

Bargaining Shocks and the Macroeconomy: A Narrative Approach*

Alejandro González
Washington University in St. Louis
alejandro.g@wustl.edu

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Abstract: What are the effects of increases in workers' bargaining power on output and the labor share? This paper uses a narrative approach to answer this question. I draw on historical and institutional evidence to track how the stance of the U.S. executive branch toward the capital-labor conflict has evolved over time. Using this narrative information, together with a minimal amount of economic theory, I estimate a structural vector autoregression to assess the effects of bargaining shocks on the economy. I find that a typical increase in workers' bargaining power lowers output by 0.4–0.8 percent in the long run, while its effects on the labor share are negligible or negative. Bargaining shocks explain about one-third of output fluctuations at all horizons but account for little of the variance in unemployment. Absent bargaining shocks, the recent decline in the labor share would have been 20 percent more pronounced. Demand shocks account for most of the labor share's recent decline.

JEL Codes: C32, E32, J3

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1 Introduction

The relationship between the functional distribution of income and macroeconomic outcomes has intrigued economists for centuries. One particularly relevant aspect of this relationship emerges when, possibly due to institutional reforms, labor captures a larger share of income at the expense of capital. Conventional economic theory suggests that an increase in the bargaining power of labor - whether due to unions or not - should lead to a contraction on the level of economic activity. The conventional view is summarized, for example, by Gali, Smets and Wouters (2012). Absent market power of worker's, the competitive equilibrium is defined by the intersection between labor demand and labor supply. In the presence of market power, there is mark-up μ over the real wage, which drives a wedge between labor supply and labor demand. Unemployment results, and output is lower relative to the competitive level. An increase in this mark-up increases the real wage, depresses output further and causes a rise in unemployment.

An alternative view, starting with Rowthorn (1980) and Taylor (1985), proposes that an increase in the wage mark-up can stimulate economic activity. The argument is that raising the real wage re-distributes income from capital to labor. Since wage earners have a higher marginal propensity to consume than the owners of capital, this redistribution boosts aggregate demand, and, under some conditions, expands output and employment - even in the long-run. This Post-Keynesian argument¹ can be cast in the standard framework by arguing that an increase in the mark-up shifts labor demand outward, as a consequence of the increase in aggregate demand. If this distributional effect is strong enough, a shock that raises μ can increase output and reduce unemployment.² What does the empirical evidence tell us about these possibly conflicting macroeconomic effects of an increase in the bargaining power of labor?

This paper addresses this question. I estimate a structural vector autoregression (SVAR) that uses both traditional sign restrictions, derived from a minimal amount of economic theory, and narrative sign restrictions (Antolin-Diaz and Rubio-Ramirez, 2018). Narrative sign

¹This argument is not purely Post-Keynesian; the logic that a class of workers has a higher marginal propensity to consume than capitalists, and that this can have consequences for the transmission of structural shocks, is common in HANK models (e.g, Bilbiie, 2008; Cantore and Freund, 2021). However, Post-Keynesians have commonly emphasized the consequences that this has for bargaining shocks.

²The model of Gali, Smets and Wouters (2012) uses a monopolistic union that sets wages for workers, and changes in the elasticity of substitution between different types of labor drive changes in worker bargaining power. An equivalent way to interpret these shocks is to think of a Nash wage bargaining model, where changes in bargaining power are driven by stochastic changes to the exponent of the Nash bargaining problem.

restrictions use a limited number of historical events where the econometrician knows how the event affected the structural shock of interest to identify the model. I argue that we can exploit three narrative events where the US executive branch changed fundamentally their stance towards capital-labor negotiations to identify how changes in the bargaining power of workers - bargaining shocks, hereafter - affect the level of output, unemployment and the labor share, while controlling for demand and supply shocks. I then use my estimates to quantify the importance of bargaining shocks for aggregate fluctuations, as well as movements in the labor share.

The three narrative events I use are (1) President Truman's nationalization of the steel industry on April 9, 1952, in order to avoid a national steel worker strike during the Korean war, (2) the signing of Executive Order 10988 in January, 1962, by President Kennedy, which allowed public sector workers to legally collectively bargain with their federal employers, and (3) the decertification and firing of union air traffic controllers by President Reagan on August 5, 1981. I argue that in the first two events, the bargaining power of workers increased, while it decreased in the third one. When controlling for demand shocks, I use the military dummies of Ramey and Shapiro (1998) as additional narrative sign restrictions to identify demand shocks.

My main result is that positive bargaining shocks cause output to decline unambiguously at all time horizons. Incorporating these narrative sign restrictions along with traditional signs restrictions sharpens identification substantially: While results with sign restrictions alone lead to uninformative estimates about the effect of bargaining power on output, a positive bargaining shock is estimated to reduce output in the long-run by 0.8% when the narrative restrictions are added to the estimation. The unemployment rate increases at business-cycle frequencies, and returns to its initial value in the long-run. Variance decompositions show that bargaining shocks account for a third of output fluctuations at business cycle and long-run frequencies, while being relatively unimportant to explain the fluctuations in unemployment. Bargaining shocks are also important to understand most of the recessions of the post-war period before 1990. Taken together, these results suggest that the conventional view that positive bargaining shocks reduce output is mostly correct, and that bargaining shocks are more important to understand output fluctuations than we have previously thought.

A second result relates to the recent decline of the labor share: are bargaining shocks important to explain this recent decline? In my preferred specification, bargaining shocks cause

the labor share to decline at business-cycle frequencies, likely because the economic contraction induced by bargaining shocks leads to more slack in labor markets and moderates wage demands. Bargaining shocks account for only a fifth of the variance of the labor share in the long-run, and a historical decomposition shows that a sequence of negative shocks to the bargaining power of workers between 1997 and 2012 actually contributed to a rise of the labor share. Demand shocks, however, account for three quarters of the variance of the labor share at long horizons, and a historical decomposition shows that demand shocks account for most of the recent decline in the labor share. To the best of my knowledge, this is a novel result in the literature, and it suggests that a slowdown in demand could account for much of the labor share decline.

A final result contributes to macroeconomic hysteresis debate: according to my estimates, demand shocks raise output in the long-run. Although not the main focus of the paper, these results reinforce recent research that has found that demand shocks are important to understand the long-run fluctuations of output (Furlanetto et. al, 2025; Antolin-Diaz and Surico, 2025). Taken together, these results for demand shocks suggests that we need to revisit our understanding of the transmission mechanisms that might lead higher demand to expand both output and the labor share in the long-run.

Related Literature. The current project contributes to the three strands of literature in the following ways. First, as discussed in the introduction, the paper provides a novel identification strategy that allows us to quantify the importance of bargaining shocks on output and unemployment at different time horizons. Standard DSGE model with many shocks and frictions typically attribute a dominant role to bargaining shocks³ in explaining the long-run fluctuations of output and unemployment, as well as an important role in explaining business cycles (Smets and Wouter, 2007; Justiniano, Primiceri and Tambalotti, 2013). These models have been criticized because bargaining shocks are not separately identified from labor supply shocks (Chari, Kehoe and McGrattan, 2009). Subsequent literature has tried to disentangle labor supply from bargaining shocks using only sign restrictions in a structural VAR framework (Foroni et. al, 2018), replicating the finding that they explain a dominant part of unemployment fluctuations and are important for business cycles. The current paper shows that, when identified through a narrative approach, bargaining shocks are

³Shocks to the wage equation are named differently depending on the specific set-up. In New Keynesian models with monopolistic unions, they are named wage mark-up shocks, whereas in models with search and matching frictions, they are called wage bargaining shocks. However, wage mark-up shocks have been interpreted as variations in the bargaining power of labor (Chari et. al, 2009). Hence, I will simply refer to both types of shocks as bargaining shocks.

an important driver of output fluctuations, but they are much less important in shaping the dynamics of unemployment than what is implied by previous literature, at all frequencies. Because the narrative events that we choose are related to changes in the institutional framework that governs the relationship between capital and labor, and unrelated to changes in demographics or fertility, the use of these events for identification effectively disentangles bargaining shocks from labor supply shocks.

Second, this paper helps contribute to the debate about the effect of bargaining shocks on output. As will be discussed below, conventional DSGE models assume that bargaining shocks contract output, because the rise in the real wage contracts labor demand, while it induces more workers into the labor force, and hence, increases labor supply. This results in an increase in unemployment and a contraction of output. However, some Post-Keynesian economists have argued since the 1980s (Rowthorn, 1980; Taylor, 1985) that exogenous increase in the real wage - which we can interpret as a bargaining shock - increases real activity. The argument is simple: a bargaining shock that raises the real wage redistributes income from capital to labor. Since the marginal propensity to consume of workers is higher than the marginal propensity to consume of capitalists, this re-distribution of income increases aggregate demand, and hence, expands output. This result is sometimes referred as the paradox of costs (Lavoie, 2014): individual attempts to reduce wages by capitalists backfire in the aggregate, since they cause a decline in demand, which then causes lower profits. Since Bowles and Boyer (1995) a large empirical literature seeks to test this prediction empirically. A summary of the results can be found in Stockhammer and Lavoie (2013), while Blecker (2016) and Stockhammer (2017) survey the more recent literature. Most of this research assumes that the real wage or the labor share are weakly exogenous, and hence, rely on regressions of the labor share against economic activity. Naturally, the main objection to this literature is that both output and the labor share are endogenous variables, and hence regressing the labor share against output does not allow one to identify the dynamic causal effects of bargaining shocks on output. This point has been emphasized by Skott (2017) and Blecker (1989, 2011). I contribute to this long-standing debate by using a structural VAR where both output and the labor share are endogenous, and propose an identification strategy that disentangles different sources of the correlation between the labor share and output - namely, demand, technology and bargaining shocks.

