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SSA Theory, the Declining Power of Labor and Economic Growth in the U.S.

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1 Social Structure of AccumulationTheory

Social Structure of Accumulation theory argues that the alternating long (20-25 years) phases of rapid and slower economic growth can best be understood through institutional lenses. A long boom requires a coherent set of supporting institutions, including labor-management systems, the relation of capital to the state, the relation of corporations to shareholders and a set of international relations. These institutions make up each period's Social Structure of Accumulation, or SSA.

At the beginning of each SSA, a set of coherent economic institutions and political coalitions underlies a long periods of rapid capitalist economic growth. But growth itself ultimately strains the institutions and the growth coalitions, leading to institutional incoherence, crisis and a long period of slower growth. The slower growth persists until a new SSA is created. Thus, the set of institutions and political coalitions that emerged as a result of the 1896 election generated substantial growth until the collapse of 1929. The new set of institutions and coalitions that emerged during Roosevelt's New Deal underlay the period of rapid postwar growth that lasted until the recessions of 1974-5 and 1982-3. And the different set of institutions and coalitions that emerged in the Reagan years underlay another period of growth. In this new SSA, however, overall economic growth was slower than that of the postwar era, while growth at top incomes was rapid, even after the Great Recession that began in 2007.

My focus here will be on how the institutions that involve labor have evolved, affecting economic growth. Thus, I will mainly neglect the other institutions that make up an SSA. In the SSA account, the long postwar boom is associated with labor market institutions that facilitated growth: Wages grew in line with productivity because of the "Treaty of Detroit" between strong unions and top management in the U.S. and corporatist peak labor-management agreements between labor and management federations in Europe and Japan.

These institutions facilitated the growth of consumption demand while restraining wage growth so that profits would still increase. A key component of this bargain was that investment out of profits would then increase as well. In a virtuous circle, investment growth-- and labor-management cooperation over introducing technological and organizational change at the workplace-- generated productivity growth, creating room for further wage growth. These institutions worked well so long as they produced a medium amount of wage growth-- less than what labor could demand given its bargaining strength, and so long as corporations maintained high propensities to invest out of profits.

The socio-political role of the state also played a role in the balancing process. Taxation, for example, was used to improve infrastructure, expand education and advance retirement opportunities. Although not sufficiently emphasized in the SSA literature, minimum wage legislation also played an important role in the postwar boom. Wage floors introduced in 1938, for example, stabilized wage and price expectations during the frightening 1937-8 recession and supported the moderate growth of wages until the mid-1970s.

In the SSA view, this economic and political account of postwar institutions provides a balanced understanding of the postwar boom. The contrast here is with the literature that debates the pros and cons of wage-led growth versus profit-led growth. Advocates of the wage-led model emphasize how wage growth stimulates demand, but run up against the problem that without a wage restraint mechanism, wage growth will become too rapid, squeezing profits and thereby limiting investment and growth. Similarly, advocates of the profit-led view maintain that wage stagnation (translate: weak unions) will increase profits, but neglect to take into account that while high profits can generate high amounts of luxury consumption, this pattern of consumption growth is too narrow to sustain investment demand.

The SSA view also provides an account of the unraveling of the postwar institutional relationships. As Weisskopf (1979) documents, and as I discuss briefly below, by the mid1970s the rising strength of labor upset the postwar limited labor-management accord. This shift illustrates the generation of imbalances that I have argued characterizes the wage-led model.

Of course, economic growth since the mid1970s has taken a different path. In the 1980s, the institutions of the postwar SSA were profoundly reshaped. This restructuring is perhaps nowhere clearer than in the labor market and labor management-relations. As I also describe below, unions lost much of their bargaining power with employers and as well their political influence within the Democratic Party. The declining power of labor seems compatible with a long period of income growth for top income-holders.

I question, however, whether weak labor has produced higher growth rates. Some observers argue that the falling strength of labor since the 1980s has led to a more volatile labor market. In the main body of this paper I address these questions by examining the effects of weak labor on trend growth rates as well as cyclical variability in employment. In other words, I revisit Okun's Law. Using cross-state data since 1964 I examine whether Okun's Law has changed in response to the decline of unionism. I find that the cyclical component of Okun's Law remains unchanged relative to the pre-1980 period, but the trend growth component has declined substantially. This reduction in trend growth is attributable to union decline.

The next section of the paper discusses the possible connections between labor's strength and economic growth. In Section 3 I discuss Weisskopf's approach in order to highlight the contrasts between the period he analyzed and the more recent decades. Section 4 examines some of the changes since 1980 that have led over time to a low-road business model in the U.S., one in which managers see workers as a cost to control rather than a partner in growth. Section 5 recognizes that the decline of unionism is correlated with the decline of manufacturing in the U.S., as well as with institutional changes in the National Labor Relations Act and the policies of the National Labor Relations Board, and asks how these phenomena might be distinguished. Section 6 discusses how changes in economic fluctuations and growth of U.S. capitalism can be examined conceptually through the lens of Okun's Law—which relates unemployment changes to changes in cyclical growth and trend growth. Section 7 presents the empirical strategy I use to identify the causal changes. Section 8 discusses the empirical results. I provide some concluding comments in Section 9. Here I also consider whether the recent victories of labor in winning $13 to $15 minimum wages in a number of large U.S. cities represents a new dawn for labor.

2. The Possible Connections between Labor's Strength and Economic Growth

The institutional dynamics of SSAs are especially evident in the case of labor market institutions. A limited labor-management accord emerged as part of the New Deal legacy, with unions legitimated and wages rising for all at about the same rate as overall productivity growth. But by the late 1960s, groups that had been substantially outside the labor accord—such as women and minorities—became militant advocates of greater wage demands for their members. At the same time, rapid economic growth generated historically low unemployment rates. These conditions in turn increased labor's strength, leading to wage growth that outran productivity growth, which then squeezed profits and undermined further growth.

This emphasis on the relationship between the rising strength of labor unions and the decline of economic growth in the 1970s was documented in a number of studies, most notably in Weisskopf (1979). An analogous story about the period since the 1980s places the *decline* of labor unions as the most important source of subsequent wage stagnation, the disconnect between wage growth and productivity growth and revivals in profit rates.

But what about the effects of union decline on growth? It is well-known that economic growth since the early 1980s has been slower than in the previous postwar period. Can labor's decline be related to the slower growth rates since 1980 and the especially slower growth rates since 2001? Although the number of jobs grew rapidly during the technology boom of the latter 1990s, the growth of employment since 2001 has been especially slow. By early 2015, even with the recovery from the Great Recession, employment in many of the biggest states in the U.S. was essentially at the same level as in 2001. The labor market had already experienced more than a lost decade.

Slower employment growth is often attributed to globalization and to technological change. I examine here the implications of a change in labor market institutions--the declining power of labor-- upon growth since the 1980s. I suggest that the decline of unionism was a major part of a shift to a low road path of development for the U.S. economy, one in which profitability was enhanced by cutting labor costs rather than by investments in innovation and productivity growth that would be shared with labor. Since the 1980s, large segments of U.S. employers moved away from a mutual-gains relationship with their employees and toward a shorter-run perspective that emphasized cost-cutting. As my results here show, these developments led to a slower growth rate for the economy as a whole.

