

## Monetary Policy without Interest Rates: Evidence from France's Golden Age (1948 to 1973) Using a Narrative Approach<sup>†</sup>

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*Central banking in France from 1948 to 1973 was a paradigmatic example of a policy that relied on quantities rather than interest rates. Standard SVAR analyses support the common view that monetary policy was ineffective during this period. However, this approach fails to identify the stance of monetary policy since it does not account for the specificity of quantitative controls on money and credit. An alternative identification strategy based on a narrative approach suggests that monetary policy shocks had strong and lasting effects in the conventional direction and accounted for nearly half of the variance in output and price levels. (JEL E43, E44, E52, E58, G21, G28, N14)*

*By the middle of 1950, in the comparatively hopeful days before the Korean crisis, France had attained reasonable internal stability and had approached an acceptable international balance. In the rehabilitation and stabilisation of the French franc, credit controls have been an essential instrument, but France's experience with them has remained almost unnoticed on this side of the Atlantic.*

— M. A. Kriz, *American Economic Review*, 1951.

Recent central bank interventions have raised concerns about the use of quantitative instruments as instruments of monetary policy. In fact, however, quantitative controls—especially credit controls—have been used as primary tools of monetary policy for decades in Western Europe and East Asia, usually during

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periods when these countries were experiencing their highest ever rates of growth. Many countries, including Brazil, India, and China, still use them today.

Despite their importance, these tools remain largely absent from the standard literature on the effects of monetary policy. Since traditional SVAR econometric methods usually consider interest rates to be the primary instrument of monetary policy, it is difficult to compare the effectiveness of quantitative controls with the standard results obtained by Sims (1992) and Christiano, Eichenbaum, and Evans (1999) concerning conventional monetary policy.

French postwar monetary policy from 1948 to 1973 was a paradigmatic example of the use of temporary quantitative credit controls that nearly eliminated the role of interest rates. As with similar policies, we have neither a comprehensive account of its operation, nor a quantitative evaluation of its effects.

The first contribution of this paper is to demonstrate that an effective way to assess the stance of monetary policy when interest rates are not the primary instrument is to follow a narrative approach (Friedman and Schwartz 1963, and Romer and Romer 1989), that is, to examine archival evidence directly concerning policymakers' intentions and decisions. No reliable quantitative indicator exists concerning French monetary policy from 1948 to 1973, since the central bank had to change its instruments constantly to adapt both to financial innovation and to the circumvention of previous sets of instruments by the banks. Using extensive archival evidence from the Banque de France on the use of a wide set of quantitative credit and liquidity controls, I measure the monetary policy stance with a dummy variable denoting restrictive episodes. In total, six episodes of restrictive monetary policy are identified.

The second contribution of this paper is to combine the narrative approach with a VAR estimation to demonstrate that quantitative controls on credit and money had a strong influence on nominal and real variables, but not on interest rates. I find that monetary policy shocks had a significant and sustained impact on production and the price level when I use a narrative measure of monetary policy in a VAR, and I find a disconnect between quantities (of money and credit) and prices (interest rates). Conversely, a shock to the discount rate or to the money market rate in a VAR model does not produce significant or consistent responses in production and prices.

These results cast new light on the importance of monetary policy in the European Golden Age of growth after WWII and under the Bretton Woods system, periods of fixed exchange rates and ubiquitous financial restraints.<sup>1</sup> To date, the literature primarily considers fiscal policy and productivity shocks as factors explaining business fluctuations in Western Europe during the period preceding the Great Inflation (see Battilossi, Foreman-Peck, and Kling (2010) for a survey). I find monetary and credit policy also mattered. Over this period, monetary policy shocks in France explain approximately 40 percent of the variance in industrial production and price levels.

<sup>1</sup> It is common in the literature to characterize the period from the end of WWII to the Great Inflation as the Golden Age of European growth (Temin 2002). No extant study provides econometric estimations of the effects of French monetary policy over the period due to a lack of appropriate measures. Sims (1992) estimates a VAR on French data from 1966 to 1990, suggesting a very strong price puzzle. Also, using a VAR approach, Bruneau and De Bandt (1999) choose 1972 as a start date, and Mojon (1998) and Clarida, Gali, and Gertler (1998) chose 1986. In all of these studies, difficulties that arise using the interest rate as a measure of monetary policy—rather than lack of data—probably motivated the sample choice.

When policy turned restrictive, industrial production and prices decreased by 5 percent within 20 months. Contrary to most VAR studies, there is no price puzzle.

For simplicity, I use the term monetary policy to refer to the whole set of central bank operations. However, two kinds of instrument are distinguished during the analysis since the Banque de France used both direct actions on credit and controls of the money supply through liquidity or reserve ratios.