Finally, this paper contributes to the large literature on the recent decline of the labor share in two ways. First, while several explanations for the recent decline in the labor share have been put forward, such as the decline in the price of investment (Karabarbounis and Neiman,

2014), rising automation (Acemoglu and Restrepo, 2019), an increase in market power and mark-ups (Azar and Vives, 2021) or a decline in the bargaining power of labor⁴, a slowdown in demand has not been proposed as a reason for a lower labor share. Furthermore, since my empirical approach allows bargaining and technology shocks to influence the decline in the labor share, we can conduct an empirical analysis of the strength of each channel, something which has been missing in the literature⁵.

Second, it revisits the question of how much of the decline in the labor share over recent decades can be explained by the decline in bargaining power of workers. Ciminelli, Duval and Furceri (2022) employ a difference-in-difference strategy to study the effects that job protection de-regulation has on the labor share, and find that it explains about a tenth of the decline in the labor share across various advanced economies. Stansbury and Summers (2020) estimate the decline in bargaining power using microeconomic data on the decline of the union wage premium. They then show that an aggregate decline in the bargaining power of labor consistent with this microeconomic evidence can explain all of the decline in the labor share. Mengano (2022) performs a similar exercise by estimating a wage equation derived from a search and matching model using panel data on manufacturing firms, and also concludes that a decline in the bargaining power of labor consistent with this micro data can explain all of the decline in the labor share. In contrast to the previous research, I find that the recent decline in the bargaining power of labor has *increased* the labor share, possibly through their effects on a tighter job market. This paper contributes to this literature by using a set of narrative events that significantly altered the bargaining power of workers to identify how much these shocks have contributed to the decline of the labor share. Along with the use of traditional sign restrictions, this approach is sufficient to assess whether a decline in the bargaining power of labor has been an important driver of the long-run dynamics of the labor share. This approach has the advantage that the econometrician does not have to take a stance on the specific structure of any structural economic model, and hence, is robust to any misspecification arising from the structure of these models.

⁴This is only a partial list of a rapidly growing literature. See the related literature discussion in Bergholt et. al (2022) for a longer discussion and references.

⁵An important exception is Bergholt et. al (2022), where the authors quantify the contributions of worker power, mark-ups, automation and the relative price of investment on the recent decline of the labor share. Their empirical exercise, however, does not contemplate weaker demand growth.

2 Empirical Framework

I start by discussing the identification problem that the econometrician faces, and discuss how using traditional sign and narrative sign restrictions allows us to set-identify the structural parameters. I then enumerate and discuss each narrative event used in the estimation that shifted the bargaining power of workers. I conclude with some of the details of estimation, my choice of priors, and the properties of the data.

2.1 The model and the Identification Problem

Consider the SVAR of the general form:

$$y_t' A_0 = c + \sum_{l=1}^p y_{t-l}' A_l + \varepsilon_t' \quad \text{for } 1 \leq t \leq T \quad (1)$$

where y_t is $n \times 1$ vector containing our n endogenous variables, c is a $n \times 1$ vector of constants, A_0 is an invertible $n \times n$ matrix of parameters, A_l for $l = 1, \dots, p$ are $n \times n$ parameter matrices, with p the number of lags, and ε_t' is a vector of structural shocks, that satisfies $\varepsilon_t \sim N(0, I_{n \times n})$, conditional on past information and the initial conditions $y_0, \dots, y_{1-p}$. For the purposes of our empirical exercises, our endogenous variables will be the labor share, the growth rate of output and unemployment, so $y_t = (w_t, \Delta \ln Y_t, u_t)$. Three structural shocks will drive the system: bargaining shocks, demand shocks, and technology shocks.

We are interested in the dynamic causal effects of bargaining shocks on output, unemployment and the labor share. The identification problem is as follows: to estimate such effects, the econometrician needs an estimate of A_0 . He could try to estimate A_0 using a reduced-form VAR:

$$y_t' = c_B + \sum_{l=1}^p y_{t-l}' B_l + v_t \quad (2)$$

Where $B_l = A_l A_0^{-1}$, $c_B = c A_0^{-1}$ and $v_t = \varepsilon_t' A_0^{-1}$. We can think of this reduced-form VAR, when the lag-length p is large enough, as a good linear approximation of the Data Generating Process. For future references, we can call the vector of structural parameters $\Theta = (A_0, A_1, \dots, A_p)$. Note that $E[v_t] = 0$ and $E[v_t v_t'] = \Sigma = (A_0 A_0')^{-1}$. The identification problem is as follows: To recover an estimate of A_0 , the econometrician uses the equation $B_l = A_l A_0^{-1}$. However, for every single estimate of B_l , there is an infinite number of A_0 and A_l that satisfy this equation. An intuitive way to understand this problem in our context is as follows: we would like to estimate the effects of bargaining shocks on the labor share and

output. However, other structural shocks, like demand shocks, affect both the labor share and output. If we observe a contemporaneous increase in output and the labor share, is this because a positive demand shock raised output, generating tighter labor markets, which raised the wage demands of workers and hence a higher labor share, or is this because an increase in the bargaining power of workers lead to an increase the labor share, and through its distributional effects on aggregate demand, an increase on output? To provide an answer to this question, we need to know the contemporaneous relationship between output and the labor share, A_0 , for which we need an identification assumption.

Traditional sign restrictions, pioneered by Faust (1998), Canova and De Nicro (2002) and Uhlig (2005), provide a way of solving the identification problem. Sign restrictions rely on the observation that, across a wide range of parameterizations, many economic models yield the same qualitative predictions about the direction of certain structural shocks on economic variables. For example, a wide range of economic models imply that demand shocks stimulate output and decrease unemployment in the short-run. To formally understand this point, let us define Impulse Response Functions (IRFs) as follows: given a value of the structural parameters, the response of the i_{th} variables to the j_{th} structural shock at horizon k corresponds to the element in row i and column j of the matrix L_k , which is defined recursively as:

$$L_0(\Theta) = (A_0^{-1}); \quad L_k(\Theta) = \sum_l^k (A_l A_0^{-1}) L_{k-l}, \quad \text{for } 1 \leq k \leq p,$$

$$L_k(\Theta) = \sum_l^p (A_l A_0^{-1}) L_{k-l}, \quad \text{for } p < k < \infty,$$

In our application, we want to argue that bargaining shocks raise the labor share upon impact, which amounts to an inequality restriction on the matrix L_0 . As shown by Rubio-Ramirez, Waggoner and Zha (2010) and Arias, Rubio-Ramirez and Waggoner (2018) we can characterize these restrictions by the function:

$$\Gamma = (e'_{1,n} F(\Theta)' S'_1, \dots, e'_{n,n} F(\Theta)' S'_n) > 0 \quad (3)$$

where $e_{1,n}$ is the first column of the identity matrix I_n for $j \leq n$, S_j is a $s_j \times r_j$ matrix of 0, 1s and -1s that selects the horizon and variables over the r_j sign restrictions identify j , and $F(\Theta)$ vertically stacks the IRFs. It should be clear from this that this set of inequalities further restricts the values that A_0 can take, which in turn restricts the possi-

ble values that structural parameters which satisfy the set of equations $B_l = A_l A_0^{-1}$ can take.

While sign restrictions are appealing because they hold across several models, it should be clear that they set-identify the SVAR, as many values of A_0 can be consistent with the set of inequalities contained in equation (3). This can lead to uninformative values of the impulse response functions of interest, and credible sets that contain implausible values of the structural parameters. Hence, Antolin-Diaz and Rubio-Ramirez (2018) propose that in addition to traditional sign restrictions, researchers use *narrative sign restrictions*, which is the approach followed in this paper. The idea behind narrative sign restrictions is to constrain the structural shocks to be positive or negative in order to conform with specific historical narratives that are agreed upon. There is a long tradition in macroeconomics, starting with Romer and Romer (1989), that uses historical, archival and institutional information to derive information about the structural shocks around a specific time period. Formally, we can incorporate these restrictions in the estimation as the simple set of inequalities

$$e'_{j,n} \varepsilon_\tau(\Theta) > 0 \quad (4)$$

Where ε_τ is a vector of structural shocks at time τ and $e'_{j,n}$ is the selection matrix discussed above. As with traditional sign restrictions, these narrative sign restrictions set-identify the structural parameters of interest, and the econometrician hopes that the events tighten credible sets enough for estimation to be informative.

