Supply-side policies in the Depression: Evidence from France

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Abstract

In 1936, France enacted supply-side restrictions, in particular wage increases and a 40-hour week law. The result was stagflation. Output rose after France devalued in September 1936, but then fell as the 40-hour law took full effect. Inflation rose rapidly. Using panel data on sectoral output, we find that the 40-hour law reduced output in affected industries. Since stagnant output coincided with a large decline in real interest rates, the French experience fits neither the standard one-sector new Keynesian model nor a two-sector model calibrated to match the cross-sectional data. We propose an alternative, disequilibrium model consistent with expansionary effects of lower real interest rates and contractionary effects of higher real wages. Both this model and our empirical evidence suggest that without supply-side problems, France would have recovered rapidly after leaving the Gold Standard.

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"CABINETS, in France, may come and Cabinets may go, but the economic crisis seems to go on for ever."

- *The Economist*, 2/5/1938, p. 295.

1 Introduction

A substantial literature documents that the monetary and fiscal policy elements of Franklin Roosevelt's New Deal promoted recovery.[1] The output effects of the New Deal's supply-side elements, in particular the National Industrial Recovery Act (NIRA), are much more controversial.[2] Standard new Keynesian models used for macroeconomic policy analysis imply that the NIRA ought to have been expansionary given economic conditions during the Great Depression (Eggertsson, 2012), but much of the literature suggests otherwise (Friedman and Schwartz, 1963; Bordo, Erceg, and Evans, 2000; Cole and Ohanian, 2004). In this paper, we use the French experience in the mid 1930s to shed light on this debate. Elected in May 1936 and led by Léon Blum, the Popular Front government in France enacted a suite of supply-side policies that combined were a sort of NIRA on steroids. The Matignon agreements in June 1936 raised private sector wages by 7% to 15%. Workers were granted two weeks of vacation without loss of pay. And perhaps most importantly, the work week was restricted to 40 hours, also without loss of pay. The size of these supply-side shocks as well as their temporal isolation from demand-side policies make France in 1936-38 an almost ideal setting for the purpose of understanding the effects of supply side policies in the Great Depression.

Cross-sectional and time-series evidence show that French wage and hour restrictions, in particular the 40-hour work week, contributed to the lack of French recovery from the Great Depression. To make this argument, we start by comparing the French experience to that of other countries in the 1930s. We show that the coincidence of rapid inflation and no

[1]On monetary policy, see Temin and Wigmore (1990), Romer (1992), and Eggertsson (2008). On fiscal policy, see Fishback and Kachanovskaya (2010), and Hausman (2013). For a view of U.S. recovery that does not emphasize aggregate demand policies, see Cole and Ohanian (2004).

[2]For an overview of the New Deal, including its supply-side elements, see Fishback (2008). The NIRA consisted of two distinct sections. The first section established the National Recovery Administration, which encouraged price and wage increases. The second section established the Public Works Administration. Following the convention in much of the literature, by "NIRA" we mean only the first section of the bill, the part restricting supply (the National Recovery Administration).

output growth was unusual relative to other countries as well as being in stark contrast to the expansion predicted by the standard new Keynesian model. Second, we show that price increases and output declines coincided with the implementation of supply-side restrictions. Third, by exploiting variation in the implementation of the 40-hour law across industries, we show that it caused a persistent 4-10% relative decline in the output of affected industries. A multi-sector new Keynesian model calibrated to match our cross-sectional estimates is inconsistent both with our time-series estimates and with the evolution of aggregate French output. Therefore, we construct a disequilibrium model to rationalize how French output could have stagnated despite a large real interest rate decline. Our model highlights a general distinction between helpful expected inflation caused by demand-side policies and harmful expected inflation caused by supply-side policies. It thus helps to reconcile the existing literature on monetary policy with the French experience.

Eichengreen and Sachs (1985) show that most countries began to recover from the Great Depression when they devalued, consistent with large effects of monetary policy on output (e.g., Romer, 1992, Eggertsson, 2008). That countries recovered rapidly in response to monetary and fiscal expansion also fits with the predictions of old and new Keynesian models. At the zero lower bound, these models predict large fiscal multipliers and expansionary effects of inflation expectations (Krugman, 1998; Christiano, Eichenbaum, and Rebelo, 2011; Woodford, 2011). Thus, this historical evidence provides some justification for the extensive use of new Keynesian models in policy analysis today, particularly when the central bank is constrained by the zero lower bound.

But the French experience does not fit this pattern. Narrative evidence suggests that the Popular Front's election in May 1936 led to a large increase in inflation expectations. Certainly insofar as inflation expectations were related to actual inflation, they must have risen significantly. French wholesale prices fell 5% in 1935, and then rose 16% in 1936 and 38% in 1937.[3] The large increase in inflation was accompanied by little change in nominal interest rates. Thus *ex post* real interest rates fell by as much as 40 percentage points. Yet, in contrast to the expansion predicted by the standard new Keynesian model, the French economy stagnated. Industrial production rose 5% in 1937 only to fall 7% in 1938.[4]

[3] Data are from Mitchell (1980), table I1.

[4] Data are from http://www.cepii.fr/francgraph/bdd/villa/mode.htm. Henceforth we will refer to this

In section 3, we show that movements in prices and output in France coincided with government actions. French prices started to rise as soon as the Popular Front government was elected in May 1936 and rose faster after France left the Gold Standard in September 1936. Output initially fell after the Popular Front government took office, but then rose after France devalued. As the 40-hour week restriction took full effect, output began to fall again.

Further evidence against the 40-hour week restriction comes from the industry cross-section. Using individual industry data on when the 40-hour week restriction began to bind and on production, in section 4 we find that the restriction reduced output by roughly 4 to 10 percent. These results are robust across a variety of different specifications and industry samples. As noted above, we also find that a multi-sector general equilibrium model calibrated to match our cross-sectional evidence is inconsistent with the time series evidence and inconsistent with the path of aggregate French output.

Guided by these empirical results, in section 5 we consider the French experience through the lens of a simple disequilibrium macro model. As an alternative to the standard new Keynesian model, we build on Kocherlakota (2012a), Kocherlakota (2012b) and earlier disequilibrium models. Our model has two key features. First, real wages are not permitted to fall below a certain threshold. When the marginal product of labor falls below this threshold, firms find it unprofitable to hire additional workers and to produce additional output. This generates a maximum level of employment and output. Second, when the economy operates at this maximum level of output, consumption demand is rationed and is thus unresponsive to real interest rate reductions. In depression economies, this supply constraint typically does not bind, so reductions in real interest rates stimulate employment and output, just as in the standard new Keynesian model. But policies that significantly raise real wages, such as those of the French Popular Front, can make the real wage constraint bind, causing a reduction in employment and output. The model implies that with consumption demand rationed, even a large reduction in real interest rates will fail to stimulate output. Thus, our model can produce comparative statics consistent with the French experience. But our model can also account for the positive cross-country association of inflation and output in

data source as 'Villa data'.

the mid-1930s. As long as countries were not supply-constrained, our model implies that the higher expected inflation was, the more output should have grown. This is consistent with the view of Romer (1992) and Eggertsson (2008) that expected inflation drove U.S. recovery after 1933.

We wish to emphasize that our paper's concern—both with the empirics and the model—is with the *output* effects of France's supply-side policies, not with their welfare effects. The supply-side policies we study had non-trivial distributional consequences for workers and capital owners (Kalecki, 1938), as well as for the employed and the unemployed. Furthermore, given the dangerous political climate and troubled state of French labor relations in 1936, the Popular Front's policies may well have been the best politically viable option. A full cost-benefit analysis of the Popular Front's policies would need to include some consideration of what, if any, viable political alternatives existed. Such an analysis is beyond the scope of this paper. Our, admittedly narrow, focus is on the consequences for output of the actual policies enacted by the Popular Front.

This paper relates to two distinct literatures. Most obviously, it contributes to our understanding of France's economic stagnation after 1936. Our analysis will broadly confirm the hypothesis in some of the literature, in particular Eichengreen (1992), that the benefits of devaluation in France were nullified by the Popular Front's supply-side policies.[5] We add to this prior literature by providing econometric evidence on the effects of the 40-hour week restriction and by providing a model to explain France's experience.

In contrast to a small English language literature on the Popular Front's policies, there is a large literature on the NIRA. We have already noted that this literature is divided on its general effectiveness. Eggertsson (2012) argues that ending deflation was critical to lifting the economy out of depression. According to him, facilitating collusion among workers and firms to raise wages and prices supported this goal. By contrast, Bordo et al. (2000) and Cole and Ohanian (2004) argue that these anti-competitive measures had contractionary effects by raising real wages and restricting supply. Since the Popular Front's policies were both inspired by and analogous to Franklin Roosevelt's supply-side policies, understanding their effects can inform this debate. The negative effects that we find from French supply-side

[5] This is also the view of Marjolin (1938), Sauvy (1984), and Villa (1991), among others.

policies are some evidence that U.S. recovery may have occurred despite rather than because of NIRA restrictions. In section 6, we conclude with a more specific discussion of the lessons from the French experience for our understanding of the NIRA.

2 France's experience in the new Keynesian model and in international context

Our interest in French supply-side policies is motivated by a robust implication of the new Keynesian model, the standard framework used for analyzing short-run macroeconomic policies.[6] The new Keynesian model implies that anything that raises expected inflation is expansionary if it causes a decline in expected real interest rates. This most obviously occurs when nominal interest rates are fixed either by the zero lower bound or for institutional reasons at any positive value. As long as they raise expected inflation and lower expected real interest rates, for instance, natural disasters and oil price shocks will be expansionary (Wieland, 2014). More important for our purposes, the new Keynesian model implies that strikes and hours' restrictions will raise output provided that they cause a decline in real interest rates.

This implication may appear odd. How can some workers producing less lead to higher output? The technical details of the standard new Keynesian model are below. The intuition is that a strike or hours' restriction raises real marginal costs, which increase expected inflation and thus lower real interest rates. Since consumers and businesses in the model optimally trade-off current spending against future spending, a lower real interest rate leads to more current demand for consumer and investor goods. Firms meet the higher demand by hiring additional workers, so that output increases. Below we present this argument in a standard new Keynesian model. But the argument is more general. It holds, for instance, in the old Keynesian framework of Romer (2013).

[6]A partial list of papers using the new Keynesian model to analyze macroeconomic policies includes: Aruoba and Schorfheide (2013), Braun, Körber, and Waki (2012), Campbell, Evans, Fisher, and Justiniano (2012), Christiano (2004), Christiano et al. (2011), Cochrane (2013), Coibion, Gorodnichenko, and Wieland (2012), Cúrdia and Woodford (2009), Dupor and Li (2014), Eggertsson and Woodford (2003), Eggertsson (2012), Erceg and Lindé (2010), Farhi and Werning (2012), Krugman (1998), Mertens and Ravn (2013), Nakamura and Steinsson (2014), Werning (2011), Wieland (2012) and Woodford (2011).

The model we present follows Woodford (2003) and is described in detail in appendix A. Because this model is now standard in macroeconomics, we directly study the log-linearized equations,

$$y_t = E_t y_{t+1} - \sigma^{-1} E_t (i_t - \pi_{t+1} - r_t) \tag{1}$$

$$\pi_t = \beta E_t \pi_{t+1} + \kappa[(\sigma + \eta) y_t - (1 + \eta) a_t - \psi_t + \xi_t] \tag{2}$$

$$i_t = \max\{r_t + \phi_\pi \pi_t, \bar{i}\}, \quad \phi_\pi > 1 \tag{3}$$

where y_t is log output, i_t is the nominal interest rate, π_t is inflation, r_t is the real natural rate of interest, a_t is aggregate productivity, ψ_t captures the impact of hours restrictions, and ξ_t captures a decreased willingness of workers to supply labor (e.g. strikes).

The first equation is the Euler equation of the model. Solving this equation forward shows that expected future real interest rates are a key determinant of output today,[7]

$$y_t = -\sigma^{-1} E_t \sum_{s=0}^{\infty} (i_{t+s} - \pi_{t+1+s} - r_{t+s}) \tag{4}$$

Thus, holding the natural rate of interest r_t fixed, any policy that lowers the expected real interest rate $(i_t - E_t \pi_{t+1})$ is expansionary. A lower expected real interest rate reduces the incentive to save, raises spending, and so stimulates output today. The strength of this effect is governed by the intertemporal elasticity of substitution σ^{-1}.

The second equation is the new Keynesian Phillips curve. It implies that inflation today is determined by expected future real marginal costs,

$$\pi_t = \kappa E_t \sum_{s=0}^{\infty} \beta^s [(\sigma + \eta) y_{t+s} - (1 + \eta) a_{t+s} + \xi_{t+s} - \psi_{t+s}], \tag{5}$$

where real marginal costs are the term in square brackets. Real marginal costs are increasing in output y_t and decreasing in productivity a_t. The strength of these relationships is governed by the elasticity of intertemporal substitution (σ^{-1}) and the elasticity of labor supply (η^{-1}). ξ_t captures the willingness of households to supply labor. We model a strike as an increase in ξ_t, which implies that firms must now pay higher wages to employ the same number of workers. Hours restrictions are captured by a decline in ψ_t. In the model, firms will

[7] In solving forward, we follow the existing literature in assuming that output reverts to trend, $\lim_{T \to \infty} y_T = 0$.

optimally employ each worker for $\bar{H}$ hours, but may be restricted by law to employ them for only $\Psi_t \bar{H} < \bar{H}$ hours at unchanged salary. Thus it is natural to see the 40-hour restriction as a decline in $\psi_t = \ln(\Psi_t)$. Holding output fixed, an hours restriction raises the marginal cost of production because more workers have to be employed at higher cost to make up for the sub-optimal short-fall in hours.

The final equation of the model is a Taylor rule with the zero lower bound constraint. For our purposes, most important is that the nominal interest rate can be unresponsive to inflation in certain circumstances. When the ideal nominal interest rate $r_t + \phi_\pi \pi_t$ falls below a bound $\bar{i}$, then the nominal interest rate becomes invariant to changes in inflation π_t. In most specifications of the Taylor rule, $\bar{i} = 0$. We allow for a non-zero bound $\bar{i} > 0$ because France was not literally at the zero lower bound in 1936-38, but nominal interest rates nonetheless did not respond to inflation.[8]

To illustrate the key mechanism of this model, we follow Werning (2011) and let the lower bound on the nominal interest rate bind for T periods through a negative natural rate of interest,

$$r_t < \bar{i}, \quad t \leq T \tag{6}$$

$$r_t \geq \bar{i}, \quad t > T. \tag{7}$$

Werning (2011) shows that for $t \leq T$, this shock makes the lower bound on the nominal interest rate bind, $i_t = \bar{i}$, depresses output, $y_t < 0$, and creates deflation, $\pi_t < 0$. After time T, the economy exits from the bound, and the economy returns to steady-state, $y_t = \pi_t = 0$. Substituting this solution into the Euler equation yields,

$$y_t = \sigma^{-1} E_t \sum_{s=0}^{T} (-\bar{i} + \pi_{t+1+s} + r_{t+s}) \tag{8}$$

Accordingly, we should expect a tight connection between higher expected inflation, $E_t \sum_{s=0}^{T} (\pi_{t+1+s})$, and higher output in countries that are constrained by the zero lower bound or any non-zero bound on the nominal interest rate. In particular, we would expect that countries that were

[8] An additional, technical purpose of the interest rate rule is to ensure that a unique bounded equilibrium exists once the economy exits from the zero bound environment. We could use a more complicated equilibrium selection device with an explicit model of the gold standard. But this would come at the cost of additional notational complexity, without, in our view, additional insight.

more successful in generating inflation ought to have recovered more quickly from the Great Depression. Variants of this logic have led some economists to argue that higher inflation would be helpful for the U.S. and Europe today.[9]

From this perspective, France's anomalous experience after leaving the Gold Standard in 1936 is a puzzle. Figure 1 shows industrial production growth and the change in wholesale price inflation following departure from the Gold Standard for the European countries for which Mitchell (1980) provides industrial output and wholesale price data. The vertical axis shows the percent change in industrial production between year t and $t + 2$, where year t is the year a country went off the gold standard. The horizontal axis measures the difference between cumulative inflation from year t to $t+2$, and the cumulative inflation that would have occurred had the inflation rate in year $t - 1$ persisted. Consistent with the new Keynesian model's emphasis on the importance of real interest rates in determining output, there is a strong positive relationship between the change in inflation and output growth. But France is an outlier; cumulative two-year inflation rose over 60 percentage points while industrial production fell.[10]

Figure 1 casts doubt on two potential explanations for poor French performance following devaluation. First, one might wonder whether France performed poorly because worries about war with Germany discouraged consumption and investment. While this is difficult to entirely rule out, that the Netherlands, Belgium, and Italy all grew strongly after their devaluations in 1935 and 1936 casts doubt on the hypothesis. Second, one might argue that France simply devalued too late (Asselain, 1993). Perhaps the advantages of devaluation came primarily through terms of trade effects and hence no longer existed to be exploited by France in 1936. Or perhaps the U.S. recession in 1937-38 made it difficult for a European country to recover in these years. Again the scatter plot provides little evidence for this view. Italy and the Netherlands also devalued in 1936, and their experiences fit neatly with the general association between higher inflation and higher growth.

[9] Among many others, see Paul Krugman's column in the *New York Times* on April 6, 2014, p. A23.