My results also suggest, somewhat surprisingly, that the cyclical relationship between growth and unemployment has not been changed substantially by the weakening of labor. This result is surprising because strong unions in the U.S. do protect workers from arbitrary dismissals and they sometimes slow down plant closures, either through collective bargaining agreements or through political pressure. In some cases, unions do bargain over employment levels, as in the cases of airplane crew sizes, nurse-staff ratios or teacher-student ratios. U.S. unions can also, through concession bargaining, be an instrument of nominal downward wage flexibility, and

thereby save some of their members' jobs.[1] A trend toward making workers more "disposable" could thus explain why unemployment increased so rapidly during the Great Recession and took so long to fall.

But there are also reasons why union decline might not change the cyclical relationship between employment and growth. For example, most union contracts contain a management rights clause that gives management the right to set the size of the workforce and to adjust it as needed when business conditions warrant. With a management rights clause, the employer's decisions regarding the size of the workforce adjustment does not require any further justification. Gordon and many other observers thus overstate the extent to which strong unions ever had substantial power in the U.S. to prevent layoffs when the economy turns south.

In addition to reducing the size of their workforce, employers can in principle adjust to downturns in economic activity by cutting their workers' hours. Indeed, as Bernanke (1986) showed, hours reductions that were shared by all employees were quantitatively as important as layoffs in reducing labor input during the Great Depression. Since that time, however, unions have pressed for layoffs rather than hours reductions as the preferred adjustment method. Using layoffs protects senior workers from hours reductions and places more of the adjustment costs on junior workers, who were the first to be laid off. Layoffs in unionized companies are allocated according to rules set forth in the contract, usually involving inverse seniority.[2]

The use of layoffs rather than hours reductions became a feature of both union and nonunion sectors in the U.S. Houseman and Abraham (1994) showed that labor market adjustment in recessions occurs more through layoffs in the U.S. and more through hours reductions in other countries, such as Germany and Japan. As is well-known, strong European unions have obtained employment protections for workers on indefinite contracts. These protections make layoffs very costly to employers and have led European employers to greater use of hours reductions as the labor adjustment mechanism in recessions.[3]

3.   **Weisskopf's 1979 analysis**

In his classic 1979 article, "Marxian crisis theory and the rate of profit in the postwar U.S. economy," Thomas Weisskopf analyzed the changing economic relationships of the postwar period that gave rise to the long crisis of the 1970s. The postwar period was one of high growth rates, and a shared prosperity among all income quintiles. The postwar system broke down, however in the 1970s. Weisskopf determined that the growth of business costs-- primarily

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[1] Downward nominal wage rigidity in the private sector was the rule in the Great Recession. Ironically, it is the union sector that exhibits more wage flexibility in a downturn.

[2] On seniority rules regarding layoffs and promotions in the unionized context, see Abraham and Medoff 1984. Mills 1984 showed that seniority rules were just as prevalent in the nonunion context. This finding was reversed by Abraham and Farber 1989.

[3] Appelbaum 2011 argues that institutional weaknesses in the U.S. labor market have inclined employers to adjust to recessions through layoffs rather than hours reductions, as in Belgium, Canada, Germany and a number of other European countries that utilize work-sharing policies. This leaves open the question of whether the use of layoffs in the U.S. has increased over time.

wages but also raw materials prices-- had squeezed profits, thereby reducing investment and setting off a period of stagflation (Weisskopf, 1979). The growth of these costs resulted in part from unusually rapid economic growth, especially during the Vietnam War, which increased the demand for labor, raw materials and other inputs faster than supplies of each could be mobilized. As a result, unemployment rates fell to levels that had not been seen since the Second World War, productivity growth slowed and wage pressures squeezed profits. In other words, the findings supported a "Rising Strength of Labor" thesis.

Weisskopf's article made many important contributions to the economic crisis literature. As usual, he provided an extremely detailed and very instructive discussion of each of the data series that he used, the proper price indices needed to measure real quantities, and how to handle such issues as changing relative prices of consumer and capital goods.[4]

But most important, by elucidating the panoply of forces that determine the rate of profit, Weisskopf elegantly brought together into a single framework the variety of conditions that could lead to a sustained economic downturn. That framework encompassed the conditions in which aggregate demand crises, such as the Great Depression of the 1930s, would erupt, as well as the conditions under which profits could be squeezed on the costs side, especially in the labor and raw material markets. Weisskopf thus provided a means to resolve the then-ongoing debate among the Keynesians, the stagnationists and the underconsumptionists who emphasized aggregate demand problems, and the profit-squeeze perspectives of those, such as Glyn and Sutcliffe and Boddy and Crotty, who paid more attention to the depletion of the reserve army of the unemployed and the consequent growth in wages and in labor's share of national income.[5]

Was Weisskopf correct to speak of a rising strength of labor in the 1960s and 1970s? The idea that labor once had economic strength, to say nothing of the idea that its strength was increasing in the U.S. into the 1970s, seems remarkable in retrospect. Indeed, private sector union membership peaked at an estimated 21 million members in absolute numbers in 1979, the year Weisskopf's article appeared. On the other hand, union density—the proportion of the workforce represented by unions, peaked much earlier—in 1953, then declined slowly but steadily through the 1970s, and then declined at an accelerated rate beginning, but not ending, in the 1980s (see Figure 1).

Weisskopf was nonetheless correct to refer to a rising strength of labor because in the period from the early 1960s to the early 1970s falling unemployment rates and rapid economic

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[4] Weisskopf also introduced several new conceptual distinctions -- such as between hoarded labor and truly-hoarded labor, and between the offensive and defensive strengths of labor-- that have not stood the test of time. The former refers to the ability of the working class to achieve real wage gains more rapid than productivity increases, while the latter refers to workers' ability to pass on to capitalists a disproportionate share of the real income loss resulting from adverse relative price changes (such as a decline in the terms of trade of the economy under consideration)."

[5] Weisskopf's model did not distinguish clearly enough between the *strength* of labor, understood in institutional terms such as union density, and its proxy, the *share* of labor in national income. But much in Weisskopf's analysis is unchanged if we just redefine his RSL acronym as denoting the Rising *Share* of Labor.

growth made it more difficult for employers to find workers just when they needed them most. Market conditions thus provided unions with more bargaining leverage. Union strikes became more common, putting more pressure on employers to offer more favorable contract terms, including in many cases generous cost of living allowances (Rosenberg 2010).

This rising strength of labor then translated into a rising share of labor in national income. As Figure 2 shows, labor's share of national income contains a strong cyclical component, falling in the first half of an expansion and rising in the second half. Thus, the proportion of national income received by labor rose between the mid1960s and the business cycle peak of 1973, recovered after the 1974-5 recession and then increased again in the latter 1970s.

Yet Weisskopf could not foresee in 1979 that labor's strength had peaked and was about to enter a long period of decline. The subsequent changes in labor's share of national income provide one indicator of its weaker power. As Figure 2 shows, labor's share has been falling since the mid-1980s, interrupted only temporarily in the second half of the 1990s expansion, and then plummeting in the past decade.[6]

4.   The Declining Strength of Labor

The timing of the decline in labor's share coincides with two key changes in labor-management relations that emerged in the early 1980s, each of which had implications for both growth rates and how labor markets absorbed economic fluctuations.[7] First, in response to the stagflation crises of the 1970s, which as Weisskopf showed were related directly to the rising strength of labor, employers mounted a prolonged, multi-pronged and very successful anti-union offensive. As a result, labor's success in NLRB elections plummeted in the early 1980s and never recovered (Farber and Western 2002).