The remainder of this paper is organized as follows. Section I presents the institutional environment and the instruments of French monetary policy from 1948 to 1973, and justifies the use of a narrative approach. Section II identifies episodes of restrictive monetary policy using archived information from the Banque de France. Section III discusses the econometric specification and identification assumptions, and presents the primary results and robustness checks. Section IV offers concluding remarks.

### I. French Monetary Policy, 1945–1973

After WWII, the procedures and objectives of the French central bank changed radically in comparison with the pre-war situation. Banque de France policy became part of a broader movement called the “nationalization of credit,” (*nationalisation du crédit*) which valued state intervention in credit allocation to support economic reconstruction and avoid the financial discontents and economic stagnation of the inter-war period (Kuisel 1981, chapter 7).

The Banque de France was nationalized on December 2, 1945, and was placed in charge of banking supervision and regulation. The December 2 Law created two important institutions within the central bank: the National Credit Council (CNC) which was in charge of implementing credit controls, and the Banking Control Commission (CCB), which supervised the banks. Mandatory declarations and registrations of bank credit with the CNC became essential for the functioning of monetary policy. They were used both for policy recommendations at sector and local level and for macroeconomic stabilization (Koch 1983, Monnet 2012a). The supervision of national banks and credit institutions by the monetary authorities was reinforced with capital controls.

Although the Banque de France had no legal objectives, its priorities were to encourage the expansion of credit and investment in order to increase industrial production (Monnet 2012a), and to guarantee the internal and external value of the French franc, that is, to stabilize price levels and the exchange rate.<sup>2</sup> To support credit growth, the Banque de France began pursuing an active refinancing policy; banks could rediscount bills up to five years (called “rediscountable medium-term credit”), whereas before WWII, the Bank’s practice had always been to discount only three month bills. This discount window policy required strong safeguards to avoid inflationary booms. The central bank started to fight postwar inflation in September 1948 (Casella and Eichengreen 1991), inventing various quantitative instruments to cut

<sup>2</sup>In January 1973, the new legal status of the Banque de France stated that the objectives of the central bank were to supervise money and credit. From 1945 onwards, the Banque de France depended legally on the government, and most of the important measures were discussed between policymakers from government ministries and from the Banque de France. This occasionally led to conflicts (e.g., 1948, 1952, and 1957) because the government was reluctant to impose restrictions to fight inflation (Koch 1983).

price levels rapidly without raising interest rates (Kriz 1951). In subsequent years, the Bank made extensive use of quantitative instruments, and invented many new ones to avoid the two-digit inflation rate which had been seen from 1945 to 1948.

The consensus view of the period is that the official discount rate of the Banque de France “had lost its meaning.”<sup>3</sup> As the Bank’s management repeatedly pointed out, the discount rate was used primarily for “its psychological effect”<sup>4</sup> because the price elasticity of credit demand was too low and there was no willingness to give a greater role to interest rates and market forces in the allocation of credit (Monnet 2012a). Policymakers called the discount rate a “qualitative” instrument, as opposed to direct credit controls, which they referred to as “quantitative” instruments.<sup>5</sup> Throughout the period, the Banque de France’s discount rate remained low, sometimes negative in real terms, and it was adjusted largely in line with the US interest rate.<sup>6</sup>

In his survey of credit controls in Western Europe, Hodgman (1973, 137–38) identifies four reasons for this reluctance to change interest rates (i.e., their maintenance below market clearing level) and the preference for quantitative controls: “financing government debt at lower interest rates than market preferences would permit; decreasing inflation without raising domestic interest rates and thus without attracting foreign funds through the balance of payments; influencing the allocation of credit to priority uses (selective controls) and, finally, blocking channels of financial intermediation and thus assisting a restrictive general monetary policy by impeding a rise in velocity.” These four reasons explain French policy well. Among Western European countries, France was the country most willing to intervene in the allocation of credit, and the French central bank was the most reluctant to use the interbank market for refinancing operations (Hodgman 1973).

The Banque de France primarily used three kinds of quantitative instruments: rediscount ceilings (borrowing limits at the central bank window), liquidity or reserve ratios, and direct control of bank lending to the economy (credit ceilings).<sup>7</sup> Table 1 shows the primary instruments used over the period and specifies when they were used. The way they functioned is described in the next section. In the Appendix, I show all the changes in the values of these instruments over the period 1948 to 1973.

### *A. Main Instruments Used by the Central Bank*

*Rediscount Ceilings and Refinancing Operations.*—Starting in September 1948, the monetary authorities set maximum rediscount limits for individual institutions.

<sup>3</sup>“La politique du crédit en France,” *Revue du personnel de la Banque de France*, No. 5, November 1954.

<sup>4</sup>This sentiment is notably expressed in ABF, PVCG, 30/09/1948 by the Governor E. Monick and in ABF, PVCG, 11/10/1951, p. 511, 11/04/1957, p. 278, by Baumgartner. All quotations are my translations of the original French from the archives of the Banque de France (ABF). NB: When I quote the minutes of the General Council of the Bank (PVCG), I use the following format: “ABF, PVCG, day/month/year.” When I quote other documents, I specify the file number (ten-digit), the box number (two-digit) and the date and nature of the document. See the Appendix for archive references. Original quotations are available in the online Appendix.

