Unions, Dynamism and Economic Performance

Barry T. Hirsch
Georgia State University

Georgia State University

Unions, Dynamism, and Economic Performance

Barry T. Hirsch
Department of Economics
Andrew Young School of Policy Studies
Georgia State University
and
IZA Bonn

October 2010

Abstract

This paper explores the relationship between economic performance and US unionism, focusing first on what we do and do not know based on empirical research handicapped by limited data on establishment and firm level collective bargaining coverage. Evidence on the relationship of unions with wages, productivity, profitability, investment, debt, employment growth, and business failures are all relevant in assessing the future of unions and public policy with respect to unions. A reasonably coherent story emerges from the empirical literature, albeit one that rests heavily on evidence that is dated and (arguably) unable to identify truly causal effects. The paper's principal thesis is that union decline has been tied fundamentally to competitive forces and economic dynamism. Implications of these findings for labor law policy and the future of worker voice institutions is discussed briefly in a final section.

1. Introduction

The relationship between unions and economic performance is necessarily central to understanding changes in union membership, the role of unions in the workplace, and public policy. It is central first because union impacts on performance enter into the policy calculus of costs and benefits associated with policies that enhance or constrain union organizing and collective bargaining coverage. Second, whatever the publicly desired level and role for unions in the workplace, the realized level of coverage is heavily influenced by how unionized businesses perform in an increasingly competitive and dynamic global economy.

A large union workforce requires financially healthy unionized employers. Competitive pressures limit the size of the union sector if union compensation premiums are not fully offset by higher productivity. Compared to nonunion workplace governance, where there is substantial managerial discretion constrained by market forces and law, union governance is formal, deliberate, and often sluggish. Unionized companies, therefore, often fare poorly in dynamic and highly competitive economic settings. Among a host of reasons for declining private sector union density in the US, the most fundamental explanation appears to be the increasingly dynamic US economy coupled with the relatively poorer economic performance among union than nonunion establishments and firms.

Collective bargaining in the public sector operates under different labor laws and in different economic and political settings than does private sector collective bargaining. The proportion of public sector workers who are union members in 2010 (Jan-Sep) is 35.9 percent as compared to 7.0 percent among private sector workers. Union density for public workers has remained steady for some 30-plus years as private sector density has declined. Just over half of all US union members are now government employees. The success of public relative to private sector unionism lends support to the thesis that dynamism and competitive pressures serve as the principal limiting force on collective bargaining. Although the public sector is not immune to financial pressures, competition and dynamism play smaller roles in the public than private sector.

This paper explores the relationship between economic performance and US unionism, focusing first on what we do and do not know based on empirical research that has been handicapped by limited US data on establishment and firm level collective bargaining coverage. Evidence on the relationship of unions with wages, productivity, profitability, investment, debt, employment growth, and business failures are all relevant in assessing the future of unions and public policy with respect to unions. A reasonably coherent story emerges from the empirical literature, albeit one that rests heavily on evidence that is dated and (arguably) unable to identify truly causal effects. The paper's principal thesis is that union decline has been tied to competitive forces and economic dynamism. Implications of these findings for labor law policy and the future of worker voice institutions is discussed briefly in a final section.

2. *US Union Membership and Density: A Tale of Two Sectors*[1]

Without too much overstatement, the 20th century can be characterized as having experienced the rise and fall of private sector unionization. The rise was sudden, the result of major economic, social, and political upheaval followed by public policy support for union organizing. The 1935 passage and subsequent Court approval and federal implementation of the National Labor Relations Act (NLRA) provided the legal and administrative framework that facilitated a rapid transition to an industrial US economy in which union governance became the norm. Major industries—coal, steel, automotive—became unionized over a brief period, a transition encouraged by New Deal corporatist policies during the 1930s and reinforced by the industrial buildup for World War II in the 1940s.[2] Following World War II, inflation and widespread strikes shifted majority opinion toward support for greater limits on union power. The Taft–Hartley Act in 1947 outlawed union practices like closed shops and secondary boycotts, allowed states to pass "right-to-work" laws, and gave the federal government the power to block or end strikes that might have national safety or health implications.

Figure 1 shows US private sector union density from 1929 through 2010 (2010 figures are based on data from January-September). The percent of private sector workers who were union members rose from about 12 percent in 1929 to 24 percent by 1940 and to 35 percent by 1947. Union density was largely flat through the mid-1950s, with a peak at 36 percent in 1953 and 1954. Private sector union density edged slightly downward during the late 1950s and 1960s, and then began its long-term decline in the 1970s. The decline has been gradual, but unrelenting. Private sector union density was 24.5 percent in 1973, 16.5 percent in 1983, 11.1 percent by 1993, and stood at 6.9 percent in 2010. The number of private sector union members was 15 million in 1973, roughly maintained through the end of that decade, but subsequently fell to just over 7 million in 2010. As private union membership fell by nearly half, nonunion wage and salary employment in the private sector more than doubled from 47 million in 1973 to 103 million in 2010 (down from 108 million in 2008).

At the same time that private sector unionism was in decline, public sector unionism increased rapidly in the 1960s and 1970s following enactment of enabling public sector labor laws within (most) states and for federal employees. Figure 1 shows public sector union density beginning in 1977 (the first year that permits a time-consistent definition of membership). Although the size of the public sector has grown considerably since the 1970s, density has remained relatively constant, rising from 32.8 percent in

---

[1] Unless stated otherwise, all figures on union membership and density are from calculations by the author from the Current Population Survey (CPS) monthly files. Data are provided at the Union Membership and Coverage Database from the CPS (www.unionstats.com) and described in Hirsch and Macpherson (2003).

[2] Wachter (2007) argues that the NLRA, while setting up the administrative machinery that facilitated union organizing and governance, at the same time planted the seed for union decline. The NLRA constituted a break from the cooperative corporatist framework envisioned by the New Deal and instead recognized collective bargaining as an adversarial system that would operate within a market economy. In doing so, the NLRA allowed union power to be constrained and eventually marginalized by competitive pressures.

1977 to 36.7 percent in 1983 to a current level of 35.9 percent in 2010. Union density for all wage and salary workers (the weighted average of the private and public figures), also shown in figure 1 for years since 1977, has declined from 23.8 percent in 1977 to 11.9 percent in 2010.

The growth of membership in the public sector combined with decline in the private sector has resulted in a union movement increasingly populated by public sector workers. Private and public membership since 1977 is shown in figure 2. Whereas in 1977 only a quarter (25.8 percent) of US union members were public employees, public membership overtook private membership during 2009. Estimates for 2010 show that 52 percent of members are government employees, 7.6 million public sector versus 7.1 million private sector union members.

As shown in Hirsch (2008), *all* the private sector decline in private sector union membership since the 1970s occurred in three large sectors of the economy – manufacturing, construction, and transportation, communications and utilities. The (immense) remainder of the private sector economy has grown enormously since the 1970s, but union membership here has remained at roughly 3.5 million throughout these years. Figures 3a-3c show total private sector employment and union density in the three traditionally unionized sectors. In manufacturing (figure 3a), total employment was relatively constant at about 20 million from 1973 through the late 1990s, but since then has fallen sharply to under 13 million in 2010. Much of the decline has been in union employment, from 7.8 million in 1973 to less than 1.5 million members in 2010. Union density in manufacturing fell from 38.9 percent in 1973 to 11.4 percent in 2010 as the dominant norm in the industrial sector shifted from union to nonunion governance.

Manufacturing is not typical of the larger economy in that it employed a declining share of total US employment. As seen in figures 3b and 3c, there was rapid grow in total employment in the transportation, communications, and utility (TCU) sectors and, until recently, construction. In construction (figure 3b) , wage and salary employment rose from 4.1 to a high of 8.6 million in 2007 before falling sharply to 6.2 million in 2010. As union density declined in construction, membership stayed roughly flat at between 1.0-1.2 million from 1983 through 2008 (falling to .8 million in 2010). Union density fell from 39.5 percent to 13.3 percent between 1973 and 2010. TCU total employment (figure 3c) also rose sharply, from 4.4 to 7.9 million between 1973 and 2010 (following an 8.7 million 2007 peak). Union density declined from 51.4 percent to 17.5 percent, with membership falling from 2.3 to 1.4 million.

Despite sharp decline in private sector density, the union wage advantage relative to similar nonunion workers has remained roughly constant over time, with modest decline in recent years (shown below). Union pay is determined by a collective bargaining process shaped by the preferences of union members and the bargaining power of the parties, the latter influenced by product and labor market

conditions. Union leaders are elected and union contracts must be approved by a majority of rank-and-file. Basic models of union behavior treat the decisions of union leaders as responsive to the preferences of the median voter or member (see Farber (1986) for a comprehensive discussion). Members face a trade-off between wages and employment, although settlements need not be on the labor demand curve, with the trade-off influenced by the ability of firms and customers to substitute between union and nonunion workers, establishments, and goods. Incumbent workers may place low weight on the greater employment opportunities that could exist at a lower wage, while median (often older) members may feel insulated from layoffs based on seniority, except when establishment closings or bankruptcies are a threat.

In contrast to the highly limited information available on company unionization and economic performance, data on union and nonunion wages are readily available. These data permit estimation of union wage premiums—the percentage difference in the wages of similarly skilled union and nonunion workers in similar jobs. Changes in union wage gaps (premiums) over time provide a rough but useful measure of changes in labor costs of union firms. Although the focus here is wages, it is total compensation (wages plus benefits) that is the more relevant measure. Evidence on benefits is limited, but that available points to a union benefits premium that exceeds the wage premium (Budd, 2007).

Hirsch and Macpherson (2010, table 2) provide time-consistent regression estimates of union–nonunion wage premiums (gaps) for the years 1973–2009 based on CPS data (for details of estimation, see Hirsch and Macpherson 2010). Estimates of the union gaps are obtained from annual wage equations, where the natural log of the wage is the dependent variable, while union status and controls for worker/job/location characteristics are included as independent variables. The regression coefficient on union status is the measure of the union wage premium, as shown in Figure 4 for both private and public sector workers. Because wages are measured in natural logs, the coefficient on union status can be interpreted as a proportional or percentage difference.[3] Controls include years of schooling, potential years of experience and its square (interacted with gender), and variables for marital status, race and ethnicity, gender, part-time work, large metropolitan area, public sector, region, broad occupation, and broad industry. Estimation issues regarding union endogeneity, two-sided (employer and employee) selection on unmeasured skill, and earnings imputation, inter alia, are discussed in the literature (see, for example, Hirsch, 2004, 2008).

Have private sector union wage premiums declined over time as density, union organizing

---

[3] The log differential is an approximate proportional difference, the union minus nonunion wage $(W_u–W_n)$ divided by some "average" wage between W_u and W_n. The percentage differential $[(W_u–W_n)/W_n]100$ is typically approximated by $[\exp(d)–1]100$, where d is the log differential.

strength, and bargaining power have diminished?[4] Yes – but by surprisingly little. Since the estimated peak premium of .249 in 1984, there has been a modest downward trend to an estimated 2009 union wage gap of .182. Although it is generally argued that union wage premiums are countercyclical due to the use of multiyear contracts (Blanchflower and Bryson, 2003), there is at most weak evidence of this in these estimates. The most important point to bring away from figure 4 is that union wage premiums remain high, on the order of 20 percent, well above the level found in most developed economies (Blanchflower and Bryson, 2003, and included references). Because the typical union workplace does not generate sufficiently higher productivity to offset the costs of higher compensation, large union premiums reinforce the array of forces leading to private sector unionism's long-run decline.

The private sector is our principal interest, but estimates of union-nonunion wage gaps among public sector workers (conditioned on controls) warrant brief mention. Consistent with prior studies (e.g., Freeman 1986), Hirsch and Macpherson (2010) find that union wage effects in the public sector over time are considerably smaller than in the private sector, more on the order of 10 than 20 percent. Their estimates rise to about 13-14 percent in the mid-to-late 1990s, but subsequently drop to under 10 percent. These aggregate estimates represent some sort of weighted average across local, state, and federal employees, as well as across a diverse set of occupations (teachers, police, firefighters, administrators, etc.). Freeman (1986) suggests that public sector unions, while having more limited wage effects than their private counterparts, may be effective in increasing public employment via the political process.

This essay argues that a highly competition and dynamic economy has been the principal reason for the long-term decline of private sector union governance. Compensation premiums absent fully offsetting productivity increases are a key element of this process. Increasing economic dynamism, say from rapid technological change or shifting trade patterns, reinforces cost disadvantages for union companies to the extent that union governance slows response to changes in the economic environment. Of course, there are many other reasons for union decline in the private sector, a trend seen (to a much lesser degree) in most developed economies. Hirsch (2008) has organized these explanations for union decline into three broad categories, competitive, structural, and institutional, arguing that the first is the overriding or fundamental reason for decline. Hirsch defines "structural" as the change in aggregate union density resulting from shifts over time in the types of jobs (industry and occupation) and their geographic location. The institutional explanation includes factors related to the union election process such as public policy (e.g., labor laws, coupled with their interpretation and enforcement), management opposition to

---

[4] There is no standard measure of union bargaining power. Union density and wage premiums are the most readily available measures. Firm-level (inverse) labor demand elasticities would be a reasonable proxy, but are not generally available. Cramton and Tracy (1998) construct a model in which weak bargaining power leads to less use of strikes and greater use of holdouts (working with an expired contract). As measured by the ratio of strikes to holdouts, bargaining power fell sharply during the 1980s. They conclude that much of the decline was due to employers' increased willingness to use replacement workers.

unions (not unrelated to competition and the comparative performance of union and nonunion companies), and worker sentiment toward unions. I return briefly to some of these issues in the final section of the paper.

3. Unions and Economic Performance: Theory

The standard economic approach treats the labor demand curve as the "labor constraint" or "tradeoff curve" between wages and employment facing labor unions within firms. A firm labor demand curve shows the profit maximizing employment level at each wage rate. All else the same, unions and their members fare better the higher rather than lower the level of demand for union labor (i.e., outward rather than inward shifts of the demand curve) and the less elastic (i.e., less wage sensitive) is demand for union labor.[5]

Although the standard model and its underlying assumptions are simplistic and often violated, the "labor constraint" framework is surprisingly helpful in understanding union behavior and outcomes. For example, policies that shift L_d outward through an increase in industry-wide product demand are beneficial to both firms and their unions, increasing firms' output and price and at the same time permitting both wage and employment increases for workers. Stated alternatively, there is a commonality of interest by shareholders and labor in the financial health of the firm and in those policies perceived as helping the firm or industry. Such examples might include mutual industry and union support for an industry-specific policy, be it trade protection, government subsidy, or favorable tax treatment (e.g., rebates for new car purchases were supported by the UAW and their employers).