Second, in response in part to growing international competition and to challenges from aggressive shareholders, and without the countervailing power of unions, managers became much more oriented toward and rewarded by the short-term buttressing of company share prices.[8] To do so they invested less in research and development and less in their own workforce. This change represented as systemic shift toward managers. Instead of cooperating with workers or their representatives for mutual long-term productivity gains, the emphasis became generating short-term increases in profits that would boost shares at the expense of long-term growth. This shift in the corporate business model meant that employers placed a smaller value on long-term employment relations, shifting away from defined-benefit pensions and other benefits that tied employers and employees together and toward the use of shorter-term employees.

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[6] This decline cannot be accounted for by trends in capital-output ratios.

[7] The discussion in this section presents a very brief summary of a large literature. For details, see the relevant chapters in Reich 2009 and in McDonough, Reich and Kotz 2010.

[8] The challenge for corporate control that aggressive shareholders brought to less aggressive managers was resolved in the favor of managers in the mid-1980s by various state laws making takeovers more difficult and by the 1985 Delaware case, *Moran v. Household* (Cremers and Ferrell 2011). But by then, the structure of managerial compensation had become aligned with shareholder value.

Changes since the 1970s in how the stock market responds to layoffs indicate how much the corporate business model has shifted. As Hallock, Strain and Webber (2011) show, the stock market does not valorize the firm-specific skills of long-term employees and increasingly reacts to layoff announcements as evidence of positive managerial decision-making. In other words, layoff announcements have become interpreted as a sign of increased cost-efficiency rather than one of financial stress. And when layoffs are expected to increase share prices, managers with short-term horizons are likely to overshoot the frequency and size of layoff announcements, even if they destroy long-term assets embodied in their employees, and thereby lower the company's share prices in the longer-run (Love and Norhria 2005).

Figure 7 of Hallock et al. 2011 presents annual data on the relationship between large layoff announcements and share prices. In the 1970s, share prices of large companies reacted strongly and negatively to layoff announcements. This pattern began to reverse in the 1980s. By the 1990s layoff announcements were nearly as likely to generate positive effects on share prices as to generate negative ones (see also Uchitelle 2007). According to Hallock (1998): "Firms that announce layoffs in the previous year pay their chief executive officers more and give them larger percentage raises than firms that do not have at least one layoff announcement in the previous year."

As Hallock et al. show with annual data, the relationship between layoffs and share prices is highly cyclical. In particular, layoffs still have negative effects on share prices during recessions even as they have positive effects during expansions. However, the magnitude of these cyclical variations has not changed in recent years compared to the 1970s, indicating that the stock market may not have affected the cyclical patterns of layoffs. Interestingly, in addition to the cyclical variations, the annual data display a long-term trend from 1970 through 2007 toward higher share prices after layoff announcements. Put together with the greater proportion of managerial compensation that is share-price related, the result is that employers now are more rewarded by layoffs than they were in the 1970s.

Trends in job tenure indicate how attachments between firms and their workers have evolved. Farber (2010) provides the most thorough study of trends in job tenure; his data cover the period from 1973 to 2008. Farber finds a substantial and steady reduction over this period in the proportion of male private-sector workers who hold a job with the same employer for more than ten years, confirming the familiar narrative that lifetime jobs are much less common than before.[9] This pattern occurred among men in all age groups and especially for men over 40. Mean tenure fell from 13.5 years to 11.4 years for men age 50, and from 18 years to 14 years for men age 60.

Changes in employer pensions that reinforced the attachments of workers and firms show similar patterns. Between just 1992 and 2004, the proportion of men ages 48 to 52 with defined benefit retirement plans—which unlike 401k and other defined contributions plans provide benefits based upon length of service with the firm-- fell from 41 percent to 24 percent.

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[9] The trends for women were stable, in large part because increases in the long-term attachment of women to the labor force and to their jobs have offset occupational declines in job duration.

Farber also finds that the proportion of workers in short-term jobs—those who remain with the same employer for less than one year-- increased in the same time period. The proportion of workers in new jobs rose in all age groups, and especially among workers aged 30-39.[10] By 2008 these short-term jobs accounted for one-fifth of total private sector employment.[11] Equally important, by 2008 half of all new jobs ended within the first year, implying that that about a fourth of all new jobs end within six months.

Some of the decline in long-term jobs reflects the decline of industries, such as manufacturing, that had above-average job tenure levels. Similarly, some of the increase in short-term jobs reflects the rise of industries, such as retail and accommodations and food services, that long had lower levels of job tenure. As Farber reports, however, the shift to shorter job tenure is also visible *within* industries.

In summary, the increased propensity to use layoffs to increase share prices and the declining value placed upon long-term employment relations each suggest that the labor market has become more flexible. What remains open is how this greater flexibility has affected the volatility of employment with the business cycle and the trend rate of economic growth.

5.   The Decline of Labor or the Decline of Manufacturing?

As Hallock, Strain and Webber (2011) make clear, a large proportion of layoffs in the U.S. have taken place in manufacturing. Some observers suggest that the decline of manufacturing is the product of globalization, especially illustrated by growing competition in recent decades from low-wage producers in China and Mexico. But as Figure 1 shows, manufacturing employment has been declining steadily as a share of total employment since the early 1950s, well before the emergence of international competition from Europe, Latin America or Asia. It seems more likely that manufacturing employment has declined because of greater productivity growth in manufacturing than in services and because of growth in the demand for services.

On the other hand, the level of manufacturing employment (also shown in Figure 1) did increase in the 1960s and 1970s. It then varied in the 1980s and 1990s with the value of the dollar against other currencies and with the growth of the U.S. current account deficit (McKinnon 2004). According to McKinnon, the steep decline of manufacturing in the 2000s reflects the large increase in the fiscal deficit, which increased interest rates and increased the value of the dollar, thereby increasing the manufacturing trade deficit. For this reason, the decline of manufacturing in other major economies, such as Germany and Japan, has been much less steep than in the U.S.

Manufacturing jobs are important for economic growth and innovation because they pay much above the economy-wide average and because about 70 percent of research and

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[10] Farber uses less than one year as his cutoff because information on the distribution of job tenure by months is not available for many of the years in his dataset.

[11] As Farber notes, over this period job duration in the public sector increased, especially but not solely among women.

development takes place in manufacturing. The decline of manufacturing consequently holds implications of its own for long-term economic growth. Manufacturing is also more cyclically sensitive than other sectors of the economy. Therefore, the decline of manufacturing can also affect how much employment responds to fluctuations in GDP.

The decline of manufacturing also has implications for the decline of unionism. Figure 1 shows that union density in manufacturing has always been higher than in the economy as a whole. Nonetheless, union density in manufacturing has been declining more rapidly than in the economy as a whole. The decline of manufacturing employment may also hold major implications for labor's share of national income, Weisskopf's measure of labor's strength.

Consider the trend in the level of manufacturing employment displayed in Figure 1. Manufacturing employment grew in the 1960s and 1970s, the period when labor's share of national income (shown in Figure 2) was also rising. And the rapid decline in manufacturing employment since the 2000 recession coincides with the rapid decline in labor's share in the same time period.

