parties to a dispute to settle their differences.

[31] Hattam, *Labor Visions.*
[32] Card and Olson, "Bargaining Power."

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