The more elastic is demand for union labor, the larger the employment (membership) loss resulting from a wage increase. Marshall's laws of derived demand show that long-run labor demand is more elastic (more wage sensitive) (a) the more elastic or price sensitive is product demand, implying difficulty in passing wage increases through to consumers in the form of higher prices; and (b) the easier is substitution of capital for labor or nonunion for union labor. The first "law" helps explain union support for or opposition to trade liberalization (union policies vary depending on whether union members are employed in predominantly export or import industries), or vehement opposition by transportation unions in the 1970s to removing airline and trucking regulations that restricted entry and price competition. The second "law" helps explain union resistance to labor saving technologies and unions' strong interest in implicit or explicit limits to on-site use of nonunion workers or outsourcing (i.e., shifting production to

---

[5] Changes in employment due to wage changes represent movement along L_d, all else the same, while shifts of the curve (i.e., greater or less employment at each given wage) depend on the level of output and the price of substitute factors – capital and nonunion labor. The labor demand curve shows the profit maximizing employment level at each given wage rate, where the wage is taken as exogenous; i.e., market determined with individual firms as approximate wage taker (the word "wage" in this context refers to total compensation). Of course, unions may move the employer up the demand curve to a wage (employment) level higher (lower) than the competitive outcome, or may move the firm off of its labor demand curve (for a discussion of "efficient contract" models, see Farber 1986).

nonunion suppliers in the US or abroad).[6]

The standard framework offers a normative basis to evaluate the effects of unionism, using economic efficiency as the outcome criterion. By this criterion, unions produce a distortion away from the efficient competitive outcome (i.e., a welfare loss), causing the price of labor to rise above opportunity costs and leading to too little employment and output in the union sector, and thus too much elsewhere. The ability of unions to raise wages above opportunity cost is made possible by the labor monopoly rights granted to unions in US labor law. The micro distortion approach to evaluating unions and collective bargaining is far too narrow, basically making unionism equivalent to an exogenous wage increase. Taken alone, such an approach fails to account for the many other ways in which unions and collective bargaining affect economic performance, positively and negatively, which is the subject of this essay. The standard framework also ignores the difficulty in measuring the value to workers and society resulting from the option for workers to choose workplace democracy and formalized governance.

Since the 1984 publication of Freeman and Medoff's *What Do Unions Do?* their "two faces of unions" framework has been used to evaluate unions. The approach provides a broad umbrella under which scholars can describe union effects on the workplace, cataloguing the effects as either monopoly effects based on standard micro theory summarized above or (often positive) collective voice/institutional response (CV/IR) effects. Because the CV/IR framework has been discussed extensively in prior literature (see papers in Bennett and Kaufman, 2007), I will be brief. What is important for purposes of this paper is that Freeman and Medoff broadened not only the theoretical lens through which economists viewed unions, but also the scope of empirical evidence. Rather than focus primarily on strike behavior and what unions do to wages, the staples of older literature, labor economists (and others) extended the literature to include union effects on wage inequality, benefits, productivity and productivity growth, profitability, investment, and turnover, among other things (Bennett and Kaufman 2007).

The monopoly face emphasizes the role of bargaining power, recognizing that the ability of unions to extract monopoly gains for its members is determined by the degree of competition and constraints on substitution facing both the employer and union. This face includes not only the distortionary effects on relative factor prices and factor usage resulting from union wage premiums.[7] Independent of price distortions, unions may cause losses in output through strikes and decrease productivity in some workplaces through contractual work rules, reduced worker incentives, and limited managerial discretion. The monopoly face of unionism has expanded to include any union effect that

---

[6] If union wage gains derive in part from a "tax" on the returns to long-lived capital, as discussed subsequently, it need not follow that union companies increase capital intensity (i.e., the ratio of capital to labor).
[7] The standard micro theory approach to unions also addresses the possibility of employer monopsony, wherein union wage increases over a particular range can increase efficiency and raise both wages and employment toward competitive levels. Labor economists disagree about the significance of monopsonistic power in labor markets.

decreases efficiency or total value (the "size of the pie") to firm stakeholders (workers and owners) and consumers. Theoretical and empirical literature, discussed subsequently, has emphasized unions' role in taxing returns on tangible and intangible capital and the resulting effects on profitability, investment, and growth (Hirsch 2007b).

The "collective voice/institutional response" (CV/IR) face of unions described by Freeman and Medoff focuses on value-enhancing aspects of unions, emphasizing the potential role unions can play in the operation of internal labor markets. Legally protected unions may make it possible for workers to express their preferences and exercise workplace collective voice. Collective bargaining can be more effective than individual bargaining or regulation in overcoming free-rider problems and underproduction of public-goods in the workplace. As the workers' agent, unions may facilitate the exercise of the workers' rights to free speech, acquire information, monitor employer behavior, and formalize the workplace governance structure (Weil 2005). Unions are more likely to represent average or inframarginal workers, whereas nonunion employers are most responsive to their more mobile employees and potential hires. The exercise of effective voice potentially can increase workplace productivity, an outcome depending not only on voice but also on a constructive "institutional response" and a cooperative labor relations environment. Freeman and Medoff emphasize that supportive management response to union voice is a necessary condition for positive union outcomes. Where management is inherently hostile to union governance, regardless of union behavior, one cannot expect unions and CV/IR to produce positive performance outcomes.

In what follows, I borrow from both the monopoly and CV/IR approaches, emphasizing the importance of union governance and how it operates in a competitive and dynamic economic environment. The role of competition on sustainability is well understood. For union companies operating in competitive, largely nonunion, industries, cost increases cannot be passed forward to consumers through higher prices. Substantial union wage premiums in such settings, absent productivity improvements that largely offset labor cost increases, should lead establishments to contract over time.[8] Unions have greater ability to acquire and maintain wage gains in less competitive economic settings, but there are fewer and fewer such settings in an increasingly competitive global economy. There has been little attention in the union and performance literature, however, on how differences in governance between union and nonunion companies interact with the economy's competitiveness and dynamism, potentially leading to differences in performance. This is the emphasis provided in this essay.[9]

---

[8] By the same reasoning, union companies that prosper in a competitive environment are not a random draw from among all possible (and largely unobserved) union-company experiences.
[9] The clearest precursors are Wachter (2004, 2007), the first paper comparing union versus nonunion governance and emphasizing transaction costs, and the second the fundamental role competition plays in limiting union strength.

4. Unions and Performance: Measurement and Interpretation

Because theory provides reasons why unionization can both improve and harm economic performance, the qualitative as well as quantitative effects of unions is largely an empirical question. Before turning to issues of measurement and evidence in this section, it is worth emphasizing three related points. First, union effects on performance are typically measured by outcome differences between union and nonunion firms or sectors. Such differences do not measure the effects of unions on aggregate or economy-wide performance as long as resources move relatively freely across sectors. Evidence summarized below, for example, suggests that unionized companies have had lower profits and growth than similar nonunion companies. To the extent that output and resources are mobile, poor performance in union establishments and firms should lead to a shift of production and employment out of the union sector and into nonunion sectors. Overall effects on economy-wide performance are likely to be modest.

A second point is that what are referred to as "union effects" on performance are the results of the interactions between management and unions (i.e., executives, managers, union leaders, rank and file) within the collective bargaining process as compared to some nonunion counterfactual. Measured union-nonunion differences in performance in, say, productivity or profits, reflect these joint actions and not just the actions or behavior by unions. Were management (union) attitudes and actions with respect to unions (management) different, "union effects" on performance would no doubt differ. Value-added unionism and a stronger CV/IR face would be more likely if the collective bargaining process were less adversarial, were management less ideologically hostile to unions, and were unions (and rank and file workers) more far sighted and less focused on capturing rents. The third point follows naturally. The effects of unions on productivity and other aspects of performance will vary substantially across companies, industries, time, and countries given that both the collective voice and monopoly activities of unions depend crucially on the labor relations and economic environments.

The empirical literature on union performance effects in the US leaves much to be desired. The most serious impediment to progress on this front is the almost total absence of current, publicly available data on collective bargaining coverage at the establishments and firm level. Data are more readily available for other developed countries, but results from other countries cannot be readily generalized given the considerable variability in labor institutions across countries. The US has regularly published data on individual worker union membership and coverage from CPS household surveys that can provide union density estimates for industries, occupations, and localities, (see Hirsch and Macpherson 2003, and the www.unionstats.com database), but not measures of establishment or firm level union coverage. Labor unions provide reports of their membership and finances to the Department of Labor, but their

---

Dynamism and the sluggishness of union governance is emphasized in Hirsch (2008) and Hirsch and Hirsch (2007). For a related discussion on workplace governance, including an application to unions, see MacLeod (2010).

membership cannot be fully allocated across specific establishments and companies based on these reports.[10] The National Labor Relations Board (NLRB) reports on union elections and outcomes, but these data have several limitations. They do not include small election units, union election wins need not translate into collective bargaining coverage (i.e., a contract), aggregating from elections up to the firm level is difficult, flows into union membership via elections for a given year (or set of years) are a small proportion of the total stock of members and there is no obvious way to account for flows out of union employment. Much of the empirical literature on unions and performance has therefore relied on unique data sets containing measures of unionism; for example, coverage among establishments in a single industry or coverage among a nationwide sample of companies responding to a researcher's survey questionnaire. And much of the evidence for the US, including that in recently published studies, is based on older data on unions and performance, most often from the 1970s and 1980s. Absent publicly available data on past and current union coverage among US establishments and firms, it is difficult to provide broad-based descriptive evidence on union-nonunion differences in performance, let alone reliably estimate causal effects.

Although never fully achievable, the goal of empirical studies (and theory) is to help make possible reliable inferences about the causal effects of unionization on economic performance throughout the economy. In principle, we would like to observe something equivalent to a laboratory experiment in which some establishments or firms were randomly "treated" or assigned collective bargaining coverage while other were not. We could then compare subsequent performance outcomes (wages, productivity, profits, investment, growth, etc.) of the "treated" union businesses with the non-treated "control" group of nonunion businesses. If the union assignment were truly random and sample sizes large, these differences in outcomes between the union and non-union businesses provide arguably unbiased measures of the causal or average "treatment effects" from unionization. Even such an idealized (and impossible) experimental approach would not account for the effects that collective bargaining institutions, labor law, and the economy-wide level of coverage have on the outcomes of nonunion businesses.

Of course, unionization is not randomly determined. Rather, today's union coverage is the result of past and present preferences, decisions, and interactions among workers, unions, and management, all occurring within environments heavily influenced by economic, legal, political, and cultural forces.[11] Empirical studies must attempt to condition on measurable differences across businesses when comparing union and nonunion outcomes. But even when one can control for a large number of covariates,

---

[10] Holmes and Walrath (2007) provide a careful and enlightening longitudinal analysis of such data. Among the issues that arise are that figures provided by union locals sometimes include members for a single establishment, sometimes for a single firm across establishments, and sometimes for members across multiple employers.

[11] It can be argued that unionism is an "experience good" for workers, organizers, and management (Gomez and Gunderson 2004). Holmes (2006) provides evidence on the geographic link between past and current unionization, consistent with the experience good framework.

estimation issues remain.

A large number of existing studies utilize cross-sectional data at a single or multiple points in time, where differences in outcomes (productivity, profits, etc.) across establishments, firms, or industries with different levels of union coverage. Regression analysis is then used to provide estimates of union relative to nonunion differences in performance, conditioned on other measurable covariates. Such results are highly informative, but caution must be used before inferring that estimated differentials provide good measures of causal union effects. Among the key issues here are whether there is omitted variable bias, union endogeneity, measurement error, and external validity.

As applied to unions and performance, omitted variable bias results when one is unable to control for an important performance determinant correlated with union density. For example, if older plants have lower productivity and union density is higher in older plants, inability to control for plant age (or its correlates) in a production function would bias downward estimates of the union impact on productivity. A second concern is that union status may be determined endogenously rather than independently of the outcome measure. For example, unions are most likely to organize, obtain contracts, and sustain employment in firms (or industries) with higher potential profitability. Standard estimates of union effects on profitability would thus be biased upward, understating the negative impact of unions on profits. The most common method for addressing endogeneity is the use of instrumental variables (IV) estimation, but this approach has been seen infrequently in the unions and performance literature because it is difficult to identify statistically appropriate instruments. Alternatively, studies can include company fixed effects or (similarly) examine how outcome measures change with respect to changes in unionism. Even when such longitudinal data are available, it is not clear that union effects can be reliably estimated since union impacts on the workplace presumably evolve and are maintained over many years.

A third concern is external validity. Even when a study is internally valid, it need not follow that its results are externally valid; that is, that its results can be generalized beyond the particular setting from which the data are drawn. Some of the more reliable estimates of union effects on productivity are based on specific industries (e.g., cement, sawmills) where output is homogeneous and measured in physical units rather than by value added. Yet it is not clear whether results for, say, the western sawmill industry (Mitchell and Stone, 1992) can be generalized to the economy as a whole, particularly given that we expect union effects to differ across time, establishment, and industry.

In short, the unions and performance literature is severely limited by the paucity of US data sets containing data on establishment and firm level union coverage and performance outcomes. Among the studies that do exist, most cannot be strictly interpreted as measuring the causal effects of union coverage. But it does not follow that the empirical literature is uninformative. Depending on the question and data

analysis at hand, it is sometimes possible to make reasoned inferences about the direction and size of bias in the estimates. Moreover, many of the studies can be interpreted as measuring partial correlations; that is, the correlation between union coverage and performance outcomes holding constant other measured covariates. Such "descriptive" evidence is informative and relevant. For example, evidence that unionized companies have, on average, substantively higher wages, at most modestly higher productivity, and lower profitability, can help explain why private sector unionism has declined in an increasingly competitive economy, even if these partial correlations are biased measures of causal union effects.

5. Unions and Performance: Evidence

Rather than provide an encyclopedic survey of the empirical literature, this section will interpret what I believe are some of the more` important or representative studies and assess what we can and cannot say about unions and performance. Readers can refer to existing surveys for a comprehensive set of references.[12] The focus is on US studies, with some attention given to studies from Canada where evidence on unions and performance aligns well with that from the US. More broadly, it is difficult to generalize results from one country to another given that the effects of unions appear sensitive to the specific economic, legal, and structural environments. This is unfortunate given that data from other developed countries are often superior to US data, providing researchers with occasional peaks inside the union-performance black box.

A. Productivity and Productivity Growth

The unions and performance literature has rightly emphasized the importance of how unionism affects productivity. If collective bargaining in the workplace were to systematically increase productivity along with worker compensation, but not retard investment and growth, a much stronger argument could be made for policies that encourage union organizing. Despite encouraging evidence from Brown and Medoff's (1978) path-breaking and rightly influential study, which concluded that unions had large positive productivity effects, subsequent literature has not supported this position. Rather, it appears that unionism in the US is associated with highly variable effects on productivity that on average may (or may not) be positive, but are almost certainly small and insufficient to offset higher union compensation costs. Unions are associated with slower productivity growth, but this appears to be the result of lower profits and investment in tangible and intangible capital among companies with union covered workforces.

