Labour Law Enforcement during World War II and the Growth of the U.S. Trade Union Movement

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Abstract

This paper examines the spatial rearrangement of the trade union movement in the United States that occurred during World War II in order to determine the importance of path dependence and increasing returns to scale in union density. The compact between the federal government and trade unions during the war is employed as an exogenous shock to union membership across the United States. This shock relies on the differential enforcement of government protection for unionization based on the relative importance of firms to the war effort. The results indicate that shocks to union membership are durable and that increasing returns to scale in union membership have played an important role in the spatial evolution of the labour movement in both the public and private sectors.

1 Introduction

The goal of this paper is to develop an *economic* understanding of the basic spatial processes that underlay the American labour movement. This topic has been largely overlooked[1] in the recent revival of interest from economists in the trade union movement[2] and, while there have been attempts to analyze the spatial growth patterns of union membership in other disciplines, there are advantages to bringing both the insights and the empirical rigour of economics to the topic.[3] To this end, I look to the field of economic geography for guidance and this paper treats the city growth and disaster response literature[4] as a template for conducting this analysis both with respect to the possible growth processes and obtaining causation in the analysis. As urban economists have attempted to explain "the distribution of economic activity across space,"(Davis and Weinstein, 2001) this work searches for the effects that govern the distribution of union membership across regions.

The three principal approaches for explaining the spatial distribution of economic activity as identified by Davis and Weinstein (2001) can be re-purposed to apply to the spatial distribution of union membership: increasing returns to scale, locational fundamentals, and growth resulting from random shocks. Union membership could be governed by increasing returns to scale or "spillover effects" for a variety of reasons: decreasing costs for organizing drives,[5] increasing costs for employers that fight union drives,[6] or decreasing costs of unionization to employers.[7] There could also be some form of political lock-in mechanism that would result in increasing returns.[8] The locational fundamentals hypothesis, in which local exogenous features determine membership,

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[1]There are only a handful of notable exceptions to this observation in the last 20 years. These include: Freeman (1998), Palley and LaJeunesse (2007), and Holmes (2006).

[2]The study of the trade union movement has found new life over the last decade with the introduction of causal empirical methodologies to the subject area. In that time, economists have developed a causal understanding of the impact of unions on wages and firm performance (Lee and Mas (2012) and DiNardo and Lee (2004)), inequality (Card et al. (2004) and Taschereau-Dumouchel (2015)), poverty (Brady et al. (2013)), and a host of other outcomes.

[3]This is not to undermine the importance and substantial work performed by dozens of economic geographers studying the spatial distribution of labour.

[4]A particular intellectual debt is owed to both Vigdor (2009) and Davis and Weinstein (2001).

[5]For example, this may include: knowledge spillovers, the presence of local volunteers to organize and support job actions, and local union infrastructure.

[6]Costs on the employer side include: picket lines that are better respected by suppliers, regional product boycotts, and political pressure.

[7]If local wages are already increased through threat effects or wage matching within industry (Freeman, 1986) there may be little disadvantage to allowing the union to enter the workplace.

[8]For example, consider the degree of control that the United Auto Workers have held over the Democratic Party in the state of Michigan for many decades.

most closely mirrors the conventional wisdom regarding the growth of unions. Union growth that is a result of the presence of certain industries, cultural beliefs, or exogenous institutions all fall within this umbrella. The random growth hypothesis suggests that the distribution of union membership develops according to a basic stochastic process.

While we have a sense of the role of "locational fundamentals" such as industrial composition or the presence of labour institutions like card check on union membership, we have no sense as to the presence or importance of increasing returns to scale in union membership. This is a major gap in our understanding of the labour movement from both an historical and a public policy perspective. Given the significant contraction of the US labour movement post-1950, this question is fundamental to understanding whether the union movement has the capacity to halt this decline.

This paper examines these growth dynamics using state-level union density dating back to the late 1930s[9] and a quasi-natural experiment that occurred during World War II. I take advantage of the World War II era labour-government compact, which made employer-resistance to union drives difficult in "essential" war industries. The compact was ignored in many sectors, but it was almost uniformly complied with in "essential" wartime industries: firms that refused to obey directive orders from the National War Labour Board (NWLB), particularly in the case of union recognition and security, could be seized by the military (Teller, 1947). This institutional feature suggests that regions that included a large number of important war industries in the early 1940s should have witnessed significantly lower organizing costs for the AFL and the CIO, resulting in an increase in organizing, and thus, union density. The compact is an ideal quasi-experiment, as it only lasted for a handful of years, was associated with the largest expansion in union organizing in American history, and can be differentiated by region using information on the assignment of war contracts. Using the value of war contracts assigned throughout the war as an instrumental variable, the results from this natural experiment show that increasing returns to scale play an important role in the growth of unions, as regions that experienced this exogenous boost to membership during World War II have seen the greatest private and public sector union membership growth since.

The latter part of the paper isolates the causes of the increasing returns phenomenon, using data from the AFL-CIO Food and Allied Service Trades (FAST) Database, covering most union organizing drives from the 1960s until the early 2000s. The results indicate that the vast majority of union organizing has occurred in regions that experienced the greatest union growth during World War II. The data also suggest that firms are somewhat less resistant to existing unions

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[9]This dataset can be extended back as far as the 1870s. However, it contains many data gaps in the late nineteenth and early twentieth centuries.

and organizing drives in high-density regions, as measured by the number of unfair labour practice filings. "Right-to-work" legislation and access to collective bargaining for public sector workers play an important role in the increasing returns phenomenon, appearing to serve as a sort of lock-in mechanism. These mechanisms clarify how the increasing returns phenomenon identified operates. Furthermore, it clarifies that some of the key locational fundamentals such as "right-to-work" legislation and employer culture are endogenous to membership.

The results indicate that the growth of the American labour movement is subject to a powerful increasing returns phenomenon. This is an important development in our understanding of the processes governing union growth and is a break with the conventional wisdom that culture, legal institutions, and firm features explain the distribution of union membership. The presence of increasing returns suggests that union density isn't just a matter of exogenous worker preferences. Rather historical shocks, potentially caused by brief institutional changes, can have long-lasting effects. This situation appears to be driven by an equilibrium situation in which unions target their organizing resources in high-density regions while employers limit their resistance to organizing drives in these same regions.