[10] In figure 1, Greece is the other obvious case in which a country experienced a large increase in inflation but little growth. Greece left the Gold Standard in September 1931 by imposing foreign exchange controls, and Greece devalued in April 1932 (Bernanke and James, 1991). Like France, in the two years followings its departure from the Gold Standard, Greece experienced high inflation and little growth. But unlike in France, this can be explained by a government debt crisis coinciding with devaluation (Mazower, 1991).

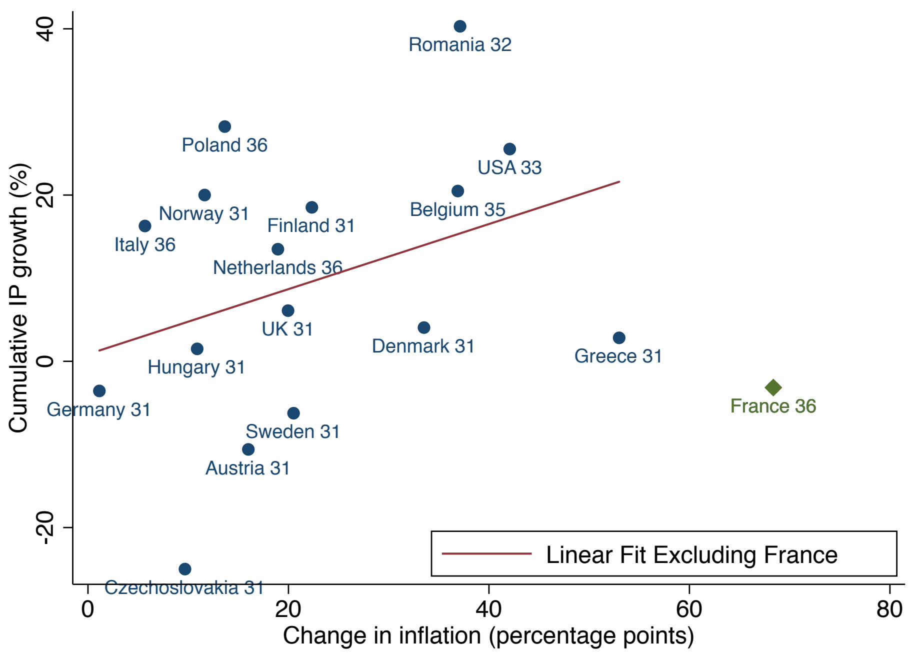
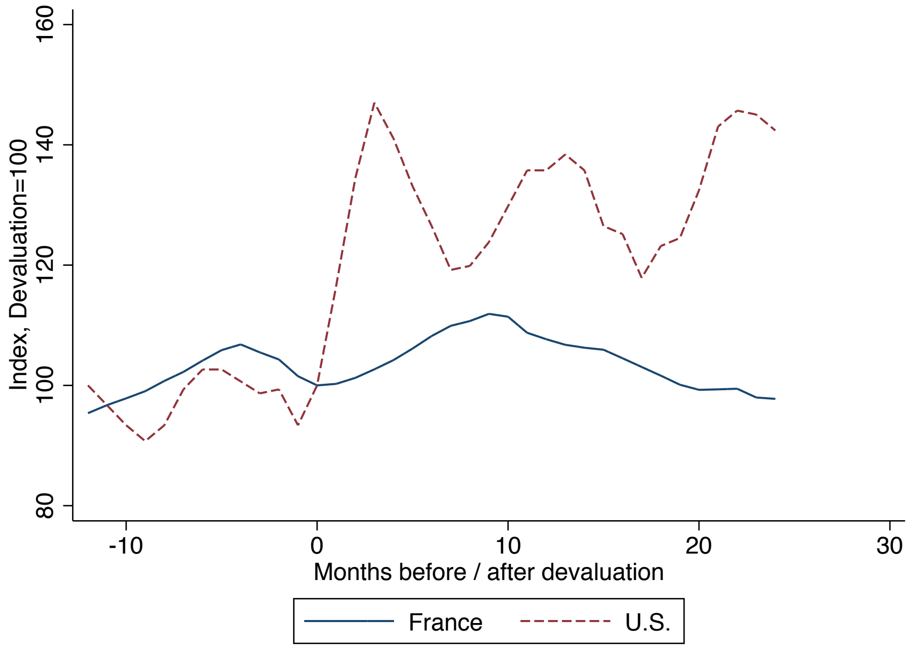
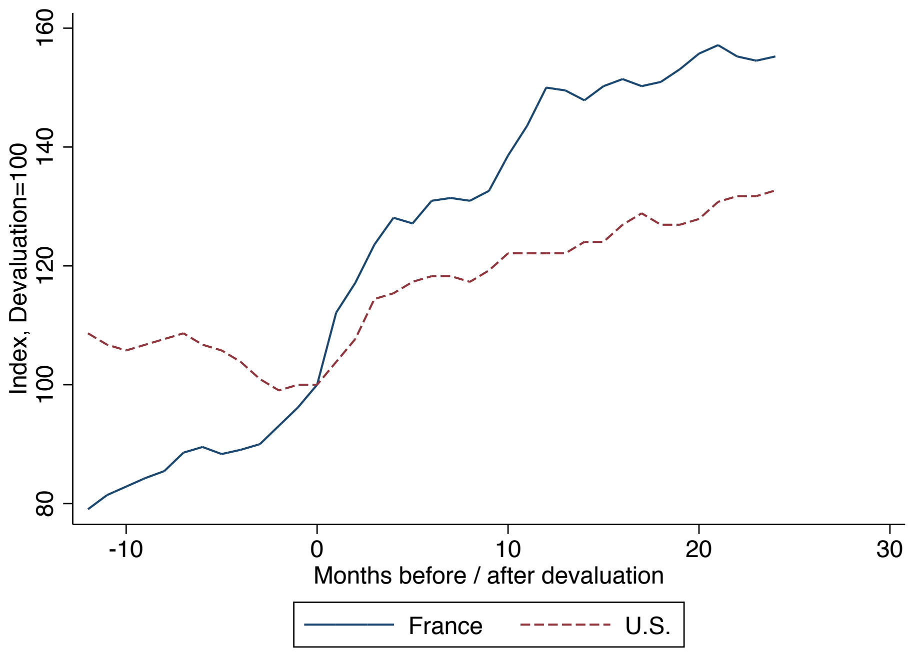


Figure 1 – Industrial production growth and the change in wholesale price inflation two years after leaving the Gold Standard. Note: The two digits after the country name are the year in which the country left the Gold Standard. Sources: Industrial output and wholesale prices for European countries: Mitchell (1980) tables E1 and I1; for the U.S: FRED series INDPRO and PPIACO. Gold Standard departure date: Eichengreen (1992), table 7.1.



(a) Industrial production in France and the U.S. (s.a.)



(b) Wholesale prices in France and the U.S. (n.s.a.)

Figure 2 – Note: For France, month 0 is September 1936; for the U.S., it is March 1933. Sources: IP data are from http://www.cepii.fr/francgraph/bdd/villa/mode.htm. and FRED series INDPRO; wholesale price data are Sauvy (1984), v. 3, p. 351, and FRED series PPIACO.

Since the Popular Front's economic policies were in part inspired by those in the U.S., figure 2 compares the behavior of output and prices in France with that in the U.S. Figure 2(a) shows monthly industrial production in France and the U.S. before and after the month of devaluation. Figure 2(b) repeats this exercise for wholesale prices. Whereas industrial production grew more in the U.S. after devaluation, inflation grew more in France. Since nominal interest rates behaved similarly in the two countries, this meant that real interest rates fell much more in France. The standard new Keynesian model makes the counterfactual prediction that the much larger real interest decline in France ought to have been accompanied by much more growth.

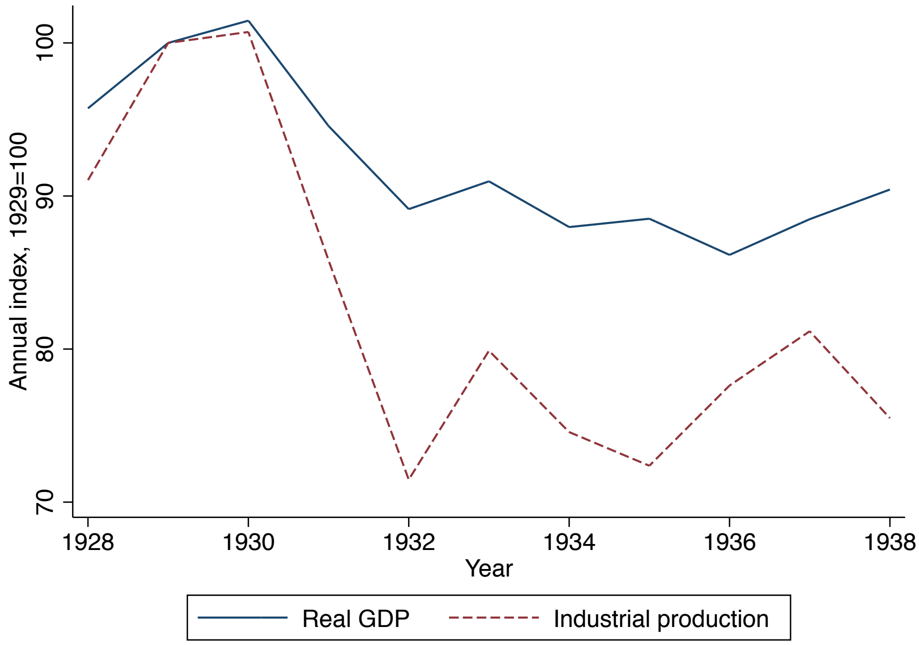
3 The Great Depression and the Popular Front

The Great Depression in France lasted 7 years.[11] Figure 3(a) shows the path of real GDP and industrial production in France from 1928 to 1938. Real GDP declined almost continuously from 1929 to 1936; the cumulative decline was 14%. Industrial production moved somewhat more erratically and bottomed out in 1935. Prices also fell. Figure 3(b) shows three price indexes: an index for all wholesale prices, an index for wholesale prices of domestic products, and an index of the cost-of-living. All three indexes declined rapidly from 1929 to 1935. Cumulative deflation as measured by wholesale prices was 44%.

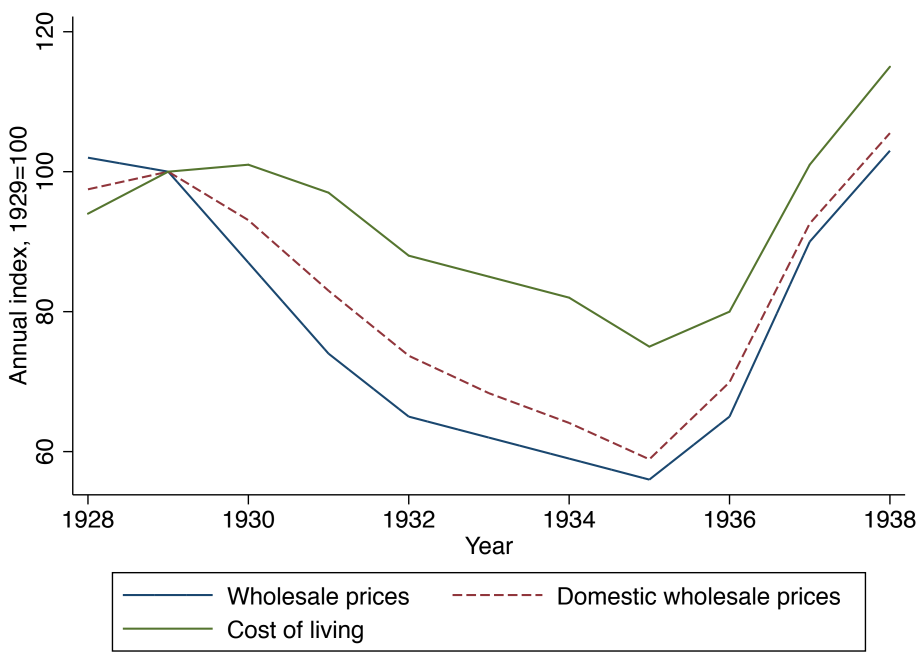
Given the policies followed, the behavior of prices and output before 1936 is unsurprising. France's adherence to the Gold Standard until September 1936 inevitably prevented substantial expansionary policies. Even worse, when France experienced gold inflows, it did not allow the influx of gold to expand the money supply (Irwin, 2012). Thus, from December 1930 to December 1935, the French money supply (M2) declined 14% (Patat and Lutfalla (1990), table A.2).

As in many countries, the severity and duration of the Depression in France led to political instability and extremism (De Bromhead, Eichengreen, and O'Rourke, 2013). Between 1929 and 1934, France had twelve prime ministers. Quasi-paramilitary fascist 'leagues' became

[11] For further discussion of the Great Depression in France, see Eichengreen (1992), Mouré (1991), and Beaudry and Portier (2002).



(a) Real GDP and IP 1928-1938



(b) Wholesale prices and cost of living index 1928-1938

Figure 3 – Sources: GDP and IP: Villa data. Wholesale prices: Mitchell (1980) table I1; domestic wholesale prices: Sauvy (1984), v. 3, table 2, p. 348; cost-of-living index: Mitchell (1980) table I2.

popular.[12] On February 6, 1934 a large right-wing street demonstration turned violent, with gunfire exchanged between demonstrators and police. Fifteen people died and over 1400 were injured. The left-wing prime minister, Edouard Daladier, felt compelled to resign. This event precipitated the unification of France's three left-wing parties (the Radicals, the Socialists, and the Communists) into the so-called Popular Front. The Popular Front's political popularity was aided by moderate prime minister Pierre Laval's deflationary policies. In 1935, Laval attempted to revive the French economy by cutting all forms of government expenditure (including wages and bond interest payments) by roughly 10 percent. Along with these unpopular economic policies, in 1935 the fascist leagues continued to threaten French democracy, most obviously when the leader of the Popular Front, Léon Blum, was beaten and nearly killed by the right-wing Action Francaise.

Against the background, the Popular Front decisively won the May 1936 parliamentary elections. Inspired workers responded with an unprecedented wave of strikes. In June 1936, there were over 12,000 strikes and 1.8 million strikers (out of a total French population of 41 million). The cause of these strikes continues to be debated. Prost (2002) and Jackson (1990) emphasize the difficult working conditions in French factories. In any case, these strikes were perhaps the most direct cause of the Popular Front's radical supply-side policies. For a time in early June 1936, the scale of the strikes led many to fear (or hope for) a revolution. Leon Trotsky, writing on June 10, 1936, said that "The May-June days of 1936 herald the first mighty wave of proletarian revolution [in France]" (Trotsky (1968), p. 6).

The new Keynesian model implies that these widespread strikes ought to have raised French output. In fact, the time series of French industrial production strongly suggests that strikes lowered output. Seasonally adjusted industrial production fell 1.2 percent in June 1936, and by a further 1.1 percent in July 1936.[13]

The May and June strikes pushed the Popular Front to quickly enact measures in support of labor. The Matignon agreements of June 7, 1936 raised private sector wages by 7% to 15% (Sauvy, 1984). Almost immediately thereafter, the government passed a series of laws codifying collective bargaining rights, granting workers two weeks of paid vacation, and reducing the work week from 48 to 40 hours, all while holding weekly pay constant (Bernard

[12] Unless otherwise noted, the facts that follow are drawn from Jackson (1990).

[13] Villa data.

and Dubief, 1988; Asselain, 1974). The 40-hour week restriction was implemented only gradually, a feature that is useful for our econometric work below.

These policies were both politically popular and were a logical response to the French socialist party's (the SFIO's) understanding of the Great Depression (Bernard and Dubief, 1988; Mouré, 1991; Jackson, 1990). The socialist party diagnosed the depression as due to a lack of consumer demand. Blum's government hoped that higher purchasing power and more leisure time would raise consumption demand. Higher demand would then lower prices by allowing firms to exploit economies of scale and move along a *downward* sloping supply curve. Higher nominal wages would thus lead to a virtuous cycle of higher real wages, more production, lower prices and still higher real wages. Lower prices would, in turn, promote exports, loosening the external constraint and avoiding the need for devaluation (Bernard and Dubief, 1988). Cutting the work week from 48 to 40 hours with unchanged weekly wages (20% higher hourly wages) had the further advantage of forcing firms to increase employment to maintain production, thus reducing the number of unemployed.

The standard new Keynesian model from section 2 allows for a more structured analysis of the 40-hour week restriction. The hours restriction implies that firms can only employ workers for $\Psi_t \bar{H} < \bar{H}$ hours, where $\bar{H}$ are the (optimal) pre-policy hours-per-worker. To match the temporary duration of the hours restriction, we assume that it binds for T_ψ periods. (The 40-hour law was relaxed in November 1938.) As before, we use a shock to the natural rate of interest r_t to fix the nominal interest rate at $\bar{i}$ for $T > T_\psi$ periods. To match the French data showing a decline in real interest rates, we require that the nominal interest rate to be unresponsive to the inflation caused by the hours restriction. One can then show that the hours restriction is expansionary in the new Keynesian model.

Proposition 1 *Let Δy_{t+s} be the change in output in the new Keynesian model due to the hours restriction. Suppose the hours restriction causes no change in the nominal interest rate. It then follows that*

$$\Delta y_{t+s} > 0 \text{ for } 0 \geq s < T_\psi.$$

Proof See appendix B.[14] ■

[14] See Wieland (2014) for an analogous proof in continuous time.

