Stagflation in the 1930s: Why did the French New Deal Fail?
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Abstract

Most countries started to recover from the Great Depression when they left the Gold Standard. France did not. In 1936, France both left the Gold Standard and enacted New-Deal-style policies, in particular wage increases and a 40-hour week law. The result was stagflation; prices rose rapidly from 1936 to 1938 while output stagnated. Using panel data on sectoral output, we show that the 40-hour week restriction had strong negative effects on production. Absent this law, France would likely have followed the usual pattern of rapid recovery after leaving the Gold Standard. We construct a model to show how supply-side policies could have prevented output growth despite excess capacity and a large real interest rate decline.

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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

Economists continue to debate the macroeconomic consequences of the New Deal. Particularly controversial is the National Industrial Recovery Act (NIRA), which raised prices and encouraged collusion. In this paper, we use the French experience in the mid 1930s to shed light on this debate. The Popular Front government, led by Léon Blum, was elected in May 1936. Blum’s government enacted a suite of supply-side policies that combined were a sort of New Deal on steroids. The Matignon agreements in June 1936 raised private sector wages by 7% to 15%. Workers were granted two weeks vacation without loss of pay. And perhaps most importantly, the work week was restricted to 40 hours, also without loss of pay.

France was unusual both in its supply side policies and in its economic performance after leaving the Gold Standard. Most countries began to recover from the Great Depression when they devalued and left the Gold Standard. But France experienced an unfortunate combination of inflation and stagnant output. Our goal is to understand France’s anomalous experience and in so doing to better understand the effect of supply side policies during the Great Depression. We argue that French wage and hour restrictions, in particular the 40-hour work week, are to blame for the lack of French recovery. To make this argument, we follow three steps. First, we compare the French experience to that of other countries in the 1930s. We show that the coincidence of rapid inflation and no output growth was unusual. We then use time series and cross-sectional variation to infer the effects of French supply side policies. Finally, we construct a model to rationalize how French output could have stagnated despite a large real interest rate decline.

Eichengreen and Sachs (1985) show that most countries began to recover from the Great Depression...
Depression when (and only when) they devalued and left the Gold Standard. They reason that devaluation gave countries the ability to use expansionary monetary and fiscal policy to facilitate recovery. This empirical regularity has proven remarkably robust and fits individual country experiences well. For instance, the U.S. left the Gold Standard in April 1933. Over the following year, industrial production grew 36%. That economies 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.

We cannot directly measure French inflation expectations. But insofar as these expectations were related to actual inflation, they must have risen significantly after the Popular Front’s election. French wholesale prices fell 5% in 1935, and then rose 16% in 1936 and 38% in 1937. The large increase in inflation was accompanied by little change in nominal interest rates (Urvoy de Portzamparc, 1942). Thus *ex post* real interest rates fell by as much as 40 percentage points. Yet unlike the U.S. in 1933, France saw little growth. Industrial production rose 5% in 1937 only to fall 7% in 1938. In the next section we show that France’s experience after devaluation is a clear outlier not only vis-a-vis the U.S., but also vis-a-vis other countries.

In sections 3 and 4, we use the chronology of events in France as well as sectoral-level panel data to better understand the anomalous behavior of prices and output in France. Fortunately for our purposes, there was substantial times series and cross-sectional variation in the implementation of the Popular Front’s supply-side policies. Unlike in the U.S., policies to raise wages were implemented before devaluation. There was also a lag between the devaluation of the Franc in September 1936 and the beginning of the 40-hour week restrictions in November. And most important for our purposes, the 40-hour week restriction was implemented gradually, taking effect in different months in different industries. For instance, it became binding in the construction industry in December 1936 and in the leather industry in March 1937 (Sauvy (1984), v. 1, p. 283).

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2Industrial production data are from the Federal Reserve Board seasonally adjusted index, FRED series INDPRO.

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

4Data are from [http://www.cepii.fr/francgraph/bdd/villa/mode.htm](http://www.cepii.fr/francgraph/bdd/villa/mode.htm). Henceforth we will refer to this data source as ‘Villa data’.
Section 3 shows 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. Output began to fall again in summer 1937, as the 40-hour week restriction took full effect.

While instructive, this time series variation does not allow for formal econometric tests. For this, in section 4 we turn to industry-level variation in the 40-hour week restriction. Using data on when the 40-hour week restriction began to bind and on industrial production, we find strong evidence that the restriction reduced output by roughly 5 to 10 percent. Time series regressions suggest that the positive effect of devaluation was almost exactly offset by the negative effect of the hours’ restriction. These results are robust and consistent across a variety of different specifications and industry samples.