2 Literature Review: Determinants of Union Membership

There are a range of studies by economists and sociologists that paint a similar picture of the determinants of union density. There has been a particular emphasis placed on the role of structural or locational factors. Koeller (1994) tests various potential determinants of union activity at the state level from 1958 to 1982. Although he finds that organizing, management opposition, and public policy all matter, structural changes in the labour force such as age, gender, and occupation have had the most significant impact on changing patterns of membership. Koeller interprets these measures as proxies for broader structural change in the economy. This finding is consistent with previous work by Moore and Newman (1988). Hirsch and Berger (1984) similarly find that firm and structural factors are largely driving changes in union density. They identify market concentration, capital intensity, the scale of production, and job risk as key determinants of union membership. In a more recent study, Hirsch (2012) examines economic dynamism and its role in changing union membership patterns. He points to the relatively poor performance of union firms as driving the decrease in union density. This decline is concentrated in manufacturing, construction, transportation, communications, and utilities and is consistent with previous papers. An interesting counterpoint to this structural literature, Riddell (1993) finds that density grew in

similar patterns in Canada and the United States until the mid-1950s at which point a divergence occurred. Rather than pointing to structural factors for this divergence, Riddell finds that the strongest factors discouraging membership in the United States are a combination of employer opposition and legal institutions.
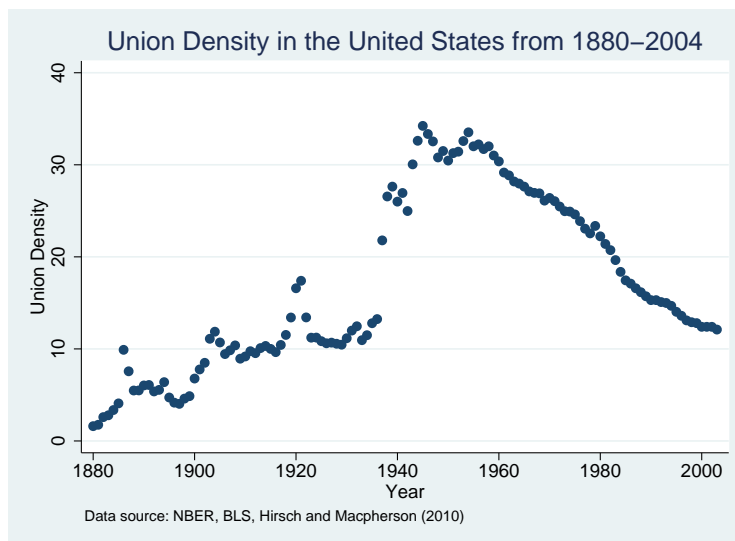

Figure 1: *Union Density in the United States from 1880-2004. Figures generated as outlined in the data section. Source: Gallup (1937, 1939, 1945), Garlock (2009), Hirsch and Macpherson (2016), and Troy (1957).*

There is ample evidence consistent with Riddell (1993) that union-side organizing decisions matter. Stepan-Norris and Southworth (2010) find evidence that increasing unfair labour practices have discouraged union organizing. They point to the important role of competition amongst unions in driving union density. Farber and Western (2002) look at the nearly 50% decline in organizing activity in the United States during the 1980s. This is one of the pivotal changes in American labour's strategy that appears to have hastened the movement's sharp decline. Farber and Western (2002) find that the collapse is not attributable to the Professional Air Traffic Controllers Organization (PATCO) dispute in 1981, but rather appears to be aligned with the election of President Reagan and, hence, the shift in the political balance of power in Washington. This suggests that changes in collective bargaining institutions drove the decline in union organizing. Finally, Weiler (1957) and Lalonde and Meltzer (1991) find that the success rate of unions in certification elections has declined throughout the post-war period, which explains a large share of the decline in organizing drives. However, they are unable to answer why this ratio has changed over time.

Further insights can be drawn from the economic history literature. Rees (1962) and Huberman and Young (2002) discuss the role that the rise of the CIO played in union growth in the lead-up to and during World War II. A change in tactics and institutional support during this era led to unions outlasting firms in disputes and gaining more members. This institutional change was a marked shift from the American norm discussed by Friedman (2000) in which US unions were typically forced to avoid state intervention.[10] During this period, US unions added an additional 6 million workers in 24,000 certification elections. However, this growth was halted in the post-war strike wave and the failure of Operation Dixie (Griffith, 1988).

Only a handful of papers have explicitly considered the importance of the spatial factors for union membership. Martin et al. (1993), three geographers studying post-1970 Britain, find that the British labour movement has been particularly resilient in its traditional heartland. Rather than pointing to an increasing returns to scale phenomenon, the authors point to a failure to organize in new growth sectors and the importance of local culture. While they don't use the language of economics to identify the increasing returns phenomenon, this paper provides suggestive evidence of such an effect. Wills (1996) considers the spatial dimension of trade unionism in the banking sector, finding that, in a number of case studies, banks are more likely to be organized and militant in labour's traditional heartland. While the spatial dimension of trade union growth has largely been the domain of geographers, there has been limited work by economists. Holmes (2006) is the most important economic work highlighting the spatial dimension of union membership, finding that there is a strong relationship between organized coal mines and steel mills in the 1950s and organized hospitals in the present. Holmes' result is framed as a "spillover" effect and is strong, indirect evidence in favour of an increasing returns hypothesis.

There is a consensus on a handful of the key determinants to union membership. There is broad agreement that structural factors, particularly industrial composition, have been the primary drivers behind changes in union density over time, while organizing drives and employer resistance appear to play important roles. And although there is limited direct evidence, the work of Holmes (2006) and Martin et al. (1993) strongly suggest that there are meaningful increasing returns to scale in union membership. Given these factors, when conducting the empirical analysis later in this paper, the regressions include a robust set of industrial controls while organizing and employer resistance are studied individually as potential causal mechanisms.

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[10]World War I is the other major example in which US unions actively benefited from US government intervention.

3 The Data: State-level Union Membership Trends

Publicly available data on union membership with spatial variation is available running back to the 1930s. Using a combination of existing studies, contemporary data sources, and historical surveys, I assemble a state-level panel of American union membership and density starting in the late 1930s.[11] Beginning in 1937, it is possible to estimate state-level union density using results from dozens of Gallup Polling surveys. Using the weights from iPoll, I generate estimates of state-level union density in 1937, 1939, and 1945. The regularity of available data is scarce prior to 1974. Membership totals are available from the National Bureau of Economic Research (1939, 1953), Troy (1957), and the U.S. Bureau of Labour Statistics (1964-1973). From 1974 onwards, annual state-level union density data are derived from the Current Population Survey (CPS) and these data are provided courtesy of Hirsch and Macpherson (2003). While the CPS data are a direct measure of density, the NBER and BLS data are based on the membership records of individual unions rather than the sampling of individuals.