Under what conditions is it valid to use these narrative events for identification? One analogy that helps us understand the validity of our narrative events is to think of them as quasi-instruments. They are instruments for the structural shock in the sense that the narrative events are the dominant source of variation of the structural shock for the period of interest. Other sources of variation of the structural shock must either push the shock in the same direction or be small enough that they are dominated by the narrative event. They are 'quasi' instruments, however, because equation (4) says nothing about exogeneity: in principle, the narrative event could be correlated with other structural shocks, unlike a real instrument. The price to pay for this relaxation of exogeneity is set identification. If one is willing to assume that these events are also exogenous, in the sense that they are orthogonal to other structural shocks, then, as suggested by Plagborg-Møller and Wolf (2021), one can use the events as dummy variables that take the value 1 when shock is positive, -1 when the shock is negative, and we can estimate the effects of the structural shock of interest using standard Instrumental Variable methods. As shown by Stock and Watson (2018), this ensures that the model is point identified.

2.2 Baseline specification

Our baseline specification uses traditional sign restrictions to help us identify the effects of bargaining shocks, which are summarized in Table 1. We only assume that bargaining shocks raise the labor share upon impact. In contrast to previous literature, we allow the bargaining shock to have ambiguous effects on output and unemployment, which does not rule out the Keynesian view discussed in the introduction. I control for both demand and supply shocks. I identify demand shocks by assuming that demand shocks raise output and decrease unemployment, while they expand the labor share. Our supply shock should be interpreted as a technology shock, which raises output upon impact and decreases the labor share upon impact.

Table 1: Sign Restrictions

	Bargaining	Demand	Technology
Labor Share	+	+	−
GDP Growth	?	+	+
Unemployment	?	−	?

Restrictions similar to this have been used in previous research, (Foroni et. al, 2018; Bergholt et. al., 2022) and are consistent with a simple three equation New Keynesian model, augmented to include unemployment. The baseline three equation model is discussed by Nekarda and Ramey (2020), where the authors show that demand shocks raise the labor share upon impact. This occurs because demand shocks expand economic activity, which raises the marginal costs of firms. Since prices are fixed, the mark-up over marginal costs declines, which increases the labor share. Conversely, technology shocks raise output but reduce marginal costs, which means that the mark-up increases if prices do not adjust. The assumption that demand shocks raise output and decrease unemployment is consistent with the New Keynesian model with monopolistic unions presented by Gali, Smets and Wouters (2012), and holds in the New Keynesian model with search and matching frictions of Christiano, Eichenbaum and Trabandt (2016). The effects of technology shocks on output are satisfied by virtually all macroeconomic models. The response of unemployment in New Keynesian model varies depending on the details of the labor market: in the model of Gali, Smets and Wouters (2012), technology shocks increase unemployment upon impact, while in the model of Christiano, Eichenbaum and Trabandt (2016) unemployment decreases. Hence,

I leave this response unrestricted.

A key thing to note from Table 1 is that, if the Keynesian argument is correct, then bargaining shocks would stimulate GDP growth and reduce unemployment, while expanding the labor share. In this case, demand shocks and bargaining shocks induce the same co-movements among output, unemployment and the labor share. This is not surprising: the Post-Keynesian argument is that bargaining shocks induce a change in the distribution effect that stimulates aggregate demand, and thus, in general equilibrium, they look similar to demand shocks. As it's well known, for sign restrictions to be useful, different shocks must induce different co-movements among the endogenous variables. Therefore, the Post-Keynesian perspective emphasizes further the need for a narrative approach to identify bargaining shocks. In addition, to further disentangle demand shocks from bargaining shocks, I will use the military dates of Ramey and Shapiro (1998) which have been widely used to study the effects of 'pure' expenditure shocks.

2.3 The narrative events

This paper measures changes in the bargaining power of labor by exploiting institutional events that fundamentally altered the relationship between capital and labor in the United States. In models of dynamic bargaining (Binmore et al., 1986), such institutional changes shift labor's relative bargaining power and thereby affect the share of the surplus allocated to workers. Prior literature has proposed alternative proxies, such as legislated changes in minimum wages (Drautzburg, Fernández-Villaverde, and Guerrón Quintana, 2021) or, in the German context, general strikes (Budrys, Porqueddu, and Sokol, 2024). However, general strikes are ill-suited for the United States: following the passage of the Taft-Hartley Act of 1947, general strikes became effectively illegal, as secondary and solidarity strikes were explicitly prohibited. Moreover, unlike in countries with more centralized bargaining systems such as Germany, collective bargaining in the United States is decentralized at the firm level, and no single sector or union establishes an economy-wide wage standard. This limits the usefulness of strikes as exogenous sources of variation in labor's bargaining power. Minimum wage legislation also presents difficulties, as such changes affect only a small share of the workforce and are plausibly endogenous to prevailing macroeconomic conditions. For example, a positive demand shock could simultaneously raise output and increase Congress's willingness to legislate a higher minimum wage.

As discussed earlier, our approach does not require the narrative events to be exogenous to demand and technology shocks. It only requires that the events are relevant in the sense that they were strong enough to drive most of the variation of bargaining shocks during that period. Hence, my selection of the events is done to ensure that the changes in the stance of the executive power with regards to capital-labor negotiations were strong enough to ensure significant changes in the bargaining power of labor during the period which they occurred.

Event 1: The Steel Seizure (1952)

The first event is President Harry S. Truman's nationalization of the steel industry on April 8, 1952.⁶ In 1951, during the Korean War, the United Steelworkers of America (USWA) entered negotiations with United States Steel. The union demanded wage increases exceeding the four cents per hour permitted by the War Stabilization Board, as well as overtime pay for weekends, expanded vacation benefits, and higher wages for night shifts. When U.S. Steel refused, negotiations broke down, and the union announced a nationwide strike to begin on April 9.

Advisors warned Truman that a strike would jeopardize steel supplies for the Korean front, undermine atomic weapons production, and disrupt critical infrastructure projects. On April 8, at 10:30 p.m. Eastern time, Truman addressed the nation on radio and television, announcing Executive Order 10340, which directed the Secretary of Commerce to seize control of the steel mills. This unprecedented expropriation aimed to prevent a nationwide labor conflict.

Following the seizure, a modest pay increase was granted, temporarily easing tensions. However, U.S. Steel challenged the action, and the Supreme Court heard arguments on May 2. On June 2, in a 6–3 decision, the Court ruled that the President lacked the authority to seize private industry. Within hours of the mills being returned, steelworkers launched a national strike lasting 53 days. The strike ended on July 24 on the same terms originally proposed by the union four months earlier.

Event 2: Executive Order 10988 (1962)

The second event is President John F. Kennedy's signing of Executive Order 10988 on January 17, 1962, which established collective bargaining rights for federal employees. Prior to

⁶The discussion that follows draws heavily on Marcus (1994).

this order, the Wagner Act of 1935 and its amendments under the Taft–Hartley Act of 1947 excluded public sector workers from unionization and collective bargaining rights. Overnight, two million federal employees gained the right to bargain collectively.

The order spurred a wave of public-sector union militancy. Over the course of the 1960s, twenty-two states enacted collective bargaining laws for government workers. This institutional change fueled extensive organizing among teachers and municipal workers, leading to a sharp rise in both union density and strike activity (McCartin, 2008).

Event 3: The PATCO Strike (1981)

The final event is the strike of the Professional Air Traffic Controllers Organization (PATCO) in 1981. PATCO was among the most militant public sector unions and, unusually, endorsed Ronald Reagan’s presidential candidacy in 1980. Reagan had previously signed legislation granting collective bargaining rights to California public employees in 1968, and his administration in California had tolerated numerous illegal public-sector strikes (McCartin, 2011). During his campaign, Reagan wrote to PATCO president Robert E. Poli, pledging support for the union’s demands for better staffing, modern equipment, and improved working conditions.

Confident of political backing, PATCO entered 1981 contract negotiations demanding a 32-hour workweek, retirement after twenty years of service, and substantial wage increases. After talks failed, the union launched a strike on August 3. Hours later, Reagan ordered strikers to return to work. Only 10 percent complied; two days later, the administration fired 11,345 controllers, banned them from federal service for life, and oversaw PATCO’s decertification on October 22.

Although federal law already prohibited public-sector strikes, illegal strikes had become commonplace. Reagan’s unprecedented decision to dismiss striking workers and dismantle their union sent a strong signal of zero tolerance, dramatically altering the institutional environment for labor. The severity of the response was unexpected by market participants and the union itself, making this a useful shock for empirical identification.

Taken together, these three events illustrate how executive action reshaped the institutional context of U.S. labor relations. The claim is not that steelworkers’ strikes, the recognition of public-sector unions, or the decertification of PATCO by themselves produced large move-

ments in aggregate wages. Rather, each event signaled a fundamental shift in the willingness of the state to intervene in labor-capital conflict, thereby altering labor’s bargaining power. These events were not aimed at stimulating output, reducing unemployment, or directly affecting the labor share, which supports their treatment as bargaining shocks and not other policy responses correlated with demand or technology shocks. We summarize our narrative restriction as follows:

Narrative Sign Restriction 1: On 1952Q2 and 1962Q2, the bargaining shock took a positive value. On 1981Q3, the bargaining shock took a negative value.