Guided by these empirical results, in section 5 we attempt to understand the French experience with a simple macro model. This is challenging since in any model with a standard Euler equation, the magnitude of the real interest rate decline in France generates a large increase in output. We propose an alternative framework building on Kocherlakota (2012) and earlier disequilibrium models. This 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 that threshold, firms will then not find it profitable to hire more workers and produce additional output. This feature generates a maximum level of employment and output. Second, when the economy operates at this level of output, consumption demand may be rationed and unresponsive to real interest rate reductions. In depression economies this supply constraint will typically not bind, so that consumers will satisfy the standard Euler equation, and reductions in real interest rates will stimulate employment and output. However, policies designed to significantly raise real wages, such as the French New Deal, can cause the real wage constraint to bind, which would cause a reduction in employment and output. Further, with consumption demand rationed, even a large reduction in real interest rates will fail to stimulate output. Thus, this model can produce comparative statics consistent with the French experience.
This paper relates to three distinct literatures. Most obviously, it contributes to our understanding of France’s economic stagnation after 1936. While almost unknown in the English language literature,\(^5\) the Popular Front’s economic policies have been long debated among French economists. Our analysis will broadly confirm the hypothesis in much of this literature that the benefits of devaluation in France were nullified by the Popular Front’s supply-side policies.\(^6\) We add to this prior literature by providing cross-sectional econometric evidence on the effects of the 40-hour week restriction and by reconciling the French experience with the new Keynesian model.

In contrast to the small amount of English language work on the Popular Front’s policies, there is a voluminous literature on the U.S. New Deal. We have already noted that this literature is divided on the general effectiveness of New Deal policies, as well as on the costs and benefits of specific programs. For instance, Temin and Wigmore (1990) and Eggertsson (2012) argue that ending deflation was critical to lifting the economy out of depression. According to them, facilitating collusion among workers and firms to raise wages and prices supported this goal. By contrast, Cole and Ohanian (2004) argue that these anti-competitive measures had contractionary effects by restricting supply. Since the Popular Front’s policies were both inspired by and analogous to Franklin Roosevelt’s policies, understanding their effects can inform this debate. The negative effects that we find from French supply side policies are some evidence that U.S. recovery may have occurred despite rather than because of New Deal supply side restrictions. We conclude this paper in section 6 with a more specific discussion of the lessons from the French experience under the Popular Front for our understanding of the U.S. New Deal.

This paper’s contribution is not only to history. With the Federal Reserve, the European Central Bank, and the Bank of Japan stuck at the zero lower bound, there is a renewed interest among academics and policymakers in the potentially positive effects of higher expected inflation. For instance, the hope that higher expected inflation will promote recovery has motivated current Japanese macropolicy (“Abenomics”) (Hausman and Wieland, 2014). The new Keynesian model suggests that when nominal interest rates are fixed, any policy which raises expected inflation will raise output. This paper adds to the evidence in Wieland (2014)

\(^5\)A prominent exception—and early inspiration to us—is Eichengreen (1992), pp. 375-385.
\(^6\)This is the view of Sauvy (1984), Eichengreen (1992), and Villa (1991), among others.
casting doubt on the empirical evidence for this proposition.\textsuperscript{7} We show that even during the Great Depression, when one would most expect positive effects from expected inflation, supply shocks appear to be contractionary, and we provide a simple model that may explain France’s experience.

2 France’s experience in international context

Our interest in France is motivated by its anomalous experience after leaving the Gold Standard in 1936. Figure 1 shows industrial production growth and wholesale price inflation in the two years following departure from the Gold Standard for the European countries for which Mitchell (1980) provides industrial output and wholesale price data. France is an outlier; no other country with positive inflation saw a decline in industrial production.\textsuperscript{8}

Figure 1 casts doubt on two potential explanations for poor French performance following devaluation. First, one might worry that France performed poorly after devaluation 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. Perhaps the advantages of devaluation came primarily through terms of trade effects and hence no longer existed to be exploited by France in 1936. 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.

Since the Popular Front’s economic policies were in part inspired by the New Deal, it is informative to specifically compare the behavior of output and prices in France with that

\textsuperscript{7}While the general debate over the effects of expected inflation has focused on supply shocks in general, there is also a long-standing literature on the effects of hours restrictions in particular. See Calmfors and Hoel (1988) and Crépon and Kramarz (2002).