Most studies have estimated some variant of the Cobb-Douglas production function developed by Brown and Medoff (1978),

---

[12] Early surveys and interpretations of the US literature include Addison and Hirsch (1989), Booth (1995), and Kuhn (1998), while recent surveys include Hirsch (2007b) and MacLeod (forthcoming). Greater emphasis on non-US studies is provided in Aidt and Tzannatos (2002) and Metcalf (2003). Doucouliagos and Laroche (2003, 2009) provide meta analyses of the literatures on unions and productivity and on unions and profits.

$$Q = AK^{\alpha} (L_n + cL_u)^{1-\alpha} \tag{1}$$

where Q is output; K is capital, L_u and L_n are union and nonunion labor; A is a constant of proportionality; and α and $(1-\alpha)$ are the output elasticities with respect to capital and labor. The parameter c reflects productivity differences between union and nonunion labor. If $c>1$, union labor is more productive, in line with the collective-voice model; if $c<1$, union labor is less productive, in line with conventional arguments concerning the deleterious impact of such things as union work rules and constraints on merit-based wage dispersion. Manipulation of equation (1) yields the estimating equation

$$\ln(Q/L) \approx \ln A + \alpha \ln(K/L) + (1-\alpha)(c-1)P, \tag{2}$$

where P represents proportion unionized (L_u/L) in a firm or industry or (in some studies) the presence or absence of a union at the plant or firm level. Equation (2) assumes constant returns to scale, an assumption relaxed by adding $\ln L$ as a control variable. The coefficient on P measures the logarithmic productivity differential of unionized establishments. If it is assumed that the union effect on productivity solely reflects the differential efficiency of labor inputs, the effect of union labor on productivity is calculated by dividing the coefficient on P by $(1-\alpha)$.

The conclusion that unions substantially raise productivity rests almost exclusively on Brown and Medoff's results using aggregate two-digit manufacturing industry data cross-classified by state groups for 1972. Brown and Medoff's preferred coefficient estimates on union density are from .22 to .24 (approximately 22-24 percent), implying values (obtained by dividing the union coefficient by $1-\alpha$) for c-1 of from .30 to .31. Using alternative assumptions about capital usage (that increase union relative to nonunion capital), estimates of union productivity effects fall roughly in half.

The production function approach has limitations, many of which were identified by Brown and Medoff. In particular, the use of value added as an output measure confounds price and quantity effects, since part of the measured union productivity differential may result from higher prices in the unionized sector, particularly in those markets sheltered from nonunion and foreign competition. Estimated effects of unions on productivity tend to be lower following price adjustments, possible in industry-specific studies such as construction (Allen 1986) and western sawmills (Mitchell and Stone, 1992). Use of value added is less a concern in firm or business level analyses that measure firms' union status *and* industry union density or other industry controls (Clark 1984, Hirsch 1991a).

The Brown-Medoff results are also inconsistent with other pieces of evidence. As argued by Addison and Hirsch (1989), parameter estimates from Brown and Medoff would imply an increase in profits resulting from unionism, contrary to widespread evidence of lower firm and industry profitability, on average, associated with union coverage. Wessels (1985) shows that it is difficult to reconcile the

productivity and wage evidence in Brown and Medoff with evidence on employment.

Subsequent studies using the Brown-Medoff approach have been as likely to find negative as positive union effects on productivity. Two studies with manufacturing-wide data and firm or business level measures of union coverage are Clark (1984) and Hirsch (1991a). Clark uses data for 902 manufacturing lines-of-business from 1970 to 1980 to estimate value-added production functions, among other things. He obtains marginally significant coefficients on the union variable between -.02 and -.03. The Clark study has the advantage of a large sample size over multiple years, business-specific information on union coverage, and a detailed set of control variables. A similar study by Hirsch (1991a), examines over 600 publicly-traded manufacturing firms during 1968-1980, with 1977 (retrospective) firm-level union coverage data collected by the author. A strong negative relationship between union coverage and productivity is found when including only firm-level controls, but the union effect drops sharply with the inclusion of detailed industry controls, a result highly comparable to that in Clark. The results prove somewhat fragile when subjected to econometric probing. Hirsch interprets his results as providing no evidence for a positive economy-wide productivity effect and weak evidence for a negative effect. Regrettably, recent US firm or business level data with measures of union coverage similar to those used by Clark and Hirsch have not been readily available.

Both Clark (1984) and Hirsch (1991a) find considerable variability in union productivity effects across manufacturing industries. These results support the point emphasized by Freeman and Medoff (1984) that "what unions do" is highly dependent on the labor relations environment. Several studies provide evidence showing that productivity or quality suffers as a result of strikes and labor unrest. Kleiner et al. (2002) conclude that negative productivity effects from strikes and slowdowns at a commercial airline manufacturer are temporary. Krueger and Mas (2004) find that tire defect rates were particularly high at a Bridgestone/Firestone plant during periods of labor unrest. Using auction data, Mas (2008) finds that construction equipment produced by Caterpillar at its US plants during periods of labor unrest was more likely to be subsequently resold and sold at a deeper discount.

Perhaps more important than the labor relations environment, per se, are the human resource management (HRM) practices (e.g., incentive pay, intensive screening of hires, teamwork, flexible job assignments, skills training, etc.) and workplace culture within establishments. If one expands the concept of workplace "governance" to include HRM practices, then we have some relatively direct (but limited) evidence relating productivity to union governance. Ichniowski et al. (1997) examine how productivity differs with respect to individual HRM practices and bundles of practices across steel finishing line plants. Although union effects on productivity were not their principal interest, they did have a measure of union coverage. They found that union plants or lines of production were somewhat less productive overall than were nonunion lines, but that this result was due to the HRM practices (largely not) adopted

in union plants. Among those steel finishing lines that adopted the most productive bundles of HRM practices, union lines were more productive than were nonunion lines. The more productive bundles of workplace practices, however, were least likely to be adopted in union plants.

Black and Lynch (2001) provide a similar finding. They estimate production functions for a sample of US manufacturing plants over the period 1987-1993, focusing not on union effects but on the effects of workplace practices, information technology, and management procedures. Absent interaction terms, Black and Lynch find slightly lower productivity in unionized plants following inclusion of detailed controls, a result equivalent to that found throughout manufacturing by Clark and Hirsch, and by Ichniowski et al. for steel production lines. Black and Lynch conclude that the negative union result is driven by low productivity among unionized plants using traditional management systems. Union plants that adopted human resource practices involving joint decision making (i.e., total quality management or TQM) and incentive-based compensation (i.e., profit sharing for nonmanagerial employees) were found to be more productive than their nonunion counterparts, which in turn had higher productivity than union plants using traditional labor-management relations. But the Black-Lynch sample contains few union plants adopting the most productive HRM systems.

Economy-wide, union plants are among those least likely to adopt modern human resource practices and incentive based compensation (Verma 2007). This stylized fact is consistent with the strong rise in such HRM practices during a period of declining unionism and by relatively compressed pay in union as compared to nonunion companies.[13]

The assessment in this section that average union-productivity effects are close to zero is reinforced in other surveys. The authors of a meta analysis of the unions-productivity literature conclude that the average effect in the US is very small but positive, while negative in the UK. (Doucouliagos and Laroche, 2003). A survey of labor economists at leading universities asking for an assessment of the union effect on productivity produced a median response of zero and mean of 3.1 percent (Fuchs et al., 1998).[14]

No less important than the effect of unions on productivity levels are the dynamic effect of unions on productivity growth, as well as studies assessing sales and employment growth. Productivity growth is typically measured by the change in value added conditional on changes in factor inputs. When data permit, studies examine union effects on growth controlling for changes in stocks of tangible and intangible capital (and other measurable factors of production). Thus, what is being measured is a "direct"

---

[13] For comprehensive US and international evidence on HRM practices, see Bloom and Van Reenen (forthcoming).
[14] The specific question asked was: "What is your best estimate of the percentage impact of unions on the productivity of unionized companies?" (Fuchs et al., 1998, pp. 1392, 1418).

effect of unions on growth, independent of effects that unions may have on capital investment (addressed below). Union effects on productivity levels and growth (i.e., changes) need not be the same. For example, unionization might initially be associated with higher levels of productivity owing to "shock" or voice effects, but at the same time retard rates of growth. Of course, over time low (high) rates of productivity growth will produce low (high) productivity levels.

Freeman and Medoff (1984) found lower but not statistically significant union productivity growth effects using alternative industry-level data sets, evidence they regarded as inconclusive. A more comprehensive analysis using firm-level data (with control for industry effects) was provided by Hirsch (1991a) based on a sample of 531 firms and covering the period 1968 to 1980. Following control for company size and firm-level changes in labor, physical capital, and R&D, union firms have substantially lower productivity growth than nonunion firms. Accounting for *industry* sales growth, energy usage, and trade, however, cuts the estimate of the union effect by more than half. Addition of industry dummies cuts the estimates further, while remaining effects are fragile when subjected to econometric probes regarding the error structure. Hirsch concludes that unionized companies during these years displayed substantially lower productivity growth than nonunion firms, but most of the difference was due to union firms having lower profits and investment and being located in industries with slower growth.

Despite the contentiousness surrounding the effects of unions on productivity levels and growth, the most comprehensive studies find little evidence that unions substantially decrease or increase productivity once one accounts for non-labor factors of production, among other determinants. Caveats attach to this conclusion, however. First, the finding that union firms have lower productivity and productivity growth absent detailed industry controls is important on its own, even though it tells us little about unions' causal effects. Second, the critical point is that unionization fails to produce a substantial positive effect on productivity that offsets union compensation gains, thus implying lower profitability and (potentially) lower investment. Third, a small or zero union impact is difficult to interpret. This could mean that all the potential positive and negative channels through which union coverage might affect productivity are unimportant, or that both positive and negative channels matter but cancel out. Fourth, studies measuring average effects of unions almost certainly mask considerable diversity in outcomes across firms and industries. Fifth, studies of productivity and productivity growth control for differences in levels or changes in factor-input usage. But unionization is associated with lower rates of investment and accumulation of physical and innovative capital. These indirect effects of unionization appear to be an important route through which union companies and sectors in the US have realized slower sales and employment growth.

B. *Profitability*

Evidence on unions and profits is reasonably clear-cut, indicating lower profitability in union than in nonunion companies. This is not surprising as long as union productivity (output) effects do not fully offset union increases in compensation. Absent such an offset, the only way profits would not decline is if union companies could shift higher costs to consumers through higher prices. In some US industries, this once may have been possible.[15] In today's competitive markets where union companies compete with nonunion domestic companies and traded goods, there is limited ability to pass forward higher costs to consumers.

In the long run, differences in profitability should lead to a movement of resources out of union into nonunion sectors, thus mitigating differences in returns. Specifically, investment in and by union operations should decline until these firms' rates of return (after a union "tax" on profits) are equivalent to nonunion returns. Remaining union coverage (companies) should be restricted to economic sectors realizing above-normal, pre-union rates of returns and those where unionization provide some special advantage and/or where competitive entry is difficult. Such an adjustment process may be rather drawn out, particularly in less competitive environments where quasi-rents accruing to long-lived capital have provided a principal source for union gains. Resource movements should be accelerated the more dynamic and competitive the economic environment.

The process described above appears to approximate the long-run de-unionization process seen in the US private sector (and perhaps in other economies). The gradual nature of this transition coupled with severe data limitations make it difficult to empirically establish, isolate, and quantify the specifics of such a process. The paucity of such evidence, however, does not rule out such a characterization of the US experience.

Lower profits among union companies should be evident in current earnings, measured by rates of return on capital or sales, and in lower stock market valuation of firms' assets. Ex-ante returns on equity (risk-adjusted) should not differ between union and nonunion companies, since stock prices adjust downward to reflect lower expected earnings (for evidence, see Hirsch and Morgan, 1994). Lower profits are found using alternative measures of profitability. Studies have used industry price-cost margin, accounting profit measures of rates of return on capital and sales, and market-value measures such as Tobin's q (market value divided by the replacement cost of assets). "Events" studies have examined changes in stock market returns associated with union election wins (and losses) relative to predicted market returns based on estimated parameters from capital asset pricing models (CAPM). The body of

---

[15] The most obvious examples were regulated industries with restricted entry (e.g., airlines, trucking, and utilities) where prices were administratively determined to approximate average costs. Substantial pass-through of costs to consumers may have possible in oligopolistic industries facing little foreign or domestic nonunion competition (e.g., the 1950-60s automotive industry).

existing evidence points unambiguously to lower profitability among union companies, although studies differ in their conclusions regarding the source of union gains.[16]

Estimates from a prototypical study suggest that unionized companies firms had profits 10 to 20 percent lower than in nonunion firms during the late 1960s through early 1980s (e.g., Hirsch 1991b). Economists are understandably skeptical that large profit differentials could survive in a competitive economy. Because rates of profit are not typically large, small absolute differences can produce large percentage differences. Whether one believes 10-20 percent differences in profitability can be sustained for "long" periods of time may hinge on one's beliefs regarding how closely the US economy is approximated by the competitive model. One interpretation of the evidence is that union-nonunion differences in profitability did survive for a long period, but that the very long run has now arrived with the competitive process having largely played itself out.[17]

As the US economy has become increasingly competitive, it has become difficult to fund union compensation premiums from economic profits (i.e., returns above opportunity costs), given that competition should force these toward zero (i.e., normal or competitive accounting returns) in the long run. Quasi-rents that make up the normal returns to long-lived physical and intangible capital, however, may provide an alternative source of funds to finance union premiums. If so, this has serious implications for investment and long-term growth, addressed in the next section.

C. *Investment*

Union effects on investment were not a focus of work by Freeman and Medoff (1984) or others summarized in *What Do Unions Do?* Subsequent research has concluded that investment is an an important route through which unions affect economic performance. The earliest empirical paper appears to be Connolly et al. (1986), who proffered a rent-seeking framework in which unions appropriate (i.e., tax) the returns from investments in tangible and intangible capital. Their framework relied on theoretical papers by Baldwin (1983) and Grout (1984). Connolly et al. found unionization, measured at the industry level, associated with lower firm-level investments in R&D. As developed subsequently (Hirsch, 1991a; 1992), "rationally myopic" unions find it optimal to "tax" capital when the time horizon of their members is short relative to owners' time horizon for long-lived, nontransferable capital. That is, union wage gains are funded in part by appropriation of some share of the quasi-rents that make up the normal return to

---

[16] See Hirsch (2007b) and Doucouliagos and Laroche (2009) for references. A notable exception to the negative profit result is DiNardo and Lee's (2004) regression discontinuity analysis, which finds virtually no significant outcome effects (including wages) associated with close union wins versus close union losses. Their methodology is designed to estimate the causal effects of collective bargaining, holding constant union sentiment among workers (i.e., roughly 50/50 support). It is not clear that the effects of union wins with "marginal" support can be generalized to union effects more generally. A substantial extension of their analysis by Lee and Mas (2009) shows that the equity value of companies is substantially reduced following average and large-margin union wins.