The intuition is that the hours restriction raises the marginal costs of production, which raises expected inflation in the new Keynesian model. Since real interest rates decline when nominal rates are fixed, consumers will reduce savings and increase spending, which generates the expansion. Further, note that even though per-worker hours decline, total hours worked rise in the new Keynesian model. This is accomplished by an even larger increase in employed workers. Thus the new Keynesian model implies that an hours restriction, like a strike, will be expansionary.

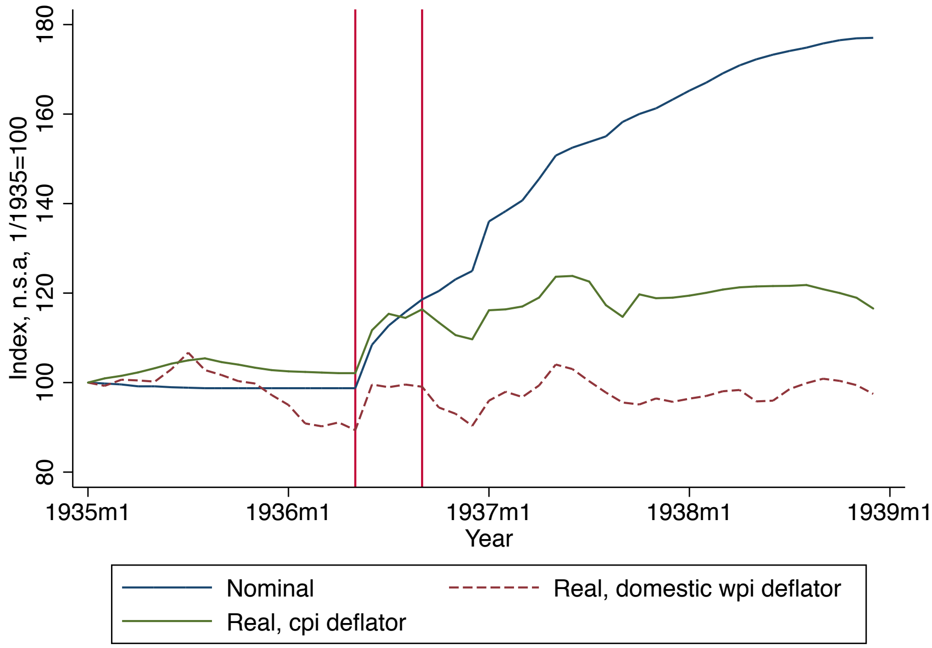
Events did not unfold either as the Popular Front hoped or as the new Keynesian model predicts. Figure 4(a) shows the actual path of monthly nominal and real wages from 1935 to 1938. The first vertical line indicates the election of the Popular Front in May 1936. Nominal wages were notably constant before the Popular Front's election. The Popular Front's policies then led both nominal and real wages to jump up almost immediately, as desired. Unlike Roosevelt's NIRA, the Popular Front's high wage policies were not accompanied by parallel efforts to raise prices.[15] This followed from the desire to raise real wages while at the same time lowering prices. Indeed, though ineffectual, the Popular Front introduced price controls in August 1936. But prices behaved as one would expect if supply curves slope up, not down: prices rose in parallel with wages, such that real wages rose less than nominal wages. Still, deflated by wholesale prices, real wages rose 4% from May 1936 to May 1937; deflated by consumer prices, they rose 21%.[16] Kalecki (1938) ascribes this real wage increase to the stickiness of housing rents and food prices. Consistent with this view, figure 4(b) shows that both wholesale prices as a whole and wholesale prices of domestic goods rose less than consumer prices.

Devaluation was an unpopular prospect, and the Popular Front hoped to ignite recovery without it.[17] The Communist party was particularly opposed to devaluation, arguing that it would, like deflation, hurt the poor. Indeed, in the polarized political climate of the 1930s,

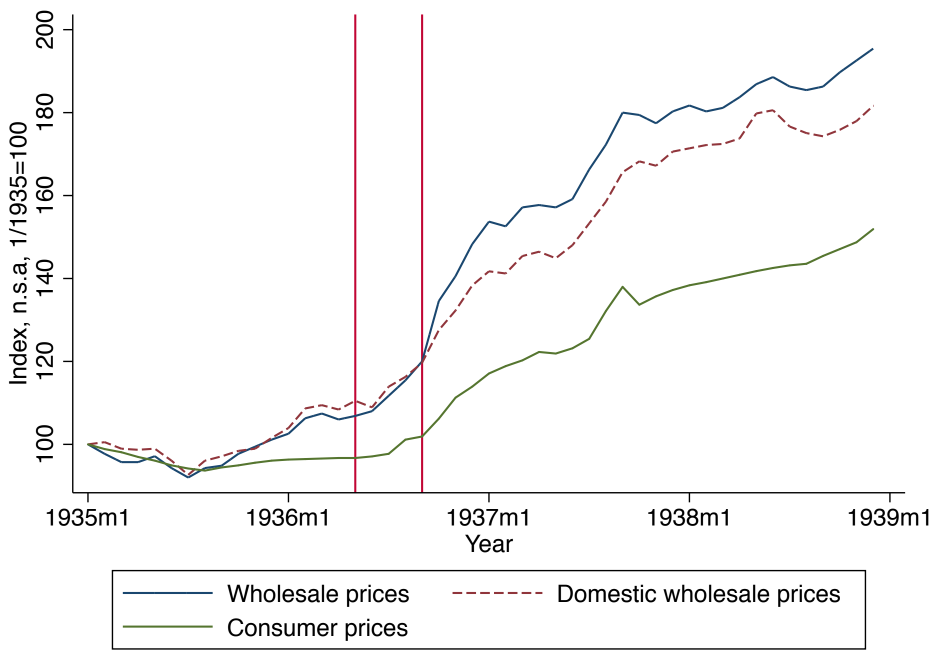
[15] An exception was the price of wheat, which was fixed at a high level by the newly created Office National Interprofessionel du Blé (Bernard and Dubief, 1988).

[16] In the 12 months after March 1933, the respective figures in the U.S. are 0 percent and 16 percent. These figures are for U.S. nominal hourly earnings in manufacturing deflated by, respectively, the PPI and the CPI (FRED series M08142USM055NNBR, PPIACO, and CPIAUCNS).

[17] Despite its public opposition to devaluation through the summer of 1936, more astute members of the government, probably including Léon Blum, recognized that devaluation would be beneficial. The problem was French popular opinion (Jackson, 1990).



(a) Nominal and real hourly wages 1935-38



(b) Wholesale and consumer prices 1935-38

Figure 4 – Note: The first vertical line indicates May 1936, when the Popular Front government took office. The second vertical line indicates September 1936, when France left the Gold Standard. Source: Sauvy (1984), v. 3, pp. 350, 351, 356, 377

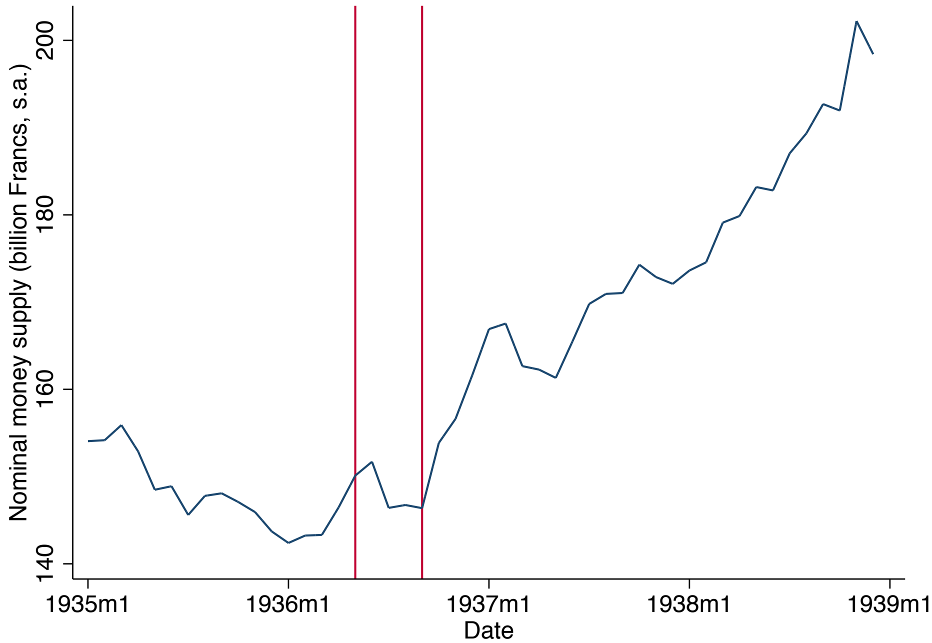
opposition to devaluation was one of the few things that united the French left and right. At least to our eyes, much of this agreement was based on serious economic misunderstandings. For instance, as shown in figure 5, the French Communist Party believed that devaluation would be a consequence of *deflation*.

In any case, the Blum government soon faced a choice between its expansionary objectives and its commitment to an overvalued Franc. Under pressure from the government, between June 23 and July 9, 1936 the Bank of France lowered its discount rate from 6% to 3% (Mouré, 1991). This was not accompanied by a large increase in the money supply. Nonetheless, combined with higher French prices, a lower discount rate inevitably led to pressure on the Bank of France's gold reserves. Reserves fell from 117 million fine ounces in April 1936 to 95 million fine ounces in September (Board of Governors of the Federal Reserve System, 1943). Faced with the choice between adopting deflationary policies and devaluing, France left the Gold Standard on September 26. To make devaluation more politically palatable, it came under the guise of the Tripartite Agreement, in which Britain, France, and the U.S. publicly committed themselves to avoid (future) competitive devaluations (Eichengreen, 1992; Jackson, 1990).

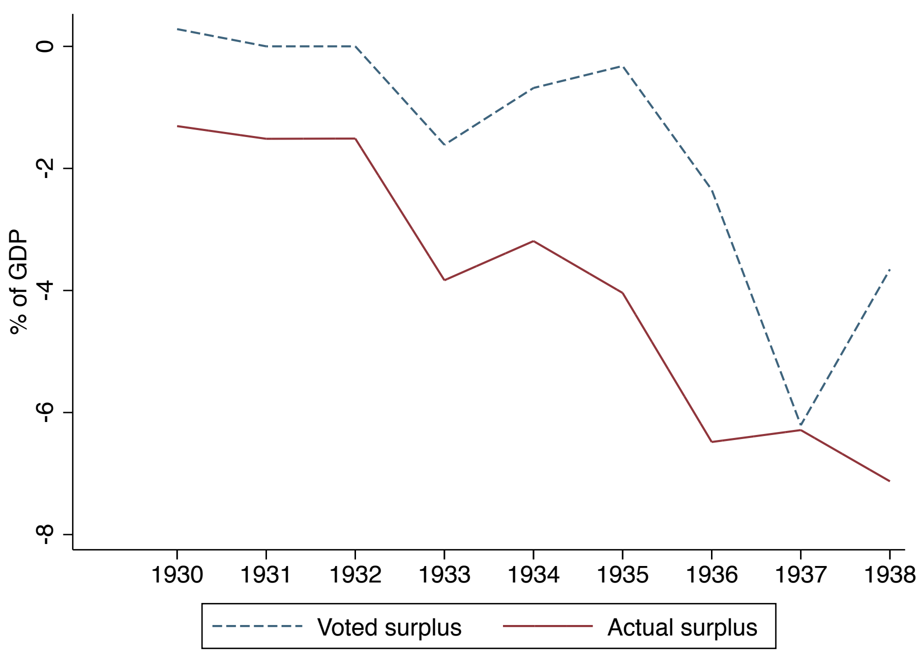
With the external constraint removed, a rapid monetary expansion began (figure 6(a)). The departure from monetary orthodoxy was accompanied by and indeed in part caused by a departure from fiscal orthodoxy. Figure 6(b) shows that both the planned and actual budget deficit grew rapidly in 1936. Much of this increase was financed by advances from the Bank of France. Between 1936 and 1938, the majority of the budget deficit was financed in this way (Mouré, 2002).

Initially, devaluation and the ensuing money supply growth led to a significant recovery. Figure 7(a) shows the behavior of monthly, seasonally adjusted industrial production from 1935 through 1938. Production fell during the first months of the Blum government, perhaps because of strike related disruptions as well as forced wage increases and paid vacation. Seasonally adjusted industrial production then rose 12% in the nine months following devaluation (the second vertical line). But the increase was short-lived. After June 1937, industrial production fell rapidly back to its pre-devaluation level. Figure 7(b) shows the annual number of unemployed over a longer time horizon. Here the picture is somewhat

Figure 5 – Communist Party slogans in spring 1935. Note: From top to bottom the large text reads: "Communist Party; Deflation -> Devaluation = Misery; To save France from misery and ruin the rich must pay; Make the rich pay." Source: Margairaz et al. (2006), p. 91.

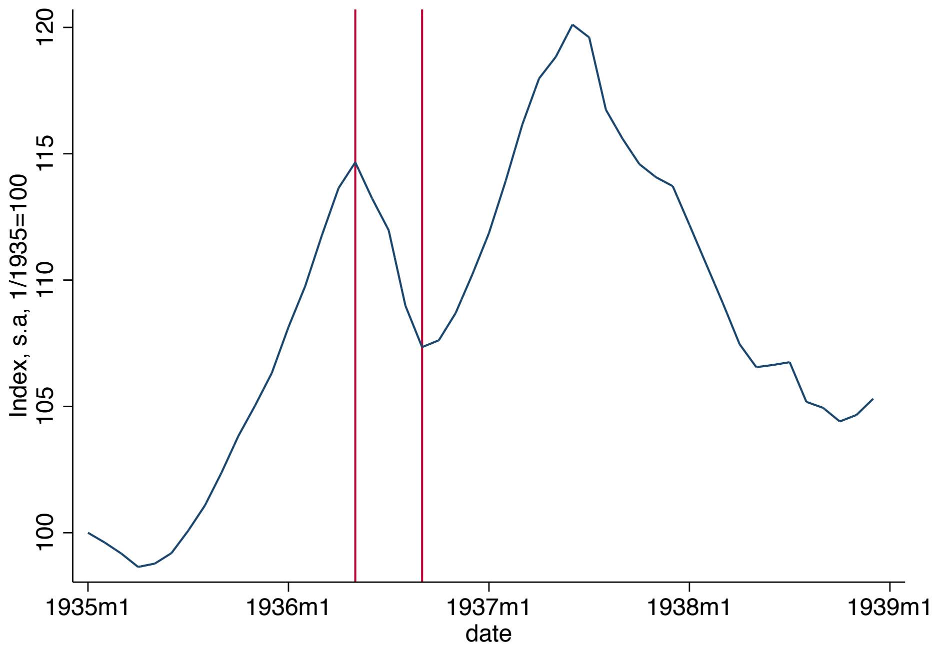


(a) The money supply (M2) 1935-38



(b) Central government budget surplus 1930-38

Figure 6 – Note: In panel (a) the first vertical line indicates May 1936, when the Popular Front government took office. The second vertical line indicates September 1936, when France left the Gold Standard. Sources: panel (a): Patat and Lutfalla (1990), table A-2; panel (b): Sauvy (1984), v.3, p. 380 and Villa data, series PIBVAL.



(a) Industrial production 1935-1938

(b) The number of unemployed 1928-1938

Figure 7 – Note: The first vertical line indicates May 1936, when the Popular Front government took office. The second vertical line indicates September 1936, when France left the Gold Standard. Sources: IP: Villa data; unemployment: Mitchell (1980), table C2.

more positive, as one would expect if the 40-hour week law led to work-sharing. The number of unemployed fell sharply from 1936 to 1937. And although it rose in 1938, it remained below the 1936 level.[18]

Previous authors have considered a variety of different explanations for France's poor performance beginning in spring 1937. Prost (2002) emphasizes the breakdown of factory discipline that followed the May-June strikes. After the Popular Front's initial nominal-wage-increasing legislation, workers were disappointed as higher prices eroded much of their nominal gains. And workers resisted the reintroduction of factory hierarchies and work regimentation (Jackson, 1990; Seidman, 1981). Of course, in the context of the new Keynesian model with fixed nominal interest rates, any supply-side problems, including problematic labor relations, cannot explain lower output. Perhaps more importantly, this story leaves unexplained why production initially rose following devaluation, only to fall back a few months later.

Other authors (e.g. Jackson (1990)) have blamed poor economic performance in 1937-38 on a lack of business confidence and capital flight. But the French stock market provides evidence against this view. In the months immediately after the Popular Front took office, consumer-price-deflated stock prices fell (figure 8). Stock prices then rose rapidly after devaluation to their highest levels since early 1932. The willingness of investors to value French assets more is inconsistent with the argument that French business was unwilling to invest under the Popular Front.

It is also not obvious that capital flight had negative effects on the French economy. As explained by Krugman (2013), unless the central bank responds with higher interest rates, there is no obvious mechanism through which capital flight lowers output. Indeed, by putting downward pressure on the exchange rate, capital outflows are likely to lead to higher output. Summer 1936 in France is a case in point. As outlined above, gold outflows put pressure on the government to devalue, which in turn ignited a significant, though brief, recovery.

In contrast to the volatile path of output and the stock market in 1936, wages and prices rose steadily (figures 4(a) and 4(b)). Figure 9(a) summarizes this information on prices

[18] The number of unemployed may strike readers as bizarrely low, since in 1936 the French population was roughly 41 million (Mitchell, 1980). This likely reflects idiosyncrasies in the measurement of French unemployment rather than actual French labor market tightness (Salais, 1988).