\textsuperscript{8}This is a robust pattern. It remains with a one rather than a two year window, and it remains if one uses GDP data from Global Financial Data rather than industrial production data from Mitchell (1980). Nearly all countries other than France fit along a line in which higher inflation is association with more growth. Greece is the exception that proves the rule. It 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 (figure 1). But unlike in France, this can be explained by a government debt crisis coinciding with devaluation (Mazower, 1991).
Figure 1 – Industrial output and 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.

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.
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, prices 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. As we shall see in section 5, standard macro models make the counterfactual prediction that the much larger real interest decline in France ought to have been accompanied by much more growth.

3 Chronology

3.1 The Great Depression in France  The Great Depression in France lasted 7 years. 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).

3.2 The Popular Front  A break with deflationary policies began in May 1936 with the election of the Popular Front government headed by Léon Blum. The Popular Front was an anti-fascist coalition of the Radicals, Socialists, and Communists. Its economic program was in part motivated by the perceived success of Franklin Roosevelt’s New Deal (Jackson, 2005).

9For further discussion of the Great Depression in France, see Eichengreen (1992), Mouré (1991), and Beaudry and Portier (2002).
1990), and it won the election on a platform advocating higher wages (Sauvy, 1969). In this it almost immediately succeeded: in early June, the combination of the Popular Front’s election and widespread sit-down strikes led to the so-called Matignon agreements. These agreements 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 and Dubief, 1988; Asselain, 1974). The 40-hour week restriction was implemented only gradually and will be an important part of our explanation for France’s stagnation.

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 by both increasing workers’ purchasing power and leisure time, demand would be increased. 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). Limiting the work week 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.

![Graph](image)

(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

Unfortunately for the Popular Front, events did not unfold as hoped. 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. After the Popular Front’s election, the policies described above led both nominal and real wages to jump up almost immediately, as desired. Unlike Roosevelt’s New Deal, the Popular Front’s high wage policies were not accompanied by parallel efforts to raise prices. This followed from the desire to raise real wages while at the same time lowering prices, thus promoting exports. Indeed, though ineffectual, price controls were introduced 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. Figure 4(b) shows the path of wholesale prices as a whole, wholesale prices of domestic goods, and consumer prices. As with nominal wages, one observes a rapid increase after the Popular Front’s election, although in this case the increase is less marked.

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10 An exception was the price of wheat, which was fixed at a high level by the newly created Office National Interprofessionnel du Blé (Bernard and Dubief, 1988).
and occurs with a slight lag. Devaluation was an unpopular prospect, and the Popular Front hoped to ignite recovery without it.\textsuperscript{11} The Communist party was particularly opposed to devaluation, arguing that it would, like deflation, hurt those least well off. Indeed, in the polarized political climate of the 1930s, opposition to devaluation was one of the few things that the French left and right agreed on. 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 \textit{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 spurred recovery. Figure 7(a) shows the behavior of monthly, seasonally adjusted industrial production from 1935 through 1936.

\textsuperscript{11}Despite its public opposition to devaluation through the summer of 1936, more astute members of the government, perhaps including Léon Blum, recognized that devaluation would be beneficial. The problem was French popular opinion (Jackson, 1990).
Figure 5 – Communist Party slogans in spring 1935. Note: From top to bottom the large text reads: “Communist Party; Deflation \rightarrow Devaluation = Misery; To save France from misery and ruin the rich must pay; Make the rich pay.” Source: Margairaz et al. (2006), p. 91.
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.

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.
1938. Production fell during the initial months of the Blum government, perhaps because of the 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 more positive, as one would expect if the 40-hour week law led to some work-sharing. The number of unemployed fell sharply from 1936 to 1937. Although it rose in 1938, it remained below the 1936 level.\(^{12}\)

Meanwhile, wages and prices continued to rise (figures 4(a) and 4(b)). Figure 8(a) summarizes this information on prices differently, showing the inflation rates for the three price indexes. After years of deflation before 1935, all prices indexes show rapid inflation in 1936 and 1937. This increase in the inflation rate was not accompanied by a significant change in nominal interest rates. Figure 8(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 8(a) and 8(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 \textit{ex post} real interest rates. Deflated by wholesale prices, the \textit{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 \textit{ex ante} real rate, which depends on expected inflation. Expected inflation is not directly observed, but often moves along with actual inflation. For instance, many scholars have argued that expected inflation rose at the same time as actual inflation in the U.S. in spring 1933.\(^{13}\) Given the magnitude of the increase in actual inflation after 1935, we believe is very likely that expected inflation also rose, and thus that \textit{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

\(^{12}\)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).