[17] The title of Addison and Hirsch's (1989) paper on union effects on performance asks "Has the long run arrived?"

investment in long-lived physical capital and R&D. In response, firms reduce their investment in vulnerable capital until returns on investment are equalized across the union and nonunion (i.e., taxed and non-taxed) sectors. Contraction of the union sector, it is argued, results from the long-run response by firms to such rent seeking.[18]

The union tax or rent-seeking framework has somewhat different implications than does the standard economic model of unions. In the standard model, a union wage increase causes a firm to move up and along its labor-demand schedule by decreasing employment, hiring higher quality workers, and increasing the ratio of capital to labor. Capital investment can increase or decrease owing to substitution and scale effects working in opposing directions. In the rent-seeking framework, a union wage increase need not decrease the relative cost of capital since the union wage is funded in part by a tax on the returns from prior investments in long-lived capital (Hirsch and Prasad 1995). Knowing that such investments may increase future union bargaining power, firms reduce investments in long-lived (nontransferable) physical and R&D capital[19]

Empirical analysis of union effects on investment in tangible and intangible capital by Hirsch (1991a) distinguishes between "direct" and "indirect" investment effects of unions. The direct effect stems from the union tax that leads firms to decrease investment until the marginal post-tax rate of return is equated with the marginal financing cost. The indirect union effect on investment arises from the higher financing costs owing to reduced profits (and, thus, reduces internal funding of investment). Using data for 1968-1980 for approximately 500 publicly traded manufacturing firms and a model with detailed firm and industry controls, including profitability, Hirsch estimates the effect on investment for a typical unionized company compared to a nonunion company. Other things equal, the typical unionized company has 6 percent lower capital investment than its equivalent nonunion counterpart. Adding in the indirect effect of lower profits on investment increases the estimated union effect to about 13 percent. For annual investments in R&D, Hirsch finds that the average unionized company has 15 percent lower R&D, holding constant profitability and the other determinants. Allowing for indirect effects induced by lower profitability, however, only modestly raises the estimate.

Subsequent empirical studies for the US provide strong support for the conclusion that unions are

---

[18] The "hold-up" models of unions and investment proffered by Baldwin (1983) and Grout (1984) involve inefficient contracts. In principle, worker wages could be reduced during the investment period in order to "pre-finance" the subsequent rent-sharing (i.e., tax on investment returns). Card et al. (2010) carefully test such a rent sharing model using matched employer-employee data from the Veneto region of Italy (the data contain no information on union status). The authors conclude that there is evidence for efficient dynamic bargaining, with workers paying up front for the returns to sunk capital that they will capture in later periods. The evidence on investment summarized in this section suggests that one should be cautious in generalizing these results to union contracts in the US.

[19] Using firm-level Compustat data and union data from Hirsch (1991a), Cavanaugh (1998) shows that deleterious union effects on market value and investment are directly related to the ease with which quasi-rents can be appropriated.

associated with lower physical and intangible capital investments (for references, see Hirsch 2007b).[20] More broadly, evidence consistent with the rent-seeking model should be evident from wage studies as well as investment studies. The labor economics literature suggests that rent sharing (i.e. higher wages associated with higher profits) exists in nonunion as well as union establishments, but collective bargaining provides a formal mechanism to identify and capture above-normal returns.[21] A recent paper by Felix and Hines (2009) uncovers the interesting empirical finding that in states with lower corporate income taxes, union wage premiums are higher. They interpret this outcome as evidence of rent sharing. A more nuanced explanation might be that low corporate income tax leads to higher capital intensity and creates a pool of quasi-rents susceptible to union bargaining power and wage demands.

A related literature has arisen on debt financing, arguing that unionized companies will maintain higher debt to equity ratios to hold down union bargaining power.[22] Support for this was found in an early paper by Bronars and Deere (1991). Recent studies include Matsa (2010) and Klasa et al. (2009). Chen et al. (forthcoming) provide related evidence, arguing that the reduced operating flexibility among union companies raises their cost of equity.

D. *Employment Growth and Survival*

The effects of unions on employment growth and survival are not independent of union effects on productivity, profits, and investment. It would be surprising were lower profits and investment not accompanied by slower growth, and this is what the evidence shows, although establishing causal effects is difficult. Leonard (1992) found that unionized California companies grew at significantly slower rates than did nonunion companies. Linneman et al. (1990) showed that much of what had been represented as a "de-industrialization" of America was largely "de-unionization" – within most narrowly defined manufacturing industries during the 1980s nonunion employment grew while at the same time there were substantial decreases in union employment (for an update and extension, see Bratsberg and Ragan, 2003). In a study using longitudinal plant-level data, LaLonde et al. (1996) show that employment (and output) decrease following a vote in favor of union certification.[23]

---

[20] Consistent with US evidence, Odgers and Betts (1997) conclude that in Canada unions significantly reduce investment in physical capital, while Betts et al. (2001) conclude likewise for R&D. In a comparative study of the US and Britain, Menezes-Filho et al. (1998) conclude that the US evidence for a deleterious union effect on R&D investment is robust but that unions have little effect in the UK following detailed industry controls. They speculate that British unions have fewer deleterious effects than do American unions owing to more explicit bargaining over employment levels and a preference for longer contracts than in the US. The R&D evidence is also consistent with the evidence finding far smaller union wage effects in Britain than in the US (Blanchflower and Bryson, 2003).

[21] Guertzgen (2009) uses linked employer-employee data from Sweden and shows that wage contracts are related to firm quasi-rents, but that industry-wide agreements (common in Sweden but not the US) have much lower responsiveness to firm-level profitability than do local agreements.

[22] Similar reasoning is used to argue that union companies have incentive to underfund pensions (Ippolito 1985).

[23] Studies of Canada (Long 1993, Walsworth 2010) and Britain (Addison et al. 2003) likewise find unionization associated with slower employment growth.

There exists a small but related literature focusing on unions and business closings. Given that we observe slower growth among union than nonunion businesses, we would expect to observe higher business failure rates as well. Such a pattern is not readily evident in the (few) studies to date. Dunne and Macpherson (1994) utilize longitudinal plant-level data (grouped by industry-by-size) to show that there are more employment contractions, fewer expansions, and fewer plant "births" in more highly unionized industries. Yet they find that unions have no effect upon plant "deaths," even after controlling for plant size. Freeman and Kleiner (1999) analyze two sets of data, one including insolvent and solvent firms, each with information on union status, and a second on individuals surveyed in the CPS Displaced Worker Surveys. Using the first data set, Freeman and Kleiner conclude that failed firms or lines of business (most lines of business remain in operation following bankruptcy) have similar union density as do solvent firms and lines of business. Using individual data, they find that being a union worker does not lead to a higher probability of permanent job loss from plant closure or business failure. DiNardo and Lee (2004) examine survival rates for establishments following union certification elections. Using a regression discontinuity design, they compare survival rates for establishments that have just under and just over a 50 percent vote in union elections. Combining NLRB election data for 1983-1999 with a matched listing of whether establishments named in the NLRB file continue to exist at that address in May 2001, they conclude that the effects of a successful union organizing drives on survival are negligible. For that matter, they find few differences between any economic outcomes, including wages, among businesses with close union wins versus losses.[24]

In short, the rather limited empirical literature that exists finds that US unions are associated with slower employment growth, but appear to exhibit little difference in rates of business failure or survival. At first blush, these results appear inconsistent and require some explanation. One possible explanation is that survival rates are affected by union status but that we have not had sufficiently rich and reliable data to establish this. For example, not all studies have been able to control for firm age and size. Older and larger firms are both more likely to survive and to be unionized. Nor do companies reorganized through bankruptcy typically show up as business failures, although plant closures would show up in establishment level studies. An alternative explanation (Freeman and Kleiner 1999; Kuhn 1998) is that rent-seeking unions will drive enterprises toward the cliff but rarely over it.[25] In an uncertain world,

---

[24] As mentioned previously, Lee and Mas (2009) provide data refinements and extend the DiNardo and Lee analysis to examine how the effect of union wins on equity value vary with the strength of union support. They conclude that union wins with average and large margins are associated with large declines in market value. They do not examine how survival rates are affected by the strength of union support.

[25] "Unions reduce profits but they do not 'destroy the goose that lays the golden egg'" (Freeman and Kleiner, 1999, p. 526). "Like successful viruses, unions are smart enough not to kill their hosts" Kuhn (1998, p. 1039). More formally, Kremer and Olken (2009) provide an evolutionary biology model of unions, noting that parasites that kill their hosts do not spread whereas those that do little harm spread and may evolve to become essential to their hosts. They conclude that unions maximizing the present value of members' wages are likely to be displaced by more

however, it would be surprising if unions and management did not sometimes miscalculate location of "the cliff" and thus have "accidental" business failures. This appears to be exactly what has happened in the airline and automotive industries in recent years, as discussed below. Hirsch (2008) has argued that union governance has often proven sluggish or insufficiently flexible (i.e., too little, too late) in the face of dynamic competitive changes. The next section addresses this broader question regarding union versus nonunion governance, an area in which we have remarkably little systematic evidence.

6. *Union Governance, Dynamism, and Competition*

Collective bargaining once provided the dominant workplace governance structure in the private industrial sectors of the US economy. This is no longer so. Although there are many reasons why private sector unions have been in decline, this section emphasizes the relative disadvantage faced by union governance in highly competitive and dynamic economic environments.

In the nonunion private sector, the dominant governance structure is employer-fiat personnel systems wherein outcomes are determined by some combination of employer norms, government regulations and mandates, and the incentives and constraints produced by market forces, in particular, financial viability coupled with the need to attract and retain qualified employees. Subject to economic constraints, plus governmental constraints with respect to discrimination, minimum pay, hours of work, safety, and the like, nonunion employers are free to dictate pay and governance methods.

Unionized companies face largely the same external legal and economic constraints as do nonunion businesses. Union workplaces, however, are characterized by relatively formalized governance structures that rely on collective bargaining, explicit contracts, and structured channels for worker voice. As envisioned in the NLRA, industrial workplaces are typified by top-down control moving from managers to workers, the latter having minimal need for discretion or decision-making. Such a characterization may have been defensible during the NLRA's formative years, but not today. In contemporary workplaces, job hierarchies are not so clear-cut and worker decision-making, often done in teams, is essential at most levels of production. Incentive pay, flexible job assignments, and the like are widespread within nonunion companies, but far less likely in union establishments (Verma 2007, Ichniowski et al. 1997, Bloom and Van Reenen, forthcoming). Although collective bargaining contracts permit considerable employer discretion in the daily operation of a workplace, managerial discretion or flexibility is constrained, with substantive changes in wages and methods of pay, benefits, job assignments, and working conditions requiring negotiation with the union.

Union governance by its very design is deliberative and often slow in responding to workplace changes. This stems in part from the adversarial nature of traditional unionism and the limited opportunity

moderate unions. In their model, exogenous firm turnover lowers equilibrium union density since unions must work harder (organize more) to stay in place.

for worker voice outside of formal union channels. Sluggish governance and high "transaction costs" are also the inevitable result of unions' democratic structure. Contracts have to be negotiated and approved by the rank-and-file. In order to gain and maintain their positions, union leaders cannot steer far away from the preferences of their members. When product and labor market conditions change, contractual revisions in the workplace relationship must await sufficient acceptance by workers of the need for or inevitability of such changes. Contract changes are typically negotiated every three years or so when an expiring contract is to be replaced or when there are substantial unanticipated shocks requiring concessions by workers or changes by management. Formal contracts have advantages, among them increasing certainty about the future and limiting opportunistic behavior by employers. But they come with a cost, reducing the ability of employers to make needed adjustments in the face of unanticipated shocks.

More generally, all workplaces confront a set of contractual issues that must be addressed through its governance structure, be it union or nonunion. Neither a union nor nonunion governance structure is uniformly superior to the other, a priori. As discussed by Wachter (2004) and Williamson et al. (1975), critical factors in any labor-contracting relationship include the ability to effectively deal with match-specific investments, asymmetric information, and risk (each being discussed below), and to do so in a relatively low cost manner (i.e., with low transaction costs). Wachter (2004) argues that the predominance of nonunion enterprises is primarily the result of low transaction costs. In a related vein, I have emphasized that formalized and deliberate union governance may not be highly disadvantageous in a static, non-competitive economic environment, but that it becomes increasingly costly the more competitive and dynamic the environment (for earlier presentation of this view, see Hirsch and Hirsch 2007; Hirsch 2008). As the economic environment has become more dynamic (rapidly changing) and competitive, traditional union governance has become more disadvantageous.

One contractual issue concerns match-specific investments in human and physical capital not valued by or transferable to other firms. As workers acquire firm-specific skills, they become more valuable to their current employer than to alternative employers. As firms acquire long-lived capital, some of it will be specific to the firm and not readily transferable to other companies. A problem associated with match-specific investments is the possibility of hold-up; once a party makes such investments, the other party can behave opportunistically and capture *ex post* "quasi-rents." One solution for firm-specific human capital is for workers and firms to jointly invest in these skills, with wages greater than those same workers can earn elsewhere but below the marginal revenue product of the workers to the firm. This arrangement creates a self-enforcing implicit agreement that gives both parties an interest in continuing the employment relationship so as not to lose returns on their investments. Opportunistic behavior by employers may be constrained by concern for their reputation among current and potential workers. As

discussed previously, not so easily solved is the hold-up problem faced by union firms with respect to long-lived firm-specific investments.

Asymmetric information between workers and management creates a risk that the advantaged party will behave opportunistically. For example, firms possess information on product demand superior to that of workers, providing firms the opportunity to misstate market conditions and gain an advantage in workplace negotiations. A result of the product-demand asymmetry has been the widespread norm under which firms are relatively free to adjust employment levels, but rarely adjust wages downward (Bewley 1999).[26] This self-enforcing mechanism reduces opportunistic use of the information asymmetry by generally taking off the table the option of understating the level of demand to achieve wage cuts. With wages fixed, employers lack incentive to misstate demand because they do not want to cut employment if demand is strong. In union workplaces, this process is somewhat more formal. Most collective-bargaining agreements allow employment level changes, but not wage adjustments, absent negotiation. Unions may grant employer requests for wage concessions, but generally only if financial records are disclosed to union representatives. Unions serve the useful purpose of verifying employer claims.

Risk bearing is a third contractual issue addressed in the employment relationship. Because workers have much of their income tied to their jobs with little ability to diversify, they are in a poor position to bear company-specific earnings risk through variable hours (including job loss) and compensation. Moreover, variability in company earnings is largely beyond the control of its workforce. Investors, in contrast, can readily diversify investments and bear such risk. Efficient risk bearing would largely insulate the compensation of (non-managerial) workers from variability in firm revenue and profit. Consequently, both union and nonunion workplaces have relatively fixed wage rates, in the union case through collective bargaining agreements and in nonunion companies through largely self-enforcing implicit contracts or norms.