In summary, it is important to distinguish the effects of manufacturing decline from the effects of union decline. I therefore take manufacturing decline into account in the empirical tests that I discuss below.

6.   Revisiting Okun's Law

In the preceding section I reviewed major changes in the U.S. labor market that began in the 1980s: weaker unions, shorter managerial time horizons, a greater propensity to lay workers off, declining employer commitments to employees and the decline of manufacturing. These changes can be summarized as generating increases in the flexibility of U.S. labor markets.

Has this increase in flexibility since the 1980s changed how the labor market reacts to economic growth and fluctuations? An increase in labor market flexibility could lead to more volatility in employment, as occurred in Spain and other countries that increased their use of temporary contracts. The 1984 to 2006 period of moderation in business cycles, sometimes referred to as the Great Moderation, suggests the opposite occurred in the U.S., while the large increase in unemployment during the Great Recession of 2007-09 supports the hypothesis of increased volatility.

An increase in flexibility, if it reduces employer investments in worker productivity, can reduce longer-term economic growth. The European experience with more flexible labor markets suggests just such an outcome, as does the slower rate of growth of the U.S. economy since the 1980s.

Okun's Law, which summarizes both short-run cyclical patterns and longer-run trend growth rates, is well-suited to address the effects of increased labor market flexibility upon short-run fluctuations and longer-run growth. Okun's Law in effect decomposes changes in the unemployment rate into cyclical and trend economic growth rate components:

$$\Delta UE_{it} = a_i + b\frac{\Delta GDP_{it}}{Y_{it}} + \varepsilon_i \tag{1}$$

where ΔUE_{it} equals the percentage point change in the unemployment rate,

and $\frac{\Delta GDP_{it}}{GDP_{it}}$ equals the growth rate of GDP. The cyclical (short-run) component of Okun's
Law is the estimated b.

To obtain the estimated trend of GDP growth consistent with no change in
unemployment, set $\Delta UE_{it} = 0$. This condition implies that

$$\left(\frac{\Delta GDP}{GDP}\right)^{*} = -\frac{a}{b} \tag{2}$$

The trend growth rate (the rate of economic growth consistent with no change in unemployment)
thus equals the intercept divided by the absolute value of the cyclical coefficient.

7.   Identification strategy and data

First stage

My first-stage strategy consists of estimating Okun's Law coefficients across the fifty
U.S. states over the period 1964-2010. For each state i, I regress the annual percentage point
change in the state unemployment rate (UE) against the percentage change in real state GDP:

Change UE (it) = a(it) + b(i)*percent change GDP(it) + e(it)

I then examine whether the coefficients changed in the 1980s and whether they changed more in
states that had greater declines in unionization. I do so first by estimating Okun's Law for two
different periods and separately for states that had greater or smaller than median declines in
unionization over the period.

To estimate these regressions I require only real state GDP and state unemployment rates
for each year.[12] State GDP data are from the NIPA regional tables, available in real terms for
later years and in nominal terms for earlier years. To obtain real state GDP for earlier years I
extrapolated backwards using state-level trends in state GDP price deflators for later years.
State unemployment rates are from BLS for later years and from the *Employment and Training*

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[12] Since hours per employee are not available at the state level, I cannot test whether hours adjustments
have become more responsive to GDP change.

Report of the President 1976 for earlier years.[13] Unionization data are from union-stats.com.[14] Details are available in the   appendix to the working paper version of this paper.

It is instructive also to examine directly whether the decline in unionization had a *causal* impact on the changes in the Okun coefficients. A challenge for this exercise is that states differ in their cyclical responses and trend growth rates. For instance, a state producing natural resources such as Texas has somewhat different cyclical responses from the country as a whole - and this may have little to do with unionization as such. To eliminate such confounding factors across states, I focus on comparing *changes* in unionization with *changes* in the cyclical and trend responses. In so doing, I also examine whether the decline in unionization is related to the decline in the share of employment in manufacturing over this period. Thus, in a second-stage I regress the estimated state-level changes in the coefficients upon changes and levels in state-level unionization and manufacturing employment shares.

Second stage

For the second-stage identification, for each state (i), I regress for 1986-2010 the annual percentage point change in the state unemployment rate (ue) against the percentage change in real state GDP:

Change UE (it) = a(it) + b(i)*percent change GDP(it) + e(it)

Define trend_post(i) = -a(i)/b(i) equals the trend growth rate, and cycle_post(i) = b(i) equals the cyclical response of unemployment to state GDP change.

For each state (i), I then regress for 1964-85 the change in the state unemployment rate (UE) against the percentage change in real state GDP:

Change UE (it) = c(it) + d(i)*percent change GDP(it) + e(it),

Define trend_pre(i) = -c(i)/d(i) equals the trend growth rate and cycle_pre(i) = d(i) is the cyclical response of UE to GDP.

Then, for each state (i), I calculate the differences in coefficients between the later (post) and the earlier (pre) periods:

Change_trend(i) = trend_post(i) - trend_pre(i)
Change_cycle(i) = cycle_post(i) - cycle_pre(i)

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[13] Monthly state unemployment rates can be somewhat unreliable because they are calculated from small CPS samples and are sometimes adjusted by models and other data that come from the GDP side. I use only annual rates, which are much less affected by such shortcomings.

[14] I start with 1964 because state-level unionization data are available beginning in that year. See the Data Appendix for further details. In order to avoid weighting states by their population, which can exacerbate spatial heterogeneity, I omit four states that are clearly outliers.

and merge those into a state-level dataset that contains the change and later-period levels of two independent variables (unionization, employment in manufacturing).

I then estimate six regressions:

Change_trend(i) = alpha + beta1*union_change(i) + beta3*manuf_change(i) + e(i)

Change_trend(i) = alpha + beta2*union_post(i) + beta4*manuf_post(i) + e(i)

Change_trend(i) = alpha + beta1*union_change(i) + beta2*union_post(i) + beta3*manuf_change(i) + beta4*manuf_post(i) + e(i)

Change_cycle(i) = alpha + beta1*union_change(i) + beta3*manuf_change(i) + e(i)

Change_cycle(i) = alpha + beta2*union_post(i) + beta4*manuf_post(i) + e(i)

Change_cycle(i) = alpha + beta1*union_change(i) + beta2*union_post(i) + beta3*manuf_change(i) + beta4*manuf_post(i) + e(i)

8.   Results

The first-stage results are presented in Tables 1 and 2. I begin with results for all the states in the sample over the entire period. I then consider whether these results vary by time period and by the extent of union decline. Then I discuss the results when I vary both the time period and the extent of union decline.

Table 1 presents the estimates over the entire period 1964-2010, without state fixed-effects in column 1 and with state fixed-effects in column 2. In this and in all the subsequent tables, the more revealing results are those that include state fixed-effects. The estimated cyclical coefficient, labeled as GDP percent change, equals -.237 and the estimated trend growth rates is 3.46 percent.[15] Both are significant at the one percent level. Standard errors are clustered at the state level in all the tables.