A possible objection is that these events disproportionately concern unionized workers, who have never represented more than 30 percent of the U.S. workforce. However, collective bargaining agreements often exert spillover effects beyond the union sector, as non-union employers compete for labor under the same wage norms. Western and Rosenfeld (2011) estimate that deunionization accounts for between one-fifth and one-third of the rise in wage inequality in the United States, precisely due to such spillovers.⁷ For this reason, the events analyzed here are plausibly relevant for aggregate outcomes.

As discussed earlier, we make use of the military dummies by Ramey and Shapiro (1998) as narrative events that help us identify the effects of demand shocks. These events have been widely used in the literature estimating the effects of military spending on output. The reader is referred to the original paper for details. We summarize this narrative restriction as follow:

Narrative Sign Restriction 2: On 1950Q1, 1965Q1 and 1980Q1, the demand shock took positive values.

2.4 Estimation, Priors and Data

Estimation of SVARs with narrative and traditional sign restrictions can be conducted using the Bayesian methods and the algorithm contained in Antolin-Diaz and Rubio-Ramirez (2018). Conceptually, their algorithm draws from their reduced-form parameters using the OLS estimates of the VAR as a prior,⁸ along with a matrix Q from the set of orthogonal matrices. The econometrician then checks that the draws satisfies both traditional and narrative sign restrictions; if they do, we keep the draw, if not, we discard it. We repeat until a

⁷Future versions of this paper will incorporate additional literature on union wage spillovers.

⁸This uses the point estimate and their standard deviations to form a prior distribution over the reduced-form parameters.

pre-determined number of draws has been accepted, which we set to 1,000 in our application. Details of the algorithm and the estimation can be found in the appendix.

I use a standard Minnesota prior as discussed in Sims and Zha (1998), Del Negro and Schorfheide (2011) or Villemot and Pfeifer (2017). The prior reduces over fitting by shrinking the autoregressive lags of each variable towards a random walk, while shrinking the cross-coefficients towards 0. It also incorporates the sum-of-coefficients prior which reflects the belief that if a variable has been stable at its initial level, it will tend to stay at that level, regardless of the value of other variables.

Our macroeconomic data spans 72 years, so it is likely that the parameters of any time series model exhibit some time variation and instability. However, we are interested in causal effects at a horizons of 10 years, which gives us only 7 independent samples. Hence, I refrain from modeling time variation, and our impulse response estimates can be interpreted as averaging across different time-varying regimes.

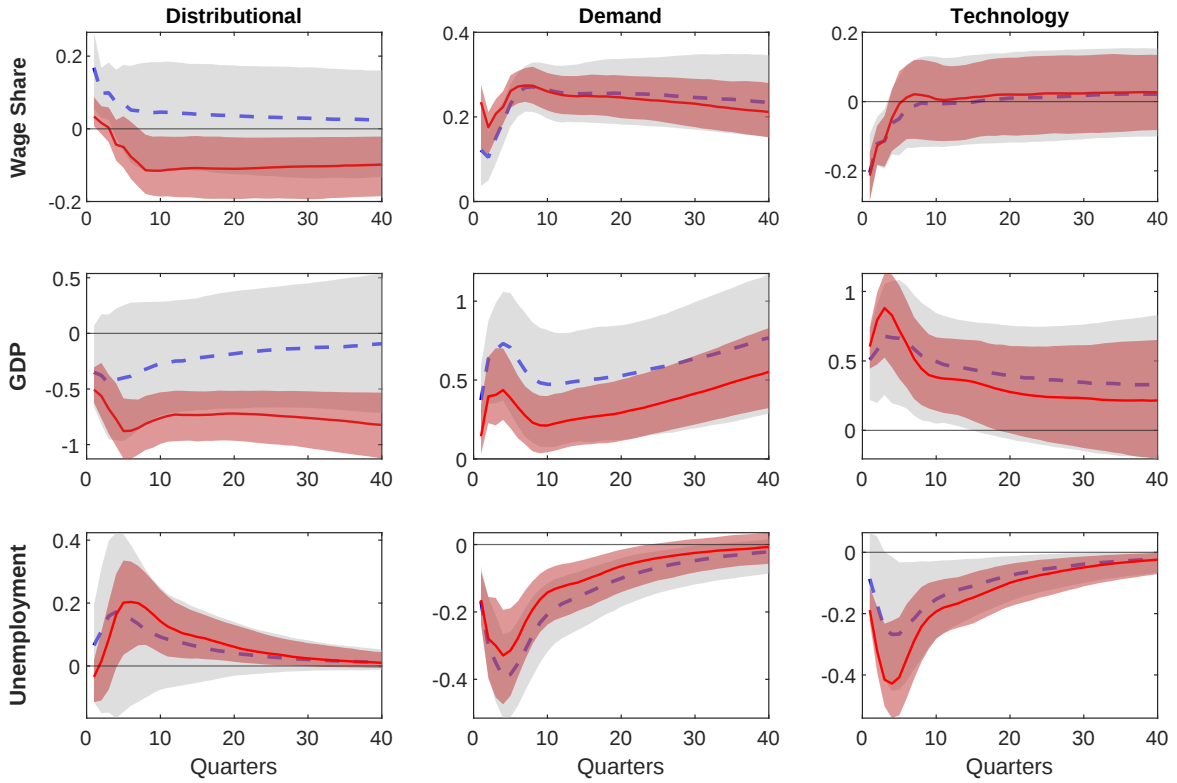
I use the Labor Share and the unemployment rate in levels, while we use log-GDP in first-differences. I back out our estimates for output in levels computing the accumulated responses of the impulse-response function for output over multiple horizons. I de-mean all variables prior to estimation, which helps reduces the deterministic component when estimating variance decompositions. I use publicly available data downloaded from the FRED between the period 1949Q1 - 2019Q4, right before the start of the COVID pandemic. My measure of the labor share is the WASCUR series (compensation of employees) divided by nominal GDP. Estimates of the long-run decline of the labor share depend heavily on accounting assumptions, and thus, are subject to debate. Koh et. al (2020) show that the average decline of the labor share hinges on how the BEA define intellectual capital and property rights on national accounts. Gutiérrez and Piton (2020) find that labor shares in major economies except the US become relatively stable when self-employment and dwellings from the corporate sector are excluded. To build a quarterly measure dating back to 1948, I can only use total wages and salaries, which excludes the incomes of the self-employed, pension payments, and accounting for intellectual capital.

3 The effects of bargaining shocks

Figure 1 displays the Impulse Response Functions (IRFs) of the labor share, output and unemployment to our three structural shocks, with and without the narrative information.

The shaded areas represent the 68 percent (point-wise) highest posterior density credible sets for the IRF, while the solid and dotted lines are the point-wise median IRFs. Our interest is in a structural shock that raises the bargaining power of workers, shown in the first column. The blue dashed line shows this effect when we use the sign restrictions only, while the red solid line shows what happens when we incorporate the narrative information with our sign restrictions.

Figure 1: Baseline impulse responses



Note: Blue dotted line includes only sign restrictions, while solid red line incorporates the narrative restrictions. Shaded areas are 68% C.I. All shocks are positive and their magnitude is 1 std dev. Responses in the y-scale measure percentage points.

Incorporating narrative information dramatically improves identification. This is most clearly appreciated in the response of GDP to the bargaining shock in the middle panel in the first column: the baseline specification that only uses sign restrictions doesn't exclude positive or null values, and the median impulse response predicts that these shocks have almost no effect in the long-run, with one standard deviation shock producing a median effect on GDP of -0.1% after 40 quarters. Incorporating narrative information provides much more informative results: a bargaining shock causes a contraction in GDP unambiguously at all horizons.

Upon impact, production contracts by half a percentage point, while in the long-run, this effect grows to a contraction of -0.9%. The credible sets narrow significantly, which means that the narrative restrictions are very informative. The effect that the bargaining shock has on the labor share also changes dramatically. The median IRF of the baseline estimation suggests a small positive effects, but the credible sets do not rule out moderate negative values. When incorporating narrative information, the response of the labor share also turns unambiguously negative, with the labor share dropping in the long run by about 10 basis points.