\(^{13}\)Among others, see Hamilton (1992), Romer (1992), and Jalil and Rua (2013).
Figure 8 – 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.

monetary stabilization (White, 1995). While it is possible that a similar dynamic was present 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). Therefore for the rest of this paper, we will proceed under the assumption that ex ante real interest rates followed the path of ex post interest rates.

4 Cross-sectional evidence

4.1 Data To identify the effect of the 40-hours restriction on the French recovery, we use variation in the timing of the laws’ application across industry sectors. Thus we collected 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,

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14In 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.
we begin this section by describing the data in detail.

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 econometric analysis. 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. To ensure that this collection covers all industries, the archivists checked the list obtained against the list of “Professions visées par la loi du 21 juin” (Archives nationales, 2003, available in F/22/2192, Dossier 3). 47 industries are covered by these application decrees, with dates of publication in the Journal Officiel ranging from September 1936 to December 1938.

To find out when the 40-hours law came into effect in each industry, we read the application decrees as published in the Journal Officiel, identified the paragraph dealing with the timing of entry into effect, and recorded the date specified in the text. Except in two cases (Navigation maritime, Société des transports en commun de la région parisienne) where the decree was published after the law had come into effect, there was generally a lag between the date of publication in the Journal Officiel 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 out of 47), the law came into effect on a specific day. But for others (Grands réseaux de chemins de fer d’intérêt général, entreprises de transports, Industries du bois, Industries de fabrication de papier et de carton, Métallurgie, Travail des métaux), the law took affect gradually. In these cases, we choose the first day of application as the start date in our empirical specification.

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15There are also mistakes in Sauvy’s dates for the metal working industries.

16In French, the 40-hours restrictions is described as applying to ‘professions’ or ‘occupations.’ But the closest modern English equivalent to these words appears to be ‘industries,’ since workers doing different jobs within the same industry were subject to the 40-hours restriction at the same time.
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. Mines, Produits Chimiques, Textiles), which are themselves weighted averages of individual series (Houille, Minéral de fer, Potasse, Pétrole, Bauxite, Sel for the Mines industry for example). We use three publications to recover as many base series as possible, to understand how they were constructed, and to perform quality checks.

Statistique générale de la France (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 de la France (1937) covering the period before 1936 (back to 1928) as well as recent months. For industries (e.g. Produits chimiques, Rayonne, Verrerie) where monthly production series do not exist for the 1928-1936 period, the monthly series were calculated 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 documented by other monthly series. There is no break in the series when the monthly production data becomes available, and the resulting index is not “too” choppy. For the months covered in both Statistique générale de la France (1937) and Sauvy and Magnin (1939), we check that these adjustments have no impact on the index for our period of interest.

Statistique Générale de la France (1941) contains individual series on Coton, Rayonne, Laine, Soie and Construction d’automobiles that are not available in Sauvy and Magnin (1939). Sauvy and Magnin (1939) also does not incorporate all information on production made available to the administration due to the “Décrets lois du 17 juin et du 12 novembre 1938 sur la communication de renseignements utiles à l’étude de la situation économique.” So we check that the series documented in both Sauvy and Magnin (1939) and Statistique Générale de la France (1941) match. This is, indeed, the case, although access to the two publications does allow 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. He argues that the comparison across sectors cannot be made precise as the industrial production index uses indirect data to determine production (e.g. consumption and trade) and includes moving average adjustments for some industries. We use Statistique générale de la France (1937) and Sauvy and Magnin (1939) to investigate the extent of these problems.

We find that the industry Travail des métaux suffers from both problems. For that reason, we conduct a robustness check without it. For the other series, the problems noted by Sauvy (1984) apply mostly to the 1928-1935 period, and thus have little affect on our analysis. For our period of interest, several industries (Mines, Métallurgie, Papier) and the individual series associated with them do not suffer at all from these problems. Others (Coke et agglomérés) can be corrected since data on the unadjusted versions of these series was also published. Others cannot be corrected (Laine, Soie), so we conduct a robustness check without them.