In columns 4 and 6, which provide the specifications that include state fixed- effects, the cyclical coefficients and the trend growth rates remain significant at the 1 percent level in both time periods, but they vary substantially between the two periods. The change in the cyclical coefficient, from −0.261 to −0.219 (a decline of 16.1 percent), indicates that a given decline in GDP has a *smaller* effect on unemployment in the later period than in the earlier period. This result suggests that any increased labor market flexibility in the later period, when unions were weaker, is *not* associated with an increase in labor market volatility**.**

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[15] In equations that include state fixed-effects, the estimated trend growth is calculated using the average of the 46 state trend estimates.

What about the difference in growth rates in the two periods? In Table 1, columns 4 and 6 show a decline in estimated trend growth rate, from 3.75 percent in the earlier period to 3.20 percent in the later period. The increase in labor market flexibility in the later period, when unions are weaker, is thus also associated with a somewhat reduced economic growth rate trend, consistent with the arguments made earlier in this paper.

I turn next to examining the possible effects of the decline of union density. Table 2 presents Okun's Law estimates, but now disaggregated into two sets of states. One set consists of states in which the union decline was greater than the median (columns 1, 3 and 5), and the other consists of states in which unions declined by less than the median amount (column 2, 4 and 6).[16]

Consider first the differences between the two sets of states over the entire period of
1964–85. These results are shown in columns 1 and 2 of Table 2. The cyclical coefficient in column 2 is slightly higher than in column 1, suggesting again that greater union decline did not have much effect on the volatility of employment.

The trend growth rates in these two columns show a different pattern. Over the period 1964–2010 trend growth was 3.58 percent in the states with the less rapid decline in unionism and 3.35 percent in the states with the more rapid union decline. States in which labor decline was muted grew moderately faster than those in which labor decline was greater. This result, which is consistent with the finding in Table 1, suggests that greater increases in management strength versus labor are associated with lower economic growth.

I turn next to Okun's Law estimates that compare both the earlier and later periods and the states with lesser or greater amounts of union decline. These results are also presented in Table 2. Columns 3 and 4 show the results for both sets of states in the earlier period and columns 5 and 6 exhibit the results for both sets of states for the later period.

In the later period, the estimated trend growth is 3.26 in the states with less union decline and 3.15 in the states with more union decline. Thus, in the later period, the estimated trend growth rate is higher in the states with less union decline than in those with more union decline. Comparisons across the two groups of states within each period indicate a higher growth rate where union decline is smaller. Within each set of states, on the other hand, the trend growth rate changes in a similar manner over time. Both sets of states experience a growth rate decline, of similar relative size, from the earlier to the later period.

Summarizing to this point, the results in Tables 1 and 2 suggest that the cyclical coefficients are relatively unchanged when comparing states with less union decline than those with more union decline. Labor markets have become less volatile over time, however, across both groups of states. Trend economic growth has similarly fallen for both groups of states over time.

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[16] The median decline in union density from 1964 to 2010 equals 16 percentage points, or about half the level in 1964.

The main differences between the two groups of states are that the states with less union decline have a modestly lower level of volatility and a modestly higher trend growth rate, across both time periods. As already mentioned, however, these results may be confounded by heterogeneity across states. The second-stage changes-on-changes regression provides one test of whether this is the case.

I turn next to the results of the second-stage regression. This regression investigates whether the declines in unionism and in manufacturing at the state level can account for the change in the trend and cycle coefficients for each state. To recall, I focus here on changes-on-changes regressions in order to identify the causal effect of deunionization on trend growth, and to take into account how heterogeneity across states could confound the comparison of trend growth rates to the change in unionization.

These results are displayed in Table 3. As columns 1 and 4 indicate, a greater decline in unionism is associated significantly with a decline in the trend growth rate, but not with any change in the cyclical volatility of unemployment. A greater decline in manufacturing, however, is not associated with a change in the trend growth rate, nor with a significant change in cyclical volatility.

As a check on these results, columns 2 and 5 in Table 3 ask whether the state-based levels of unionism and manufacturing in the later period are related to changes in the trend and cycle coefficients. None of the coefficients in these regressions are significant. Finally, the change and level variables are both included in the regressions reported in columns 3 and 6. The results in column 3 indicate that a higher level of union density is significantly related to a higher estimated trend growth rate.

Column 6 indicates again that both the decline of unionism and the level of unionism are not related significantly to changes in the cyclical volatility of unemployment. A greater decline of manufacturing, however, is not significantly related to increased cyclical labor market volatility. This result is surprising, since manufacturing is highly cyclical.

With respect to the question of increased labor market volatility, the second-stage results, which are better designed to identify causation rather than correlation, support the findings from the first stage: declining union density does not seem related to increased cyclical responses of unemployment to changes in GDP. Indeed, as Table 1 showed, the cyclical response of unemployment is somewhat weaker in the more recent period.

While the second-stage regressions provide one approach to correcting for state-level heterogeneity, they are not a panacea. Indeed, in previous research on minimum wage effects using similar specifications (Allegretto, Dube and Reich 2011), my co-authors and I found that specifications with state and time fixed effects suffered from omitted variables bias precisely because of spatial heterogeneity.

As a final test, I therefore examine the relationship between productivity growth and union decline across states, but using change over the entire time period 1969-2010. These results are presented in Figure 3. They indicate that productivity growth did decline more in

states with greater union decline. This evidence thus supports the view that labor's declining strength had negative effects on long-term economic growth.

9.   Conclusion

As Weisskopf (1979) demonstrated, the postwar period until the mid-1970s was characterized by a rising strength of labor. During this period of rapid economic growth shared prosperity raised living standards among all sections of the U.S. income distribution. Strong trend growth did not eliminate periodic business cycles. As Arthur Okun's original formulation showed, changes in GDP were accompanied by predictable changes in unemployment rates. This postwar system collapsed in the 1970s, to be followed by a new one that, among other changes, substituted a rising strength of management for the previous rising strength of labor.

My investigation of Okun's Law finds that the cyclical patterns of the early period persist in the more recent period, but the trend growth patterns are very different. Trend growth has been slower from 1985 to 2010 than in the 1964-1984 period.

What can explain the slower growth? My Okun's Law estimates on the whole suggest that the decline of unions has led to lower economic growth, but that evidence is not entirely conclusive. The longer-term evidence in Figure 3 does buttress support for this argument. De-unionization, on the other hand, has clearly not made the labor market more responsive to cyclical changes in GDP, as some have argued it would. In other words, unions had not previously played any significant role in preventing employers from responding to business cycle downturns, at least with regard to employment.

I also find that low levels of manufacturing generate slower growth, above and beyond the direct effect that manufacturing decline has had on union decline. With respect to whether cyclical patterns have changed, I find that manufacturing decline has caused a *dampened* effect of recessions on unemployment increases.

The struggle for a $15 minimum wage: a new dawn for labor?