From this data, we can answer a few basic questions regarding the spatial properties of union membership. How persistent has union membership been in heavily organized regions? What has state-level variation in membership looked like over time? Are there distinct points of time at which union membership has undergone spatial rearrangement?

I generate several measures of spatial variation and persistence over time that provide insight to the aforementioned questions. Three different measures are used to analyze union variation over time: the relative variation of log union membership, the relative variation of union density, and the relative variation of the share of all union members in region x.[12] These numbers are relative

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[11]In studying regional union membership patterns there are two types of datasets that can be constructed: a long-run panel of state-level union density and a short-run panel of MSA-level union density. The most interesting historical analysis can only occur at the state-level as a result of data limitations, as modern MSA-level information is only available starting in the 1980s.

[12]It is not clear what the correct metric should be when considering the spatial and temporal growth of the labour membership. Union density, the share of eligible workers who are members or service-fee payers of a union is the measure typically used in the literature. The advantage of employing union density is that it allows direct comparisons between regions of different populations and sizes. Union density is employed as the primary measure in this analysis. However, employing union density rather than membership masks some of the underlying variation in the data. In particular, density may fall as a result of either a decline in absolute union membership or a growth in population. As such, I also conduct the analysis using total membership figures and the share of all union members in the United States in a region. Analyzing changes in the variation of the share of union members in a state is particularly useful for developing a sense as to whether union growth and contraction are occurring proportionately across low and high-density states.

in that I divide the variance in year y by the variance in 2004.[13] Two measures are used to analyze the degree of persistence in the data: the raw density correlation in year y with density in 2004 and the rank density correlation in year y with the rank density in 2004. As in the analysis of relative variation, these two measures are meant to capture whether changes in persistence are driven by changing union membership or changing population. In addition, these measures are able to indicate whether labour's "heartland" is shifting over time. A summary of these measures is presented in Table 1.

The data reflect well-known long-term trends. Union density remained low throughout most of the early 20th century, generally hovering in the 10% to 13% range, aside from a short-lived blip during World War I. The picture drastically shifts in the 1930s driven by a combination of an increasing union wage premium, better public opinion of unions, and the passage of the National Industrial Recovery Act (NIRA) that introduced legislative protections for collective bargaining. This combination of factors led to a dramatic increase in union membership leading up to World War II, which led to previously unseen levels of membership, density, and variance. Prior to World War II, variance in both membership and density typically moved with total union membership. A key observation is that the variance in the share of membership initially peaked in 1939 at 1.6 times contemporary variance.

The next available data points are in 1945 and 1953. During the war itself, a second expansion in union membership occurs in which both density and variance reached historical peaks immediately after the war. Even with the passage of the Taft-Hartley Act in 1947 and the introduction of "right-to-work" legislation across much of the south, union density would continue to climb for several more years after this period, reaching nearly 40% nationally in the late 1950s. From this point onwards, the labour movement has undergone a near continuous decline in union density and decline in the variance of both membership and density. However, the variance in the share of total union membership in a state remains relatively stable from 1964 until the the 1980s at which point it begins to climb. This could indicate that the labour movement was able to leverage its national power to enable organizing in relatively low density regions until their political and financial power began to collapse in the Reagan era. In particular, this phenomenon could be linked to the roughly 50% decline in organizing during the Reagan administration, which may have

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[13]All three variance measures capture the concentration of the labour movement, although with important differences in their interpretation. The relative variation for both total membership and density allow us to get an idea as to whether changes in density are being driven by decreasing membership or increases in the labour force. The relative variation in the share of all union members in a state is a useful measure as it captures whether changes in variance are driven by an overall decline in national union membership or a spatial relocation of trade union members.

disproportionately affected low density states. The rise in the variance of the share of membership in a state throughout the 1980s, 1990s, and 2000s along with the relatively high variance prior to labour's growth in World War II suggests that when labour struggles, it tends to concentrate in smaller and smaller geographic pockets.

The decline in union membership drives a significant decline in the variation of both membership and density from 1953 until the 1980s. Union density and membership are both highly persistent. However, there is a single break point in the spatial arrangement of union membership. There is a very large jump in the level of persistence between 1939 and the post-war years, indicating that there may have been a large, differentially applied shock that impacted union membership during the growth spurt during World War II.

Table 1: Summary Statistics Over Time

Year	Membership	Density	Relative Variation of Density	Relative Variation of Share	Density Raw Corr with 2004	Density Rank Corr with 2004	History
1939	8.8	21.5	3.13	1.60	0.58	0.61	Start of World War 2. The NIRA (1933) and the Wagner Act (1935) are passed.
1953	16.2	32.6	4.31	0.94	0.78	0.79	The Taft-Hartley Act (1947) is passed. Florida and Arkansas pass the first "right-to-work" legislation in 1944. Passage of the LMRDA.
1964	17.9	29.3	3.63	0.871	0.87	0.88	The AFL-CIO merge in 1955. The Landrum-Griffith Act is passed in 1959.
1974	18.2	26.2	2.70	0.86	0.88	0.90	Passage of OSHA in 1970.
1984	17.3	19.1	1.72	0.84	0.94	0.92	Reagan breaks the PATCO in 1981.
1994	16.7	15.7	1.25	0.84	0.95	0.94	NAFTA is passed in 1994.
2004	15.4	12.6	1	1	1	1	Continued decline in union membership.

Notes: *Figures generated as outlined above. Source: Gallup (1937, 1939, 1945), Troy (1957), Garlock (2009), and Hirsch and Macpherson (2010).*

After the break point during World War II, the movement has undergone a continual decline

with high levels of regional persistence and decreasing variance as a result of lower union density. When controlling for the aggregate size of the labour movement by looking at the share of total union workers found in each state, the level of variation has started to increase over the last 20 years, which points towards a labour movement that is continuing to maintain its position in a handful of relatively well organized states while declining elsewhere. However, this evidence is merely suggestive so it is necessary to turn to the quasi-experimental approach below.