Any advantage of nonunion over union pay and governance determination is not likely to arise from the above factors – match-specific investments, asymmetric information, or risk bearing – but, rather, from lower transaction costs in adjusting to contractual changes associated with these and other issues. Were changes in the economic environment very gradual and competitive pressures weak, a formal and highly deliberate union governance structure might pose few problems.[27] The costs of deliberate or sluggish union governance, however, increase with the speed of change and the degree of competition. New information is constantly coming to a firm and its workers and it is prohibitively costly

---

[26] Sharp, widespread downturns such as the Great Recession beginning in 2008 provide the exception to the general rule of no unilateral pay cuts. Such downturns in business are readily evident to workers, in which case employers' stated need to impose pay cuts, reduced benefits, furloughs, etc. is credible and more readily accepted by workers.
[27] Our attention here is focused on differences in governance structure in union and nonunion workplaces. We ignore here any costs (or benefits) associated with union monopoly or employer monopsony power.

to have explicit contract terms for every possible contingency. Revising formal contractual terms is costly. Although many collective bargaining agreements have broad management rights clauses, formalized contractual governance limits flexibility and managerial discretion in union companies.

It is widely believed that the US industrial sector operates in a highly competitive and dynamic environment. Arguably, the US economy has become more competitive and dynamic over time, increasing the cost of union relative to nonunion governance. There is no single definition or measurement for the competitiveness and dynamism of an economy.[28] In the discussion below, I briefly look at measures of concentration, trade, productivity growth, and job creation and destruction.

A common, albeit imperfect, measure of product market competition is a concentration ratio, which measures the share of value added, sales, employment, etc. by the largest companies (often the share of the largest four companies).[29] Concentration ratios for value added, employment, and payroll, both economy-wide and in manufacturing, have remained steady or decreased over the last 50 years, suggesting steady or increasing competitiveness in the US (White, 2002). Moreover, most measures of concentration do not account (or fully account) for international trade, thus understating the level and increases over time in competiveness. Competitive pressures from international trade are strong and have grown over time. The value of imports as a percentage of GDP increased from 5.4 percent in 1970 to 17.6 percent in 2008, before falling sharply in 2009 (a preliminary estimate is 13.7 percent) due to the worldwide recession (US Council of Economic Advisers, 2010, table B-1).

An economy's dynamism can be evidenced by high rates of productivity growth (due to technological change and a host of other factors) and high levels of job creation and destruction (Schumpeter's "creative destruction" or what labor economists refer to as "job churn"). Output per work hour in the nonfarm business sector of the economy has more than doubled since 1970, from an index (with 1992 = 100) of 68.3 in 1970 to 148.5 in the third quarter of 2009 (US CEA, 2010, table B-49). Productivity growth in manufacturing exceeds that economy-wide. As further evidence on productivity, one could point to relatively high growth rates in research and development expenditures and patents granted.

The US labor market is characterized by high rates of job churn. Between 1990 and 2005, the private sector (manufacturing sector) had a job destruction rate of 7.6 (4.9) percent per quarter and job

---

[28] The term "dynamism" has become increasingly associated with 2006 Nobel laureate Edmund Phelps, whose use of the word has a broader emphasis than in this essay (Phelps 2007). Phelps discussion of dynamism emphasizes, among other things, innovation (which changes jobs), entrepreneurship, openness, and inclusion and self-realization through one's work. Phelps argues that dynamism can serve to increase self-realization among the disadvantaged and that economies without dynamism cannot be just.

[29] A concentration ratio need not be a good measure of monopoly power, which we expect to be associated with restricted output and high prices, since some firms grow very large relative to their competitors because of low prices and/or high quality. But concentration ratios are informative.

creation rate of 7.9 (5.3) percent, implying a net employment growth rate per quarter of 0.3 (–0.4) percent (Davis, Faberman, and Haltiwanger 2006, table 2A). High rates of employment growth and job churn make it difficult, in a nearly mechanical sense, for unions to maintain their share of covered workers. To maintain density as total employment grows, unions must organize not only enough existing and newly created jobs to offset union jobs lost, but additional jobs as well given net increase in total employment. Maintaining union density is particularly difficult since most new jobs are "born" nonunion and declining union membership decreases the financial base from which organizing is funded.

Evidence directly linking union decline to competition or dynamism is limited. Magnani and Prentice (2010) use a data set on US manufacturing industries from 1973-1996 and simulate the effects of unions on flexibility and average costs. They conclude that more highly unionized industries have lower flexibility and higher average costs, the latter due mainly to higher fixed costs (e.g., worker benefits), than do less unionized industries. Slaughter (2007) shows that union density is lower in manufacturing industries with a high degree of global engagement, in particular those with inward foreign direct investment. His interpretation is that increased capital mobility has raised labor demand elasticities and weakened union bargaining power. An implication of the competitive thesis is that a highly competitive economy not only constrains union density, but also limits the economy-wide costs of unionism since resources are more readily reallocated to sectors with the highest expected returns.

Recent research by Bloom and Van Reenen (2007, 2010) on differences in management practices across firms and countries have found that productivity and financial performance are associated with differences in management practices. Moreover, more favorable management practices (i.e., those with better outcomes) are associated with more competitive market environments and a relatively "light touch" in labor market regulations. Although Bloom and Van Reenen's work provides little direct evidence on union effects on performance, it is suggestive given that changes in management practices, the expansion of use of incentive pay schemes, and increasing market competition have coincided with declines in unionization in the US and elsewhere.

Although it is difficult to link in a systematic way deliberative union governance and union decline in the face of increasing competition and dynamism, case studies can illustrate such a possibility. Examples include Hirsch's discussion of collective bargaining in the automotive and airline industries (Hirsch 2007a, 2008). The US automotive industry is emblematic of the narrative provided in this essay. The automotive industry was almost completely unionized and faced little international competition in the decades following World War II. There was then increasing penetration of foreign produced imports (in particular from Japan) and, subsequently, the establishment of numerous assembly plants by foreign-owned producers in the US, typically employing nonunion workers. At the same time, more and more production moved out of assembly plants and into a growing and increasingly nonunion auto parts supply

chain, with plants clustered within a one-day drive of assembly plants.

Total US employment in motor vehicle and equipment manufacturing has remained relatively constant over the last 35 years at the same time that there have been increases in productivity and production. Calculations from Current Population Survey (CPS) data for 1973–2006 by Hirsch (2008) show employment in the automotives industry moving from 1.2 million in 1973 to 1.0 million in 1983, 1.1 million in 1990, 1.3 million in 2000, and 1.4 million in 2006. At the same time, union membership (and density) dropped sharply from 830 thousand (71.0 percent) in 1973, to 590 (58.8 percent) in 1983, 540 (48.4 percent) in 1990, 470 (35.9 percent) in 2000, and just 360 thousand (26.0 percent) in 2006. In short, the US maintained a large automotive industry, but one with a much smaller union presence. Michigan, Ohio, and a few other states had sharply reduced shares of automotive industry employment over this period, with states such as Tennessee, South Carolina, Alabama, and Kentucky gaining employment shares of 2–3 percentage points each.

Technological change in the automotive industry over this period was rapid, with substantial increases in productivity and decreases in quality-adjusted prices. After falling well behind their Japanese and European competitors in productivity and quality, US companies made considerable progress in narrowing these gaps. But change was not nearly fast enough. Competitive prices are set at the margin – and in the automotive industry it was increasingly the "Toyotas" and "Hondas" rather than Detroit that determined market prices (US branded vehicles in fact sell at a discount based on perceived quality differences). In order for the Big Three to have prospered, they would have needed to maintain their market shares and avoid substantial price discounting. Had they been able to do so, they could have spread their legacy retiree pension and health commitments over a larger number of automobiles and employees. This scenario did not play out. Instead, the Big Three US companies lost market share (in particular, General Motors) while at the same time paying higher wages and benefits then their competitors and retaining the commitment to pay retiree health and pension costs. Their ability to cut labor costs was further limited because workers displaced due to technology or restructuring were paid while in a "jobs bank" (now eliminated). Vehicle manufacturers trimmed costs of inputs by putting pressure on their auto parts suppliers to lower prices, at the same time demanding improved product quality and just-in-time delivery.

Something had to give. During the mid-2000's auto parts suppliers Delphi (a corporate spin-off of GM), Dana, Collins & Aikman, and others filed for bankruptcy and worker wages and benefits were lowered substantially. GM and Ford structured various lump-sum buyouts of workers in order to reduce employment. UAW contracts, which had maintained generous health plan coverage with no employee or retiree cost sharing, introduced cost sharing. The UAW subsequently assumed the administering of health benefits from a "VEBA" fund financed by promised lump-sum payments from the companies. When the

Great Recession hit in 2008, neither GM nor Chrysler could maintain solvency. GM went into a federal structured bankruptcy that broke out its "dead" assets (abandoned plants, etc.) into a separate company (Motors Liquidation or "Old GM") supported by federal loans, while shaping what is hoped to be a viable entity with the federal government as principal (non-active) shareholder. In order to help make the "New GM" viable, not only were equity owners wiped out, but bondholders took large losses, a two-tier wage structure was adopted for use once GM hires new employees, brands were eliminated, dealers thinned out, and numerous plants were closed. Chrysler was reorganized with ownership from Fiat, a UAW VEBA, and minority ownership shares from the US and Canadian governments. Ford was able to avoid bankruptcy because it had taken on a very large amount of debt (i.e., had a large infusion of cash) just prior to the collapse of sales.

While the Great Recession could not have been anticipated, the underlying structural problems facing the Big Three were widely acknowledged for years if not decades. Had the Big Three not been unionized or had the UAW been more flexible far earlier, what might have happened? Of course we cannot observe such a counterfactual. It is at least possible that rather than "hitting the (bankruptcy) wall" and thus producing substantial employment and compensation decreases, an earlier and more gradual adjustment process might have occurred. Over time, plants and dealerships might have been closed, staffing levels decreased, and compensation growth slowed. As seen elsewhere in the private sector, employee health plans would have included considerable cost sharing, and promises for retiree pension and health benefits would have been more constrained. Of course, there is no assurance that management at the Big Three, absent the constraints of the union governance process, would have steered their companies toward healthy financial outcomes. What is clear is that the collective bargaining process could not shield employees from long-run market forces or company-specific strategic failures.

The automotive industry, it should be noted, is typified by large and medium-sized companies and plants. Whether union or nonunion, US or foreign-owned, employee governance will be relatively formalized in all but the smallest organizations. But a formalized governance structure need not produce rigidity. What I am suggesting is that adversarial union governance has proven a disadvantage relative to nonunion human resource management and greater managerial flexibility, in particular when facing technological advances, domestic and international competition, market demand shocks, and the like. The tendency of union governance to be sluggish is not an economic law. Some union workplaces have well-functioning employee governance, good labor relations, and respond well to economic change. No doubt more workplaces would fit this characterization were not antipathy toward unions so widespread among US managers. But adversarial union governance, both economy-wide and in an automotive industry characterized by a generally stable labor relations system, too often fails the market test. This conclusion is not intended as a critique (or endorsement) of behavior by union leaders, rank-and-file, or management,

but as criticism of the current US labor relations system.

In contrast to most US industries, unions in the airline industry have largely maintained coverage and retained substantial bargaining power, subject to economic conditions in the industry. Roughly half of all workers in air transportation were unionized before deregulation in the mid-1970s and about half remained unionized through 2006 (Hirsch, 2007a), although density has since fallen to about 40 percent in 2009 (www.unionstats.com). All major carriers, including Southwest, are unionized (Delta pilots but not other workers are unionized), while mid-size national and regional carriers include a mix of union and nonunion companies. The high union density is in part a carryover from the pre-1978 regulatory period. More fundamentally, density was maintained because strong bargaining power makes representation attractive to workers; a profitable nonunion carrier paying well below other carriers would quickly be organized. Bargaining power is substantial because of the strike threat. A strike by a carrier's pilots, flight attendants, or mechanics (and possibly other workers) can shut down all flight operations. A shutdown in a service industry can be particularly costly. Unlike consumer durables, transport services cannot be stored or shifted in time. Many customers can switch to non-struck carriers. Because shutdowns are so costly, strikes are rare, but unions are able to capture rents for their members.

What has emerged in the airline industry is compensation that reflects a "union tax" cycle. Union airline workers, particularly pilots among the larger carriers, realize substantial wage premiums (Hirsch and Macpherson, 2000; Hirsch, 2007a). Following periods in which airlines have been relatively profitable, such as the late 1990s, union contracts "tax" those profits and premiums rise. Following substantial losses, unions provide contract concessions. But union response to changing economic conditions takes time. In the perfect storm that hit the airline industry in the early 2000s, the response was too slow. Adverse conditions faced by airlines included a recession hitting in 2001 as high contract wages were taking force; the 9/11 attacks and a 20 percent reduction in flights; a stock market downturn destroying pension wealth; Internet pricing that lowered carrier margins; increasing market shares of "low-cost carriers"; and later, increasing fuel prices. US Airways and United entered bankruptcy protection in 2002 (and US Airways again in 2004), while Delta and Northwest entered bankruptcy on the same day in 2005.[30] American Airlines, the only legacy carrier that had not disappeared, been acquired, or entered bankruptcy since deregulation in 1978, faced a bankruptcy filing in 2003 until it received concessions from its unions.

---

[30] Delta's experience is instructive. Prior to 2001, Delta had a strong balance sheet with low indebtedness and, with the exception of its pilots, a nonunion workforce, although pay for nonunion workers had to be similar to that for union workers to deter union organizing. By 2003, Delta faced deteriorating product market conditions coupled with industry-leading pay for its pilots and other workers. Financial viability required that Delta sharply reduce labor and other costs, but this could not be done without substantial concessions from pilots. Despite its initial advantages, the company was unable to steer a path to financial viability, instead accumulating massive debt and finally resorting to use of the costly bankruptcy process to achieve lower costs.

In most industries, companies that have high costs and respond slowly to economic shocks are likely to whither as customers switch to goods produced by domestic or foreign competitors. Emerging successfully from bankruptcy may not be a viable option for such companies. In the airline industry, however, carriers continued operations and retained much of their customer base, emerging from bankruptcy with a lower cost structure that in turn set the pattern for much of the industry. There has been industry consolidation, with mergers by US Airways/America West and Delta/Northwest, proposed mergers of United/Continental and Southwest/AirTran, and removal of capacity from the system.

Despite a long-run relationship between the major carriers and their unions, labor relations throughout much of the industry have remained contentious, with the notable exception of Southwest. As this narrative is written, airlines are beginning to show profitability following a period of unusually high oil prices then followed by the Great Recession. Because airlines operate under the Railway Labor Act (RLA), union contracts remain active at existing terms absent a new contract or either the union or firm asking for release from the existing agreement following a mediation process. Absent agreement on new contracts, or desire among workers to call a strike, much of the industry has maintained its low cost structure (by historic standards) and allowed the airlines to earn modest profits despite relatively low prices and traffic. Airline unions and their members, however, are determined to recover wages and benefits lost through bankruptcy and poor market conditions. One factor determining future labor compensation will be product market competition and prices. The recent mergers should give the major carriers more pricing power if air travel demand is robust. These carriers, however, face increasing penetration and competition from domestic low-cost carriers (some union and some nonunion), thus constraining price and labor compensation increases.