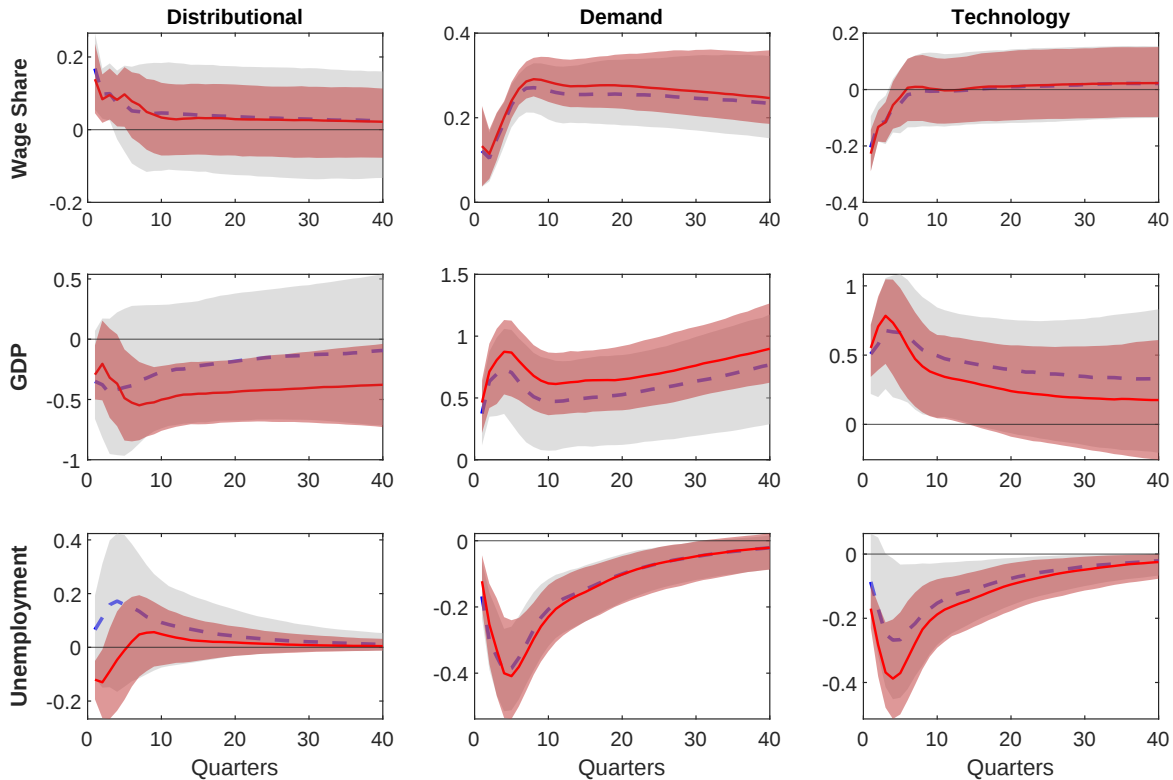
If this shocks improves the bargaining power of workers, which leads to a higher real wage, why does the labor share drop in the long-run? A simple way to interpret this outcome is to assume that the real wage depends on the unemployment rate as well as the parameter that measures exogenous bargaining power. This is the case in many search-and-matching models where the real wage depends both on a parameter measuring bargaining power and a term capturing labor market tightness (see Mengano, 2022). The direct, partial equilibrium effects of raising bargaining power is to raise the real wage, but as GDP contracts and the unemployment rate rises, slack in the labor market moderates the real wage demands of workers, which then reduces the labor share.

The second column of figure 1 shows that demand shocks strongly decrease unemployment and raise the labor share at all horizons. The effect on the labor share is quite strong: at a 40 year horizon, the labor share is raised by 20 basis points. Both of these effects are well identified without narrative restrictions. However, the narrative restrictions do modify the response of output to a demand shock significantly. They shrink credible sets, and they also moderate the effects of demand shocks on output, especially in the short-run. This finding is consistent with what Ramey and Shapiro (1998) found using the same military dummies, since their interest was on short-term fiscal multipliers. However, the long-run effects of demand shocks are still significant, with the typical structural shock raising output by half a percentage point in the long-run. This result is consistent with Antolin-Diaz and Surico (2025), who find that a typical military spending shocks increases output by 0.4% percentage points at the 10 year horizon. It is also consistent with the recent empirical evidence of hysteresis, for example, Furlanetto et. al (2025) and Fazzari and Gonzalez (2025).

Technological shocks shocks have little effect on the labor share. However, positive technology shocks raise output and lower unemployment, effects that are more tightly estimated when including the narrative restrictions.

A natural question to ask is how informative our new narrative restrictions on the bargaining power of workers without the Ramey and Shapiro military dummies. Figure 2 compares IRFs from the baseline specification with sign restrictions only to a specification that additionally incorporates just our narrative sign restrictions for bargaining shocks.

Figure 2: IRFs - bargaining power restrictions only



Note: Blue dotted lines are the median response based on sign restrictions alone while the solid red lines incorporate narrative restrictions. Shaded areas are 68% credible sets. All shocks are positive with a one standard deviation magnitude. The y axes units are percentage points.

Again, the IRFs confirm that our narrative restrictions on bargaining shocks alone are enough to produce unambiguously negative effects on output at nearly all horizons. The median effect of a bargaining shock is to lower output in the long-run by half a percentage point, which is a more modest effect compared to our specification that incorporates the military dummies, but the effect remains economically significant. However, these restrictions alone are not informative with about the effect of bargaining shocks on the labor share. The credible sets only narrow marginally and the median effect is still moderately positive.

It is also interesting to note that when using only the narrative sign restrictions related to bargaining shocks, demand shocks have a larger effects relative to the sign restrictions alone, while adding the military dummies have the opposite effect.

To further disentangle how each historical event impacts identification, we can follow the suggestion of Antolin-Diaz and Rubio-Ramirez (2018) and compute the probability that IRF violates the narrative restriction for each historical event when only the baseline sign restrictions are imposed. A high probability of violating the baseline specification means that the restriction is very informative, in the sense that the baseline specification admits many structural parameters that should be discarded on the basis of our historical knowledge.

Table 2: Probability of Violating the Narrative Sign Restrictions

Event	Probability
Truman (1952Q2)	54.0%
Kennedy EO10988 (1962Q1)	52.3%
PATCO (1981Q3)	58.5%
Any episode	82.8%

Table 2 shows the results of this exercise. We can see that each individual restriction is very informative, in the sense that over half of the parameter draws in the baseline specification violate the narrative sign restrictions. Taken together, over 80% of the parameter draws violate any of the historical restriction, which reinforces the conclusion that narrative sign restrictions are informative to identify the model.

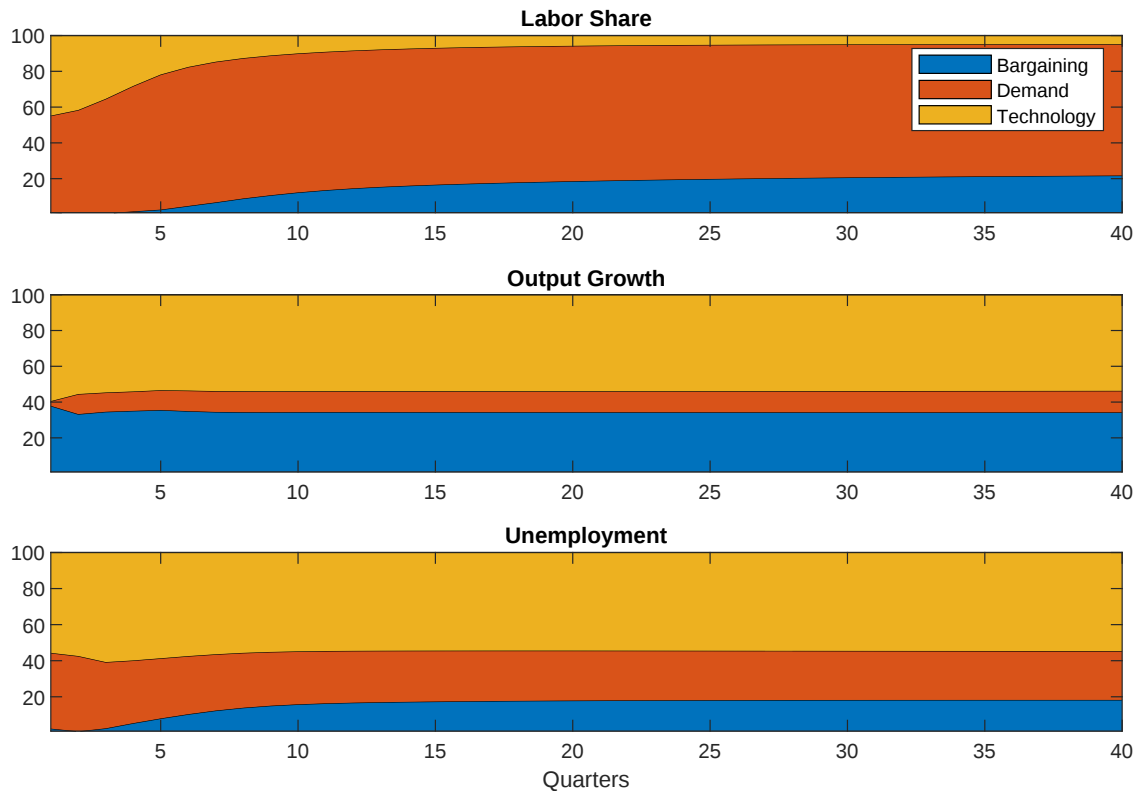
Bargaining shocks and output fluctuations

Next, I use the estimated model to answer the following questions: how important are bargaining shocks for fluctuations? Do they have a quantitatively important effect for the long-run decline in the labor share? Figure 3 shows the forecast error variance decomposition of our model. This computes the share of the variance of a given variable attributable to each structural shock in our SVAR, at frequencies from impact to 40 quarters ahead.