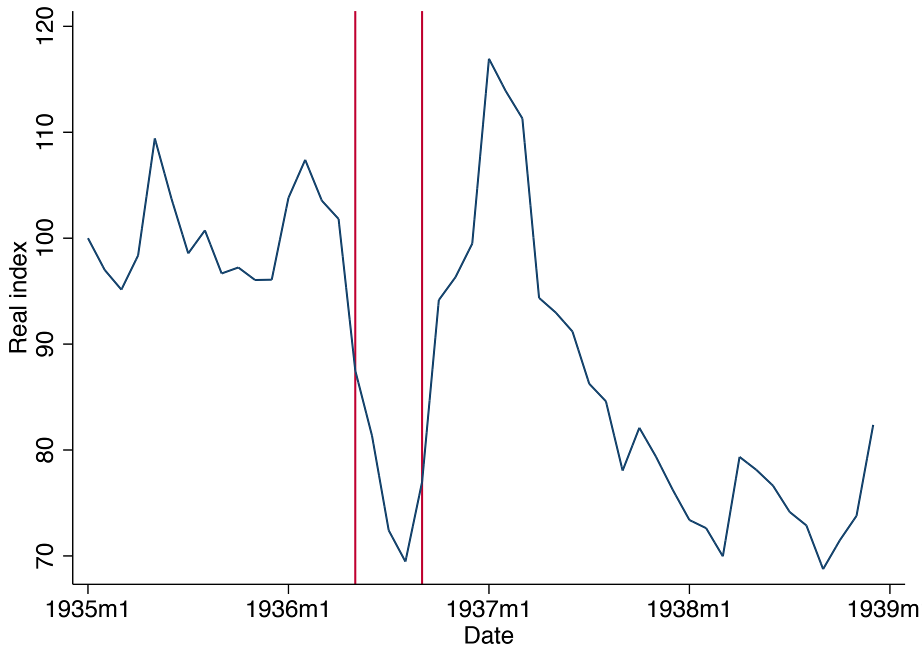


Figure 8 – The stock market 1935-1938. Note: The first vertical line indicates May 1936, when the Popular Front government took office. The second vertical line indicates September 1936, when France left the Gold Standard. The stock market data are for the INSEE general index deflated by consumer prices. Source: GFD, series FRINDEXW deflated by consumer prices from Sauvy (1984), v. 3, p. 356.

differently, showing the inflation rates for three price indexes. After years of deflation before 1935, all prices indexes show rapid inflation in 1936 and 1937. This increase in inflation was not accompanied by a significant change in nominal interest rates. Figure 9(b) displays three nominal interest rates: the 45-90 day commercial paper rate, the average yield on 36 bonds, and the yield on 3% government consols. A glance at the y-axes of figures 9(a) and 9(b) shows that movements in nominal interest rates were tiny compared to the post-1935 increase in inflation.

The coincidence of large increases in inflation and steady or falling nominal rates meant a large decline in *ex post* real interest rates. Deflated by wholesale prices, the *ex post* real commercial paper rate declined from +3.0% in December 1935 to -44.5% in December 1936. Of course, what is relevant for economic activity is the *ex ante* real rate, which depends on expected inflation. We do not directly observe expected inflation, but reports of contemporary observers suggest that price increases were expected. Already in May 1936, the authors of *L'observation économique* worried about the degree of pass-through from higher costs to higher prices.[19] In June 1936, they concluded that "consumers will inevitably face higher prices soon."[20] In the following months, they expressed similar expectations of price increases, but with growing confidence ("Simple economic logic suggests that the current drivers of price increases will continue to act in the same direction."[21] "Price increases have continued as one should have expected."[22]). These observations imply an understanding that supply curves slope up and not down, and that expected inflation moves together with actual inflation.[23] The narrative evidence combined with the magnitude of the increase in actual inflation after 1935 leads us to believe that expected inflation significantly rose, and thus that *ex ante* real interest rates fell.

An objection to this view, however, might cite France's experience during the Revolution, when in the mid 1790s high inflation coexisted with incorrect expectations of imminent monetary stabilization (White, 1995). While it is possible that a similar dynamic was present

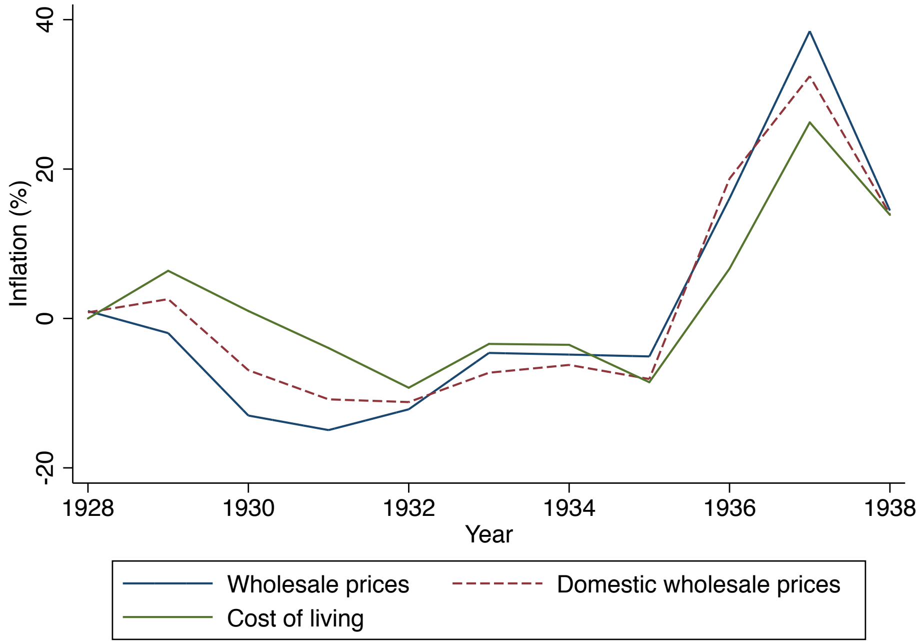
[19]"[The policy measures] will result in heavy and suddenly imposed higher charges [...] which will raise complex questions about price adjustments," *L'observation économique*, May 1936, p. 162.

[20]*L'observation économique*, June 1936, p. 203.

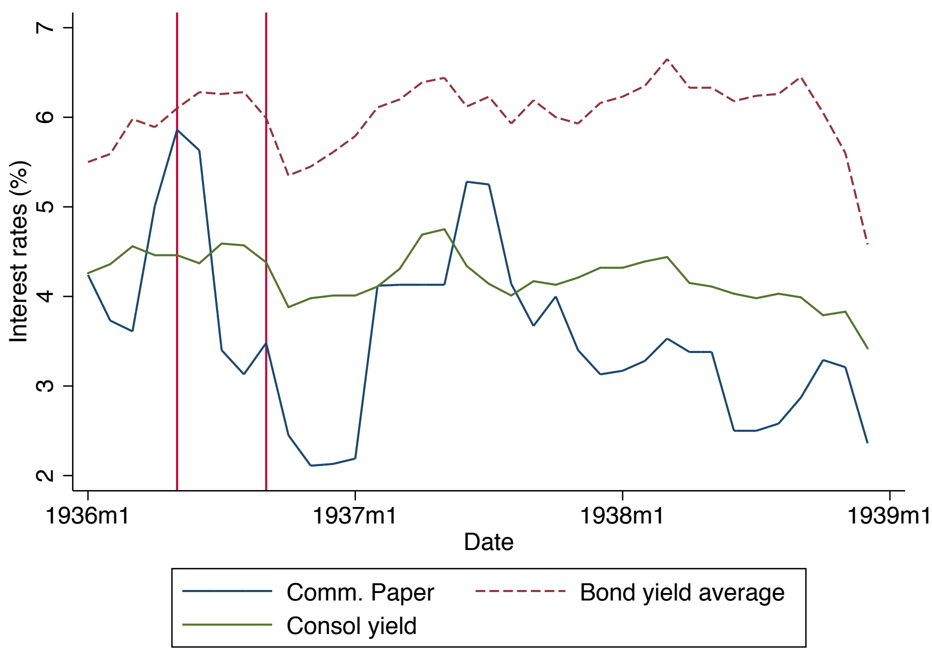
[21]*L'observation économique*, July-August 1936, p. 243.

[22]*L'observation économique*, October-November 1936, p. 354.

[23]The appendix provides further narrative evidence on expected inflation as well as the French versions of the above quotes.



(a) Inflation 1928-1938



(b) Nominal interest rates 1936-1938

Figure 9 – Note: In panel (b), the first vertical line indicates May 1936, when the Popular Front government took office. The second vertical line indicates September 1936, when France left the Gold Standard. The bond yield average includes 3 government, 2 mortgage, 12 railway, and 19 industrial bonds. Sources: Wholesale prices: Mitchell (1980), table I1; domestic wholesale prices: Sauvy (1984), v.3, table 2, p. 348; cost-of-living index: Mitchell (1980), table I2; commercial paper rate and average bond yield: League of Nations Economic Intelligence Service (1937, 1938, 1939); consol yield: Global Financial Data, series IGFRA10D.

under the Popular Front, we have seen no evidence suggesting this. Certainly there was no event calculated to lower inflation expectations equivalent to the February 1796 burning of the printing presses described by White (1995).[24] For the rest of this paper, therefore, we will proceed under the assumption that *ex ante* real interest rates followed the path of *ex post* real interest rates.

4 Cross-sectional evidence

The time series discussed in the previous section provide evidence that the application of the 40-hour week law cut short France's recovery after devaluation. To more precisely identify the effect of the 40-hours restriction, we use variation in the timing of the laws' application across industry sectors. We use data on when the law came into effect by sector as well as data on monthly industrial production by sector. Since to our knowledge we are the first to use these data for econometric analysis, we begin this section with a detailed description of the data.

4.1 Data

4.1.1 Application dates of the 40-hours restriction

Our first task was to learn when the 40-hour week restriction took effect in different industries. Sauvy (1984), v. 1, p. 283 reports these dates for some industries, but not for a sufficient number to permit a quantitative analysis.[25] Thus to obtain these dates, we turn to the original source, so-called "application decrees" as published in the *Journal officiel*. The National Archives inventory "*Les lois sur la durée du travail conservées aux Archives nationales*" (Archives nationales, 2003) collects and organizes these decrees by industry and by dates of publication in the *Journal officiel*. 47 industries are covered by these application decrees, with publication dates ranging from September 1936 to December 1938.

[24] In fact, the government's promise to stop issuing paper currency was a ruse. In late 1795, when it promised to stop printing money, it did not reveal that it still possessed a large stock of currency (*assignats*). And after actually burning the printing equipment, within one month the government issued a new type of paper money (*mandats territoriaux*). See White (1995) for a full description of these events.

[25] There are also mistakes in Sauvy's dates for the metal working industries.

To learn when the 40-hours law came into effect in each industry, we read the application decrees as published in the *Journal officiel*. Except in two cases (navigation, public transportation in the Paris region) in which the decree was published after the law had come into effect, there was generally a lag between the publication date and the date of entry into effect. This lag is not, however, the same for every industry, so it would be incorrect to use the date of publication coupled with a rule of thumb to determine the date of entry into effect. For most industries (40 of 47), the law came into effect on a specific day. But for others (railways, public and private transportation by road, wood, paper, metallurgy, metal works), the law took affect gradually. In these cases, we choose the first day of application as the start date in our empirical specification.

4.1.2 Industrial production data

We use industrial production data constructed by the *Institut de conjoncture* for the *Statistique générale de la France* under the leadership of Alfred Sauvy in 1937. The aggregate index is based on 43 monthly series. It is a weighted average of 10 industry specific indexes (e.g. mining, chemical products, textiles), which are themselves weighted averages of individual series (e.g. coal, metal, potash, oil, bauxite, and salt for the mining industry). We use three publications to recover as many base series as possible, to understand how the data were constructed, and to perform quality checks.

Statistique générale (1937) is the first article presenting this new index. The data published in this article cover only 1936 and 1937, but the article carefully details the construction of the index. Sauvy and Magnin (1939) is an extension of Statistique générale (1937), and provides data on production from 1928 to 1939. For industries (e.g. chemical products, viscose rayon, glassware) where monthly production data is not available for the 1928-1935 period, the monthly series is constructed such that the annual average of the monthly index equals the index obtained with yearly data, the month-to-month variation follows the cyclical pattern of other available monthly series for the industry, and the series does not display a break when monthly production becomes available. For the months covered in both Statistique générale (1937) and Sauvy and Magnin (1939), we check that these adjustments have no impact on the index for our period of interest.

Statistique générale (1941) contains individual series on cotton, viscose rayon, wool, silk, and car manufacturing that are not documented in Sauvy and Magnin (1939). Statistique générale (1941) also potentially incorporates extra information on underlying production series made available to the administration following the "*Décrets lois du 17 juin et du 12 novembre 1938 sur la communication de renseignements utiles à l'étude de la situation économique*." We check that the series documented in both Sauvy and Magnin (1939) and Statistique générale (1941) match. They do, though access to the two publications allows us to correct for a few misprinted numbers.

Sauvy (1984), vol. 1, p. 287 performs an informal version of our regressions below. He looks at data on industrial production in some industries, and notes—with no graphical or quantitative evidence—that production appears to fall after the 40-hour week law was applied. Unfortunately, Sauvy's views on the 40-hour law are not entirely credible. As an advisor to the French government, Sauvy successfully pushed to have the 40-hour week restriction relaxed in November 1938 (Sauvy, 1975). Thus Sauvy had a life-long interest in arguing that the 40-hour law had had negative effects on the French economy.

Although Sauvy (1984) argues that the industry-level data show a negative effect of the 40-hour week law, he suggests that this relationship cannot be made quantified since the industrial production index uses indirect data to determine production (e.g. consumption and trade data) and includes moving average adjustments for some industries. We use Statistique générale (1937) and Sauvy and Magnin (1939) to investigate the extent of these problems.

We find that the metal working industry suffers from both problems. For that reason, we conduct a robustness check without it. For other industries, the problems noted by Sauvy (1984) apply mostly to the 1928-1935 period, and thus have little effect on our analysis. For our period of interest, several industries (mining, metallurgy, paper) and the individual series associated with them do not suffer at all from these problems. Others (coke and agglomerates) can be corrected, since the unadjusted version of these series was also published. Others cannot be corrected (wool, silk), so we conduct robustness checks without them.

The *Institut de conjoncture* also applied a few ad-hoc adjustments to the raw series. These adjustments were mostly applied to one industry, the metal working industry, which as we already noted, we discard in a robustness check. We find one problematic ad-hoc adjustment for the leather industry, whose index is partly based on the level of employment and the average number of hours worked in this sector. The *Institut de conjoncture* applied an upward correction to this index when the 40-hours law became binding, because the index fell "too much." For that reason, we conduct a robustness check without it.

In sum, we believe the data are sufficiently good for an econometric analysis to be informative. And insofar as measurement error and smoothing (moving-average) adjustments make the data problematic, these problems affect our quantitative estimates more than they do our qualitative findings.

4.2 Graphical evidence Before turning to formal regressions, it is useful to summarize our evidence graphically. Figures 10 and 11 show the path of seasonally adjusted industrial production in the 17 different industries for which we have production data and for which we know the date of the 40-hour law's application. In each graph, the red vertical line indicates the month that the 40-hour week law took effect. Although there are some obvious exceptions, such as metal working and metal mining, in most cases there is a clear drop in production within a few months of the hours restriction.

Our interpretation is that the 40-hour law restricted production. Of course, we have not ruled out causality in the other direction: one might worry that the path of industrial production drove the timing of the law's application rather than vice-versa. But we believe this is unlikely given the factors driving the timing variation of the law's application.

Article 7 of the 40-hours law required the consultation and participation of social partners to translate the law into application decrees. As documented by Chatriot (2002), the process began when the Department of Labor announced the start of consultations in the *Journal officiel* for a given industry. One might worry that the government chose to first apply the 40 hours law to the industries in which unemployment was particularly high. But column 2 in table 1 shows that for the industries used in our analysis, little timing variation was generated by this first phase of the process. For 13 industries, the consultation was announced in June 1936. For the 4 other industries, it was announced in August 1936.[26]

[26] For some industries, a second announcement date is listed when the announcement occurred in different months in sub-sectors.

Table 1 – Timing variation in the application of 40 hours law

Industry	Announcement	Decree publication	Entry into effect
Coal mining	June 36	Sep / Oct 36	November 36
Potash mining	June 36	October 36	November 36
Metal working	June / August 36	October 36	November 36
Metallurgy	June / August 36	October 36	November 36
Metal mining	June 36	November 36	December 36
Construction	June / August 36	November 36	December 36
Cotton	June / September 36	November 36	January 37
Wool	June / September 36	November 36	January 37
Linen	June / September 36	November 36	January 37
Hemp	June / September 36	November 36	January 37
Silk	June / September 36	November 36	January 37
Oil production	June 36	March 37	March 37
Chemical products	August 36	March 37	March 37
Leather	August 36	March 37	March 37
Paper	August 36	April 37	April 37
Utilities	August 36	April 37	April 37
Salt	June 36	August 37	August 37

Notes: "Announcement" is the publication date in the *Journal officiel* of a notice to the social partners of the industry, which opens the consultation process. "Decree publication" is the publication date in the *Journal officiel* of the application decree. "Entry into effect" is the date of entry into effect of the 40 hours restriction in the industry as specified in the application decree.