4   Quasi-experimental Analysis: War Contracts and Break Points

The review of the data in the prior section points to a few clear facts. First, union density is highly persistent. Second, while the variance of union density has declined over time, the variance in the share of total union membership in a state has increased in recent decades. Third, there is both an increase in the variance of union density and a sharp drop in the persistence rate between 1939 and 1953. These facts point to the likelihood that the growth of unions is subject to regional increasing returns to scale; however, the importance of this effect is unclear.[14]

In order to determine the extent of any increasing returns phenomenon, it is necessary to locate a meaningfully large, one-time, exogenous shock that significantly impacted union membership differentially across states. It is then possible to test whether a one-time shock has a long-lasting effect or whether union membership in impacted regions revert to their prior status. Thankfully, the prior analysis points in the direction of a quasi-natural experiment. The increase in variance and drastic decline in persistence between 1939 and 1953[15] suggest that a "break point" in union membership occurred over these years. This suggests that there likely exists some institutional or policy change over the course of World War II that resulted in a spatially differentiated rate of growth of the labour movement. Ideally, this feature would be exogenous while controlling for observables such that it could be used in an instrumental variables analysis to provide causal estimates of the impact of union growth during World War II on the rate of union growth after the war.

[14]Although variance was largely stagnant in the 1970s and 1980s, it does not mean that increasing returns were not at work. For example, it is possible that there were changes in locational fundamentals in that time period such as industrial composition that masked such an effect.

[15]This same gap appears when using estimates derived from Gallup Polling for 1939 and 1945. However, 1953 is preferable as it is computed using the same data source as the 1939 figure.

4.1 Quasi-experimental Analysis: Identifying the Exogenous Shock

Such a feature is readily identifiable upon a review of labor and industrial histories of World War II. It is well known that the government played a large and escalating role in manpower activities (Baron et al., 1984), which included mediation between unions and employers.

In the late 1930s as war appeared ever more likely in Europe, the Roosevelt administration created a series of government boards comprised of representatives from industry, unions, and the public, which would serve to resolve industrial disputes with an emphasis placed on industries that were essential to the war effort. In order of existence[16] these boards were: the National Defense Advisory Committee (NDAC), the National Defense Mediation Board (NDMB), and the National War Labor Board (NWLB).[17] As the war progressed, the government viewed disruptions in the production of military products as ever more unacceptable and it took greater and greater efforts to discourage strikes and lockouts (Cornford and Miller, 1995).

This effort to discourage work-stoppages was primarily enforced through an informal compact between the government and the leaders of the AFL and CIO under which the unions agreed to not strike in exchange for government protection in organizing campaigns, particularly campaigns to secure the union shop.[18] However, this compact was far from harmonious. The two parties frequently disagreed on wage rates and, while the leaders of the labour movement offered no-strike pledges, they were regularly unable to control wildcat strikes by disgruntled and radicalized workers.

The War Department was careful to never strictly side with unions or employers, but because they were responsible for awarding defense contracts, they played an active role in setting the government's labour policy. The debate over whether the War Department should withdraw contracts from companies in violation of the Wagner Act began in late 1940 and continued throughout the war. This debate was initially set off when the NDAC declared a set of labor principles that the War Department adopted as a guide for issuing labor contracts. These principles required that defense contracts comply with federal, state, and local laws regarding labor relations, wages, hours, workman's compensation, safety and other conditions for employment. This was a policy that the War Department consistently altered; they would deny bids to employers based on their labour

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[16]These boards did not overlap and each may be viewed as a continuation of their predecessors.

[17]Some historians have downplayed labour's role in these boards, but the NDAC did enact a series of labor principles governing the War Department and the NDMB itself collapsed when the CIO representatives resigned from the board. While Roosevelt was responsible for the first significant legal protections for unions, his policy regime during the war could be described as anti-work stoppage rather than pro-labor (Cornford and Miller, 1995).

[18]The union shop being a firm or division of a firm in which all workers are members of the union.

history, but could also approve violators of the Wagner Act. Procurement Circular 43 took this policy further and required compliance with federal labour law in every invitation for bids. This led to rejection of bids from repeat violators such as the Ford Motor Company and Bethlehem Steel. Perhaps the most important example of this policy in action was the denial of a $100 million contract to Ford. This decision was essential in securing the eventual settlement between Ford and the United Auto Workers. However, after a year the circular was dropped, allowing the War Department to make special exceptions.

Labour did not solely rely on the government to protect their rights and unions would actively conduct strikes for recognition. Typically, when an employer fought a union drive in an industry important to the mobilization effort, the union would file a complaint with the NWLB and the representatives of the public would back the representatives from labour regarding a refusal to bargain from the employer and attempts to win the union shop. In some cases, the ruling of the labor board was sufficient for the employer to grant the union shop or negotiate with the union, however the board was limited in the tools at its disposal to enforce these rulings. The NWLB had a single enforcement tool at its disposal, referring individual cases to the President who could sign an executive order, which would enable the government to seize control of a company. The government would then encourage the board of directors to replace the senior management or, in the case of privately held companies, employ another firm to manage the violating company. This new management was usually selected conditional on their willingness to comply with the ruling of the NWLB.[19]

Since the NWLB was essentially given a "nuclear" option for enforcement without a lesser mechanism, it was reluctant to actually employ this tool. As such, this option was primarily applied to firms that were important to the war effort rather than firms at large. The NWLB granted significantly more protections to workers attempting to form a union or bargain with their employer in key war industries than they did in other types of manufacturing. It is easy to flag these industries in historical records as the War Manpower Commission (WMC) regularly published a list of "essential activities" (U.S. War Manpower Commission, 1942) with the first list having been developed in late 1942 (Mitchell, 2005). According to Kersten (2000), organizations such as the Fair Employment Practices Commission would employ this list of essential war industries as a guide, but could expand the list for their usage.

This policy of providing greater protection to organizing drives and efforts to introduce the union

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[19]An example of this policy was the takeover of the North American Aviation Company in which the president issued an executive order to take control of the firm over a strike regarding employment conditions.

shop in essential war industries suggests that an instrumental variables strategy that can be used to determine the causal impact of a one-time shock in union membership on future union growth. In particular, while controlling for regional demographics and industrial composition, I instrument for the growth rate of unions during the 1939-1953 period using the value of war contracts provided to firms in the region. This instrumental variable is attractive as it does not rely upon claims as to a definition of essential work, but rather weights importance with a dollar value.

This analysis could be problematic if the one-time exogenous shock was not temporary. The National War Labor Board ceased operations in 1946 and the last of the firms seized by the federal government were returned to private operation in 1946. Since World War II, it is the consensus in the labor studies literature that the federal government has not provided any meaningful support outside of the NLRB in unions' efforts to organize firms. Even this limited form of institutional support is considered to be largely ineffective (Cornford and Miller, 1995). As displayed in work by Brunet (2016), the timing and value of war spending are exogenous to factors related to American economic conditions. Further, contracts were tightly controlled by the War Department, allowing for limited political influence.