A few ad-hoc adjustments were also applied to the raw series by the Institut de conjoncture. Fortunately for us, these ad-hoc adjustments were mostly applied to only one industry, the Travail des métaux industry, which as we already noted, we discard in a robustness check. We find one problematic ad-hoc adjustment for the Cuir 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. Figure 9 shows the path of seasonally adjusted industrial production in the 17 different industries for which we have data and know the date when the 40-hour week law took effect. 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 laws’ application rather than vice-versa. But we believe this is unlikely. Neither government publications from the time, nor more recent secondary literature, contain any suggestion that the law’s application was driven by individual industry performance.

The graphs in Figure 9 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:

$$\log I_{i,t} = \beta_1 \text{40-hr}_{i,t} + \beta_2 X_{i,t} + \epsilon_{i,t}$$  
(1)

$$\Delta \log I_{i,t} = \beta_1 \text{40-hr}_{i,t} + \beta_2 X_{i,t} + \epsilon_{i,t},$$  
(2)

where $I_{i,t}$ is industrial production in month $i$ in industry $t$, 40-hr$_{i,t}$ is a dummy variable equal to 1 after the 40-hour week restriction takes effect in industry $i$, and $X_{i,t}$ are control variables.

For control variables, we consider several options. Column 1 and 2 in table 1 include month and industry fixed effects. Columns 3 and 4 include time fixed effects and controls for the decline in industry production from 1929 to 1933 and from 1933 to 1935; they exclude data before 1935. In the rest of the table, we explore the effect of using lags of the dependent variable instead of fixed effects. In all cases, we show results both for the complete set of 17 industries and excluding those industries for which Sauvy states that the data may be problematic (the “No Sauvy” columns).
Figure 9 – 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 1 – Effects of 40-hour restriction on industrial production

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Log IP</th>
<th>Change in log IP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time-FE + Ind-FE</td>
<td>Time-FE + Controls</td>
</tr>
<tr>
<td></td>
<td>Baseline</td>
<td>No Sauvy</td>
</tr>
<tr>
<td>40-hour restriction</td>
<td>−0.115*</td>
<td>−0.104*</td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
<td>(0.052)</td>
</tr>
<tr>
<td>Decline 1929-1933</td>
<td>0.810**</td>
<td>0.798**</td>
</tr>
<tr>
<td></td>
<td>(0.047)</td>
<td>(0.050)</td>
</tr>
<tr>
<td>Decline 1933-1935</td>
<td>1.203**</td>
<td>1.057**</td>
</tr>
<tr>
<td></td>
<td>(0.122)</td>
<td>(0.141)</td>
</tr>
<tr>
<td>Devaluation</td>
<td>0.042**</td>
<td>0.050**</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Time-FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industry-FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Dep. Var. Lags</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>1641</td>
<td>1231</td>
</tr>
</tbody>
</table>

Notes: “40-hour restriction” is an industry-level dummy variable set to one when the 40-hour restriction comes into effect and after. Variables labelled “Decline [Year 1]-[Year 2]” measure the growth in IP from January of [Year 1] to January of [Year 2]. Regressions using these controls use data only from [Year 2] onwards. The “Devaluation” variable is set to one after France leaves the Gold Standard in September 1936. Columns labeled “No Sauvy” exclude industries for which Sauvy has no underlying production data after 1935. Newey-West standard errors with 12 lags in parenthesis. + p<0.10, * p<0.05, **p<0.01.
Across these different specifications, results are consistent and robust. In the specifications for which the dependent variable is the log level of production (all except the final 3 columns), the coefficients range from -0.04 to -0.12, suggesting that the 40-hour week law reduced production by between 4% and 12%. In most cases, the coefficients are also highly statistically significant. Reassuringly, excluding those industries for which Sauvy identifies potential problems has little effect on the magnitude of the coefficient, though the smaller sample leads to larger standard errors.

In the specifications with lags rather than 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 economically and statistically significant in the specifications with both the log level and log difference of production as the dependent variable. More interesting, the positive coefficient on the devaluation dummy is almost exactly equal to the negative coefficient on the 40-hour week restriction. At least in this partial equilibrium framework, the expansionary effects of devaluation were almost exactly offset by the contractionary effects of the 40-hour week law.