In the months following the announcement notice, the Department of Labor organized and hosted negotiations between representatives of employers and employees in each industry. The length of these negotiations varied across industries, generating the observed timing variation in the implementation of the law. For our identification strategy, one might worry that the length of this negotiation process was correlated with industry performance. But the description of these negotiations provided in Chatriot, Fridenson, and Pezet (2003) suggests not.

First, Chatriot et al. (2003) find that negotiations were easier in industries such as mining with a long history of dialogue between representatives of employers and employees than in industries such as metallurgy where this type of negotiation was new. The last column of table 1 illustrates, however, that this wasn't enough to generate a difference in the timing of the application of the law in mining and metallurgy. If in other industries the quality of dialogue between representatives of employers and employees both directly affected output and determined when the 40-hour law came into effect, our industry fixed-effects specification will easily deal with that problem to the extent that this "quality" of dialogue is constant over time.

Second, the authors provide examples of idiosyncratic technical difficulties in implementing the law. These affected the duration of negotiations, since they often required the Department of Labor to conduct surveys. Chatriot et al. (2003) mention industry-specific issues such as a debate about mandatory break requirements during the day in mining. But a number of general issues, such as the definition of "effective working time," were also easier to settle in certain industries than in others. Fortunately for our purposes, these technical hurdles generate close to ideal exogenous timing variation in the law's implementation.

Finally, our causal interpretation is supported by contemporary observers, who directly linked the decline in industrial production to the 40-hour law's application. In the case of mining, *L'activité économique* wrote, for example, that "the application of the 40 hours workweek in this industry [...] is the obvious cause of this decline in activity."[27]

The graphs in figures 10 and 11 summarize all of our empirical evidence. But from them it is difficult to discern either the statistical or economic significance of the 40-hour week law. For this we turn to panel regressions.

4.3 Regression evidence We estimate specifications of the following form:

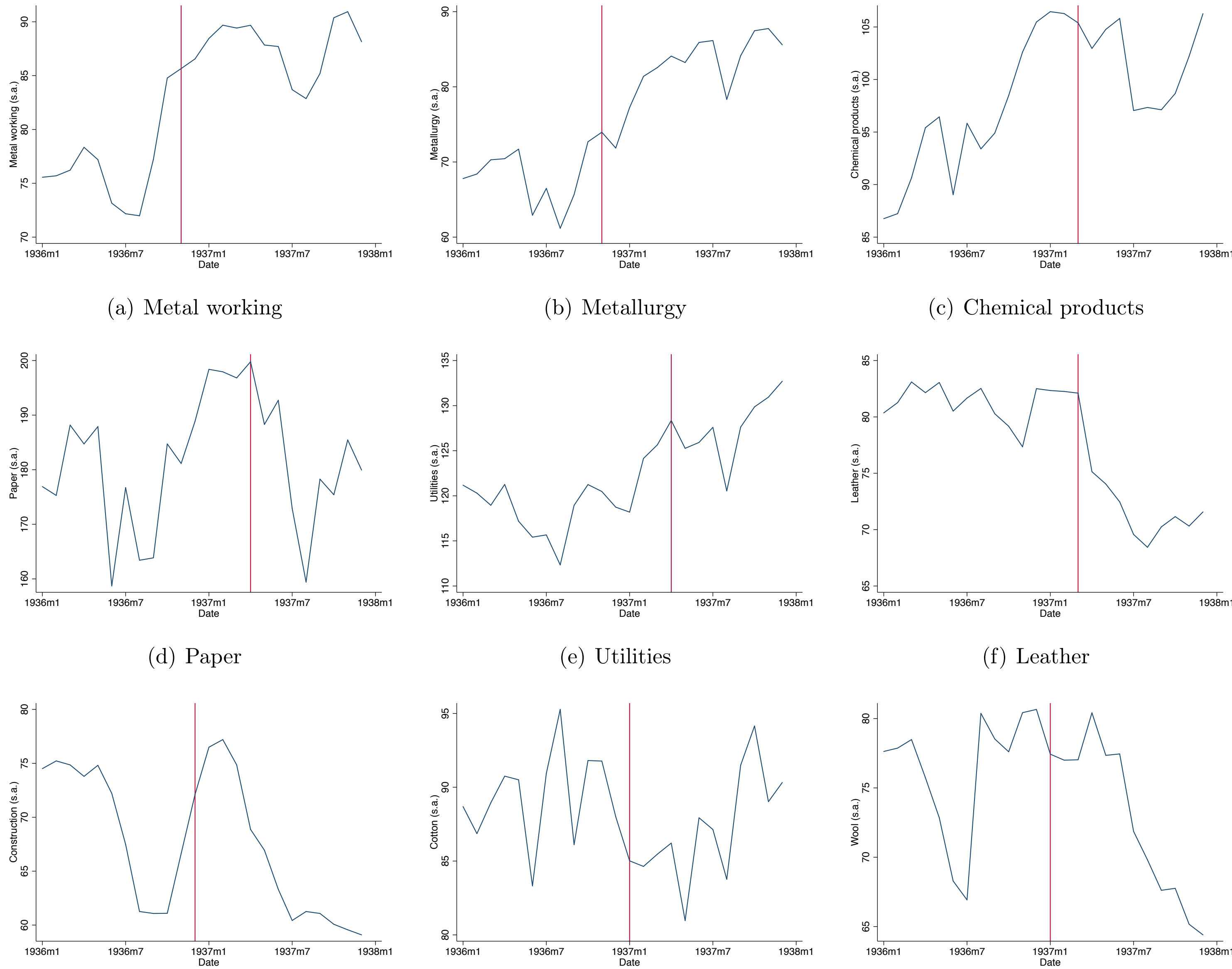
$$\Delta\log IP_{i,t} = \beta_1 \Delta 40\text{-hr}_{i,t} + \beta_2 X_{i,t} + \varepsilon_{i,t}, \tag{9}$$

where $IP_{i,t}$ is industrial production in industry i in month t, 40-hr$_{i,t}$ is a dummy variable equal to 1 when the 40-hour week restriction takes effect in industry i, and $X_{i,t}$ are control variables. 40-hr$_{i,t}$ switches from 0 to 1 at different times in different industries because of the timing variation discussed above. It switches back to 0 in November 1938 in all industries, since at that time the 40-hour restriction was relaxed.

For control variables, we consider several options. All columns in table 2 include industry fixed effects. Columns 1 through 4 also include month fixed effects. Columns 3, 4, 7, and 8 add 11 lags of IP growth to control for recent economic performance. This ensures that our estimates are not driven by selected application of the 40-hour restriction to weaker

[27] *L'activité économique*, N. 8, 01/31/1937, p. 273-274, *"L'application de la semaine de 40 heures dans cette industrie à partir du 1er novembre est la cause évidence de ce recul d'activité."*

industries. By using lags of the dependent variable, we are interpreting the effect of the 40-hour law as the difference between the actual path of output in the industry and the path that would have been expected given lagged output. In odd columns we only estimate the contemporaneous effect of the 40-hour restriction. In even columns we add 11 lags of the change in the 40-hour law to determine the persistence of these effects. We use 11 lags because some textile industry data is only available starting in January 1936.

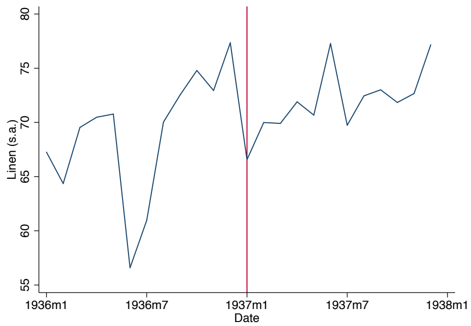


(a) Metal working (b) Metallurgy (c) Chemical products

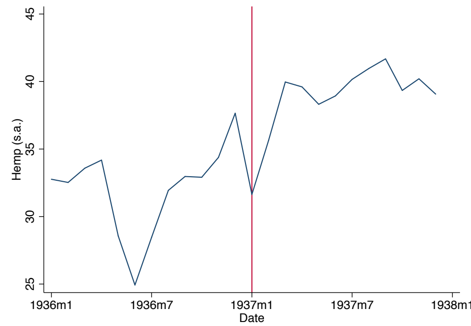
(d) Paper (e) Utilities (f) Leather

(g) Construction (h) Cotton (i) Wool

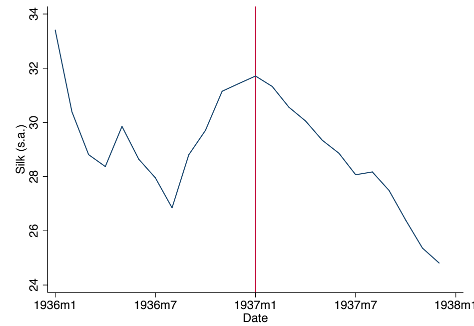
Figure 10 – Note: These graphs show seasonally adjusted industrial production. The red vertical line indicates the date the 40-hour week law took effect. Sources: see text.



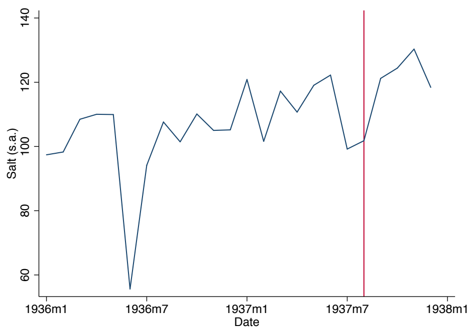
(a) Linen



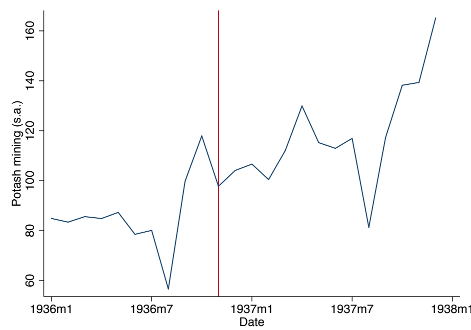
(b) Hemp



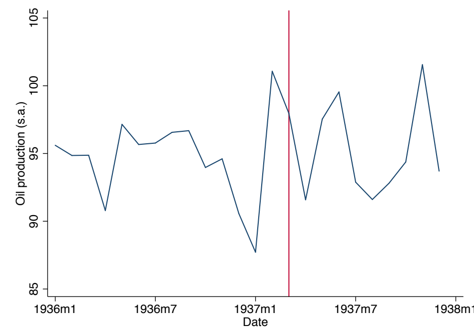
(c) Silk



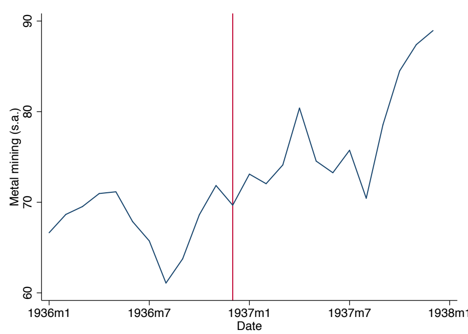
(d) Salt



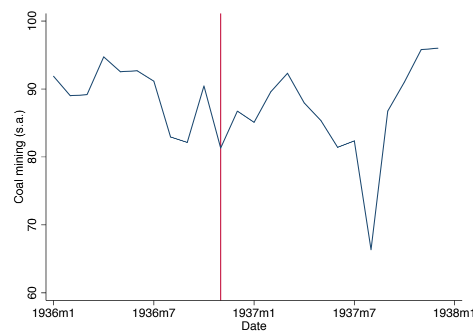
(e) Potash mining



(f) Oil production



(g) Metal mining



(h) Coal mining

Figure 11 – Note: These graphs show seasonally adjusted industrial production. The red vertical line indicates the date the 40-hour week law took effect. Sources: see text.

Table 2 – Effects of 40-hour restriction on growth of industrial production

Panel A: All industries

Specification	Ind-FE + Time-FE		Ind-FE + Time-FE + Lags		Ind-FE		Ind-FE + Lags	
	Baseline	Cumulative	Baseline	Cumulative	Baseline	Cumulative	Baseline	Cumulative
Δ 40-hour restriction	−0.045∗	−0.045∗	−0.034∗	−0.037∗	−0.039∗∗	−0.043∗∗	−0.036∗∗	−0.042∗∗
	(0.021)	(0.020)	(0.016)	(0.018)	(0.012)	(0.012)	(0.010)	(0.010)
Δ Devaluation					0.061	0.062	0.049	0.051
					(0.046)	(0.046)	(0.038)	(0.038)
Time-FE	Yes	Yes	Yes	Yes	No	No	No	No
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cumulative Effect	-	-.101	-	-.075	-	-.091	-	-.077
Decree Lags	0	11	0	11	0	11	0	11
Dep. Var. Lags	0	0	11	11	0	0	11	11
N	1828	1641	1641	1641	1641	1641	1641	1641

Panel B: Excluding industries without underlying production data after 1935

Specification	Ind-FE + Time-FE		Ind-FE + Time-FE + Lags		Ind-FE		Ind-FE + Lags	
	Baseline	Cumulative	Baseline	Cumulative	Baseline	Cumulative	Baseline	Cumulative
Δ 40-hour restriction	−0.062∗	−0.061∗	−0.050∗	−0.055∗∗	−0.055∗∗	−0.059∗∗	−0.049∗∗	−0.055∗∗
	(0.027)	(0.025)	(0.019)	(0.020)	(0.015)	(0.015)	(0.012)	(0.012)
Δ Devaluation					0.076	0.077	0.062	0.064
					(0.060)	(0.060)	(0.047)	(0.047)
Time-FE	Yes	Yes	Yes	Yes	No	No	No	No
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cumulative Effect	-	-.073	-	-.07	-	-.068	-	-.039
Decree Lags	0	11	0	11	0	11	0	11
Dep. Var. Lags	0	0	11	11	0	0	11	11
N	1342	1210	1210	1210	1210	1210	1210	1210

Notes: The data are an unbalanced panel of 17 industries beginning between January 1928 and January 1936; the data end between March and May 1939. Panel B excludes construction, textiles, leather, and metal working."40-hour restriction" is an industry-level dummy variable set to one when the 40-hour restriction is in effect. The "Devaluation" variable is set to one after France leaves the Gold Standard in September 1936. Newey-West standard errors with 12 lags in parenthesis. $+p<0.10$, $*\ p<0.05$, $**p<0.01$.

Sources: See text.

We show results both for the complete set of 17 industries (panel A) and excluding those industries for which Sauvy states that the data may be problematic (panel B). The results are robust. Neither the exact combination of control variables nor excluding those industries for which industrial production data may be more problematic (panel B) has much effect on the results. In all cases, the coefficient on the change in the 40-hour law is between -0.034 and -0.062, suggesting that on impact the hours restriction reduced output by between 3.5 and 6 percent. The coefficient is always statistically significant at the 5% level.[28] In the specifications with lags of the change in the 40-hour law, the results are also informative about the cumulative effect of the law. These specifications suggest cumulative effects roughly double the initial effect, on the order of 5 to 10 percent.

In the specifications without time fixed effects, we are able to explore the effects of a dummy for devaluation equal to 1 in September 1936 and after. The dummy is not statistically significant but the magnitude is consistent with a substantial positive effect of devaluation on production. The regressions confirm the story in figures 10 and 11 and in the prior informal literature. Because firms were constrained by hours restrictions, France failed to sustain a recovery after devaluation. This empirical evidence, however, comes with an important caveat. Despite negative effects on individual industries, the 40-hour week restriction could have been expansionary for the economy as a whole by raising inflation expectations and therefore lowering real interest rates.

By definition, this general equilibrium effect cannot be entirely ruled out with sector-level evidence. But the similarity of columns 1-4 and 5-8 casts doubt on its importance. Columns 1-4 include time fixed effects, and thus use only cross-sectional variation to identify the 40-hour restrictions' effect. By contrast, columns 5-8 also take advantage of time series variation. If there were stimulative general equilibrium effects of the 40-hour week restriction, one would expect the coefficients in columns 5-8 to be positive or at least very different from those in columns 1-4. Instead, we cannot rule out that the coefficients are the same. If anything, the small standard errors in columns 5-8 suggest that rather than confounding

[28] We use Newey-West standard errors to account for autocorrelation in the residuals. But we do not account for any correlation in the residuals across industries. This may lead to some downward bias in our standard errors. Unfortunately, the small number of industries in our sample makes clustering infeasible, so a precise adjustment for this problem is not possible.

the negative cross-sectional effects with positive general equilibrium effects, the time-series evidence adds additional precision to our (negative) estimates.

4.4 General Equilibrium The evidence above does not alone completely rule out positive general equilibrium effects from the 40-hour week law. To determine whether our results are consistent with plausible positive general equilibrium effects, we calibrate a multi-sector new Keynesian model to match the data. The model is a multi-sector generalization of the baseline model in section 2. We derive the equations in appendix C and directly study the log-linearized equations here:

$$y_t = E_t y_{t+1} - \sigma^{-1}(i_t - \pi_{t+1} - r_t) \tag{10}$$

$$\pi_t = \frac{1}{N}\sum_{i=1}^{N} \pi_{it} \tag{11}$$

$$\pi_{it} = \beta E_t \pi_{i,t+1} + \kappa[\xi_t + \sigma c_t + \eta n_t - a_t - \psi_{it} - (p_{it} - p_t)] \tag{12}$$

$$p_{it} - p_t = p_{i,t-1} - p_{t-1} + \pi_{it} - \pi_t \tag{13}$$

$$y_{it} - y_t = -\theta(p_{it} - p_t) \tag{14}$$

$$i_t = \max\{r_t + \phi_\pi \pi_t, \bar{i}\} \tag{15}$$

where $p_{it} - p_t$ is the relative price of industry i's good, π_{it} is inflation in industry i, y_{it} is output in industry i and N is the number of sectors. The parameter θ is the elasticity of substitution across industry goods. It captures the sensitivity of relative demand for industry i's good to its relative price.