Bargaining shocks are an important source of output fluctuations: upon impact, they account for 40% of the variance of output growth. At business cycle frequencies, as in the long-run, they account for about a third of output fluctuations. However, they are much less

important to understand unemployment dynamics: they account for about 15% of unemployment fluctuations at horizons of 10-quarters, while they account for a fifth of long-run unemployment fluctuations.

Figure 3: Variance decompositions



Note: The colored areas represent the point-wise mean contributions of each structural shock to the forecast error variance of each variable at different horizons. Output is first-differenced, while unemployment and the labor share are in levels.

It is useful to compare our results with the estimates implied by some prominent business cycle models. Smets and Wouters (2007) attribute 15% of output fluctuations at business-cycle frequencies to wage-mark up shocks, which are conceptually similar to our bargaining shocks. At the 40 quarter horizon, this share rises to 45%. They also find that this shock plays an even more important role in explaining the unemployment rate: 60% of unemployment fluctuations at business-cycle frequencies are due to wage-mark up shocks, with this share rising to 89% in the long-run. Subsequent literature has criticized these estimates arguing that in these models, labor supply shocks are not separately identified from wage-mark up shocks (Chari, Kehoe and McGrattan, 2009). Subsequent attempts to disentangle labor supply from wage mark-up shocks in a DSGE framework reduce the importance of wage-mark up

shocks for output and unemployment fluctuations to 6% and 41%, respectively at business cycle frequencies, and 17% and 80% in the long-run (Gali, Smets and Wouters, 2012).

Compared to the literature that only uses sign restrictions to identify bargaining shocks, we find a larger role for these shocks in explaining output fluctuations, but smaller in explaining unemployment fluctuations. Foroni, Furlanetto and Lepetit (2018) find that bargaining shocks account for 15% of output fluctuation at business cycle frequencies, but explain nearly 40% of unemployment fluctuations at these frequencies. To summarize, our estimates imply that bargaining shocks are much more important to explain output fluctuations at business cycle frequencies than what standard DSGE models and previous SVAR estimate imply, but they are much less important to explain unemployment fluctuations, especially in the long-run, than what the previous literature suggest.

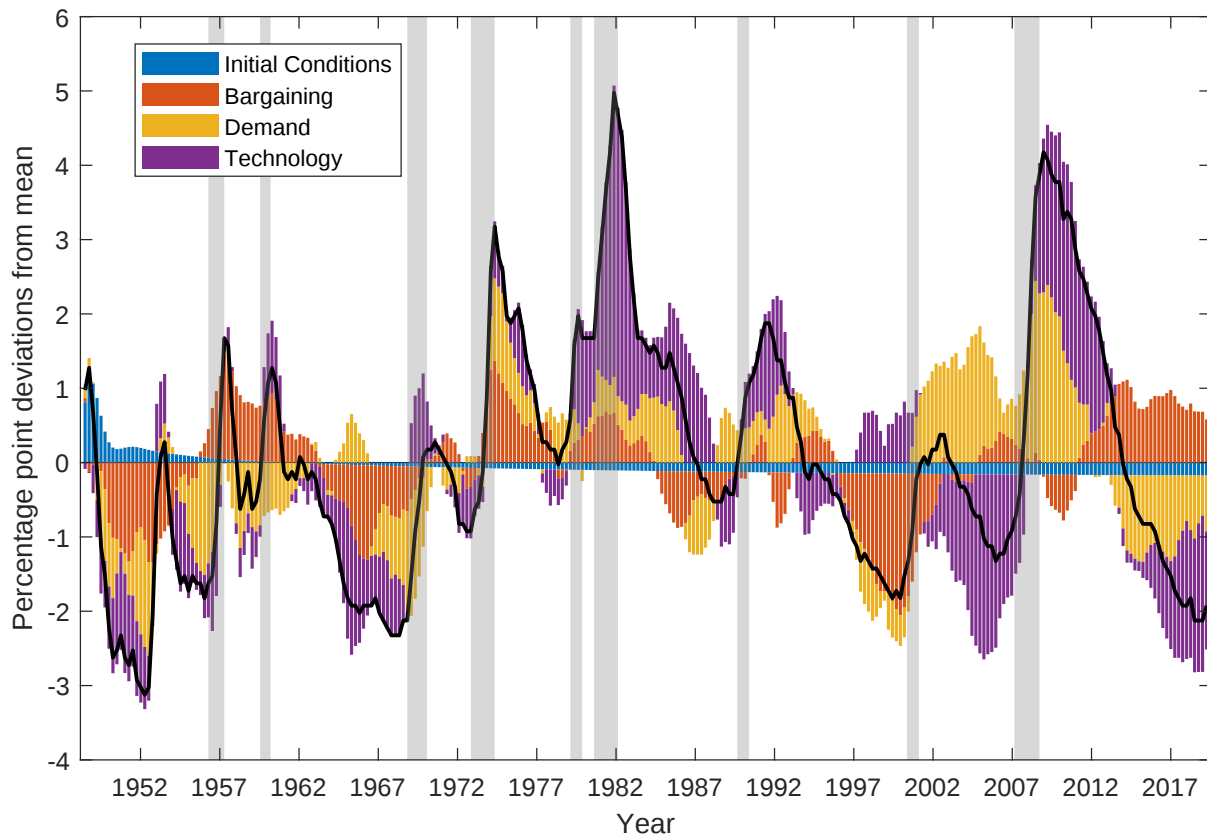
Turning to the labor share, the most salient feature of the decomposition is the overriding importance of demand shocks in explaining the movement of the labor share. At horizons of 10 quarters, demand shocks account for three quarters of the fluctuations of the labor share. Technology and bargaining shocks account for the rest. In the long-run, however, bargaining shocks account for a fifth of the variance of the labor share. A number of recent papers find that quantitative macroeconomic models disciplined with microeconomic data can account for all of the decline in the labor share (Stansbury and Summers, 2020; Mengano, 2023). However, when bargaining shocks compete with other structural shocks to explain the long-run dynamics of the labor share, their contribution to the long-run decline of the labor share is negligible (Bergholt, Furlanetto and Maffei-Faccioli, 2022). Our estimates imply that bargaining shocks are a source of long-run variations in the labor share, but far from the most important .

The profit squeeze revisited

How important have bargaining shocks been to explain recessions over the post-war period? Figure 4 plots a historical variance decomposition of unemployment that allows us to answer this question. The shaded grey areas represent NBER recessions. The black line represents the unemployment rate, in deviations from its mean. The figure makes it clear that positive shocks to the bargaining power of labor were an important factor in shaping the recessions of 1957, 1959, 1972 and to a lesser extent, the twin recessions of 1981 and 1983. However, these shocks did not contribute at all to the Great Recession, or to any recession after 1983. This lends some support to the original argument of the 'profit squeeze' developed by Weisskopf,

Bowles and Gordon (1985) as well as Marglin (1984). These (at the time) Neo-Marxist scholars argued that the slowdown in productivity growth and economic activity of the 1980s was brought about by a previous regime of high employment, which strengthened the bargaining power of a militant labor movement leading to a high labor share. One way to interpret their arguments is that the recessions of increasing severity starting in 1969 are explained by positive bargaining shocks. This is no longer the case after the emblematic PATCO strike of 1983, when bargaining shocks lose their importance to explain recessions.