It remains to be seen whether there can emerge a reasonably cooperative labor relations environment in the airline industry, with agreements on new contracts providing sustainable labor costs. One scenario would have the parties learning a common set of lessons from their decade-long roller-coaster ride and then finding their way toward sustainability. A more likely scenario may be a return to the past – a strained labor relations environment, resumption of lagged wage-profit cycles, and eventually an upending of the status quo following the failure to respond quickly to future market shocks.

The examples of the automotive and airline industries are based on very different types of industries operating in different economic environments. Yet each of their histories provides examples where lack of flexibility by management and sluggishness in union governance failed to respond in a timely fashion to large economic shocks. It might be argued that the shocks faced in these two industries were extreme, although it is not obvious this is so. Shocks occur throughout the economy. The point is that these are generally dealt with continually through resource movements (including business failures) in response to price signals, where "price" includes product prices, wages, interest rates, profits/losses,

etc. The thesis here is that union governance throughout the economy has often been sluggish in responding to such shocks and has proven disadvantageous in an increasingly dynamic and competitive economy.

The contrast between the private and public sectors provides further evidence for this thesis. Since federal and state labor laws cleared the way for collective bargaining in the public sector, public union density has greatly exceeded private density, with the public level maintained over time. In 1977, the first year in which current union variable definitions were adopted in the CPS, union membership (coverage) density in the public sector was 32.8 (40.1) percent. In the private sector, 1977 membership (coverage) density was 21.7 (23.3) percent. By 2010 (through September), private sector density had fallen sharply to only 6.9 (7.7) percent, whereas public sector density remained largely unchanged at 35.9 (39.6) percent. The number of public sector union members overtook private sector membership during 2009; government workers accounted for 52.0 percent of all union members in 2010 (figures from www.unionstats.com).

As readily evident in the current recession, the public sector is not immune to economic forces and taxpayer pressure to hold down taxes. Although not immune to such forces, local, state, and federal jurisdictions see limited movement of "consumers" (constituents) to competitive jurisdictions, face little risk of competitive "entry", and face a lower threat of bankruptcy than do private sector employers. Although the focus of this essay has been the private sector, where the bulk of economic activity takes place, the US union movement is increasingly driven by its public sector interests where actions in the political arena may be every bit as important as actions in the workplace (see Freeman [1986] on differences between public and private sector unions).

7. Are Worker Voice Institutions Sustainable in a Competitive World?

This essay has argued that traditional union governance in the US private sector has proven poorly suited to flourish in an increasingly competitive and dynamic world. In this brief concluding section it is worth asking two questions. First, is the decline of unionism, at least in its current form, inevitable? And second, are there alternative vehicles for worker voice that might emerge in the future?

There is no strong basis for believing that traditional private sector unionism will increase substantially over time. Such a conclusion follows naturally if we are correct that the fundamental constraint on the size of the union sector has been the growing competitiveness and dynamism of the US economy, in particular technological change and globalization (i.e., increased international flows of goods, capital, and people). Changes in technology, particularly information technology, have led to shifts in the occupations, industries, and locations of jobs accounting for perhaps a quarter of the long-run union decline. Most of the union density decline, however, has not been due to employment shifts but to union density decline within narrowly defined industries and occupations (Hirsch 2008). In such a competitive

world, neither traditional unions nor any other worker voice institution can flourish unless it has high value added and limited rent seeking. Of course there are other explanations for declining private sector unionization – strong management opposition, a less favorable labor law environment, high levels of unfair labor practices, changes in worker sentiment, and weakened demand by nonunion workers for union services due to the increased protection offered by employment laws (antidiscrimination laws, pension insurance, etc.). But these explanations are less fundamental and of second-order importance compared to competition and dynamism.

I am not suggesting that traditional unionism will disappear any time soon. This conclusion follows naturally from the arithmetic of union membership stocks and flows. Stated simply, far less organizing is necessary to maintain union density at, say, 5 percent than at, say, 10 or 15 percent. Beginning around the early 1980s, organizing rates fell substantially below the level needed to maintain density. Depending on assumptions about union and nonunion job destruction, coupled with overall employment growth, recent rates of organizing can probably support a steady-state private sector density close to 5 percent, not far from current rates (Farber and Western 2002). The key point is that unions will remain a minority workplace governance model absent fundamental changes.[31]

Absent resurgence in traditional union governance in the private sector, what alternative paths, albeit ones that are politically unlikely, might lead to enhanced worker voice?[32] A place to start is to ask what workers want. My reading of worker surveys administered in the US in the early 1990s, along with subsequent surveys in other countries, is as follows (Freeman and Rogers 1999). First, many workers want greater voice and participation in workplace decision-making, but the voice they desire is as much individual voice as the collective voice associated with traditional unions. Second, workers want a more cooperative and less adversarial worker-management relationship, coupled with management support for worker participatory organizations. Third, workers who desire voice do not only want to express themselves but also want their views affect workplace outcomes. And fourth, workers see management resistance as the primary obstacle to worker participation and cooperation. Despite some differences, the expressed wants and concerns of workers are surprisingly similar in union and nonunion workplaces.

Inferences drawn from the above are as follows. First, the current system provides too little worker voice/participation and worker-management cooperation in both union and nonunion workplaces. Second, the adversarial relationship envisioned and reinforced by the NLRA holds little appeal for workers. And third, while desirable levels of voice and cooperation will evolve in some companies absent

---

[31] Union services are an "experience good" – those exposed to unions in their community, among family members or friends, or in early jobs are more likely to be union members. This reinforces the trend toward declining unionism, since lower density today implies less union experience among potential future members (Gomez and Gunderson 2004, Holmes 2006, Budd 2010).

[32] The following discussion summarizes ideas presented previously in Hirsch and Hirsch (2007).

policy initiatives, greatly enhanced voice in US workplaces is likely to require (politically unlikely) labor and employment law initiatives.

Desirable policies ideally would satisfy multiple criteria, although some of these may involve inherent tradeoffs (e.g., greater worker voice may increase rather than constrain rent seeking). First, proposals should be value enhancing for the parties and the economy. Second, reforms should facilitate enhanced voice (including some freedom to choose whether and how to exercise that voice), cooperation, and the flow of information within nonunion workplaces. Third, any arrangement should constrain rent seeking and opportunistic behavior by workers and employers. And fourth, reforms should allow for variation across heterogeneous workplaces and be flexible within workplaces over time.

Two possible paths toward value-enhancing workplace governance (see Hirsch and Hirsch 2007) are briefly discussed below. The focus is on nonunion workplaces where more than 90 percent of workers are employed, although what happens in the nonunion sector will impact (and possibly energize) the union sector.

A. *Reform of NLRA Sections 8(a)(2) and 2(5)*

NLRA provisions affecting worker participation in nonunion firms include Sections 8(a)(2) and 2(5). The former prohibits employer domination or support for any labor organization. The latter defines a labor organization as one in which employees participate and which has the purpose, in whole or in part, to deal with employers over grievances, disputes, wages, rates of pay, hours of employment, or conditions of work. The legitimate goals of the provisions are to (a) prevent employer-dominated employee groups that would effectively prevent workers from choosing an independent (traditional) union and to (b) restrain employer interference with a traditional union that is recognized as workers' exclusive representative.[33]

Such provisions, however, also restrict development of nonunion vehicles for employer-employee cooperation and productivity-enhancing voice. Although unions are concerned that such employee groups might become a substitute for traditional unions, it is more likely that the process of electing worker representatives and the exercise of voice in nonunion companies would complement, invigorate, and perhaps re-orient traditional unions (for related discussion, see Estlund 2002). Other developed countries, most notably Canada, bar company-dominated unions but do not foreclose employer-initiated or supported worker groups that might engage in discussion over compensation and working conditions. Employer-supported nonunion employee groups are permitted and not uncommon in Canada, while traditional unions and collective bargaining operate at levels higher than in the US

---

[33] For a related analysis of Sections 8(a)(2) and 2(5), see Estreicher (2000), part of an edited volume by Kaufman and Taras (2000) that includes papers examining company supported worker groups in the US (pre- and post-NLRA) and in Canada.

The proposed modification of the NLRA restriction on employer-sponsored work organizations is to change Section 2(5)'s definition of labor organization to include only those entities that have been certified by the Board, or recognized by an employer, as an exclusive collective-bargaining representative under Section 9. This modification, similar to a proposal by Estreicher (1994) and to a House-passed Taft-Hartley bill in 1947, would permit employers to create or maintain employee groups that discuss terms and conditions of employment, so long as those groups are not labor organizations as defined by a revised Section 2(5). This permits employers largely unfettered opportunity to promote the sharing of information without the specter of a Section 8(a)(2) violation, while maintaining the major policy aims of that provision. The Section 8(a)(2) goal of preventing employers from coercing or misleading employees into thinking that they have independent representation is maintained.

Unlike proposals that do not alter the definition of "labor organization" (e.g., the TEAM Act, passed by Congress and vetoed by President Clinton in 1996) the proposed modification ensures that all non-Section 9 entities (organizations other than traditional unions) lack the protections that independent labor organizations enjoy under the NLRA. Thus, employers and employees are able to engage in information-sharing without fear of violating the NLRA, while employees who want representation by an independent union may pursue that goal without any interference by the employer-sponsored work group. These nonunion worker groups would not participate in formal collective bargaining, but could communicate with management and participate in workplace discussions, including those regarding pay, grievances, and working conditions. Since the opportunity for workers to unionize in most nonunion workplaces is very low, the proposed arrangements should expand employee choice and encourage union and employer competition in responding to employee demands.

Although likely to be welfare enhancing, the proposed changes, even if adopted, would not likely bring about large-scale change. Current law is weakly enforced and does not provide an overwhelming barrier to nonunion worker participation programs. The paucity of such groups may be more limited by management resistance to worker participation than to fears of violating labor law. Relaxation of 8(a)(2) and 2(5) restrictions would be a change in the right direction, however, encouraging and publicly sanctioning participation and employee-employer cooperation in nonunion companies.

I see such a move invigorating rather than damaging traditional unionism, although the goal of the policy is to enhance nonunion voice and not to bolster traditional unions, per se. Both competition and complementarity between union and nonunion vehicles of worker democracy and participation are likely to pull traditional unions in a direction centered more at value creation and less on rent appropriation. The highly competitive environment in which US firms operate will provide both an incentive to develop value-enhancing innovations in workplace governance while at the same time constraining developments that transfer rents but do not add value. If value-enhancing innovations emerge from such a policy

change, adoption could be common, although probably not widespread. Absent net benefits, we should see little change from the status quo.

B. *Change the Labor Law Default*

A broader and more unlikely reform is a change of the labor law default from its current *not union* setting to an alternative setting. I suggest a default that invokes employees' option to adopt a governance structure with independent worker voice (but not collective bargaining), perhaps along the lines of German workers' councils.[34] The default structure could be waived if workers choose not to activate or renew it, or could be replaced with something else following the approval of workers *and* management. Although the default could be waived, just as with the current nonunion default, many workplaces will not do so. Economic agents exhibit behavioral inertia, often sticking with an existing rule or environment as long as it does not differ too much from the preferred choice. Moreover, the default signals a norm that public policy has deemed appropriate. The default is not a mandate, but a starting point (or bargaining "threat point") from which the parties are free to move.

Such a change in employment law obviously requires careful analysis and design. But I see virtue in a default that establishes some form of independent worker association, although not one with full collective bargaining rights. Workers would retain their current right to form independent unions without management approval. The default mechanism would specify standard procedures by which workers and management might discuss, negotiate, and approve mutually beneficial changes. We cannot predict precisely how any given system would operate and evolve, and the default will not function well in all workplaces. Over time, experience with such a system can lead to administrative and legislative reforms. Adoption of a new workplace default would set off no small amount of activity among management, workers, and workers' agents to communicate, negotiate, and arrive at alternatives that make the parties better off. And of course the precise working of such a system will be determined in no small part by the way it evolves in the workplace, courts, and regulatory agencies.

C. *Going Forward*

Although there is value in discussing alternatives to current labor law, adoption of any such policy proposal is not likely in the foreseeable future. Apart from industrial relations and labor law scholars, there are few readily identifiable constituencies for labor law change. And there is little political center among those who would be most involved in the political and legislative process required to bring about such change. Even were reforms adopted, the economic, social, and political environment will do more to determine labor outcomes than will labor and employment law.

---

[34] In Germany, employees can activate a works council in their workplace by meeting a low threshold. For an overview of German works councils, see Addison et al. (2004). There have been declines in both German unions and works councils in recent years, neither being immune to increased globalization (Addison et al. 2010).

The most likely scenario for the near future is the status quo, with no major labor law innovations but with workplace governance evolving in reaction to shifting opportunities and constraints. With or without labor law reform, the Internet and the reduced cost of information and communications is likely to play an increasing role in workplace voice. A long-standing labor law issue has been the question of permitted access by union representatives (both employees and organizers) on company property. Existing law has been applied to the use of company e-mail and thus significantly restricts such activity. Reasonable changes in interpretation of the law could facilitate better communication (J. Hirsch forthcoming).

More broadly, the Internet continues to change the way in which unions, companies, worker groups, policy advocates, and the public at large interact. The Internet provides a virtual location or web site(s) where employees can obtain and exchange information with union organizers, their incumbent union, their employer, or any other number of other workplace groups or associations. Freeman (2005) suggests that the Internet may also make possible the evolution of other forms of worker associations (from "Webb to the Web") organized not so much around collective bargaining with a particular employer, but around political or workplace issues, be they national (trade legislation, changes in FLSA hours regulations, etc.) or "local" (e.g., changes in IBM pension calculations). Whatever the evolution of nonunion and union employee voice, electronic communication will play an important role.

The specific workplace institutions and sets of human resource management practices that will emerge and prevail in the coming decades cannot be reliably identified. What can be said with some confidence is that whatever the forms of workplace governance, they will have to provide value-added in the workplace and flourish in what is likely remain a highly competitive and dynamic economic environment.