4.2   Quasi-experimental Analysis: Empirical Strategy

With an instrumental variable based on this labour-government compact identified, it is possible to estimate the causal impact of historical union growth[20] on the future growth rate of both private and public sector unions. The instrument, the value of all war contracts awarded to firms in a state comes from the County and City Databooks (2000), covering the duration of World War II.[21] This instrument is used to conduct a two stage least squares analysis.

The appropriate form of the regression is not immediately clear. Since the labour movement has contracted so substantially, it is likely that if an increasing returns phenomenon exists it is the case that heavily unionized regions are losing membership more slowly than regions with a fairly weak union presence. Furthermore, since unions rarely decertify, the disappearance of union density is typically driven by two factors: increases in the size of the labour force and firm attrition. With respect to firm attrition, we should expect density to decrease at a similar rate in high and low density locations alike, meaning that with a 50% firm attrition rate and no new organizing, a

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[20]In the instance of this paper, historical union growth happens to be entirely in the private sector.

[21]If we had a county level measure for union density it would be possible to conduct the analysis at this level, but unfortunately no such measure is available.

region with 20% density would fall to 10% while a region with 4% density would fall to 2%. Since firm attrition and creation is likely the dominant factor in membership decline, this suggests that it isn't appropriate to simply choose the change in density as the outcome variable.

To deal with this concern, the dependent variable for this analysis is the percentage change in union density in region, x, between 1953 and any future time period while the independent variable of interest is the absolute change in union membership between 1939 and 1953.[22] This functional form is ideal as it allows for a broad definition of economies of scale that accounts for the fact that union density decline is being driven by firm attrition and creation. In addition, I control for a broad array of industry employment levels and population demographics.

Thus, the baseline specification for the initial OLS analysis is:

$$\frac{U_i^Y - U_i^{1953}}{U_i^{1953}} = \alpha + \beta_2(U_i^{1953} - U_i^{1939}) + \beta_2 X_i + e_i \tag{1}$$

Where U_i^Y is union density in state i in year Y, X_i is a vector of industrial and demographic covariates in state i, and e_i is an error term.

In the two stage least squares analysis, the first stage regression is:

$$(U_i^{1953} - U_i^{1939}) = \gamma + \delta_1 C_i + \delta_3 X_i + v_i \tag{2}$$

Where C_i is the value of war contracts received by state i throughout the war, U_i^Y is union density in state i in year Y, X_i is a vector of industrial and demographic covariates in state i, and v_i is an error term.

In the second stage, I then regress $\frac{U_i^Y - U_i^{1953}}{U_i^{1953}}$ on the predicted values from the first stage regression and additional control variables.

In addition, I perform a number of robustness tests regarding the validity of the instrument and the broader results. I consider an alternative specification, which regresses the ratio of union density in year Y over union density in 1953 on union density in 1953 and a range of covariates:

$$\frac{U_i^Y}{U_i^{1953}} = \alpha + \beta_2 U_i^{1953} + \beta_2 X_i + e_i \tag{3}$$

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[22]Note that this analysis is robust to using the less precise estimates derived from Gallup Polling with 1939 and 1945 as the start and end points.

I also perform regressions using union membership in both 1939, union membership in 1953, and the pre-war trend in union membership between 1937 and 1939 as the dependent variable and the instrument and other controls for the relevant year. If the instrument is in fact valid, it should prove to be a strong predictor in 1953, but have little predictive power in 1939 or for the pre-war trend.

4.3   Quasi-experimental Analysis: Data

The instrumental variables analysis is conducted at the state level using the union density data discussed earlier.[23] Using this data, I construct the change in union density over the war period, 1939-1953 and the percentage change in total density from 1953-1964, 1953-1974, and so forth running up until 1953-2014.

The data for the instrumental variable, the dollar value of war contracts assigned to a state, is gathered from the County and State Data Book from 1944. These data are divided into 4 separate categories that I combine into a single instrumental variable. These include: funds directed towards military projects, funds for industrial projects, contracts for combat equipment, and other war-related contracts. The intensity of this shock is straightforward: the greater the number of war contracts entering the region, the greater the incentive for firms to ensure compliance with the NLRB and NWLB.

To ensure that these shocks are not simply capturing time trends for regions with a greater share of manufacturing, demographics, government funding or legal institutions, I include controls for an array of demographic and industrial controls gathered from the County and City Data Books (2000).

4.4   Quasi-experimental Analysis: Results

Prior to reporting the results of the regression analysis, it is informative to look at the data visually to get a sense to the broader trends.

Figure 2 displays the correlation between union growth from 1939-53 to the percent change in union density between 1953 and 2000. If the war-era shocks were, in fact temporary, we would expect the slope of the best-fit line to be negative. If the shocks were durable, but did not impact

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[23]This includes a total of 47 states as a handful of states have gaps in the 1939 and 1953 periods.
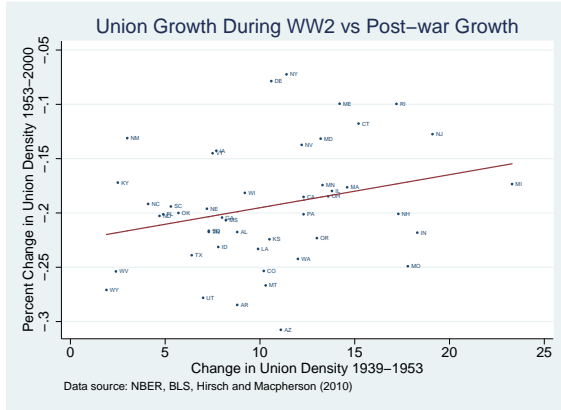
Figure 2: *This figure plots the absolute change in union density between 1939 and 1953 on the x axis versus the change in union density between 1953 and 2000 on the y axis. Source: Gallup Organization (1939, 1945), Troy (1957), Hirsch and Macpherson (2010).*
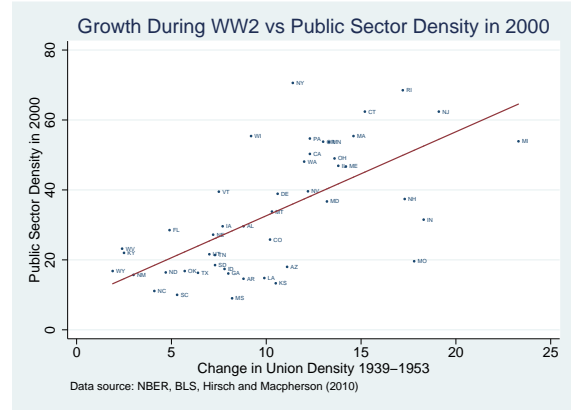
Figure 3: *This figure plots public sector union density and the change in union density between 1939 and 1953. The current level of public sector union density is also the change since 1953. Source: Gallup Organization (1939, 1945), Troy (1957), Hirsch and Macpherson (2010).*