Compared to the one-sector baseline model, the multi-sector new Keynesian model has three more equations. One that aggregates industry-level inflation into aggregate inflation (equation (11)), one that relates relative prices to past relative prices and differential inflation rates (equation (13)), and one that relates relative demand (and thus output) to relative prices (equation (14)).

We conduct the following experiment. First, we follow Werning (2011) and let the lower bound on the nominal interest rate bind for $T = 16$ quarters through a negative natural rate of interest,

$$r_t = \bar{r} < \bar{i}, \;\; 1 \le t \le T = 16$$
$$r_t = \bar{r} \ge \bar{i}, \;\; t > T = 16$$

Werning (2011) shows that for $t \le T$ this shock makes the interest rate bound bind, $i_t = \bar{i}$, depresses output, $y_t < 0$, and creates deflation, $\pi_t < 0$. After time T, the economy exits from the bound and the economy returns to steady-state, $y_t = \pi_t = 0$. The key for our purposes is that the nominal interest rate then becomes unresponsive to inflation caused by the hours restriction. That way we can match the large decline in the real interest rate in France from 1936 to 1938.

To capture the staggered nature of the implementation of the hours restriction, they bind at different times for two industries in the model. Specifically, in industry 1 the hours restrictions binds immediately for 8 quarters. In industry 2, the hours restriction starts to bind after 4 quarters. It then binds for a year. Thus, consistent with events in France, the hours restriction is abolished in both industries simultaneously. The table below summarizes this pattern.

Industry 1	Industry 2
$\psi_{1t} < 0, \;\; 1 \le t \le 8$	$\psi_{2t} < 0, \;\; 4 \le t \le 8$
$\psi_{1t} = 0, \;\; t > 8$	$\psi_{2t} = 0, \;\; t > 8$

In our calibration we set $\psi_{it} = -0.2$ to capture the 20% reduction in hours.

To determine the impact of the hours restriction, we conduct two experiments. First we calculate output when only the shock to the natural rate of interest is present. In that experiment there are no hours restriction, $\psi_{it} = 0$. This experiment serves as a benchmark for our second experiment, which features both the shock to the natural rate of interest and the temporary hours restriction as described above. We then determine the effect of the hours restrictions by subtracting model output from the second experiment (which has hours restrictions) from model output for the first experiment (which did not).

We require that the model predictions for the hours restriction matches our partial equilibrium evidence in table 2. Thus, when the hours restriction is switched on for an industry, its relative change in output must be equal to -4.5% (our baseline estimate). In the model hours restrictions are switched on at $t = 1$ for industry 1 and at $t = 4$ for industry 2. The average change in *relative* output for those two events is,

$$\underbrace{\frac{\Delta(y_{11} - y_1) + \Delta(y_{24} - y_4)}{2}}_{\text{Average relative change in output on implementation}} = -4.5\%,$$

where the first part of the numerator is the relative change in output in industry 1 at time $t = 1$, and the second part is the relative change in output in industry 2 at time $t = 4$.

From equation (14), it follows that the changes in relative demand are determined by changes in relative prices,

$$\frac{\Delta(y_{11} - y_1) + \Delta(y_{24} - y_4)}{2} = -\theta \frac{\Delta(p_{11} - p_1) + \Delta(p_{24} - p_4)}{2} = -4.5\%$$

This is the key equation for our calibration. First we will pick a value for the elasticity of substitution θ. Then we infer the degree of price-stickiness we need, such that changes in relative prices equal $\frac{4.5\%}{\theta}$, which ensures that we match the relative changes in output. As shown below, we need a lot of price flexibility to move relative prices enough for reasonable values of θ.

We pick the intertemporal elasticity of substitution as $\sigma^{-1} = 0.5$, the lowest value typically employed in new Keynesian models. We make the Frisch labor supply elasticity infinite. A higher intertemporal elasticity or a lower labor supply elasticity would only amplify the large general equilibrium effects below. We set the Taylor rule inflation response to $\phi_\pi = 1.5$, but, because the central bank will not react to the supply shock in our experiments, this parameter plays no role in our quantitative results. We set the steady-state annual nominal interest rate to $4(\beta^{-1} - 1) = 4\%$ and let the shock to the natural rate of interest be $\bar{r} = -4.1\%$. For simplicity we let the interest rate bound $\bar{i}$ be zero. The model is calibrated to a quarterly frequency.

In table 3 we tabulate for given elasticity of substitution θ the degree of price flexibility κ necessary to match the 4.5% relative decline in output growth on impact for the 40-hour law. The higher the elasticity of substitution, the smaller the relative price change that generates this decline, and therefore the lower is the degree of price flexibility κ. The third column shows that the multi-sector model can reproduce our partial-equilibrium estimates given these parameters.

In the fourth column of the table we calculate the average change in output for an industry where the 40-hour law is implemented. This corresponds to our time-series regressions in columns 5-8 of table 2 and is equal to,

$$\text{Output growth on impact} = \frac{\Delta y_{11} + \Delta y_{24}}{2}$$

Unlike in column 3 of table 3 we no longer difference using average output at time t. Thus, this measure captures both general equilibrium and partial equilibrium effects. For instance y_{11} will be depressed by the increase in relative prices in industry 1, but raised by any positive general equilibrium effects of the hours restrictions at time $t = 1$. In the model, the latter effect dominates, which explains the positive coefficients in column 4 of table 3. By contrast, our estimates in columns 5-8 of table 2 are consistently negative. Thus, while we can calibrate the model to match our partial equilibrium estimates, it then is quantitatively and qualitatively inconsistent with our time series evidence.

This inconsistency arises because the positive general equilibrium effects in the model are very large. The general equilibrium effects are large because we need very flexible prices to match the large relative decline in output of -4.5%. And when prices are more flexible, then the increase in marginal costs from the 40-hour law causes larger increases in expected inflation, which significantly raises output today through the Euler equation. In column 5 we document the economy-wide increase in output from the 40-hour law restriction in the model. This ranges from 26.6% with an elasticity of substitution $\theta = 5$ to 33567.53% with $\theta = 0.75$. In our view, the most plausible values for θ are at or below 1. This is because we consider expenditure elasticities of substitution across broad industries such as metal working, metal mining, textiles, salt, construction, and utilities. But even for relatively substitutable goods, $\theta = 3$, the general equilibrium effects appear implausibly large given the poor aggregate performance of the French economy.

Thus neither the model-based output growth on impact nor the economy-wide output responses are qualitatively and quantitatively consistent with the French data. We therefore view our results as evidence against the new Keynesian prediction that the 40-hour law helped the French economy.

Table 3 – General equilibrium effects in multi-sector new Keynesian model

Parameters		Model results		
Elasticity of substitution	Implied price flexibility κ	Relative output growth on impact (%)	Output growth on impact (%)	Economy-wide output increase (%)
$\theta = 5$	0.07	-4.51	6.41	26.59
$\theta = 3$	0.14	-4.50	22.44	64.92
$\theta = 1.5$	0.38	-4.51	174.43	416.57
$\theta = 1$	0.79	-4.49	1275.99	2859.23
$\theta = 0.75$	1.62	-4.49	15709.18	33567.53

Notes: Implied price flexibility is the parameter κ that given θ matches the -4.5% relative output growth on impact.

5 A simple model of the French economy

As an alternative to the new Keynesian model, we consider a simple disequilibrium model based on Kocherlakota (2012a) and Kocherlakota (2012b). The analysis is in the spirit of earlier disequilibrium models such as Leijonhufvud (1968) and Barro and Grossman (1971). Relative to more modern descendants of these disequilibrium models, such as Michaillat and Saez (2013), our model is simple: it is designed not to match a number of business cycle facts, but rather to cleanly illustrate how a simple modifications of the core new Keynesian model can bring it closer to the data. We leave out important aspects of the French situation, such as capital flight and fiscal policy. This is not because we think such matters are unimportant. Rather, we see the model below as a new core building block to which such considerations could be added for a more complete treatment of the French experience.

There are N households that live for two periods. Each maximizes utility subject to its budget constraints.

$$
\begin{aligned}
&\max_{c_1, c_2, b_1} \quad u(\theta_{i1} c_{i1}) + \beta u(c_{i2}) \\
&s.t. \;\; \theta_{i1} c_{i1} = \omega_{i1} + \pi_{i1} - b_i - \tau_{i1} \\
&s.t. \;\; c_{i2} = \omega_{i2} + \pi_{i2} + b_i(1+r) - \tau_{i2} \\
&s.t. \;\; c_{i1}, c_{i2} \geq 0.
\end{aligned}
$$

ω_t is the real wage, π_t is profit by firms, b are purchases of government bonds that pay off $(1+r)b$ in period 2, and τ_{it} are taxes levied by the government. We assume that the government can freely set the real interest rate $1+r$. This presumes some form of price stickiness, but with this assumption we do not have to model it explicitly.

In the first period we allow for the possibility that demand may be rationed. The probability $0 \leq \theta_{i1} \leq 1$ captures the fraction of demand that will be met. We model it through sequential order processing. Within the period $t = 1$, purchasing an amount ξ of consumption requires 1 unit of time. Orders are fulfilled sequentially, so that after 1 unit of time has elapsed, ξ units of consumption are bought. Consumers can then decide whether to spend another unit of time and acquire an additional ξ units of consumption. So long as stores still carry goods, demand will be met and the process will continue until all the necessary time ($\frac{c_{i1}}{\xi}$) is spent to acquire c_{i1}. However, when total demand is more than total output, $\sum_{i=1}^{N} c_{i1} > y_1$, stores will be depleted after each consumer spends $\frac{1}{\xi}\frac{y_1}{N}$ units of shopping time, leaving each consumer with only $\frac{y_1}{N}$ units of consumption (their previous orders). At that point, demand is rationed and any further decisions to spend time shopping will not yield additional goods. This mechanism yields the following specification for θ_{i1}:

$$
\theta_{i1} = \begin{cases} 1 & \text{if } \sum_{i=1}^{N} c_{i1} \leq y_1 \\ \max\{\frac{y_1}{N}\frac{1}{c_{i1}}, 0\} & \text{if } \sum_{i=1}^{N} c_{i1} > y_1 \end{cases} \tag{16}
$$

Thus θ_{i1} equals 1 if total consumption demand is unconstrained by aggregate output y_1. This will typically be the case when the economy is depressed. However, large supply restrictions that depress output can cause this probability to fall below 1. In that case, agent i can consume at most average output, $\theta_{i1} c_{i1} = \frac{y_1}{N}$. This rationing system is somewhat stylized, but we have kept it simple to focus on the key implication for our model: that consumers cannot get more consumption if firms are not willing to produce more output.

Each household also inelastically supplies n^{FE} units of labor, where the superscript FE stands for full employment. Some labor may be unemployed by firms, in which case there is unemployment. Importantly, as in Kocherlakota (2012a), workers cannot offer to work for less than the prevailing wage. In that sense, labor markets are incomplete, because we prohibit workers from entering such contracts.[29]

The economy is also populated by N firms that produce output using labor hired at the common real wage ω_t.[30] The production function $f(n_j)$ has decreasing returns, $f'(n_j) > 0, f''(n_j) < 0$. Firms aim to maximize profits,

$$\max_{n_{jt}} \quad \pi_{jt} = f(n_{jt}) - \omega_t n_{jt}.$$

So long as firms do not ration output, n_{jt} is determined by demand through the production function $\sum_{i=1}^{N} c_{i1} = y_1 = \sum_{j=1}^{N} f(n_{jt})$. This level of employment then determines the real wage ω_{jt} through the firms' first-order-condition. Again, we think of firms meeting demand sequentially as consumers' orders come in. As we shall see, however, there are conditions under which firms will not be willing to meet additional demand.

The government issues a quantity B of bonds in period 1 and rebates the proceeds to the household. In period 2 it repays the face value of the bonds with interest. Thus, its tax rates are set as follows:

$$\tau_1 = -B$$
$$\tau_2 = (1+r)B.$$

Even though these bonds do not (in equilibrium) transfer resources across periods, the price at which they are traded (the real interest rate) does affect real economic activity. For simplicity we do not model government spending, although this could also be accommodated in our framework.

Market clearing conditions are standard, except that only a fraction $\frac{1}{N}\sum_{i=1}^{N}\theta_{ij}$ of orders

[29]Formally, this is ruled out because households do not optimize with respect to their labor supply.

[30]It is not necessary that the number of firms equals the number of households; we make this assumption to simplify the exposition.

gets filled:

$$\sum_{j=1}^{N} f(n_{j1}) = \sum_{j=1}^{N} y_{j1} = \sum_{i=1}^{N} \theta_{i1} c_{i1};$$
$$\sum_{j=1}^{N} f(n_{j2}) = \sum_{j=1}^{N} y_{j2} = \sum_{i=1}^{N} c_{i2};$$
$$B = \sum_{i=1}^{N} b_i;$$
$$n_t \leq n^{FE}.$$

The first two equations impose that output equals realized consumption each period, the third that bond supply equals bond demand, and the fourth that the economy cannot operate at more than full employment.

We first consider the firm's optimization problem. It implies that the marginal product of labor equals the real wage.

$$f'(n_{jt}) = \omega_t, \quad \forall j = 1, ..., K.$$

Thus, for a given level of employment we can pin down the real wage. Following Kocherlakota (2012a), we assume that in period 1 wages have to be at least as high as $\bar{\omega}_1$,

$$\omega_1 \geq \bar{\omega}_1. \tag{17}$$

This could reflect either social norms in wage setting, or a combination of sticky prices and wages that puts a lower bound on real wages. We denote by $\bar{n}_1$ the level of employment consistent with this real wage, and we assume that it is less than n^{FE},

$$\bar{n}_1 \ : \ f'(\bar{n}_1) = \bar{\omega}_1 > f'(n^{FE}).$$

Thus, period 1 per-capita employment can be at most $\bar{n}_1$. Any higher level of employment would not be profitable for firms given that they have to pay at least $\bar{\omega}_1$. Since $\bar{n}_1 < n^{FE}$, there will be unemployment in period 1. The economy also cannot produce any more per-capita output than $f(\bar{n}_1)$ in period 1. As we shall see, by rationing consumer demand this puts a limit on how much monetary policy can stimulate output.

By contrast, we think of period 2 as the time when social norms and / or sticky prices and wages have adjusted such that the labor market clears. We therefore assume that labor markets in period 2 operate frictionlessly at full employment, so $n_2 = n^{FE}$, and per-capita output equals $f(n^{FE})$.

Consider next the household's problem. The household can frictionlessly borrow and lend, which typically gives rise to the standard Euler equation. But in our set-up, the consumer also needs to take into account that additional borrowing will not fully translate into higher consumption when $\theta_{i1} < 1$. Hence the Euler equation is

$$\begin{aligned} u'(c_{i1}) &= \beta(1+r)u'(c_{i2}) && \text{if } \ c_{i1} \leq \frac{y_1}{N} \\ \theta_{i1}c_{i1} &= \frac{y_1}{N} && \text{if } \ u'(\frac{y_1}{N}) > \beta(1+r)u'(c_{i2}). \end{aligned}$$

Intuitively, when demand is unconstrained ($\theta_{i1} = 1$), consumers must be indifferent between consuming and saving a marginal unit of income. But when ideal consumption demand exceeds available output (the second line), the consumer will not be able to purchase any more than $\frac{y_1}{N}$. After expending the necessary shopping time to purchase $\frac{y_1}{N}$, store shelves will be empty, and further demand will be unmet. Thus, the consumer is at a corner solution where $\theta_{i1}c_{i1} = \frac{y_1}{N}$ is the best available choice.

We can find a symmetric equilibrium by imposing market-clearing conditions and symmetry among the ex-ante identical consumers and firms.

$$u'(f(n_1)) = \beta(1+r)u'(f(n^{FE})) \qquad \text{if } \ f(n_1) < f(\bar{n}_1) \tag{18}$$

$$u'(f(n_1)) > \beta(1+r)u'(f(n^{FE})) \qquad \text{if } \ f(n_1) = f(\bar{n}_1). \tag{19}$$

Equation (18) is the Euler equation of the canonical new Keynesian model. In that model, reductions in the real interest rate $(1 + r)$ stimulate consumption and thus output and employment in period 1. To see this, note that a lower real interest rate decreases the right-hand-side of the equation. Since n^{FE} is fixed, the only variable that can adjust to restore the equality is n_1. n_1 must rise to lower marginal utility in period 1. Low real interest rates induce consumers to save less and spend more today, and firms are willing to meet this demand by hiring more labor and producing more output. As discussed above, it is this equation (18) that prevents the new Keynesian model from matching the French experience.

In our model, however, the Euler equation only applies so long as there are no constraints on the labor market. Once those bind, output is fixed at $f(n_1) = f(\bar{n}_1)$, and real interest rate declines have no stimulative effects. Because period 1 consumption is rationed by available output, lower interest rates will not lead consumers to borrow more.