Figure 4: Historical decomposition of unemployment

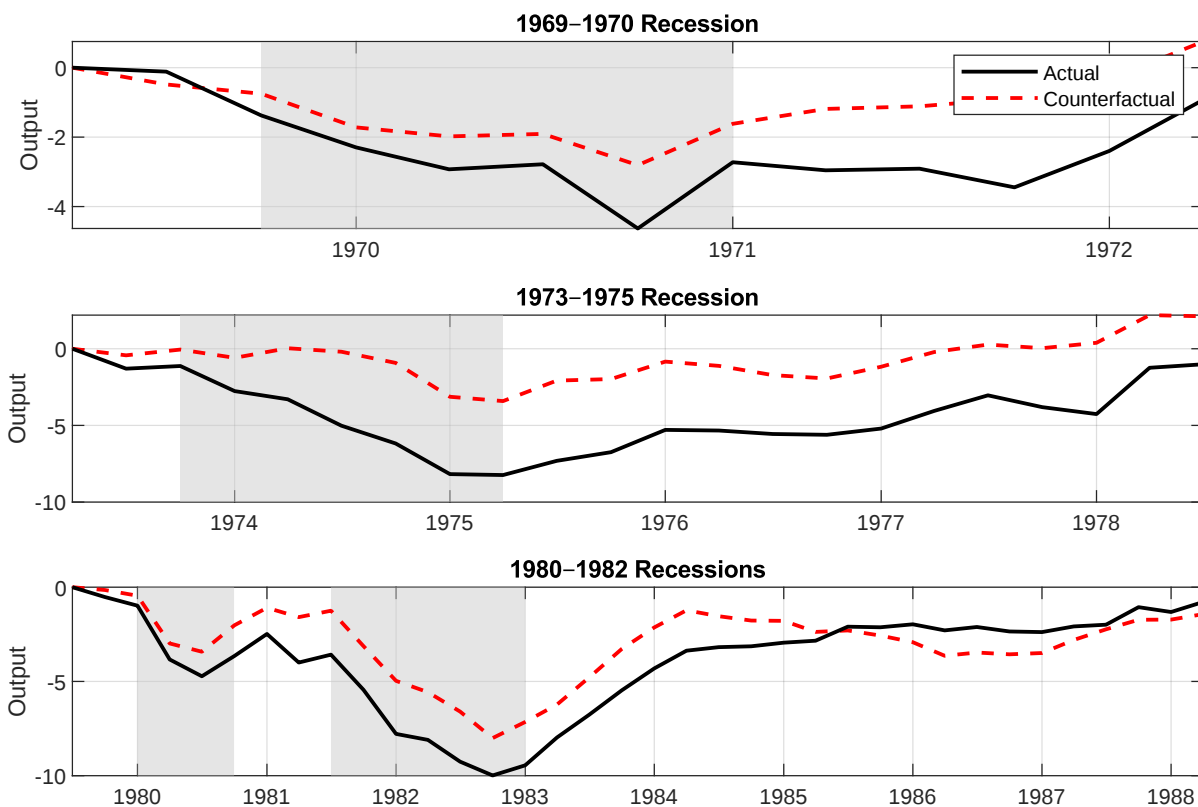


Note: The colored bars present the evolution of the unemployment rate, in deviations from its mean, attributable to each structural shock of the SVAR and the initial conditions. Grey shaded areas represent NBER recession dates.

Another way to gauge the merits of this argument is to assess whether the output declines of 1969, 1973 and 1981-1983 were driven by bargaining shocks. Figure 5 compares the path of actual output losses to a counterfactual path where we shut down bargaining shocks. The resulting plots show that positive bargaining shocks account for 60% of the cumulative output losses of the 1973 recession - output would have only dropped 3.5% percentage points

instead of 8.1% percentage points if there hadn't been positive bargaining shocks. Bargaining shocks also account for half of the cumulative output loss of the 1969 recession, and for a quarter and a fifth of the output losses of the twin recessions of the 1980s. In the appendix, it can be seen that they account for none of the output losses of the great financial crises, in accordance with previous results from the literature.

Figure 5: Counterfactual Recessions



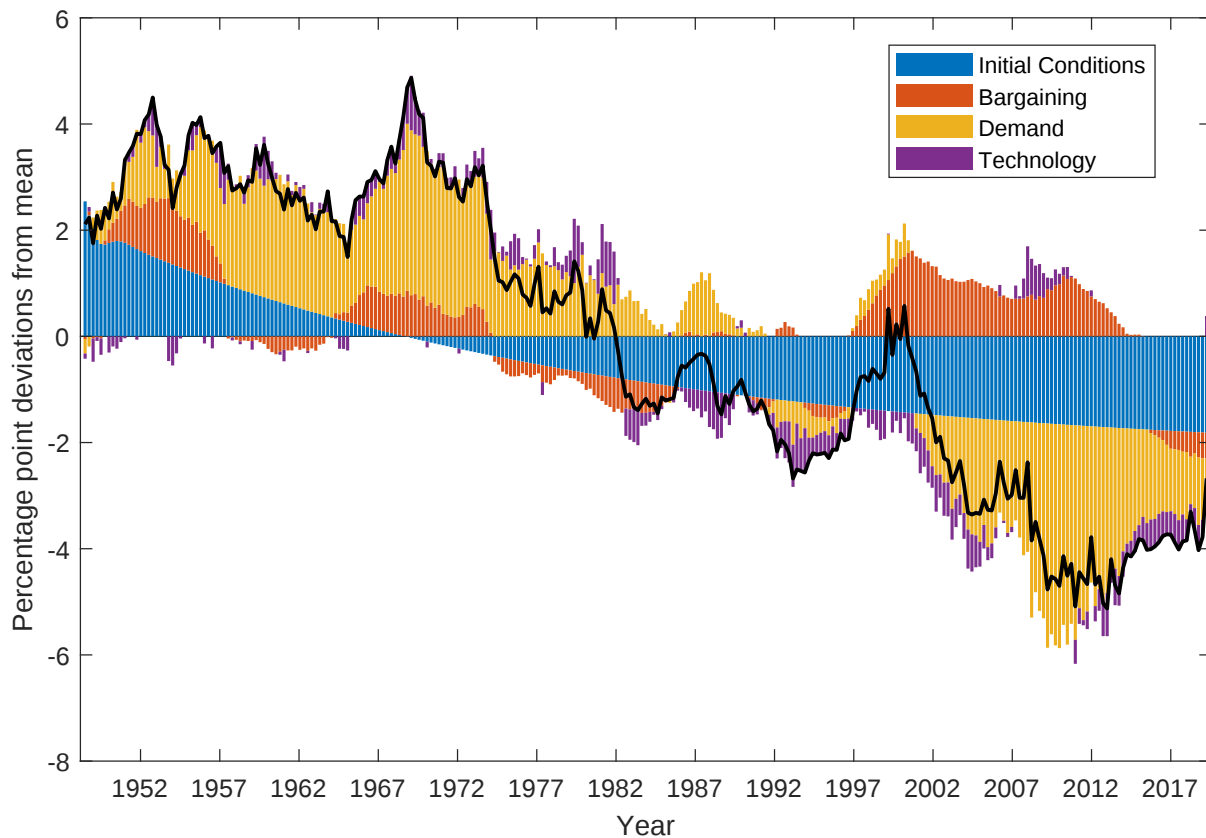
Note: The black line shows the actual path of cumulative output, normalized to 0 just before the recession. The dotted line shows the counterfactual path of output absent bargaining shocks

The observed decline of the labor share

How important are bargaining shocks to account for the long-run dynamics of the labor share? Figure 6 shows a historical variance decomposition of the labor share. Given that the variable has a downward trend, initial conditions account for a larger share of the variance than in the case of unemployment and output growth. However, two results stand out. First, consistent with our earlier results, demand shocks are by far the most important determinant of the labor share. A sequence of positive demand shocks accounted for the levels of the

labor share from the post-war period until the early 1990s, when stagnating demand caused the start of the labor share decline. Since the early 2000s, a sequence of negative demand shocks have contributed to decline in the labor share, with the period around the Great Financial Crises magnifying the decline significantly. This is a novel result in the literature, which has so far neglected the role of demand in shaping the long-run dynamics of the labor share.

Figure 6: Historical decomposition of the labor share



Note: The colored bars present the evolution of the unemployment rate, in deviations from its mean, attributable to each structural shock of the SVAR and the initial conditions. Grey shaded areas represent NBER recession dates.

However, a second salient result is that the labor share decline in the decade of the 2000's would have been more pronounced absent bargaining shocks. The labor share would have been roughly one percentage point lower this whole decade, which is a significant magnitude by historical standards. However, it is also clear that bargaining shocks are not the main driver of the decline in the labor share, a result consistent with Bergholt, Furlanetto and Maffei-Faccioli (2022).

4 Conclusion

In this paper, I estimate the effects of bargaining shocks on the macroeconomy by using a novel identification strategy that relies on narrative sign restrictions - the use of a few historical events that shifted the bargaining power of workers significantly. I find that this approach sharpens identification substantially relative to traditional sign restrictions, and I show that bargaining shocks contract output unambiguously, with a long-run effect of -0.8% in my preferred specification. Bargaining shocks also increase unemployment and cause a decline in the labor share at business cycle frequencies. Variance decomposition exercises show that bargaining shocks account for a third of the fluctuations of output at all horizons, and are important to explain the recessions before the 1990s. In contrast to other literature, I find that a sequence of negative bargaining shocks in the early 2000s raised the labor share, likely because they decreased unemployment. Absent these bargaining shocks, the decline in the labor share would have been about one percentage point lower between 1999 and 2009.

In addition, I find that demand shocks have permanent effects on output, which is new evidence of hysteresis. In addition, negative demand shocks explain the majority of the decline in the labor share over the past two decades. Since the decline in demand has been overlooked as a potential driver of the decline of the labor share, this suggests a new potential determinant of the functional distribution of income.

What are the policy implications of these results? Although policy analysis is not a central focus of the paper, a few suggestive points can be made. The results in this paper suggest that increases in the bargaining power of labor resulting from changes in the stance of the government towards capital-labor relationship have a negative impact on output as well as the labor share. Such an outcome is not intended by the proponents of these policies: increases in the bargaining power of labor are often proposed as a way to achieve a more equitable distribution of income between capital and labor, even if this comes at the cost of a loss in the level of real activity. However, this paper also shows that policies that boost aggregate demand and tighten labor markets can both raise the level of output in the long-run and raise the labor share. Indeed, the experience of the recent Biden administration, where the unemployment rate was at the lowest levels in 40 years, suggests that tight labor markets caused by active fiscal and monetary policies might raise the labor share without compromising economic activity. If this is indeed the case, more research is needed to assess the distributional consequences of demand shocks - the social dividends from this intellectual pursuit may be much higher than economists have previously suggested.