The regressions confirm the story in figure 9 and in the prior informal literature. France failed to recover after devaluation because firms were constrained by hours restrictions. 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 thus 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 5-7 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 5-7 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 5-7 to be positive, or at least very different from those in columns 1-4. In fact, we cannot rule out that they are the same. If anything, the small standard errors in columns 5-7 suggest that rather than confounding the negative

\(^{17}\)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.
cross-sectional effects with positive general equilibrium effects, the time-series evidence adds additional precision to our estimates.

This evidence is not definitive. Perhaps the 40-hour law had negative effects in manufacturing, but positive effects in services. But evidence against this hypothesis comes from the poor performance of French GDP. If the 40-hour week restriction had been expansionary for the economy as a whole, even while negatively affecting manufacturing, it is difficult to explain why French output stagnated.

In the next section, we show that the negative effect of supply-side policies in the face of excess capacity and stable nominal rates is at odds with the standard new Keynesian model. We propose an alternative model to explain France’s experience.

5 The French experience and the new Keynesian model

The French experience is difficult to reconcile with canonical new Keynesian models. These models emphasize intertemporal motives by consumers, so that a large decline in real interest rates translates into large increases in consumption and output. Specifically, the Euler equation in such models is

$$\ln C_t = -\sigma E_t \sum_{s=0}^{\infty} (\bar{r}_{t+s} - \pi_{t+1+s}) + \lim_{T \to \infty} E_t \ln C_T,$$

where $C_t$ is consumption, $\bar{r}_t$ is the nominal interest rate, $\pi_t$ is inflation, and $\sigma$ is the intertemporal elasticity of substitution. The long-run level of consumption $\lim_{T \to \infty} E_t \ln C_T$ is fixed by assumption. According to this equation, if real rates fall by 40 percentage points for one year only, then consumption growth equals $\Delta \ln C_t = \sigma \times 40\%$. Typical new Keynesian calibrations set $\sigma$ between 0.5 and 1, which implies a 20-40% increase in consumption. This is clearly at odds with the evolution of the French economy from 1936 onwards.

5.1 A simple model of the French economy

As an alternative, perhaps more plausible explanation, we consider a simple disequilibrium model based on Kocherlakota (2012). The analysis is also in the spirit of earlier disequilibrium models such as Leijonhufvud (1968) and Barro and Grossman (1971).
Our analysis is kept deliberately simple to focus on how modifications of the core new Keynesian model can bring it closer to the data. As a result, we are leaving out important aspects of the French situation, such as capital flight and fiscal policy.\textsuperscript{18} 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 can be added for a more complete treatment of the French experience.

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

\[
\max_{c_1, c_2, b_1} u(p_i c_{i1}) + \beta u(c_{i2})
\]

s.t. \( p_{i1} c_{i1} = \omega_{i1} + \pi_{i1} - b_i - \tau_1 \)

s.t. \( c_{i2} = \omega_{i2} + \pi_{i2} + b_i (1 + r) - \tau_2 \)

s.t. \( c_{i1}, c_{i2} \geq 0 \).

where \( \omega_t \) is the real wage, \( \pi_t \) is profit by firms, \( b \) are purchases of government bonds that pay off \((1 + r)b\) in period 2, and \( \tau_t \) 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 \( 0 \leq p_{i1} \leq 1 \) captures the fraction of demand that will be met. We model it through sequential order processing and a shopping time constraint. Within the period \( t = 1 \) an amount \( \xi \) of consumption requires \( s \) units of shopping time. Orders are fulfilled sequentially, so that after \( s \) has elapsed, \( \xi \) units of consumption are bought. Consumers can then decide whether to spend another \( s \) units of shopping time and acquire an additional \( \xi \) units of consumption. So long as stores still carry goods demand will be met and the process continues until all the necessary shopping time \((\frac{\omega_{i1}}{\xi})\) is spent to acquire \( c_{i1} \). However, when total demand is less than total output, \( \sum_{i=1}^{N} c_{i1} > y_1 \), then stores will be depleted after each consumer spends \( \frac{y_1}{\xi N} \) 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

\textsuperscript{18}Capital flight figures prominently in many explanations of France’s stagnation after 1936. However, the mechanism through which capital flight would have lowered output is unclear. See Krugman (2013).
decisions to spend time shopping will not yield additional goods. This mechanism yields the following specification for $p_{i1}$:

$$p_{i1} = \begin{cases} 
1 & \text{if } \sum_{i=1}^{N} c_{i1} \leq y_1 \\
\max\left\{ \frac{y_1}{N}, 0 \right\} & \text{if } \sum_{i=1}^{N} c_{i1} > y_1
\end{cases} \quad (4)$$

Thus $p_{i1}$ 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, $p_{i1}c_{i1} = \frac{y_1}{N}$.