Figure 1: U.S. Private Sector Union Density, 1929-2010
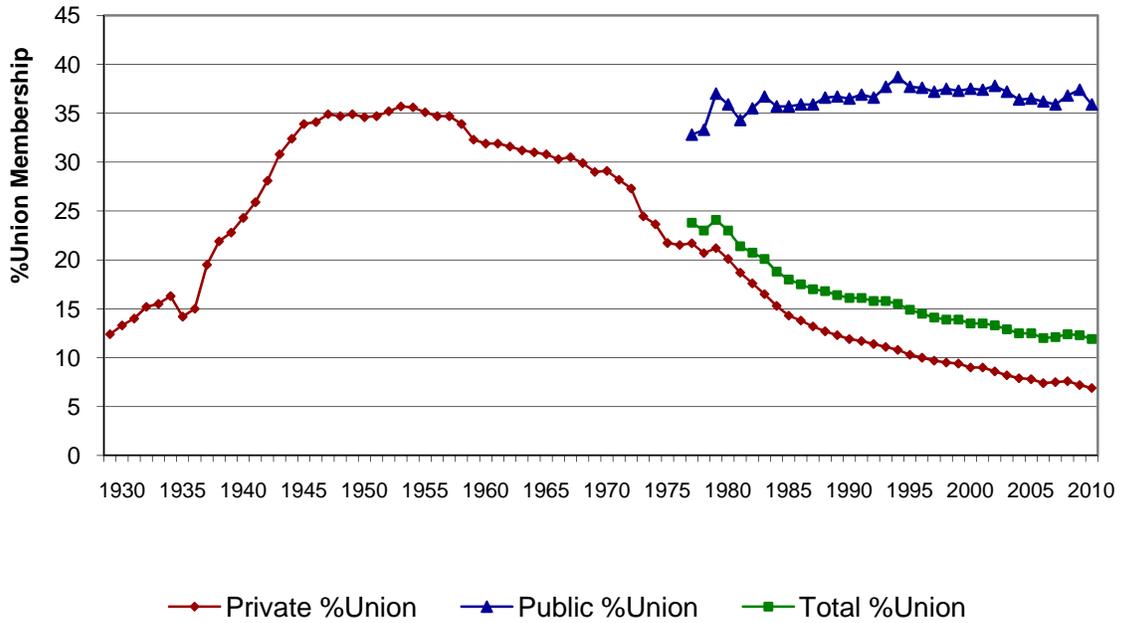**Total and Public Sector Union Density, 1977-2010**

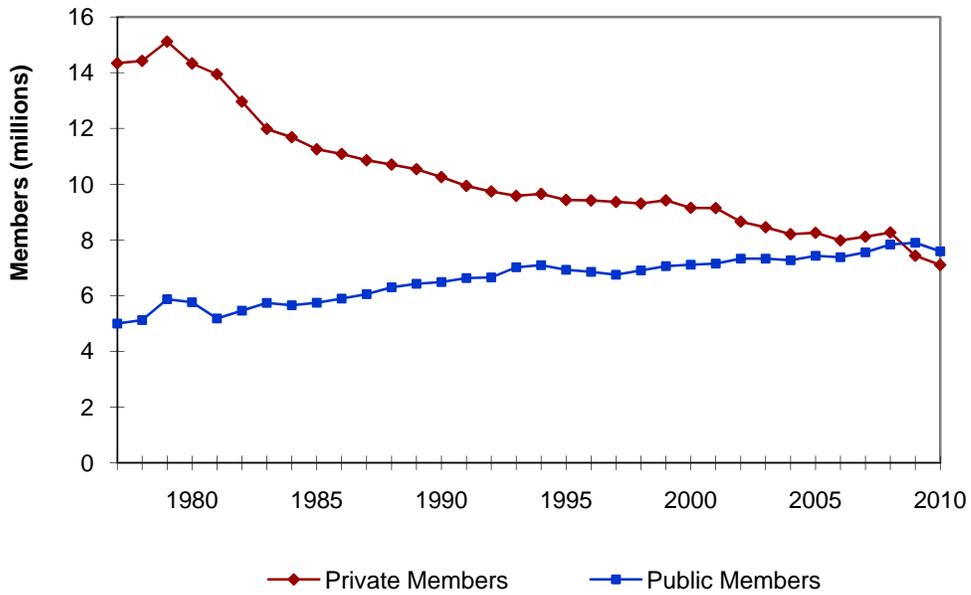**Fig. 2: Private and Public Union Membership, 1977-2010**

Fig. 3a: Employment and Union Density in Private Manufacturing, 1973-2010
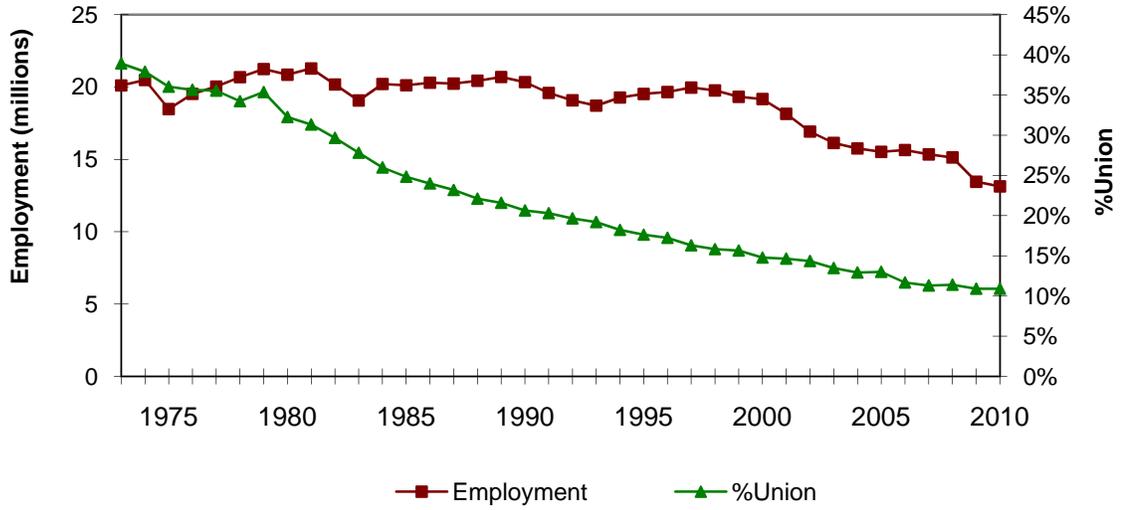

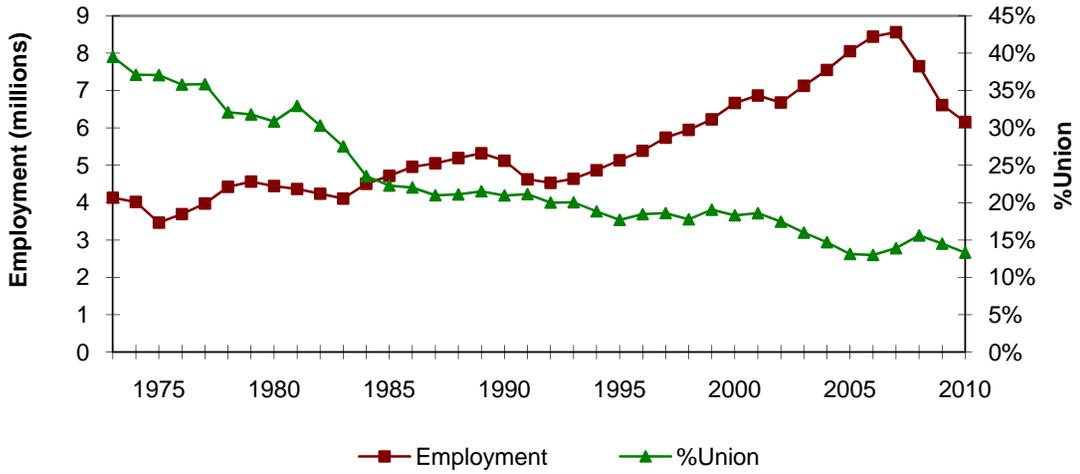Fig. 3b: Employment and Union Density in Private Construction, 1973-2010

Fig. 3c: Employment and Union Density in Private Transportation, Communications, and Utilities, 1973-2010
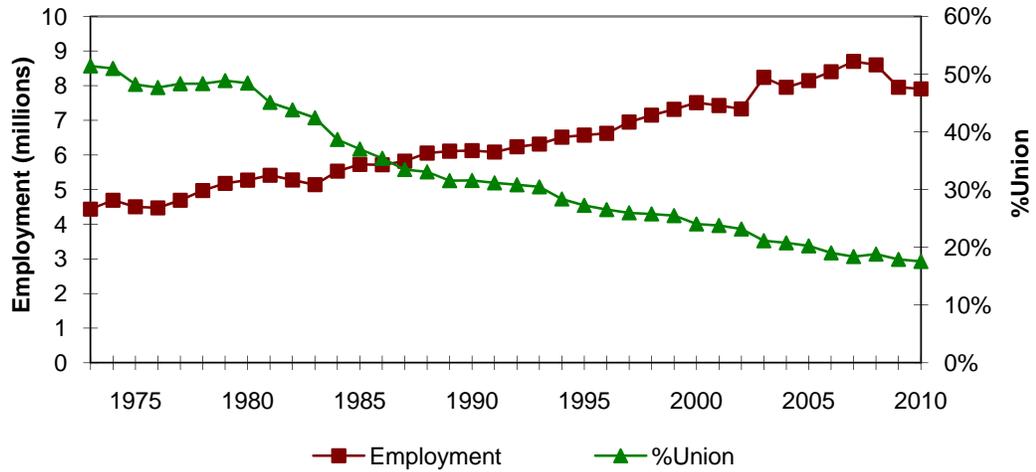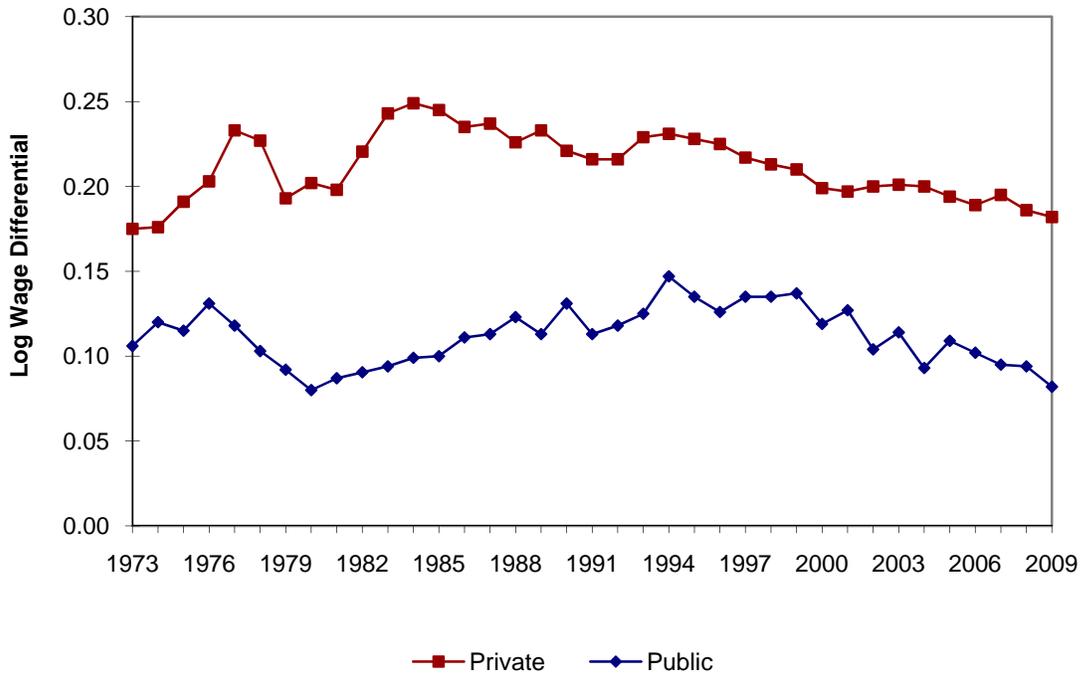

Fig. 4: Private and Public Sector Union Wage Premiums, 1973-2009

References

Addison, John T., John S. Heywood and Xiangdong Wei (2003), "New Evidence on Unions and Plant Closings: Britain in the 1990s," *Southern Economic Journal* 69 (3), 822-841.

Addison, John T., Alex Bryson, Paulino Teixeira, André Pahnke, and Lutz Bellmann (2010), "The State of Collective Bargaining and Worker Representation in Germany: The Erosion Continues," IZA Discussion Paper No. 5030 (June).

Addison, John T. and Barry T. Hirsch (1989), "Union Effects on Productivity, Profits, and Growth: Has the Long Run Arrived?" *Journal of Labor Economics* 7 (1), 72-105.

Addison, John T., Claus Schnabel and Joachim Wagner (2004), "The Course of Research into the Economic Consequences of German Works Councils," *British Journal of Industrial Relations* 42 (2), 255-281.

Aidt, Toke and Zafiris Tzannatos (2002), *Unions and Collective Bargaining: Economic Effects in a Global Environment,* Washington, DC: World Bank.

Allen, Steven G. (1986), "Unionization and Productivity in Office Building and School Construction," *Industrial and Labor Relations Review* 39 (2), 187-201.

Baldwin, Carliss Y. (1983), "Productivity and Labor Unions: An Application of the Theory of Self-Enforcing Contracts," *Journal of Business* 56 (2), 155-185.

Bennett, James T. and Bruce E. Kaufman (eds) (2007), *What Do Unions Do? A Twenty-Year Perspective*, Piscataway, NJ: Transaction Publishers.

Betts, Julian R., Cameron W. Odgers, and Michael K. Wilson (2001), "The Effects of Unions on Research and Development: An Empirical Analysis Using Multi-Year Data," *Canadian Journal of Economics* 34 (3), 785-806.

Bewley, Truman (1999), *Why Wages Don't Fall During a Recession*. Cambridge, MA: Harvard University Press.

Black, Sandra E. and Lisa M. Lynch (2001), "How to Compete: The Impact of Workplace Practices and Information Technology on Productivity," *Review of Economics and Statistics* 83 (3), 434-445.

Blanchflower, David G. and Alex Bryson (2003), "Changes Over Time in Union Relative Wage Effects in the UK and the US Revisited," in John T. Addison and Claus Schnabel (eds), *International Handbook of Trade Unions*, Cheltenham, UK and Northampton, MA: Edward Elgar, pp. 197–245.

Bloom, Nicholas and John Van Reenen (2007), "Measuring and Explaining Management Practices Across Firms and Countries," *Quarterly Journal of Economics* 122 (4), 1351-1408.

_____. (2010), "Why Do Management Practices Differ across Firms and Countries?" *Journal of Economic Perspectives* 24 (1), 203-224

_____. (forthcoming), "Human Resource Management and Productivity," in Orley C. Ashenfelter and David Card (eds), *Handbook of Labor Economics, Vol. 4*, Amsterdam: Elsevier.

Booth, Alison L. (1995) *The Economics of the Trade Union*. Cambridge, UK: Cambridge University Press.

Bratsberg, Bernt and James F. Ragan, Jr. (2002), "Changes in the Union Wage Premium by Industry," *Industrial and Labor Relations Review* 56 (1), 65-83.