the future rate of union growth we would expect a flat slope. However, we instead see a positive slope, which is indicative of an increasing returns relationship. Similarly, we see a positive slope in Figure 3 when we replace the change in total membership from 1953-2000 with public sector density in 2000, which is equivalent to the change in public sector membership over the time period. This is a result of the fact that no public sector unions had been certified as of 1953.

These figures are both strongly suggestive of an increasing returns relationship. The baseline OLS regression results in which the percentage change in density between 1953 and 2000 is regressed on the change in density between 1939 and 1953 are also strongly supportive of this interpretation. These results are presented in Table 2. Although not statistically significant, the point estimates suggest that for an average state that saw union density increase by approximately 10% of the labour force, that historical boost has resulted in 3% to 6% percent increase in union density. Note that this increase is not a change in the raw density figure, but rather a change in the percentage increase in union density over time. The picture when considering public sector density, which was non-existent in the 1939-53 period, is even clearer. The point estimates suggest that the war boost between 1939 and 1953 for a typical state has increased the percent of the public sector organized in 2000 by 21-24%. It is important to note that this is an increase in absolute public sector union density. A percentage increase cannot be considered as public sector bargaining is not legal at the

start of the period. While the results in Table 2 are not conclusive, they suggest the likelihood of an increasing returns relationship, as the coefficient is positive and significant with the full set of controls.

Table 2: Baseline OLS Regressions (Total and Public Sector Union Density)

A. Dependent Variable: Percent Change in Union Density				
	1953-2000		1953-2015	
Change in Union Density 1939-1953	.006*	.004	.004	.003
	[0.003]	[0.003]	[.003]	[.003]
Observations	47	47	47	47
R^2	0.074	0.22	0.027	0.18
Covariates		X		X

B. Dependent Variable: Change in Public Sector Density				
	1953-2000		1953-2015	
Change in Union Density 1939-1953	2.4***	2.1***	2.3***	2.1***
	[0.40]	[0.47]	[0.41]	[0.43]
Observations	47	47	47	47
R^2	0.43	0.51	0.42	0.49
Covariates		X		X

Notes: *The results presented are least-squares estimates of equation 1. The primary independent variable is the change in union density between 1939 and 1953. Results with covariates include a full set of demographic and industrial employment controls. Source: Gallup (1939, 1945) Troy (1957), Hirsch and Macpherson (2016), County and State Databook (2000). Significance stars: * 0.05 ** 0.01 *** 0.001*

It is possible that both sets of OLS results could be meaningfully biased. For example, it is possible that some form of state fundamentals, be them demographic, economic, or institutional that drove increasing membership between 1939 and 1953 could be driving changes in membership from 1953-2000. For example, if a state had witnessed a particularly disruptive strike or lockout during the earlier period it may have generated a regional culture of fear around organizing, which could in fact determine union membership in both periods. Another possibility would be the presence of racial tensions in the American South, which may have undermined organizing during the war and continue to undermine organizing into the present. Given this concern, I turn to the instrumental variables analysis for causal results.

The results from the first stage of the 2SLS regressions are displayed in Table 3. The results are strong, positive, and significant indicating that unions grew much more rapidly in regions with many war contracts. The instrument is economically and statistically significant and the F-value is sufficiently high to not raise concerns regarding a weak instruments problem. It is clear that regions that the received the most war contracts have witnessed the greatest growth in public sector

density.

Table 3: Instrumental Variable Results (Total and Public Sector Union Density)

Stage 1. Dependent Variable: Change in Union Density 1939-1953		
Total War Contracts	0.48***	0.66***
	[0.12]	[0.20]
Observations	47	47
R^2	0.31	0.41
Covariates		X

Stage 2a. Dependent Variable: Percent Change in Union Density 1953-2000				
	1953-2000		1953-2015	
Change in Union Density 1939-1953	0.013	0.015*	0.011	0.019*
	[0.086]	[0.0081]	[0.010]	[0.011]
Observations	47	47	47	47
Covariates		X		X
Stage 2b. Dependent Variable: Public Sector Union Density in 2000				
	1953-2000		1953-2015	
Change in Union Density 1939-1953	4.1***	4.0***	3.8***	4.1***
	[1.23]	[1.44]	[1.27]	[1.50]
Observations	47	47	47	47
Covariates		X		X

Notes: *The results presented are two-stage least-squares estimates of equation 2. In the first stage, the change in union density between 1939 and 1953 is regressed on the value of allocated war contracts. Stage 2a has the percentage change in total union density as the dependent variable while Stage 2b has the change in public sector union density. Results with covariates include a full set of demographic and industrial employment controls. Source: Gallup (1394, 1945), Troy (1957), Hirsch and Macpherson (2010), County and State Databook (2000), Census of Manufacturers (1939). Significance stars: * 0.05 ** 0.01 *** 0.001*

Given these first stage results, the instrumental variable has sufficient power for the analysis. A simple method to get a sense of whether the instrument is truly valid is to run separate OLS regressions with union density in 1939 and 1953 as the dependent variable and an array of independent variables, principally the instrumental variable. If valid we should expect the instrumental variable to have a large treatment effect in 1953, but no meaningful treatment effects in 1939. The results of these regressions are presented in Table 4. Similarly, I run the regressions with the 1937 to 1939 union membership pre-trend as the dependent variable and neither instrument is found to have any predictive power. As a further robustness check, I perform a reduced form analysis in which I consider the direct impact of the instrumental variable on union growth post-war and present-day public sector union density. In general, the results regarding public sector union density should be considered the strongest as there are few other viable pathways through which historical war contracts could impact public sector union membership than increasing returns.