Bibliography

Acemoglu, D., & Restrepo, P. (2019). Automation and new tasks: How technology displaces and reinstates labor. *Journal of economic perspectives*, 33(2), 3-30.

Antolín-Díaz, J., & Rubio-Ramírez, J. F. (2018). Narrative sign restrictions for SVARs. *American Economic Review*, 108(10), 2802-2829.

Antolin-Diaz, J., & Surico, P. (2025). The long-run effects of government spending. *American Economic Review*, 115(7), 2376-2413.

Arias, J. E., Rubio-Ramírez, J. F., & Waggoner, D. F. (2018). Inference based on structural vector autoregressions identified with sign and zero restrictions: Theory and applications. *Econometrica*, 86(2), 685-720.

Azar, J., & Vives, X. (2021). General equilibrium oligopoly and ownership structure. *Econometrica*, 89(3), 999-1048.

Bergholt, D., Furlanetto, F., & Maffei-Faccioli, N. (2022). The decline of the labor share: new empirical evidence. *American Economic Journal: Macroeconomics*, 14(3), 163-198.

Binmore, K., Rubinstein, A., & Wolinsky, A. (1986). The Nash bargaining solution in economic modelling. *The RAND Journal of Economics*, 176-188.

Bilbiie, F. O. (2008). Limited asset markets participation, monetary policy and (inverted) aggregate demand logic. *Journal of economic theory*, 140(1), 162-196.

Blecker, R. A. (1989). International competition, income distribution and economic growth. *Cambridge Journal of Economics*, 13(3), 395-412.

Blecker, R. A. (2011). Open economy models of distribution and growth (Vol. 2011, pp. 215-239). Cheltenham: Edward Elgar.

Blecker, R. A. (2016). Wage-led versus profit-led demand regimes: the long and the short of it. *Review of Keynesian economics*, 4(4), 373-390.

- Bowles, S., & Boyer, R. (1995). Wages, aggregate demand, and employment in an open economy: an empirical investigation. *Macroeconomic policy after the conservative era*, 143-171.
- Cantore, C., & Freund, L. B. (2021). Workers, capitalists, and the government: fiscal policy and income (re) distribution. *Journal of monetary economics*, 119, 58-74.
- Canova, F., & De Nicro, G. (2002). Monetary disturbances matter for business fluctuations in the G-7. *Journal of Monetary Economics*, 49(6), 1131-1159.
- Chari, V. V., Kehoe, P. J., & McGrattan, E. R. (2009). New Keynesian models: Not yet useful for policy analysis. *American Economic Journal: Macroeconomics*, 1(1), 242-266.
- Christiano, L. J., Eichenbaum, M. S., & Trabandt, M. (2016). Unemployment and business cycles. *Econometrica*, 84(4), 1523-1569.
- Ciminelli, G., Duval, R., & Furceri, D. (2022). Employment protection deregulation and labor shares in advanced economies. *Review of Economics and Statistics*, 104(6), 1174-1190.
- Drautzburg, T., Fernández-Villaverde, J., & Guerrón-Quintana, P. (2021). Bargaining shocks and aggregate fluctuations. *Journal of Economic Dynamics and Control*, 127, 104121.
- Faust, J. (1998, December). The robustness of identified VAR conclusions about money. In *Carnegie-Rochester conference series on public policy* (Vol. 49, pp. 207-244). North-Holland.
- Fazzari, S. M., & González, A. (2025). How large are hysteresis effects? Estimates from a Keynesian growth model. *Journal of Economic Dynamics and Control*, 173, 105058.
- Faroni, C., Furlanetto, F., & Lepetit, A. (2018). Labor supply factors and economic fluctuations. *International Economic Review*, 59(3), 1491-1510.
- Furlanetto, F., Lepetit, A., Robstad, Ø., Rubio-Ramírez, J., & Ulvedal, P. (2025). Estimating hysteresis effects. *American Economic Journal: Macroeconomics*, 17(1), 35-70.
- Galí, J., Smets, F., & Wouters, R. (2012). Unemployment in an estimated New Keynesian model. *NBER macroeconomics annual*, 26(1), 329-360.
- Gutiérrez, G., & Piton, S. (2020). Revisiting the global decline of the (non-housing) labor share. *American Economic Review: Insights*, 2(3), 321-338.

- Justiniano, A., Primiceri, G. E., & Tambalotti, A. (2013). Is there a trade-off between inflation and output stabilization?. *American Economic Journal: Macroeconomics*, 5(2), 1-31.
- Karabarbounis, L., & Neiman, B. (2014). The global decline of the labor share. *The Quarterly journal of economics*, 129(1), 61-103.
- Koh, D., Santaaulàlia-Llopis, R., & Zheng, Y. (2020). Labor share decline and intellectual property products capital. *Econometrica*, 88(6), 2609-2628.
- Lavoie, M. (2014). Post-Keynesian economics: new foundations. In *Post-Keynesian Economics*. Edward Elgar Publishing.
- Lavoie, M., & Stockhammer, E. (2013). Wage-led growth: Concept, theories and policies. In *Wage-led growth: an equitable strategy for economic recovery* (pp. 13-39). London: Palgrave Macmillan UK.
- Marcus, M. (1994). Truman and the steel seizure case: The limits of presidential power. Duke University Press.
- Marglin, S. A. (1984). Growth, distribution, and inflation: a centennial synthesis. *Cambridge Journal of Economics*, 8(2), 115-144.
- McCartin, J. A. (2008). “A Wagner Act for Public Employees”: Labor’s Deferred Dream and the Rise of Conservatism, 1970–1976. *The Journal of American History*, 95(1), 123-148.
- McCartin, J. A. (2011). *Collision course: Ronald Reagan, the air traffic controllers, and the strike that changed America*. Oxford University Press.
- Mengano, P. (2022). Trends in worker bargaining power. Available at SSRN 4466868.
- Nekarda, C. J., & Ramey, V. A. (2020). The cyclical behavior of the price-cost markup. *Journal of Money, Credit and Banking*, 52(S2), 319-353.
- Plagborg-Møller, M., & Wolf, C. K. (2021). Local projections and VARs estimate the same impulse responses. *Econometrica*, 89(2), 955-980.
- Ramey, V. A., & Shapiro, M. D. (1998, June). Costly capital reallocation and the effects of govern-

ment spending. In Carnegie-Rochester conference series on public policy (Vol. 48, pp. 145-194). North-Holland.

Romer, C. D., & Romer, D. H. (1989). Does monetary policy matter? A new test in the spirit of Friedman and Schwartz. NBER macroeconomics annual, 4, 121-170.

Rowthorn, R. E. (1981). Demand, real wages and economic growth. Thames papers in political economy, 1-39.

Rubio-Ramirez, J. F., Waggoner, D. F., & Zha, T. (2010). Structural vector autoregressions: Theory of identification and algorithms for inference. The Review of Economic Studies, 77(2), 665-696.

Sims, C. A., & Zha, T. (1998). Bayesian methods for dynamic multivariate models. International Economic Review, 949-968.

Smets, F., & Wouters, R. (2007). Shocks and frictions in US business cycles: A Bayesian DSGE approach. American economic review, 97(3), 586-606.

Skott, P. (2017). Weaknesses of ‘wage-led growth’. Review of Keynesian Economics, 5(3), 336-359.

Stansbury, A., & Summers, L. H. (2020). The declining worker power hypothesis: An explanation for the recent evolution of the American economy (No. w27193). National Bureau of Economic Research.

Stock, J. H., & Watson, M. W. (2018). Identification and estimation of dynamic causal effects in macroeconomics using external instruments. The Economic Journal, 128(610), 917-948.

Stockhammer, E. (2017). Wage-led versus profit-led demand: what have we learned? A Kaleckian–Minskyan view. Review of Keynesian economics, 5(1), 25-42.

Taylor, L. (1985). A stagnationist model of economic growth. Cambridge Journal of Economics, 9(4), 383-403.

Uhlig, H. (2005). What are the effects of monetary policy on output? Results from an agnostic identification procedure. Journal of Monetary Economics, 52(2), 381-419.

Western, B., & Rosenfeld, J. (2011). Unions, norms, and the rise in US wage inequality. American Sociological Review, 76(4), 513-537.

Weisskopf, T. E., Bowles, S., & Gordon, D. M. (1985). Two views of capitalist stagnation: Underconsumption and challenges to capitalist control. *Science & Society*, 259-286.

Žymantas, B., Porqueddu, M., & Sokol, A. (2024). Striking a bargain: narrative identification of wage bargaining shocks. In *Striking a bargain: narrative identification of wage bargaining shocks*: Žymantas, Budrys— uPorqueddu, Mario— uSokol, Andrej. Vilnius: Lietuvos Bankas.