[To be added]

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Table 1   Okun's Law, 1964 to 2010

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	1964 to 2010		1964 to 1985		1986 to 2010	
Change in UE rate						
	(1)	(2)	(3)	(4)	(5)	(6)
GDP % change (cycle)	–0.220	–0.237	–0.239	–0.261	–0.197	–0.219
se	(0.006)	(0.006)	(0.009)	(0.009)	(0.009)	(0.009)
Constant	0.798	0.767	0.905	1.051	0.640	0.557
se	(0.028)	(0.130)	(0.045)	(0.220)	(0.034)	(0.160)
Trend growth	3.480	3.460	3.780	3.750	3.250	3.200
se	(0.078)	(0.075)	(0.130)	(0.120)	(0.120)	(0.110)
N	2162	2162	1012	1012	1150	1150
R^2	0.371	0.401	0.421	0.459	0.301	0.355
State fixed effects	n	y	n	y	n	y

Notes: All coefficients are significant at the 1 percent level. Excludes outlier states: Alaska, North Dakota, Louisiana, and Wyoming. Regressions performed in R with lm function. Standard errors are clustered at the state level. The standard errors for the trend growth estimates were determined with a bootstrap: for each regression group, sample N=46 observations with replacement from the group data, calculate the trend estimate for the sample, repeat 500 times, determine the empirical distribution of the 500 trend growth estimates for each group.

Table 2   Okun's Law by time period and extent of union decline

			1964 to 1985		1986 to 2010	
	Union decline		Union decline		Union decline	
	Small	**Large**	**Small**	**Large**	**Small**	**Large**
Δ UE rate	(1)	(2)	(3)	(4)	(5)	(6)
% ΔGDP (cycle)	–0.226	–0.246	–0.253	–0.268	–0.206	–0.229
se	(0.009)	(0.009)	(0.013)	(0.014)	(0.014)	(0.012)
Constant	0.820	0.733	1.090	1.038	0.599	0.508
se	(0.192)	(0.189)	(0.316)	(0.318)	(0.235)	(0.218)
Trend growth	3.577	3.349	3.906	3.635	3.264	3.145
se	(0.011)	(0.01)	(0.037)	0.034	(0.028)	(0.014)
N	1058	1058	483	483	575	575
R^2	0.374	0.408	0.437	0.438	0.290	0.371
State fixed effects	y	y	y	y	y	y

Notes: All the cycle and trend coefficients are significant at the one percent level. Excludes outlier states: Alaska, North Dakota, Louisiana, and Wyoming. Regressions performed in R with lm function. The standard errors for the trend estimates were determined with a bootstrap: for each regression group, sample N=46 observations with replacement from the group data, calculate the trend estimate for the sample, repeat 500 times, determine the empirical distribution of the 500 trend growth estimates for each group.

Table 3 Effects of Unionization and Manufacturing on Changes in Trend and Cycle

N = 46	Change in trend			Change in cycle		
	(1)	(2)	(3)	(4)	(5)	(6)
$\%\Delta union_{net}$	−0.253		−2.203	0.038		0.021
se	(1.646)		(1.852)	(0.104)		(0.123)
$\%\Delta manuf_{net}$	−0.056		0.184	−0.112		−0.105
se	(1.399)		(1.415)	(0.088)		(0.094)
$union_{mean\ post}$		4.519	6.971*		0.223	0.101
se		(3.646)	(4.218)		(0.241)	(0.279)
$manuf_{mean\ post}$		−4.533	−6.217		0.015	−0.002
se		(4.616)	(4.917)		(0.305)	(0.325)
Intercept	−0.790	-0.592	−1.824	0.004	0.021	−0.015
se	(1.487)	(0.872)	(1.652)	(0.094)	(0.058)	(0.109)
R^2	0.001	0.001	0.001	0.001	0.001	0.001

Notes: * indicates significant at ten percent level. Excludes outlier states: Alaska,
North Dakota, Louisiana, and Wyoming. Regressions performed in R with lm function.
See Table A2 in the data appendix for details of independent variables.

Figure 1 **Manufacturing employment (level and share) and union membership in nonfarm employment and in manufacturing**