Each household also inelastically supplies $n^{FE}$ units of labor, where the superscript $FE$ stands for full employment. Not all of that labor may be employed by firms, in which case there is unemployment. Importantly, as in Kocherlakota (2012), households do not optimize with respect to their labor supply. Thus 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.

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

$$\max_{n_{jt}} \pi_{jt} = f(n_{jt}) - \omega_{t}n_{jt}$$

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 $\omega_{jt}$ through the firms’ first-order-condition. Again, we think of firms meeting demand sequentially as the consumers’ orders come in. However, as we will see, 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 bond with interest. Thus, its tax

\footnote{It is not necessary that the number of firms equals the number of households, but it does simplify the exposition.}
rates are set as follows:

\[ \tau_1 = -B_1 \]
\[ \tau_2 = (1 + r_2)B_2 \]

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 and clarity 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 $\frac{1}{N} \sum_{i=1}^{N} p_{ij}$ of orders gets filled

\[
\sum_{j=1}^{N} f(n_{j1}) = \sum_{j=1}^{N} y_{j1} = \sum_{i=1}^{N} p_{i1}c_{i1}
\]
\[
\sum_{j=1}^{N} f(n_{j2}) = \sum_{j=1}^{N} y_{j2} = \sum_{i=1}^{N} c_{i2}
\]
\[
B = \sum_{i=1}^{N} b_i
\]
\[
n_t \leq n^{FE}
\]

The first equation imposes that output equals realized consumption, the second that bond supply equals bond demand, and the third 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.

\[ f'(n_{jt}) = \omega_t, \quad \forall j = 1, \ldots, K \]

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

\[ \omega_1 \geq \bar{\omega}_1 \quad (5) \]

This could reflect either social norms in wage setting, or a combination of sticky prices and
wages that put 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, in 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 will see, this puts a limit on how much monetary policy can stimulate output by rationing consumer demand.

By contrast, we think of period 2 as the time when social norms and/or sticky prices/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 problem. The household can frictionlessly borrow and lend, which typically gives rise to the standard Euler equation. However, in this set-up the consumer will also need to take into account that additional borrowing will not fully translate in to higher consumption when $p_{i1} < 1$. The Euler equation then becomes,

$$u'(c_{i1}) = \beta(1+r)u'(c_{i2}) \quad \text{if } c_{i1} \leq \frac{y_1}{N}$$

$$p_{i1}c_{i1} = \frac{y_1}{N} \quad \text{if } u'(\frac{y_1}{N}) > \beta(1+r)u'(c_{i2})$$

Intuitively, while demand is unconstrained ($p_{i1} = 1$), consumers must be indifferent between consuming and saving an additional unit of income at the margin. By contrast, when the ideal consumption demand is such that it exceeds available output (the second line), the consumer will not be purchase any more than $\frac{y_1}{N}$. This is because after expending the necessary shopping time to purchase $\frac{y_1}{N}$, store shelves will not get refilled and any further demand will not be met. Thus, the consumer is at a corner solution where $p_{i1}c_{i1} = \frac{y_1}{N}$ is the best available choice.

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

\[ u'(f(n_1)) = \beta(1 + r)u'(f(n^{FE})) \quad \text{if} \quad f(n_1) < f(\bar{n}_1) \]  \hspace{1cm} (6)

\[ u'(f(n_1)) > \beta(1 + r)u'(f(n^{FE})) \quad \text{if} \quad f(n_1) = f(\bar{n}_1) \]  \hspace{1cm} (7)

Equation (6) is the Euler equation of a typical new Keynesian model. In that model, reductions in the real interest rate \((1+r)\) will stimulate consumption and thus output in period 1. To see this note that lower real interest rates decrease the right-hand-side of the equation. Since \(n^{FE}\) is fixed, the only variable that adjusts to restore the equality is \(n_1\). In particular, \(n_1\) must rise to lower marginal utility in period 1. By emphasizing this equation, the new Keynesian model cannot match the French experience as we noted above.

However, in this model the Euler equation only applies so long as there are no constraints on the labor market. Once those bind, then output is fixed at \(f(n_1) = f(\bar{n}_1)\) and any further reductions in interest rates have no stimulative effects. In that case, consumers will not borrow more given further interest rate reductions, because their consumption in period 1 is rationed by the available output.