Table 4: Instrumental Variable Validity Test

Dependent Variable - Union density			
Year	1939	1953	Pre-War Trend
Total War Contracts	0.0029	0.024***	1.06
	[0.0028]	[0.0056]	[0.63]
Obs.	47	47	47
Covariates	X	X	X

Notes: *OLS regressions of union density in 1939 or 1953 and the pre-war change in union density on the value of war contracts allocated to a state. Source: Gallup (1939, 1945), Troy (1957), Hirsch and Macpherson (2010), County and State Databook (2000), Census of Manufacturers (1939). Significance stars: * 0.05 ** 0.01 *** 0.001*

The second stage results, presented in Table 3, indicate an economically and statistically significant positive relationship between union growth during World War II and growth post-war. The treatment effect is large with a typical state, experiencing a 10% increase in density during the war, seeing a subsequent 11% to 19% percent increase in density between 1953 and 2000. A one standard deviation increase in the change in union density between 1939 and 1953 (4.8%) would result in a percentage increase in union density between 1953 and 2000 of 6.2% to 9.1%. This is clear evidence of the increasing returns to scale phenomenon. In other words, regions that witnessed the most union growth during World War II have seen the smallest decline in union membership since. It is overwhelmingly the case that states that we view as labour's heartland today such as Michigan, New York, and Pennsylvania were also the heartland of American war production.

We can also look to the second stage results with public density. This relationship is economically and statistically significant, which is the clearest signal of the increasing returns phenomenon. The average treatment effect is quite large, resulting in a 38% to 41% increase in public sector density subsequently. A one standard deviation increase in the change in union density between 1939 and 1953 (4.817%) would result in current day public sector union density being 18.3% to 19.7% greater. Having confirmed that the increasing returns phenomenon is a dominant feature driving the arrangement of union membership, the next step is to turn our attention to the mechanisms driving this permanence and the increasing returns phenomenon.

In Table 5 results are presented for the alternative specification detailed in equation 3. The results from the instrumental variables analysis with this alternative specification confirm the economically and statistically significant positive estimates.

Finally, in Table 6 results are presented for every decade spanning from 1964 to 2014. The results indicate that the impact of union density growth during the 1939-1953 period generally

Table 5: Alternative Instrumental Variables Specifications (Total Union Density)

Stage 1. Dependent Variable: Union Density in 1953		
Total War Contracts	0.93***	1.37***
	[0.16]	[0.40]
Observations	47	47
R^2	0.23	0.33
Covariates		X

Stage 2. Dependent Variable: Union Density in Year T Over Density in 1953			
	2000		2015
Union Density in 1953	0.0069	0.0071**	0.0056	0.0092**
	[0.0042]	[0.0034]	[0.0049]	[0.0045]
Observations	47	47	47	47
Covariates		X		X

Notes: *The results presented are two-stage least-squares estimates of a variation of equation 3. In the first stage, union density in 1953 is regressed on the value of allocated war contracts. In Stage 2, the dependent variable is the ratio of union density in 2000 or 2015 and union density in 1953. Source: Troy (1957), Hirsch and Macpherson (2010), County and State Databook (2000), Census of Manufacturers (1939). Significance stars: * 0.05 ** 0.01 *** 0.001*

increases over time, as we would expect if increasing returns to scale were present.

Table 6: Instrumental Variable Results by Decade (Total Union Density)

Dependent Variable: Percentage Change in Union Density 1953-		
Year	Change in Union Density 1939-1953	
1964	0.0056	0.0013
	[0.0057]	[0.0078]
1974	0.0093	0.010
	[0.0070]	[0.0079]
1984	0.011	0.011
	[0.0090]	[0.011]
1994	0.013	0.016
	[0.0092]	[0.010]
2004	0.016*	0.022**
	[0.0091]	[0.0095]
2014	0.014	0.020**
	[0.011]	[0.011]
Observations	47	47
Covariates		X

Notes: *The results presented are two-stage least-squares estimates of equation 2 for various decades. In A, the percentage change in total union density between a given year and 1953 is the dependent variable. The independent variable of interest is the change in union density between 1939 and 1953. In B, the ratio of total union density in a given year over tis value in 1953 is the dependent variable. The independent variable of interest is union density in 1953. Source: Troy (1957), Hirsch and Macpherson (2016), County and State Databook (2000), Census of Manufacturers (1939). Significance stars: * 0.05 ** 0.01 *** 0.001*

5 Causal Mechanisms

The results show clear evidence that the regional gains made by the union movement have been long-lasting and subject to significant increasing returns to union density. Given the robust controls used, which should largely account for industry-specific union attrition, there are only a few plausible mechanisms that could be driving this effect.

First and foremost amongst these are organizing decisions. Unions themselves may be choosing to organize,[24] both in the private and the public sectors, in regions that are already the most highly organized. This mechanism could be driven by a variety of factors. For example, the presence of large numbers of union members in an area may result in a cultural shift making workers more likely to support a union drive. It may also be easier for unions to mount the resources needed to run an organizing drive in union-heavy states, particularly those unions that conduct organizing through their state federations rather than through the international. Directly related to organizing drives, high local membership may make workers themselves more receptive to joining a union, which could be an underlying explanation for targeted union drives to high-density regions or simply result in a greater election win rate.

Beyond organizing it may also be the case that high local union membership creates a culture in which employers are less willing to abuse their employees or fight organizing drives (legally or illegally). This could result from local boycotts or support, but it could also be a process through which employers learn how to function in a union environment.

A final potential mechanism is that high local membership may result in a more pro-union legal environment, which could open membership to additional workers, allow for the union or agency fee shop, or aid in organizing drives. In the subsections below, I analyze these mechanisms.

5.1 Causal Mechanisms: Organizing

Using a similar regression strategy to that employed in the main body of the paper, I analyze whether unions affiliated with the AFL-CIO conduct more or less organizing drives in regions of the country that witnessed the greatest level of growth during World War II. Along with the data described previously, I merge the primary dataset with the Food and Allied Service Trades (FAST) union organizing database from the AFL-CIO research department. This dataset includes

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[24]Note that this refers to both the active central decision of a national union or state federation or the decision of workers on the shop floor to initiate a grassroots organizing drive

all organizing drives that occurred between 1964 and 2001.