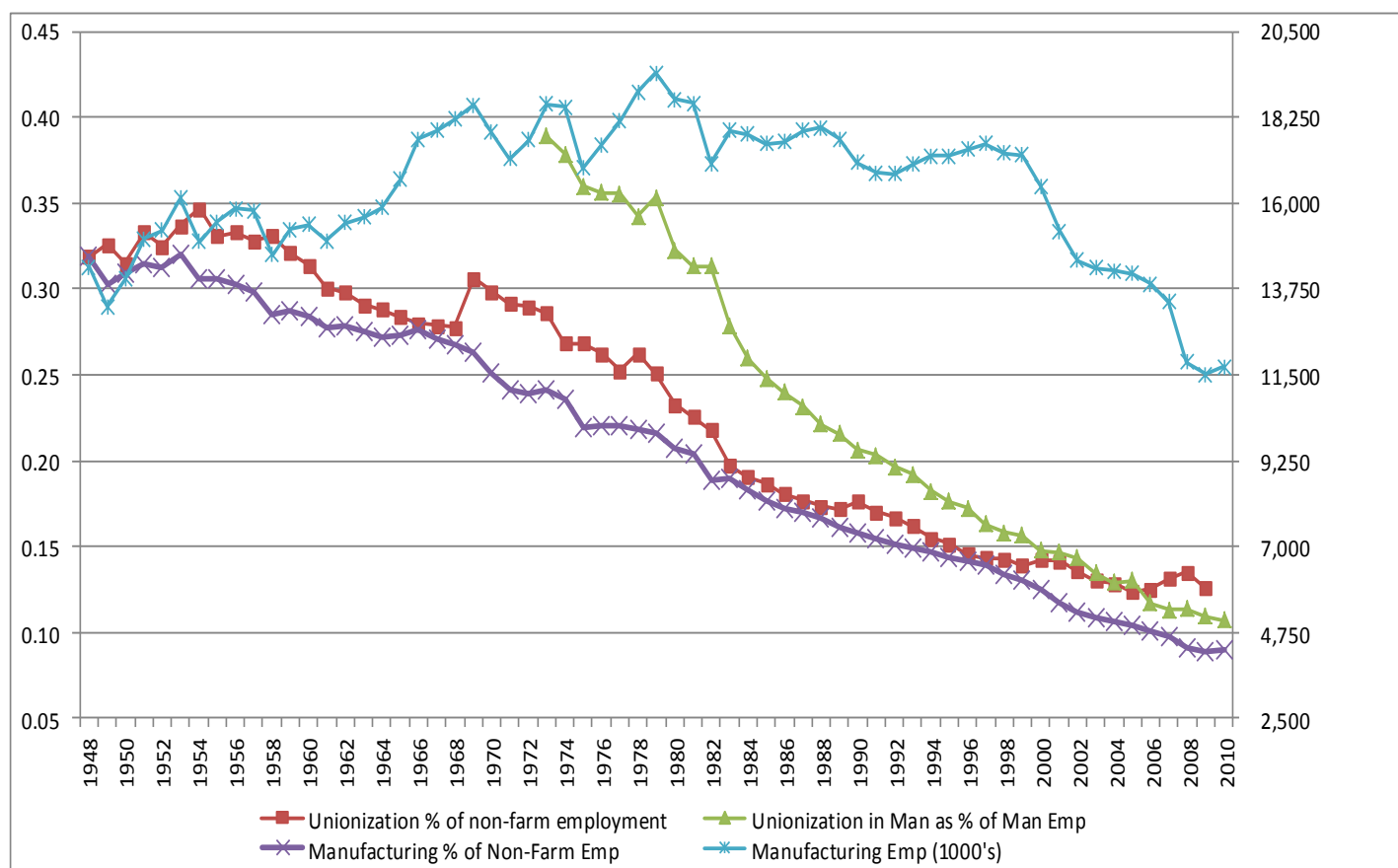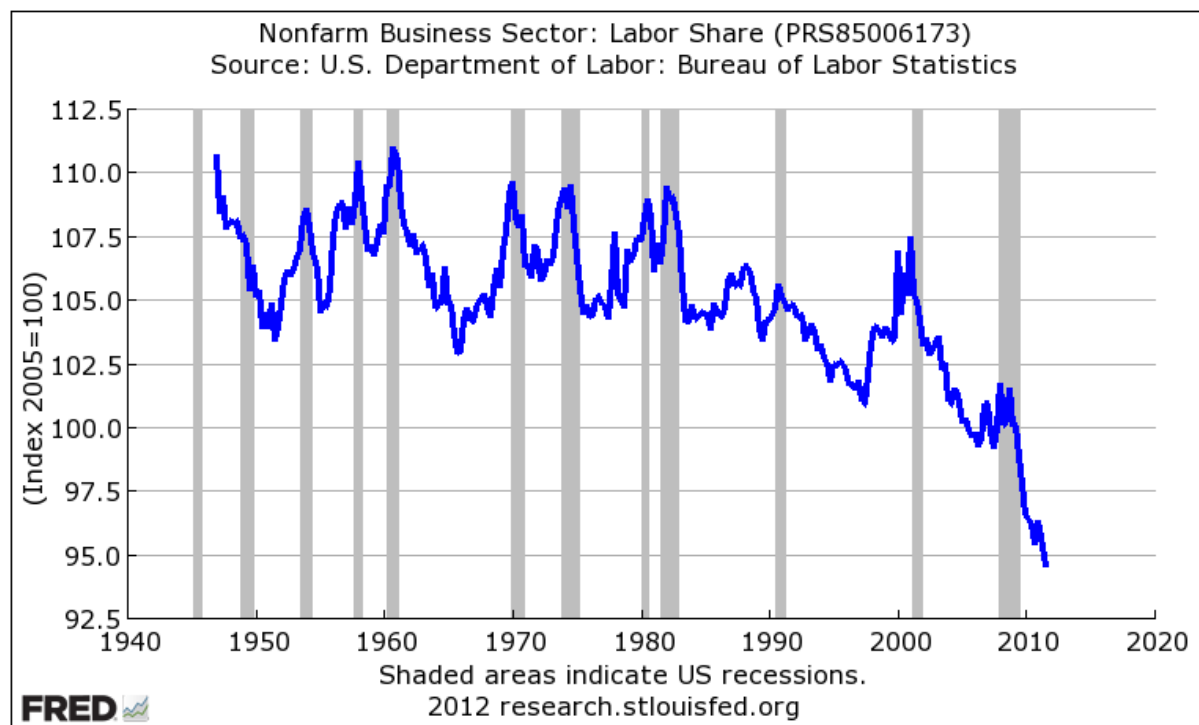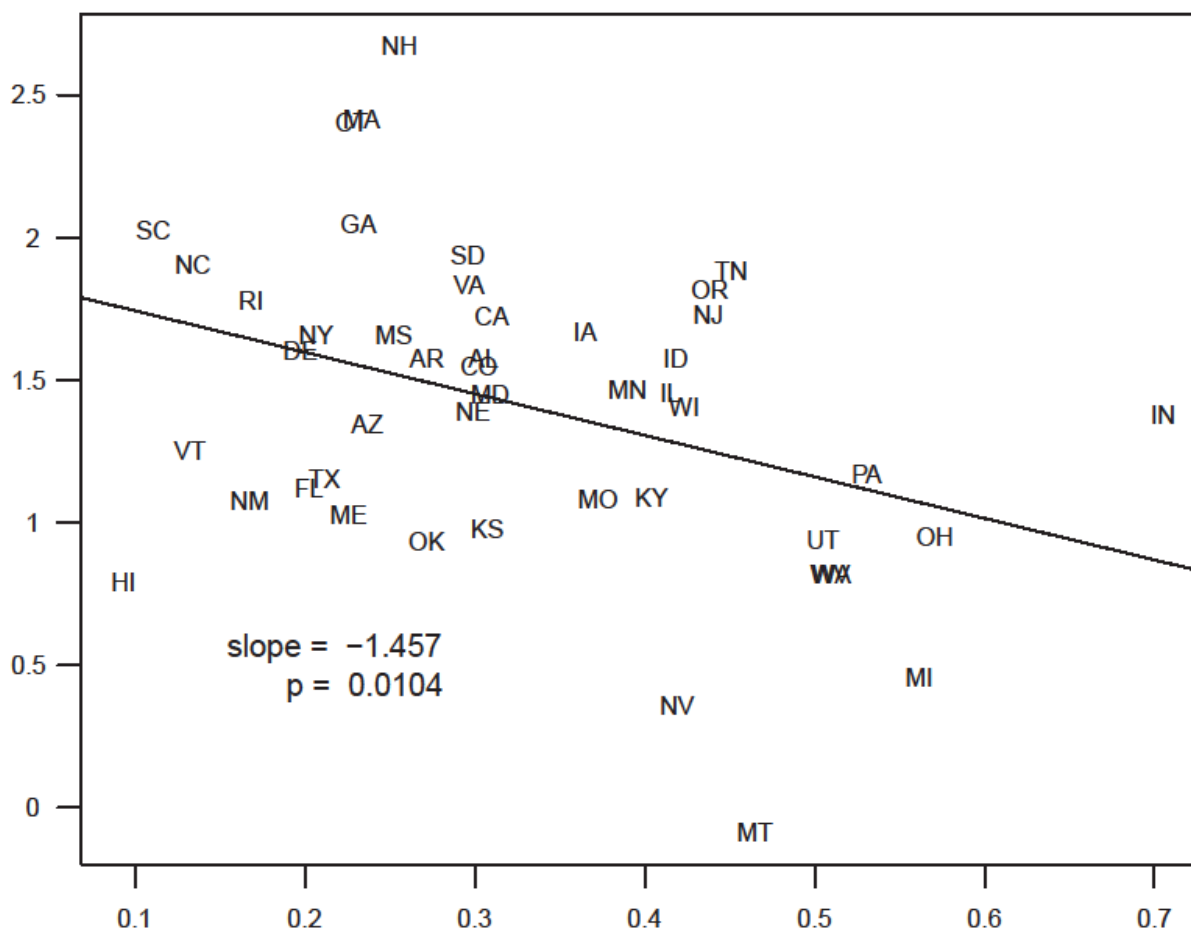**Figure 2   Labor's Share of National Income 1947q1 to 2011q3**

Nonfarm Business Sector: Labor Share (PRS85006173)
Source: U.S. Department of Labor: Bureau of Labor Statistics

Shaded areas indicate US recessions.
2012 research.stlouisfed.org

Figure 3   **Productivity growth versus union decline, 1969 – 2010**

Notes: Excludes outlier states: Alaska, North Dakota, Louisiana and Wyoming. Average annual percent change in productivity versus average annual percentage point *decrease* in union share. Data for each state for 1969-1971 are averaged to provide initial productivity and union share values. Data for each state for 2008-2010 are averaged to provide final productivity and union share values. The values in this figure are the difference between the final and initial values divided by 40, i.e., the number of years from the beginning of the period to the end (1970 to 2009 due to the three year averages used for the final and initial values). State productivity is measured as the ratio of real gross domestic product (RGDP) and the total number of employees.