This is illustrated in figure 10. When the economy is at point A, the standard new Keynesian Euler equation is operational, 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

\[ 1 + \bar{r} : \quad u'(f(\bar{n}_1)) = \beta(1 + \bar{r})u'(f(n^{FE})). \]  \hspace{1cm} (8)

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 simply not profitable for firms to produce additional output, and consumers, recognizing that any additional demand will not be met, do not adjust their consumption profile. Thus in period 1 the economy is stuck at a level of output below full employment.

We can think of the French policies as a combination of raising \(\bar{\omega}_1\) to \(\bar{\omega}'_1\) through New-Deal type policies and reductions in the real interest rate \(1+r\) to \(1+r'\). Suppose the economy initially starts at \(n_1 < \bar{n}_1\), such as point A in figure 11. 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 for large interest rate reductions, such as to point \( B \). By contrast, the model suggests that devaluation would have raised French output by lowering interest rates, had these supply restrictions not been enacted.

So far we have abstracted from capital. This allowed us to the discussion to keep the model deliberately simple and focus on the key inconsistency of the new Keynesian model with the data. However, modifying the analysis along these lines is unlikely to affect our results. Suppose the production function is now \( f(n, k) \) and the aggregate capital stock in period one is \( K_1 \). Then in a symmetric equilibrium, the real wage constraint becomes,

\[
f'(n_1, K_1 \frac{1}{N}) \geq \bar{\omega}_1,
\]

and we define the maximum level of employment as \( \bar{n}_1 \) such that \( f'(\bar{n}_1, K_1 \frac{1}{N}) = \bar{\omega}_1 \). Thus, 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 look analogously to the Euler equation for consumption (7) when supply is constrained. Thus investment will also be irresponsible 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.
Figure 10 – The baseline two period model in real-interest-rate-output-space. The right vertical line denotes the full employment level of output, \( f(n^{FE}) \), which is independent of the interest rate. The downward-sloping segment of the left line captures the standard Euler equation (6), 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 (5) 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 stimulate output above \( f(\bar{n}) \).
Figure 11 – 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 (6), 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 (5) 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

We began this paper by noting the controversy over the macroeconomic effects of the New Deal. With the U.S. and other industrialized countries again at the zero lower bound, this debate is of more than historical interest. Most of the New Deal literature has focused only on the U.S. experience. We hope this paper shows that other countries’ experiences can be informative.

In 1936, the Popular Front government in France implemented several New-Deal-style policies. Like Roosevelt it encouraged higher wages. Like Roosevelt it encouraged a shorter work week. The Popular Front mandated a 40-hour work week. Roosevelt in 1933 implemented the “President’s Reemployment Agreement” which shortened the workweek at many U.S. firms.\(^{20}\) Roosevelt directly and the Popular Front indirectly raised prices.

Despite their obviously negative microeconomic consequences, Roosevelt’s actions have sometimes been argued to have been positive in aggregate, since they contributed to higher expected inflation and thus lower real interest rates (Temin and Wigmore, 1990; Eggertsson, 2012). More generally, new Keynesian models suggest that when nominal interest rates are fixed, any policy that raises expected inflation will raise output.

The French experience speaks directly to this debate. We find strong evidence both in the aggregate time series and across individual industries that the 40-hour week restriction had negative effects on French output, despite contributing to a dramatic 40 percentage point decline in \textit{ex post} real interest rates. Supply-side restrictions likely explain why France, unlike nearly every other country, experienced stagflation after leaving the Gold Standard. We provide a model to illustrate a simple mechanism through which the Popular Front’s supply-side restrictions could have out-weighed expansionary effects from devaluation, a result that is impossible to reconcile with the standard new Keynesian model.

U.S. New Deal policies were of course different in the specifics from the Popular Front’s. But in their broad macro effects they ought to have been similar. Thus the French experience suggests that the inflation-inducing effects of the New Deal may well have been negative for growth. Of course, the New Deal could have worked through other channels. It might, for

\(^{20}\text{Taylor (2011) analyzes the “President’s Reemployment Agreement.” He finds positive effects on employment but negative effects on output. See also Neumann, Taylor, and Fishback (2013).}
instance, have increased consumer confidence by showing the government visibly at work helping the economy. What this paper suggests is that any such positive effects may have been counterbalanced by negative effects from restricting supply.
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