This is illustrated in figure 12. When the economy is at point A, the standard new Keynesian Euler equation applies, so reductions in the interest rate will stimulate consumption and output. At point B, the economy reaches the threshold real interest rate at which further reductions (e.g., to point C) fail to stimulate output. The threshold interest rate at which the economy switches is defined by

$$1 + \bar{r} \ : \ u'(f(\bar{n}_1)) = \beta(1 + \bar{r})u'(f(n^{FE})). \tag{20}$$

Monetary policy becomes ineffective because demand is constrained by available production, which in turn is bound by the real wage constraint in the labor market. It is not profitable for firms to produce additional output; consumers, recognizing that any additional demand will not be met, do not adjust their consumption profile. Thus regardless of how far real interest rates fall, in period 1 the economy is stuck at a level of output below full employment.

One can think of the Popular Front as raising the real wage from $\bar{\omega}_1$ to $\bar{\omega}_1'$ and reducing the real interest rate from $1+r$ to $1+r'$. Suppose the economy initially starts at $n_1 < \bar{n}_1$, such as point A in figure 13. The higher level of $\bar{\omega}_1$ implies a lower maximum level of employment is possible in period 1, $\bar{n}_1' < \bar{n}_1$. This is illustrated by the leftward-shift of the vertical line. It is then immediate that employment will fall if $\bar{n}_1' < n_1$ even if the real interest rate falls to a point such as B. By contrast, the model suggests that devaluation would have raised French output by lowering interest rates, had supply restrictions not been enacted.

Note that the model's predictions are consistent with the decline in French unemployment from 1936-1937 (figure 7(b)), because n should be interpreted as total hours. Thus, a prediction that n falls is consistent with a rise in employment if hours per worker are forced to fall. This fits the facts in France, where employment rose roughly 6 percent between May 1936 and May 1937 at the same time as total hours fell roughly 7%.[31]

[31] This refers to data for industrial / commercial establishments with more than 100 employees (Sauvy

So far, we have abstracted from capital. This allowed us to keep the model simple and to focus on the key inconsistency between the new Keynesian model and the data. But adding capital to the model is unlikely to affect our results. Suppose the production function were $f(n, k)$ and the aggregate capital stock in period one K_1. Then in a symmetric equilibrium, the real wage constraint becomes

$$f'(n_1, \frac{K_1}{N}) \geq \bar{\omega}_1,$$

and we define the maximum level of employment as $\bar{n}_1$ such that $f'(\bar{n}_1, \frac{K_1}{N}) = \bar{\omega}_1$. Employment and output remains bounded because aggregate capital is fixed in the short-run. Note also that reductions in interest rates are unlikely to raise investment because the necessary output to meet the investment demand is not produced. Technically, the Euler equation for investment will be analogous to the Euler equation for consumption (19) when supply is constrained. Thus investment will also be unresponsive to interest rate reductions.

In short, the model suggests that incorporating labor market constraints may be important for reconciling the French experience with the new Keynesian model.

(1984), vol. 3, pp. 299-300).

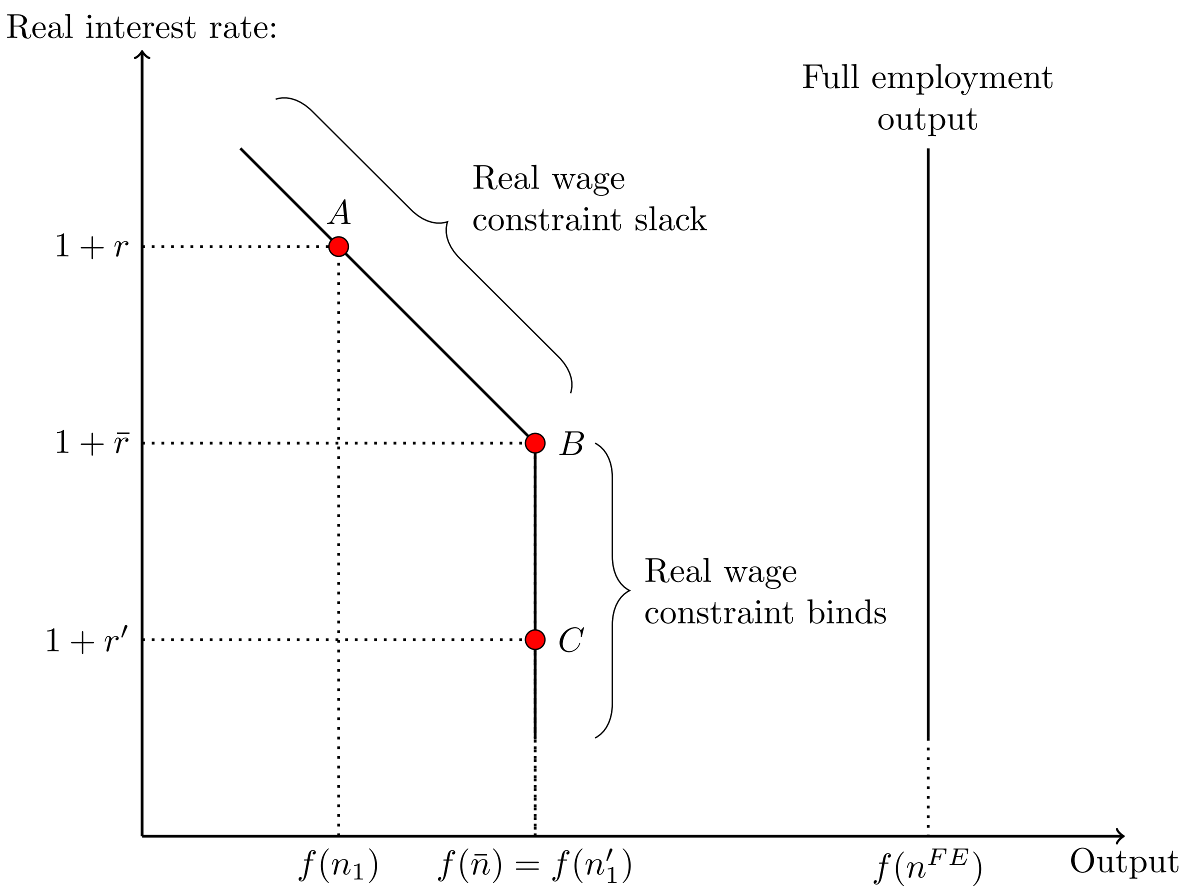


Figure 12 – The baseline two period model in real-interest-rate-output-space. The right vertical line denotes the full employment level of output, $f(n^{NE})$, which is independent of the interest rate. The downward-sloping segment of the left line captures the standard Euler equation (18), where reductions in the interest rate stimulate consumption and output. The vertical segment starting at point B captures the portion of the model where the real wage constraint (17) becomes binding. Then firms do not find it profitable to raise output, and consumer demand is rationed. Thus, even large real interest rate reductions do not raise output above $f(\bar{n})$.

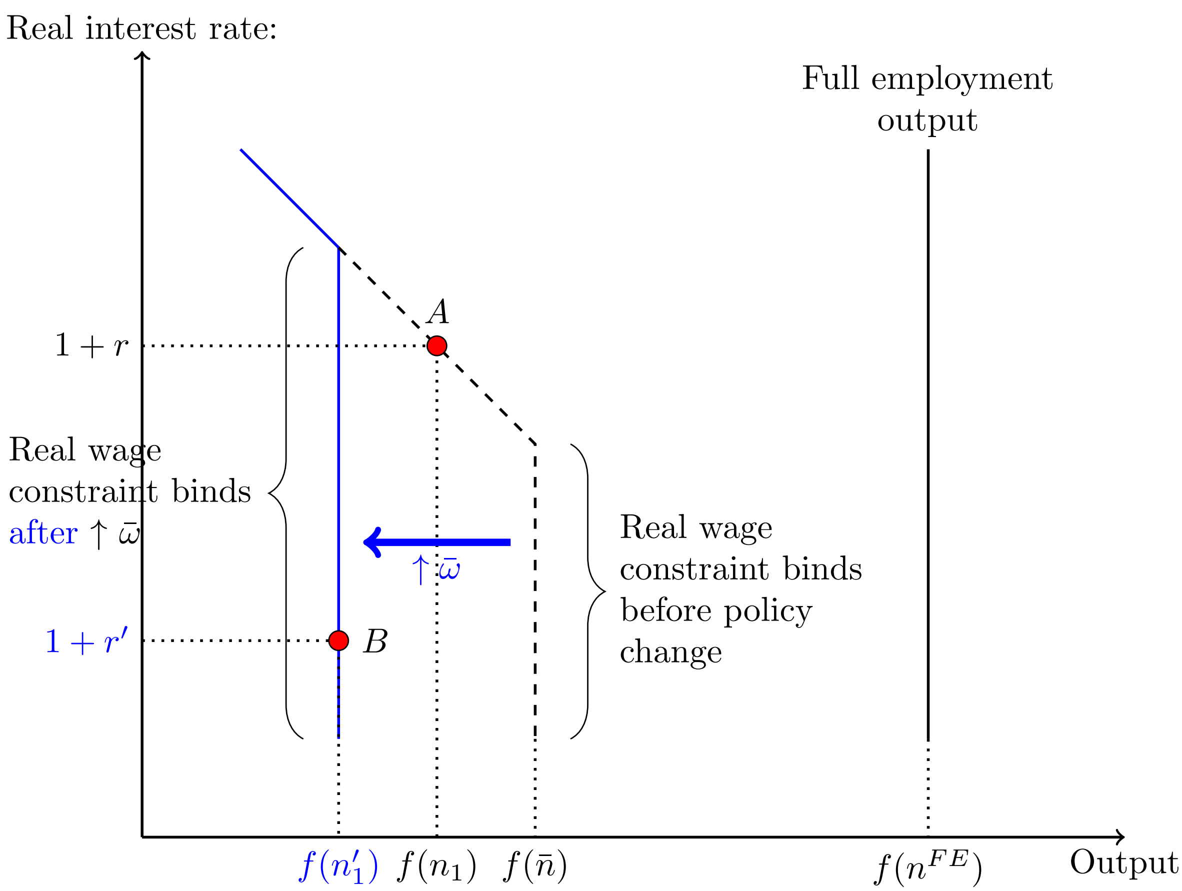


Figure 13 – The French experience in the baseline two period model in real-interest-rate-output-space. The right vertical line denotes the full employment level of output, $f(n^{NE})$, which is independent of the interest rate. The downward-sloping segment of the left line captures the standard Euler equation (18), where reductions in the interest rate stimulate consumption and output. The vertical segment starting at point B captures the portion of the model where the real wage constraint (17) becomes binding. An increase in the minimum real wage $\bar{\omega}_1$ shifts the vertical segment to the left, as the constraint binds earlier. As a result, output falls relative to point A even for large real interest rate reductions, such as to point B.

6 Conclusion

This paper suggests that there are good ways to raise inflation expectations and bad ways to raise inflation expectations. Unfortunately for France in 1936, the Popular Front mostly chose bad ways; it raised inflation expectations through forced wage increases and supply restrictions. Using cross-sectional and time-series evidence we show that these policies slowed the French recovery. The Popular Front's devaluation of the Franc in September 1936 was a good way of raising inflation expectations, and it ignited a significant though short-lived expansion. But the positive effects of devaluation were entirely counterbalanced by a general climate of labor unrest and the negative effects of supply-side restrictions.

If one accepts this empirical conclusion, one is left with a mystery. How does one reconcile the negative effect of supply shocks with a coherent view of macroeconomic behavior in a depressed economy with fixed nominal interest rates? We present one possible answer in the form of a disequilibrium model in which a high real wage prevents firms from accommodating higher demand, even when output is far below potential. Our model, in keeping with the evidence from France, implies that policies that raise inflation expectations without raising real wages will be expansionary, while policies that raise inflation expectations *and* raise real wages may not be.

This prediction stands in stark contrast with the prediction from the canonical new Keynesian model that any policy that lowers real interest rates will be expansionary. Eggertsson (2012) explores the implications of this prediction for Franklin Roosevelt's supply-side polices (e.g. the NIRA). He argues that the higher prices and wages encouraged by the NIRA were expansionary. This conclusion is striking both because it is an unavoidable outcome of taking the standard new Keynesian model seriously, and because it is at odds with a long-standing literature criticizing the supply-side elements of the U.S. New Deal (e.g. Friedman and Schwartz (1963) Alchian (1969), Eichengreen (1992), Bordo et al. (2000), and Cole and Ohanian (2004)).

We believe the French experience under the Popular Front is more consistent with the traditional view. If the NIRA were a positive for the U.S. recovery, then the French recovery ought to have been strong—in their effect on inflation, the Popular Front's policies were an extreme form of the NIRA. Our evidence that the 40-hour week law neutralized the positive effects of devaluation supports Eichengreen (1992)'s (p. 344) view that "[I]n contrast to the situation in France three years later, accompanying polices in the United States, while not uniformly helpful [the NIRA], were at the same time insufficient to neutralize devaluation's stimulative effects." The U.S. may have been fortunate that unlike Léon Blum, Franklin Roosevelt was ultimately more committed to demand expansion than to supply restriction.

We end with two caveats. First, as emphasized above, our focus has been on the *output* effects of the Popular Front's policies, not their overall welfare effects. We leave it to future work to consider whether distributional or other benefits of the Popular Front's policies outweighed the negative output effects. Second, that the 40-hours law reduced output does not imply that the Popular Front could have pursued better policies, given political and social constraints. The almost revolutionary climate of France in spring 1936 left the Popular Front with few options. The 40-hours law may well have been the least bad.

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A The standard new Keynesian model

This appendix describes the model used in section 2. The derivation follows that of the standard model in Woodford (2003).

A.1 Households A representative household maximizes expected discounted utility,

$$\max E_t \sum_{s=0}^{\infty} \beta^s \left[\frac{C_{t+s}^{1-\sigma} - 1}{1-\sigma} - \Xi_t \frac{N_{t+s}^{1+\eta}}{1+\eta} \right]$$

where β is the discount factor, C_t is consumption, N_t is the number of employed workers, each of with supplies up to $\bar{H}$ hours worker per worker, σ^{-1} is the intertemporal elasticity of substitution and η^{-1} is the labor supply elasticity. The parameter Ξ_t captures the disutility with supplying total hours $N_t H_t$.

The household's per-period budget constraint is,

$$P_t C_t + B_t = B_{t-1}(1 + i_t) + W_t N_t + \Pi_t + T_t$$

where P_t is the price of consumption, B_t are nominal bond holdings, i_t is the nominal interest rate, W_t is the nominal wage rate for each employed worker, Π_t are profits rebated by firms, and T_t are government transfers net of taxes.

The household's first order conditions are,

$$\begin{aligned} C_t^{-\sigma} &= \lambda_t \\ \Xi_t N_t^{\eta} &= \lambda_t \frac{W_t}{P_t} \\ \lambda_t &= \beta E_t \lambda_{t+1}(1 + i_{t+1} - \pi_{t+1}) \end{aligned}$$

where λ_t is the Lagrange multiplier on the (real) budget constraint and π_t is inflation. We model a strike in reduced form as a rise in Ξ_t. This increase implies that firms have to pay higher wages to employ the same amount of total hours.

The aggregate consumption good consists of individual varieties C_{it} that aggregate into the consumption good,

$$C_t = \left[\int_0^1 C_{it}^{\frac{\theta-1}{\theta}} di\right]^{\frac{\theta}{\theta-1}}$$

where $\theta > 1$ is the elasticity of substitution across varieties.

The consumer's relative demand for each variety are,

$$C_{it} = C_t \left(\frac{P_{it}}{P_t}\right)^{-\theta}$$

where P_{it} is the price of the variety and the aggregate price is,

$$P_t = \left[\int_0^1 P_{it}^{1-\theta} di\right]^{\frac{1}{1-\theta}}$$

A.2 Firms Firms are indexed by $i \in [0, 1]$ and produce varieties using the technology,

$$Y_{it} = A_t N_{it} H_{it}$$

where A_t is aggregate technology and N_{it} are workers employed at H_{it} hours-per-worker in the production of variety i.

We first determine the firm's (static) cost-minimization problem for a given level of output,

$$\min_{H_{it} \leq \bar{H}, N_{it}} \frac{W_t}{P_t} N_{it}$$
$$s.t. \;\; A_t N_{it} H_t = Y_{it}$$

The first-order conditions are,

$$\frac{W_t}{P_t} N_{it} H_{it} = \mu_t Y_{it}$$
$$0 = \mu_t Y_{it}, \quad \text{or} \quad H_{it} = \bar{H}$$

With a wage set per-worker the firm will want to use each worker for the maximum level of hours that she is willing to work. While arguably stylized, the key for our purposes is that the firm will want to employ the worker for longer than the 40-hour week will allow. Further, consistent with the implementation of the 40-hour week, which was effectively a 20% pay rise, any restriction of hours below $\bar{H}$ keeps a worker's wage unchanged.