Sources: Total state/year employment: State Annual Personal Income, SA27; Wage and salary employment by industry, Bureau of Economic Analysis, U.S. Department of Commerce: bea.gov/regional/spi/.

Data Appendix

Data Sources and Methods

Data for this study come primarily from the Bureau of Labor Statistics (BLS) and the Bureau of Economic Analysis (BEA). Annual state unemployment data from 1976 to 2010 are from the Current Employment Statistics (CES) state level historical data series on the Bureau of Labor Statistics (BLS) website.[17] Data on state unemployment rates for earlier years, 1964 to 1975, were not available online, and come from the U.S. Department of Labor, *Employment and Training Report to the President* (1978). Gross Domestic Product (GDP), national price deflators (NPD), and state-level quantity indices (QI) for the years 1964 to 2010 are from the Bureau of Economic Analysis (BEA) website. Unionization data by state for 1964-2010 are from www.unionstats.com.

Data on state annual GDP from BEA are indexed to differing years depending on the time period of the data series. The latest series from BEA, from 1997 to 2010, is indexed to 2005 dollars. However, years 1976 to 1996 are indexed to 1997, while years prior to 1997 are in nominal terms only. For this paper, all state GDP data are converted to 2005 dollars using varying methods that depend upon the data available.

RGDP 1987 to 2010 from BEA

For 1987 to 1997, GDP is converted to 2005\$ by multiplying the state-level ratio of RGDP in 2005\$ to real GDP(1997\$) in the year 1997, by the RGDP in year y:

$$RGDP_{2005\$y} = (RGDP_{2005\$}/RGDP_{1997\$})_{year1997} * RGDP_{1997\$}y.$$

RGDP 1976 to 1986

Real GDP for 1976 to 1986 are estimated using real GDP in the first available year, 1987, using the ratio of state quantity indices for each year, y, to that in 1987:

$$RGDP_{2005\$y,i} = (QI_{y,i}/QI_{1987,i})*RGDP_{1987,i},$$

where $QI_{y,i}$ is the quantity index in year, y, and state, i.

RGDP 1964-1976

GDP for the earliest years in the time series, 1964 to 1976, are in nominal terms and are converted to 2005 dollars using the identity,

$$RGP_{y,i} = NGDP_{y,i}/SPD_{yi}$$

where $NGDP_{yi}$ is nominal GDP and SPD is the *estimated* state price deflator, in year y, and state i. Estimates of state price deflators are used for years prior to 1976 since quantity indices are not available for these years.

State price deflators (SPD) are calculated for the years, 1997 to 2010, in order to interpolate estimates of the SPD (years prior to 1997) and to convert GDP to 2005\$ in these years. In the years 1977 to 2010, SPD were calculated using the identity:

$$SPD_{y,i} = NGDP_{y,i}/RGDP_{y,i}.$$

The SPD for each state is interpolated for years prior to 1977 using the SPD values calculated from the above identity, and data provided on NGDP and RGDP in latter years, using STATA'S *interpolate* command. Interpolate allows for a non-linear estimation of the relationship of SPD to NPD, where SPD is the dependent variable being predicted by NPD using years where both variables are available (1976 to 2010).[18] Since SPD and NPD are highly correlated, NPD serves as a good predictor of SPD.

```
        |   npd     spd
--------------+------------------
    npd |  1.0000
    spd |  0.9781   1.0000
```

Table A1 Summary Statistics, State Level Data, 1964-2010

Variable	Mean	Std. Dev.	Min	Max
n=2,302				
Real GDP (2005$)	157,272	205,982	5,098	1,768,604
Annual percent GDP growth	3.0	3.3	-11.6	19.9
Unionization rate	17.3	8.5	2.3	44.8
Percentage point change in unionization rate	-14.5	6.4	-29.9	0.1
Unemployment rate	5.6	2.1	1.8	17.4
Percentage point change in unemployment rate	0.1	1.1	-6.6	7.3

Okun's Law Two-Stage Regressions

Pre = 1964 to 1985. Post = 1986 to 2010.

The variables const_pre and const_post are estimated constants and the variables beta_pre and beta_post are the estimated coefficients from the regression of percentage change in GDP on percentage point change in unemployment rate in each period. The "trend" variables (pre and post) are the negative ratio of the intercept to the beta for each period in each state. The "cycle" variables (pre and post) are the estimated beta coefficients for each state. The variables dtrend and dcycle are the changes between the post and pre periods in the trend and cycle estimates for each state. The variables dunion and dsmansemp are the changes in unionization rates and manufacturing shares of employment from 1964 to 2010. l_union and l_manemp are the mean state-level unionization and manufacturing employment rates in the post period.

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[18] The linear extrapolation using year and SPD (e.g. ipolate spd year) resulted in many negative values. The interpolation based upon NPD was more accurate.

Table A2 Summary Statistics –Two Stage Regressions

Variable	Mean	Std. Dev	Min	Max
N = 46				
cons_pre	1.09	0.50	0.10	2.33
cons_post	0.73	0.40	-0.23	1.85
beta_pre	-0.29	0.11	-0.48	-0.03
beta_post	-0.23	0.11	-0.47	0.03
trend_pre	3.85	1.03	1.83	6.21
trend_post	3.24	1.21	0.56	7.17
cycle_pre	-0.29	0.11	-0.48	-0.03
cycle_post	-0.23	0.11	-0.47	0.03
dtrend	-0.61	1.42	-4.63	5.34
dcycle	0.05	0.09	-0.09	0.43
dunionrate	-14.47	6.49	-29.90	0.10
dsmanemp	-0.17	0.09	-0.32	0.00
l_union	13.02	5.72	4.22	26.84
l_manemp	0.13	0.05	0.03	0.22
cons_pre	1.09	0.50	0.10	2.33
cons_post	0.73	0.40	-0.23	1.85
beta_pre	-0.29	0.11	-0.48	-0.03

Excludes outlier states of North Dakota, Louisiana, and Wyoming.

Table A3. Change in union density, 1964- 2010 (d_unionrate)

Alabama	-10.9
Arizona	-11.2
Arkansas	-10.9
California	-15.2
Colorado	-14.6
Connecticut	-12.1
Delaware	-9.4
Florida	-8.4
Georgia	-7.9
Hawaii	0.1
Idaho	-17.4
Illinois	-20.0
Indiana	-30.0
Iowa	-16.2
Kansas	-14.4
Kentucky	-16.0
Maine	-12.1
Maryland	-13.1
Massachusetts	-13.2
Michigan	-28.2
Minnesota	-21.1
Mississippi	-10.9
Missouri	-17.1
Montana	-24.3
Nebraska	-13.6
Nevada	-18.3
New Hampshire	-14.1
New Jersey	-22.3
New Mexico	-6.7
New York	-11.2
North Carolina	-5.2
Ohio	-23.9
Oklahoma	-10.3
Oregon	-22.4
Pennsylvania	-22.9
Rhode Island	-9.6
South Carolina	-2.3
South Dakota	-8.4
Tennessee	-17.4
Texas	-8.0
Utah	-17.2
Vermont	-6.5
Virginia	-11.1
Washington	-24.7
West Virginia	-21.7
Wisconsin	-19.7