Bronars, Stephen G. and Donald R. Deere (1991), "The Threat of Unionization, the Use of Debt, and the Preservation of Shareholder Wealth," *Quarterly Journal of Economics* 106 (1), 231-254.

Brown, Charles and James Medoff (1978), "Trade Unions in the Production Process," *Journal of Political Economy* 86 (3), 355-378.

Budd, John W. (2007), "The Effect of Unions on Employee Benefits and Non-Wage Compensation: Monopoly Power, Collective Voice, and Facilitation," in *What Do Unions Do? A Twenty-Year Perspective*, ed. James T. Bennett and Bruce E. Kaufman, Piscataway, NJ: Transaction Publishers, pp. 160-192.

_____. (2010), "When Do U.S. Workers First Experience Unionization? Implications for Revitalizing the Labor Movement," *Industrial Relations* 49 (2), 209-225.

Card, David, Francesco Devicienti, and Agata Maida (2010), "Rent-sharing, Holdup, and Wages: Evidence from Matched Panel Data," NBER Working Paper No. 16192 (July).

Cavanaugh, Joseph K. (1998), "Asset Specific Investment and Unionized Labor." *Industrial Relations* 37 (1), 35-50.

Chen, Huafeng (Jason), Marcin Kacperczyk, and Hernán Ortiz-Molina (forthcoming), "Labor Unions, Operating Flexibility, and the Cost of Equity," *Journal of Financial and Quantitative Analysis*.

Clark, Kim B. (1984), "Unionization and Firm Performance: The Impact on Profits, Growth, and Productivity," *American Economic Review* 74 (5), 893-919.

Connolly, Robert A., Barry T. Hirsch, and Mark Hirschey (1986), "Union Rent Seeking, Intangible Capital, and Market Value of the Firm," *Review of Economics and Statistics* 68 (4), 567-577.

Cramton, Peter and Joseph Tracy (1998), "The Use of Replacement Workers in Union Contract Negotiations: The US Experience, 1980–1989," *Journal of Labor Economics* 16 (4), 667-701.

Davis, Steven J., R. Jason Faberman, and John Haltiwanger (2006), "The Flow Approach to Labor Markets: New Data Sources and Micro-Macro Links," *Journal of Economic Perspectives* 20 (3), 3-26.

DiNardo, John and David S. Lee (2004), "Economic Impacts of New Unionization on Private Sector Employers: 1984–2001," *Quarterly Journal of Economics* 119 (4), 1382-1441.

Doucouliagos, Christos, and Patrice Laroche (2003), "What Do Unions Do to Productivity? A Meta-Analysis," *Industrial Relations* 42 (4), 650-691.

_____. (2009), "Unions and Profits: A Meta-Regression Analysis," *Industrial Relations* 48 (9), 146-183.

Dunne, Timothy and David A. Macpherson (1994), "Unionism and Gross Employment Flows," *Southern Economic Journal* 60 (3), 727-738.

Estlund, Cynthia L. (2002), "The Ossification of American Labor Law," *Columbia Law Review* 102 (6), 1527-1612.

Estreicher, Samuel (1994), "Employee Involvement and the 'Company Union' Prohibition: The Case for Partial Repeal of Section 8(a)(2) of the NLRA," *New York University Law Review* 69 (1), 125-161.

_____. (2000), "*Nonunion Employee Representation: A Legal/Policy Perspective*," in Bruce E. Kaufman and Daphne Taras (eds), *Nonunion Employee Representation: History, Contemporary Practice, and Policy*, Armonk, NY: M.E. Sharpe, pp. 149-175.

Farber, Henry S. (1986), "The Analysis of Union Behavior," in Orley C. Ashenfelter and Richard Layard (eds), *Handbook of Labor Economics, Vol. II*, Amsterdam: Elsevier, pp. 1039-1089.

Farber, Henry S. and Bruce Western (2002), "Accounting for the Decline of Unions in the Private Sector, 1973-1988," in James Bennett and Bruce Kaufman (eds), *The Future of Private Sector Unionism in the United States*, Armonk, NY: M.E. Sharpe, pp. 28-58.

Felix, R. Alison and James R. Hines, Jr. (2009), "Corporate Taxes and Union Wages in the United States," NBER Working Paper No. 15263 (August).

Freeman, Richard B. (1986), "Unionism Comes to the Public Sector," *Journal of Economic Literature* 24 (1), 41-86.

_____. (2005), "From the Webbs to the Web: The Contribution of the Internet to Reviving Union Fortunes," in Sue Fernie and David Metcalf (eds), *Trade Unions: Resurgence or Demise?* London: Routledge, pp. 162-184.

Freeman, Richard B. and Morris M. Kleiner (1999), "Do Unions Make Enterprises Insolvent?" *Industrial and Labor Relations Review* 52 (4), 510-527.

Freeman, Richard B. and James L. Medoff (1984), *What Do Unions Do?* New York: Basic Books.

Freeman, Richard B. and Joel Rogers (1999), *What Workers Want*, Ithaca, NY: Cornell University Press.

Fuchs, Victor R., Alan B. Krueger, and James M. Poterba (1998), "Economists' Views about Parameters, Values, and Policies: Survey Results in Labor and Public Economics," *Journal of Economic Literature* 36 (3), 1387-1425.

Gomez, Rafael and Morley Gunderson (2004), "The Experience Good Model of Trade Union Membership," in Phanindra V. Wunnava (ed), *The Changing Role of Unions: New Forms of Representation*, Armonk, NY: M.E. Sharpe, pp. 92-112.

Grout, Paul A. (1984), "Investment and Wages in the Absence of Binding Contracts: A Nash Bargaining Approach," *Econometrica* 52 (2), 449-460.

Guertzgen, Nicole (2009), "Rent-sharing and Collective Bargaining Coverage: Evidence from Linked Employer-Employee Data," *Scandinavian Journal of Economics* 111 (2), 323-349.

Hirsch, Barry T. (1991a), *Labor Unions and the Economic Performance of US Firms*, Kalamazoo, MI: Upjohn Institute for Employment Research.

_____. (1991b), "Union Coverage and Profitability Among US Firms," *Review of Economics and Statistics* 73 (1), 69-77.

_____. (1992), "Firm Investment Behavior and Collective Bargaining Strategy," *Industrial Relations* 31 (1), 95-121.

_____. (2004), "Reconsidering Union Wage Effects: Surveying New Evidence on an Old Topic," *Journal of Labor Research* 25 (2), 233-266.

_____. (2007a), "Wage Determination in the US Airline Industry: Union Power Under Product Market Constraints," in Darin Lee (ed), *Advances in Airline Economics, Volume 2: The Economics of Airline Institutions, Operations and Marketing*, Amsterdam: Elsevier, 27-59.

_____. (2007b), "What Do Unions Do for Economic Performance?" in James T. Bennett and Bruce E. Kaufman (eds), *What Do Unions Do? A Twenty-Year Perspective*, Piscataway, NJ: Transaction Publishers, 193-237.

_____. (2008), "Sluggish Institutions in a Dynamic World: Can Unions and Industrial Competition Coexist?" *Journal of Economic Perspectives* 22 (1), 153-176.

Hirsch, Barry T. and David A. Macpherson (2000), "Earnings, Rents, and Competition in the Airline Labor Market," *Journal of Labor Economics* 18 (1), 125-155.

_____. (2003), "Union Membership and Coverage Database from the Current Population Survey: Note," *Industrial and Labor Relations Review* 56 (2), 349-354, and accompanying data site http://www.unionstats.com/.

_____. (2010), *Union Membership and Earnings Data Book: Compilations from the Current Population Survey*. Washington, DC: Bureau of National Affairs.

Hirsch, Barry T. and Barbara A. Morgan (1994), "Shareholder Risk and Returns in Union and Nonunion Firms," *Industrial and Labor Relations Review* 47 (2), 302-318.

Hirsch, Barry T. and Kislaya Prasad (1995), "Wage-Employment Determination and a Union Tax on Capital: Can Theory and Evidence Be Reconciled?" *Economics Letters* 48 (1), 61-71.

Hirsch, Jeffrey M. (forthcoming), "Communication Breakdown: Reviving the Role of Discourse in the Regulation of Employee Collective Action," *UC Davis Law Review* 44.

Hirsch, Jeffrey M. and Barry T. Hirsch (2007), "The Rise and Fall of Private Sector Unionism: What Next for the NLRA?" *Florida State University Law Review* 34 (4), 1133-1180.

Holmes, Thomas J. (2006), "Geographic Spillover of Unionism," NBER Working Paper No. 12025.

Holmes, Thomas J. and Michael Walrath (2007), "Dynamics of Union Organizations: A Look at Gross Flows in the LORS Files," NBER Working Paper No. 13212 (July).

Ichniowski, Casey, Kathryn Shaw, and Giovanna Prennushi (1997), "The Effects of Human Resource Management Practices on Productivity: A Study of Steel Finishing Lines," *American Economic Review* 87 (3), 291-313.

Ippolito, Richard A. (1985), "The Economic Function of Underfunded Pension Plans," *Journal of Law and Economics* 28 (3), 611-651.

Kaufman, Bruce E. and Daphne Taras (eds) (2000), *Nonunion Employee Representation: History, Contemporary Practice, and Policy*, Armonk, NY: M.E. Sharpe.

Klasa, Sandy, William F. Maxwell, and Hernán Ortiz-Molina (2009), "The Strategic Use of Corporate Cash Holdings in Collective Bargaining with Labor Unions," *Journal of Financial Economics* 92 (3), 421-442.

Kleiner, Morris M., Jonathan S. Leonard, and Adam M. Pilarksi (2002), "How Industrial Relations Affects Plant Performance: The Case of Commercial Aircraft Manufacturing," *Industrial and Labor Relations Review* 55 (2), 195-218.

Kremer, Michael and Benjamin A. Olken (2009), "A Biological Model of Unions," *American Economic Journal: Applied Economics* 1 (2), 150-75.

Krueger, Alan B. and Alexandre Mas (2004), "Strikes, Scabs, and Tread Separations: Labor Strife and the Production of Defective Bridgestone/Firestone Tires," *Journal of Political Economy* 112 (2), 253-289.

Kuhn, Peter (1998), "Unions and the Economy: What We Know; What We Should Know," *Canadian Journal of Economics* 31 (5), 1033-1056.

LaLonde, Robert J., Gérard Marschke, and Kenneth Troske (1996), "Using Longitudinal Data on Establishments to Analyze the Effects of Union Organizing Campaigns in the United States," *Annales d' Économie et de Statistique* 41/42, 155-185.

Lee, David and Alexandre Mas (2009), "Long-Run Impacts of Unions on Firms: New Evidence from Financial Markets, 1961-1999," NBER Working Paper No. 14709 (February).

Leonard, Jonathan S. (1992), "Unions and Employment Growth," in Mario F. Bognanno and Morris M. Kleiner (eds), *Labor Market Institutions and the Future Role of Unions*, Cambridge, MA: Blackwell Publishers, pp. 80-94.

Linneman, Peter D., Michael L. Wachter, and William H. Carter (1990), "Evaluating the Evidence on Union Employment and Wages," *Industrial and Labor Relations Review* 44 (1), 34-53.

Long, Richard J. (1993), "The Effect of Unionization on Employment Growth of Canadian Companies," *Industrial and Labor Relations Review* 46 (4), 691-703.

MacLeod, W. Bentley (forthcoming), "Great Expectations: Law, Employment Contracts, and Labor Market Performance," in Orley C. Ashenfelter and David Card (eds), *Handbook of Labor Economics, Vol.4*, Amsterdam: Elsevier.

Mas, Alexandre (2008), "Labor Unrest and the Quality of Production: Evidence from the Construction Equipment Resale Market," *Review of Economic Studies* 75 (1), 229-258.

Matsa, David A. (2010), "Capital Structure as a Strategic Variable: Evidence from Collective Bargaining," *Journal of Finance* 65 (3), 1197-1232.

Menezes-Filho, Naercio, David Ulph, and John Van Reenen (1998), "R&D and Unionism: Comparative Evidence from British Companies and Establishments," *Industrial and Labor Relations Review* 52 (1), 45-63.

Metcalf, David (2003), "Unions and Productivity, Financial Performance and Investment: International Evidence," in John Addison and Claus Schnabel (eds), *International Handbook of Trade Unions*, Northampton, MA: Edward Elgar, pp. 118-171.

Elisabetta Magnani and David Prentice (2010), "Did Reducing Unionization Create More Flexible American Industries?" *Industrial and Labor Relations Review* 63 (4), 662-680.

Mitchell, Merwin W. and Joe A. Stone (1992), "Union Effects on Productivity: Evidence from Western Sawmills," *Industrial and Labor Relations Review* 46 (1), 135-145.

Odgers, Cameron W. and Julian R. Betts (1997), "Do Unions Reduce Investment? Evidence from Canada," *Industrial and Labor Relations Review* 51 (1), 18-36.

Phelps, Edmund S. (2007), "Macroeconomics for a Modern Economy (Nobel Address)," *American Economic Review* 97 (3), 543-561.

Slaughter, Matthew J. (2007), "Globalization and Declining Unionization in the United States," *Industrial Relations* 46 (2), 329-346.

US Council of Economic Advisors (2010), *Economic Report of the President*, Washington, DC: US Government Printing Office (February).

Verma, Anil (2007), "What Do Unions Do to the Workplace? Union Effects on Management and HRM Policies," in James T. Bennett and Bruce E. Kaufman (eds), *What Do Unions Do? A Twenty-Year Perspective*, Piscataway, NJ: Transaction Publishers, 275-312.

Wachter, Michael L. (2004), "Theories of the Employment Relationship: Choosing Between Norms and Contracts," in Bruce E. Kaufman (ed), *Theoretical Perspectives on Work and the Employment Relationship*, Champaign, IL: Industrial Relations Research Association, pp. 163-93.

_____. (2007), "Labor Unions: A Corporatist Institution in a Competitive World," *University of Pennsylvania Law Review*, 155 (3), 581-634.

Walsworth, Scott (2010), "Unions and Employment Growth: The Canadian Experience," *Industrial Relations* 49 (1), 142-156.

Weil, David (2005), "Individual Rights and Collective Agents: The Role of Old and New Workplace Institutions in the Regulation of Labor Markets," in Richard Freeman, Larry Mishel, and Joni Hersch (eds), *Emerging Labor Market Institutions for the Twenty-First Century*, Chicago: University of Chicago Press, pp. 13-44.

Wessels, Walter J. (1985), "The Effects of Unions on Employment and Productivity: An Unresolved Contradiction," *Journal of Labor Economics* 3 (1), 101-108.

White, Lawrence J. (2002), "Trends in Aggregate Concentration in the United States," *Journal of Economic Perspectives* 16 (4), 137-160.

Williamson, Oliver E., Michael L. Wachter, and Jeffrey E. Harris (1975), "Understanding the Employment Relation: The Analysis of Idiosyncratic Exchange," *The Bell Journal of Economics* 6 (1), 250-278.