The resulting optimal choices of labor and hours-per-worker are,

$$H_{it} = \bar{H}$$
$$N_{it} = \left(\frac{Y_{it}}{A_t \bar{H}}\right).$$

In our analysis, we also allow for the possibility that hours are constraint to a sub-optimal level $\bar{H}_t = \Psi_t \bar{H} < \bar{H}$. In that case the firm's optimal choices are

$$H_{it} = \Psi_t \bar{H}$$
$$N_{it} = \frac{Y_{it}}{A_t \Psi_t \bar{H}}.$$

Each firm is subject to Calvo pricing frictions. Each period it can reset its price with probability λ. The optimal reset price maximizes the expected discounted sum of profits,

$$\max_{P_{it}^*} E_t \sum_{s=0}^{\infty} (\beta\lambda)^t \frac{C_{t+s}}{C_t} \left[\frac{P_{it}^*}{P_{t+s}} Y_{i,t+s} - \frac{W_{t+s}}{P_{t+s}} N_{i,t+s}\right]$$

We solve this problem for the general case where Ψ_t need not be 1. Using the solution to the cost-minimization problem and the relative demand for variety i yields the following objective:

$$\max_{P_{it}^*} E_t \sum_{s=0}^{\infty} (\beta\lambda)^s \left(\frac{C_{t+s}}{C_t}\right)^{-\sigma} \left[\left(\frac{P_{it}^*}{P_{t+s}}\right)^{1-\theta} Y_{t+s} - \frac{W_{t+s}}{P_{t+s}} \left(\frac{Y_{t+s}}{A_{t+s}}\right) \frac{1}{\Psi_{t+s}\bar{H}} \left(\frac{P_{it}^*}{P_{t+s}}\right)^{-\theta}\right]$$

The first order condition of the firm is,

$$\frac{P_{it}^*}{P_{t-1}} = \frac{\theta}{(\theta-1)(1-\alpha)} \frac{\sum_{s=0}^{\infty} (\beta\lambda)^s \left(\frac{C_{t+s}}{C_t}\right)^{-\sigma} \left[\frac{W_{t+s}}{P_{t+s}} \left(\frac{Y_{t+s}}{A_{t+s}}\right) \frac{1}{\Psi_{t+}\bar{H}} \left(\frac{P_{t-1}}{P_{t+s}}\right)^{-\theta}\right]}{\sum_{s=0}^{\infty} (\beta\lambda)^s \left(\frac{C_{t+s}}{C_t}\right)^{-\sigma} \left[\left(\frac{P_{t-1}}{P_{t+s}}\right)^{1-\theta} Y_{t+s}\right]}$$

Given the optimal reset price, the evolution of aggregate inflation is,

$$1 + \pi_t = \left[\lambda \left(\frac{P_{it}^*}{P_{t-1}}\right)^{1-\theta} + (1-\lambda)\right]^{\frac{1}{1-\theta}}.$$

A.3 Government The government finances an exogenous stream of government spending $\{G_t\}$. Because taxes are lump-sum, their timing do not affect the equilibrium allocations so we set them equal to contemporaneous government spending,

$$T_t = G_t.$$

The steady-state share of government spending in output is $s_g = \frac{\bar{G}}{\bar{Y}}$

The allocation of varieties within G_t is analogous to the private sector,

$$G_{it} = G_t \left(\frac{P_{it}}{P_t} \right)^{-\theta}.$$

The central bank follows an interest rate rule subject to the zero bound constraint,

$$i_t = \max\{r_t + \phi_\pi \pi_t, 0\}.$$

A.4 Market Clearing We require that all goods-markets clear in equilibrium,

$$C_{it} + G_{it} = Y_{it}, \quad \forall i \in [0, 1].$$

A.5 Log-linearized equilibrium conditions We log-linearize the equilibrium conditions around the zero-inflation steady-state as in Woodford (2003),

$$c_t = E_t c_{t+1} - \sigma^{-1}(i_t - \pi_{t+1} - i_t) \tag{21}$$

$$\pi_t = \beta E_t \pi_{t+1} + \kappa mc_t \tag{22}$$

$$mc_t = \omega_t - a_t - \psi_t \tag{23}$$

$$\omega_t = \xi_t + \sigma c_t + \eta n_t \tag{24}$$

$$i_t = \max\{r_t + \phi_\pi \pi_t, 0\} \tag{25}$$

$$y_t = (1 - s_g)c_t + s_g g_t \tag{26}$$

where lower-case letters denote log-deviation from steady-state and $\kappa = \frac{(1-\lambda\beta)(1-\lambda)}{\lambda}$. The equations in the text then follow by substitution.

B Proofs

B.1 Hours restrictions are expansionary Let Δy_t be the change in output due to the hours restriction. Given that nominal interest rates are unchanged, the solution for Δy_t is given by the recursion,

$$\Delta y_{t+T_\psi} = 0 \tag{27}$$

$$\Delta y_{t+s} = \Delta y_{t+s+1} + \sigma^{-1} \sum_{k=s+1}^{T_\psi} [(\eta + \sigma)\Delta y_{t+k} - \psi_{t+k}]. \tag{28}$$

For instance, the change output one period before the restrictions end is given by,

$$\Delta y_{t+T_\psi - 1} = -\sigma^{-1} \psi_{t+T_\psi}. \tag{29}$$

Since hours restrictions imply $\psi_t < 0$ this corresponds to an increase in output. Since the change in output in the recursion is increasing in Δy_t and $-\psi_t > 0$ it then follows that the hours restrictions are unambiguously expansionary.

B.2 Strikes are expansionary Let Δy_t be the change in output due to the strike, i.e. a temporary reduced willingness to supply labor. Given that nominal interest rates are unchanged, the solution for Δy_t is given by the recursion,

$$\Delta y_{t+T_\xi} = 0 \tag{30}$$

$$\Delta y_{t+s} = \Delta y_{t+s+1} + \sigma^{-1} \sum_{k=s+1}^{T_\xi} [(\eta + \sigma)\Delta y_{t+k} + \xi_{t+k}]. \tag{31}$$

For instance, the change output one period before the restrictions end is given by,

$$\Delta y_{t+T_\xi - 1} = \sigma^{-1} \xi_{t+T_\xi}. \tag{32}$$

Since a decreased willingness to supply labor implies $\xi_t > 0$ this corresponds to an increase in output. Since the change in output in the recursion is increasing in Δy_t and $\xi_t > 0$ it then follows that the strike is unambiguously expansionary.

C Multi-sector new Keynesian model

This appendix describes the model used in section 4. It is a generalization of the one-sector standard new Keynesian model in appendix A.

C.1 Households A representative household maximizes expected discounted utility,

$$\max E_t \sum_{s=0}^{\infty} \beta^s \left[\frac{C_{t+s}^{1-\sigma} - 1}{1-\sigma} - \Xi_t \frac{N_{t+s}^{1+\eta}}{1+\eta} \right]$$

where β is the discount factor, C_t is consumption, N_t is the number of employed workers, each of with supplies up to $\bar{H}$ hours worker per worker, σ^{-1} is the intertemporal elasticity of substitution and η^{-1} is the labor supply elasticity. The parameter Ξ_t captures the disutility with supplying total hours $N_t H_t$. Workers are perfectly mobile across labor markets.

The household's per-period budget constraint is,

$$P_t C_t + B_t = B_{t-1}(1 + i_t) + W_t N_t + \Pi_t + T_t$$

where P_t is the price of consumption, B_t are nominal bond holdings, i_t is the nominal interest rate, W_t is the nominal wage rate for each employed worker, Π_t are profits rebated by firms, and T_t are government transfers net of taxes.

The household's first order conditions are,

$$\begin{aligned} C_t^{-\sigma} &= \lambda_t \\ \Xi_t N_t^{\eta} &= \lambda_t \frac{W_t}{P_t} \\ \lambda_t &= \beta E_t \lambda_{t+1}(1 + i_{t+1} - \pi_{t+1}) \end{aligned}$$

where λ_t is the Lagrange multiplier on the (real) budget constraint and π_t is inflation. We model a strike in reduced form as a rise in Ξ_t. This increase implies that firms have to pay higher wages to employ the same amount of total hours.

The aggregate consumption good consists of N industry goods C_{it} (e.g. Cars, Textiles) that aggregate into the consumption good,

$$C_t = \left[\frac{1}{N} \sum_{i=1}^{N} C_{it}^{\frac{\theta-1}{\theta}} dj \right]^{\frac{\theta}{\theta-1}}$$

where θ is the elasticity of substitution across industry goods. The consumer's relative demand for each industry good are,

$$C_{it} = C_t \left(\frac{P_{it}}{P_t} \right)^{-\theta}$$

Each industry i consists of a continuum of individual firms $j \in [0, 1]$ that produce differentiated goods C_{ijt} (e.g. Renault, Citroen). These aggregate into the industry good through a standard CES structure,

$$C_{it} = \left[\int_0^1 C_{ijt}^{\frac{\zeta-1}{\zeta}} dj \right]^{\frac{\zeta}{\zeta-1}}$$

where $\zeta > 1$ is the elasticity of substitution across varieties.

The consumer's relative demand for each variety are,

$$C_{ijt} = C_{it} \left(\frac{P_{ijt}}{P_{it}} \right)^{-\zeta}$$

where P_{ijt} is the price of the variety.

The industry price index is,

$$P_{it} = \left[\int_0^1 P_{ijt}^{1-\zeta} dj \right]^{\frac{1}{1-\zeta}},$$

and the aggregate price index is,

$$P_t = \left[\frac{1}{N} \sum_{i=1}^{N} P_{it}^{1-\theta} dj \right]^{\frac{1}{1-\theta}},$$

C.2 Firms Firms are indexed by $i = 1, ..., N$ and $j \in [0, 1]$ and produce varieties using the technology,

$$Y_{ijt} = A_t N_{ijt} H_{ijt}$$

where A_t is aggregate technology and N_{ijt} are workers employed at H_{ijt} hours-per-worker in the production of variety j in industry i.

We first determine the firm's (static) cost-minimization problem for a given level of output,

$$\min_{H_{ijt}\leq \bar{H}, N_{ijt}} \frac{W_t}{P_t} N_{ijt}$$
$$s.t. \;\; A_t N_{ijt} H_t = Y_{ijt}$$

The first-order conditions are,

$$\frac{W_t}{P_t} N_{ijt} H_{ijt} = \mu_{ijt} Y_{ijt}$$
$$0 = \mu_{ijt} Y_{ijt}, \quad \text{or} \quad H_{ijt} = \bar{H}$$

With a wage set per-worker the firm will want to use each worker for the maximum level of hours that she is willing to work. While arguably stylized, the key for our purposes is that the firm will want to employ the worker for longer than the 40-hour week will allow. Further, consistent with the implementation of the 40-hour week, which was effectively a 20% pay rise, any restriction of hours below $\bar{H}$ keeps a worker's wage unchanged.

The resulting optimal choices of labor and hours-per-worker are,

$$H_{ijt} = \bar{H}$$
$$N_{ijt} = \left(\frac{Y_{ijt}}{A_t \bar{H}} \right).$$

In our analysis, we also allow for the possibility that hours are constraint to a sub-optimal level $\bar{H}_t = \Psi_{it} \bar{H} < \bar{H}$. Note that the constraint is industry-specific, but not firm-specific. In that case the firm's optimal choices are

$$H_{ijt} = \Psi_{it} \bar{H}$$
$$N_{ijt} = \frac{Y_{ijt}}{A_t \Psi_{it} \bar{H}}.$$

Each firm is subject to Calvo pricing frictions. Each period it can reset its price with probability λ. The optimal reset price maximizes the expected discounted sum of profits,

$$\max_{P^*_{ijt}} E_t \sum_{s=0}^{\infty} (\beta\lambda)^t \frac{C_{t+s}}{C_t} \left[\frac{P^*_{ijt}}{P_{t+s}} Y_{ij,t+s} - \frac{W_{t+s}}{P_{t+s}} N_{ij,t+s} \right]$$

We solve this problem for the general case where Ψ_{it} need not be 1. Using the solution to the cost-minimization problem and the relative demand for variety i yields the following objective:

$$\max_{P^*_{ijt}} E_t \sum_{s=0}^{\infty} (\beta\lambda)^s \left(\frac{C_{t+s}}{C_t}\right)^{-\sigma} \left[\left(\frac{P^*_{ijt}}{P_{i,t+s}}\right)^{1-\theta} \left(\frac{P_{i,t+s}}{P_{t+s}}\right) Y_{i,t+s} - \frac{W_{t+s}}{P_{t+s}} \left(\frac{Y_{i,t+s}}{A_{t+s}}\right) \frac{1}{\Psi_{i,t+s}\bar{H}} \left(\frac{P^*_{it}}{P_{i,t+s}}\right)^{-\theta} \right]$$

The first order condition of the firm is,

$$\frac{P^*_{ijt}}{P_{t-1}} = \frac{\theta}{(\theta-1)(1-\alpha)} \frac{\sum_{s=0}^{\infty} (\beta\lambda)^s \left(\frac{C_{t+s}}{C_t}\right)^{-\sigma} \left[\frac{W_{t+s}}{P_{t+s}} \left(\frac{Y_{i,t+s}}{A_{t+s}}\right) \frac{1}{\Psi_{i,t+s}\bar{H}} \left(\frac{P_{i,t-1}}{P_{i,t+s}}\right)^{-\theta} \right]}{\sum_{s=0}^{\infty} (\beta\lambda)^s \left(\frac{C_{t+s}}{C_t}\right)^{-\sigma} \left[\left(\frac{P_{i,t-1}}{P_{i,t+s}}\right)^{1-\theta} \left(\frac{P_{i,t+s}}{P_{t+s}}\right) Y_{i,t+s} \right]}$$

Given the optimal reset price, the evolution of aggregate inflation is,

$$1+\pi_{it} = \left[\lambda \left(\frac{P^*_{it}}{P_{i,t-1}} \right)^{1-\theta} + (1-\lambda) \right]^{\frac{1}{1-\theta}}.$$

The evolution of aggregate inflation is then

$$1+\pi_t = \left[\frac{1}{N} \sum_{i=1}^{N} \left((1+\pi_{it}) \frac{P_{i,t-1}}{P_{t-1}} \right)^{1-\theta} \right]^{\frac{1}{1-\theta}}.$$

C.3 Government The central bank follows an interest rate rule subject to the zero bound constraint,

$$i_t = \max\{r_t + \phi_\pi \pi_t, 0\}.$$

C.4 Market Clearing We require that all goods-markets clear in equilibrium,

$$C_{ijt} = Y_{ijt}, \;\; \forall j \in [0,1], \; i = 1, ...N.$$

C.5 Log-linearized equilibrium conditions We log-linearize the equilibrium conditions around the zero-inflation steady-state as in Woodford (2003),

$$c_t = E_t c_{t+1} - \sigma^{-1}(i_t - \pi_{t+1} - i_t) \tag{33}$$

$$\pi_t = \frac{1}{N}\sum_{i=1}^{N} \pi_{it} \tag{34}$$

$$\pi_{it} = \beta E_t \pi_{i,t+1} + \kappa mc_{i,t} \tag{35}$$

$$mc_{i,t} = \omega_t - a_t - \psi_{i,t} - (p_{it} - p_t) \tag{36}$$

$$p_{it} - p_t = p_{i,t-1} - p_{t-1} + \pi_{it} - \pi_t \tag{37}$$

$$y_{it} - y_t = -\theta(p_{it} - p_t) \tag{38}$$

$$\omega_t = \xi_t + \sigma c_t + \eta n_t \tag{39}$$

$$i_t = \max\{r_t + \phi_\pi \pi_t, 0\} \tag{40}$$

$$y_t = c_t \tag{41}$$

where lower-case letters denote log-deviation from steady-state and $\kappa = \frac{(1-\lambda\beta)(1-\lambda)}{\lambda}$. The baseline model is a special case where $N = 1$.

D Narrative evidence on inflation expectations

We rely on the following publications to document whether contemporary observers expected price increases.

1. *L'observation économique*, published monthly by the *Société d'études et d'informations économiques.*

2. *L'activité économique*, published quarterly by the *Institut de statistique de l'université de Paris et Institut Scientifique de Recherches Economiques et Sociales.*

May-June 1936

- "*[Les mesures] se traduiront par une surcharge extrêmement lourde brusquement imposée [...] C'est dire que se poseront de complexes questions de rajustement de prix.*"[32] [The policy measures] will result in heavy and suddenly imposed higher charges [...] which will raise complex questions about price adjustments.

- "*Il est donc inévitable que le consommateur soit appelé à supporter rapidement [...] [l]'élévation du prix de vente*"[33]. Consumers will inevitably face higher prices soon.

July-August 1936

- "*[Le gouvernement] parait s'orienter vers une politique de hausse [des prix] dans tous les domaines*"[34]. [The government] seems to be moving towards a general policy of higher prices.

- "*[Les] facteurs qui sont a l'origine de cette hausse [des prix] [...], en simple logique économique, doivent continuer à agir dans le même sens.*"[35] Simple economic logic suggests that the curent drivers of price increases will continue to act in the same direction.

[32] *L'observation économique*, May 1936, p.162.
[33] *L'observation économique*, June 1936, p.203.
[34] *L'activité économique*, N.6, 07/31/1936, p.101.
[35] *L'observation économique*, July-August 1936, p.243.

September-November 1936

- "*La dévaluation du franc [...] se trouve placée sous une constellation de circonstances qui agissent dans le sens d'une hausse des prix nationaux*"[36]. The devaluation is taking place amidst circumstances which all go in the direction of higher domestic prices.

- "*La perspective [...] semble inéluctable, de voir continuer quelques temps l'ascension des prix.*"[37] It seems unavoidable that the increase in prices will continue.

- "*La hausse de grandes categories de prix [...] s'est poursuivie, comme on devait s'y attendre.*"[38] Price increases have continued as one should have expected.

[36] *L'observation économique*, September-October 1936, p.323.
[37] *L'observation économique*, September-October 1936, p.323.
[38] *L'observation économique*, October-November 1936, p.354.