Table 7: OLS Mechanism Regressions

A. Dependent Variable: Number of Union Elections post-1964		
Change in Union Density 1939-1953	169.12***	67.48*
	[38.23]	[35.70]
Observations	47	47
R^2	0.18	0.83
Covariates		X

B. Dependent Variable: Public Sector Bargaining Rights Index		
Change in Union Density 1939-1953	0.21**	0.27**
	[0.0088]	[0.010]
Observations	47	47
R^2	0.092	0.34
Covariates		X

C. Dependent Variable: Right-to-Work Status		
Change in Union Density 1939-1953	-0.054***	-0.046***
	[0.013]	[0.015]
Observations	47	47
R^2	0.28	0.30
Covariates		X

D. Dependent Variable: ULP Allegations per million members		
Change in Union Density 1939-1953	-6203.38**	-503.87
	[290.96]	[334.13]
Observations	47	47
R^2	0.14	0.81
Covariates		X

Notes: *The models presented are least-squares estimates of equation 1, but with alternate dependent variables: A. The number of union elections post-1964 is regressed on the change in union density between 1939 and 1953; B. The value of a public sector labour law index exclusively composed of bargaining rights measures regressed on the change in union density; D. A right-to-work dummy is regressed on the change in union density; D. The number of ULPs from 1980-1989 is regressed on the change in union density. Source: Freeman and Valletta (2002), Troy (1957), Hirsch and Macpherson (2016), County and State Databook (2000), Census of Manufacturers (1939). Significance stars: * 0.05 ** 0.01 *** 0.001*

The regression analysis, found in Tables 7 and 8, shows that AFL-CIO unions have conducted more organizing drives[25] in regions that witnessed the highest rates of union growth over the war period. While not a particularly surprising result, it indicates that not only are unions maintaining more membership in high density regions, but that they are replacing attrition with newly organized members. In addition, from the previously reported public sector density results the regions that

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[25]There have also been more elections and more successful elections.

witnessed the greatest growth in unions during World War II have also seen the greatest increase in representation of the public sector workers.

These results are unsurprising, but they do indicate that the increasing returns phenomenon is not simply driven by differential attrition, but by the differential creation of new unions. What these results cannot tell us, unfortunately is why these unions are choosing to organize in these high density regions, although this could be driven by employer resistance or legal institutions, which are considered below.

5.2   Causal Mechanisms: Legal Institutions

In order to test for the importance of legal institutions in this relationship I employ two measures. First, I employ an index of public sector collective bargaining rights generated from the data in Freeman and Valletta (1988) based on the ability of various types of public employees to organize in a state. Second, I use a binary variable as the outcome as to whether a state is "right-to-work," as of 2004 meaning that it is illegal for unions to negotiate a union security clause.

These variables both turn out to be highly significant. There is a clear negative relationship between "right-to-work" status of a state and historical union growth and a strong positive relationship between public sector bargaining rights and historical union growth, as displayed in the regression analysis displayed in Tables 7 and 8. These results show a robust negative relationship between union growth from 1939-53 and the "right-to-work" status of a state as of 2004. Similarly, a strong positive relationship is found for the index of public sector bargaining rights.

This suggests that private sector unions did play a substantial role in shaping state-level labour laws. First, it is possible that unions were able to exert much greater influence over the state-wide ballot propositions that have typically been used to enact right-to-work legislation. Second, it appears that states with historically strong private sector unions were able to better bargain with politicians to expand collective bargaining rights broadly in the public sector.

5.3   Causal Mechanisms: Employer Resistance

The final mechanism that I consider is whether historical union density is related in any way to employers' response to unions in the workplace or organizing campaigns. While there is no perfect measure for employer resistance, I make use of NLRB unfair labour practice (ULPs) charges as a

measure of resistance. I have these measures both for existing unions and union drives courtesy of the AFL-CIO FAST database. I make use of the total number of allegations that occurred during the 1980s, which is the most complete section of the dataset.

While not conclusive, the results indicate that regions with the greatest union growth during the war period have had the fewest numbers of unfair labour practice allegations per worker since. This could play into the increasing returns phenomenon in several ways. For example, it could mean that attrition is lower in those regions or, as is more likely the case, that organizing campaigns and first contract campaigns have a much greater rate of success.

Table 8: Instrumental Variable Mechanism Regressions

A. Dependent Variable: Number of Union Elections post-1964		
Change in Union Density 1939-1953	680.48***	335.34**
	[250.35]	[125.56]
Observations	47	47
Covariates		X

B. Dependent Variable: Public Sector Bargaining Rights Index		
Change in Union Density 1939-1953	0.019	0.043**
	[0.016]	[0.021]
Observations	47	
Covariates		X

D. Dependent Variable: Right-to-Work Status		
Change in Union Density 1939-1953	-0.082***	-0.079**
	[0.024]	[0.035]
Observations	47	47
Covariates		X

E. Dependent Variable: ULP Allegations per million members		
Change in Union Density 1939-1953	-953.90**	-713.78
	[408.60]	[676.10]
Observations	47	47
Covariates		X

Notes: *The results presented are the second stage of the least-squares estimates of equation 2, but with alternate dependent variables: A. The number of union elections post-1964 is regressed on the change in union density between 1939 and 1953; B. The value of a public sector labour law index exclusively composed of bargaining rights measures regressed on the change in union density; C. A right-to-work dummy is regressed on the change in union density; D. The number of ULPs from 1980-1989 is regressed on the change in union density. Source: Freeman and Valletta (2002), Troy (1957), Hirsch and Macpherson (2010), County and State Databook (2000), Census of Manufacturers (1939). Significance stars: * 0.05 ** 0.01 *** 0.001*

6 Conclusion

This paper provides the first causal evidence on the spatial growth dynamics of the American labour movement. The results indicate that a defining feature of American trade union growth has been a powerful increasing returns to scale phenomenon and path dependency based on the labour-government compact struck during World War II. American states that received the "war boost" in the 1940s are the states that still have a meaningful labour presence today, with their levels of union density declining at a much slower rate than less organized states. Evidence suggests that this relationship may be driven by an equilibrium in which unions invest the majority of their organizing and political resources into "union" states and employers in "union" states put up significantly less resistance than in other states.

These results are relevant to ongoing public policy debates across the Midwestern United States as they suggest that one-time legislative moves to cripple the labour movement in states such as Wisconsin, Indiana, and Michigan may result in an irreversible decline in union membership. With some unions in Wisconsin losing nearly half of their members in the wake of Governor Walker's clampdown on collective bargaining rights and passage of "right-to-work" legislation (Belkin and Maher, n.d.), it is unlikely that a reversal of this legislation would restore the state's prior level of union membership. Rather, the results of this paper suggest that a "game changing" movement would be required for the labour movement to reverse its broad-based membership declines.

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