<sup>5</sup>Notably expressed by the Governor Baumgartner, PVCG, 11/10/1951.

<sup>6</sup>In Monnet (2013), I demonstrate that it did not follow a Taylor rule; not only was the discount rate not (or only mildly) increased when inflation or production boomed, but it was not reduced when production fell.

<sup>7</sup>I use the terms rediscount and discount interchangeably when discussing the central bank’s refinancing operations as the Banque de France only discounted bank loans (i.e., rediscount) after WWII.

TABLE 1—INSTRUMENTS OF MONETARY POLICY

Type of instruments	Introduction	Abolition	Note
<i>Discount ceilings and penalty rates</i>			
Individual bank discount ceilings	Sep. 1948	Jan. 1972	Several exemptions
Enfer rate (also called pension A) and super enfer rate (also called pension B)	Oct. 1951	Dec. 1967	
Fixed rate pension	Dec. 1967	Jan. 1972	
<i>Ratios</i>			
Floor on government paper	Sep. 1948	Sep. 1967	
Liquid asset ratio ( <i>coefficient de trésorerie</i> )	Dec. 1960	Jan. 1967	
Reserve requirements on liabilities	Jan. 1967	1998	
Reserve requirements on credit	Apr. 1971	Jan. 1987	
Minimum portfolio of medium term credit	Jan. 1967	Jan. 1985	
Supplementary reserves	Feb. 1970	Jan. 1987	Only when credit ceilings in place
<i>Credit ceilings</i>			
Central bank authorization for large loans	Feb. 1947	Feb. 1957	
Maximum limit on bank credit growth (credit ceilings)	Feb. 1958	Jan. 1987	Only temporarily before 1972. Several exemptions

*Notes:* This table lists the names of all the quantitative instruments used by the Banque de France and specifies when they were first implemented (introduction) and when they were last used (abolition). The Appendix shows the changes in the value of each instrument from when it was introduced to the end of 1973. See Section IA for details on the use and definition of the instruments.

The Banque de France determined these ceilings on a discretionary basis, according to its information on each bank's needs. Thus, the value of each rediscount ceiling was set for prudential or distributive purposes, but a simultaneous change in all ceilings could be used to decrease or increase the aggregate quantity of credit in the economy. For instance, the central bank could decrease all the ceilings by 10 percent in order to restrict the supply of bank credit to the economy. The Banque de France's discount rate remained below the interbank rate until January 1971 so it was always more beneficial for banks to borrow up to their rediscount ceiling before seeking financing on the interbank market. In January 1971, however, the Banque de France began prioritizing the money (interbank) market over the discount window for its primary refinancing operations. It subsequently set its discount rate above the interbank market rate. Consequently, rediscount ceilings were abolished in January 1972.

In October 1951, the Bank introduced two penalty rates for discounts granted in excess of the ceilings: one for the first 10 percent of credit above the ceiling, and another for credit over and above the first 10 percent margin. These were known respectively as the "evil rate" (*taux d'enfer*) and the "super-evil rate" (*taux de super-enfer*), or *pension A* and *pension B*. As use of this excess refinancing decreased, the distinction between *enfer* and *super-enfer* was dropped in 1967 and replaced by a single rate called the *fixed rate pension*.

The rediscount ceilings did not apply to medium-term bills (i.e., with maturities of one to five years) which became rediscountable at the Banque de France after WWII. These bills were given preferential treatment in order to finance medium and long-term investments and economic reconstruction in the 1950s. By the end of the 1950s, once the reconstruction period was largely over, banks were better able to finance themselves and were thus less dependent on the central bank's discount window. The proportion of short-term credit in bank balance sheets had decreased significantly

(Monnet 2012a), and it became necessary to control medium-term credit in order to curb credit growth and inflation. Consequently, rediscount ceilings were replaced with credit ceilings (see Section 1.3) as the primary instrument of monetary policy after 1958, although rediscount ceilings were kept and continued to play a role until 1972.

*Liquidity and Reserve Ratios.*—When the Banque de France implemented its rediscount ceilings in 1948, it soon realized that they would be ineffective in restricting short-term credit and liquidity if banks could sell long-term bills to increase their short-term lending. Since banks held a large portfolio of Treasury bills at the end of WWII, a decrease in rediscount ceilings would have missed its objective if banks had sold these bills on the money market to acquire liquidity or not renewed them at maturity. Therefore, banks were required to retain a minimum portfolio of Treasury bills, called a “floor” (*plancher*). An increase in the minimum legal portfolio of government paper acted as an automatic restraint on the volume of short-term lending and was an obvious way to help finance the public deficit. This Treasury bill floor was defined on an individual basis for each institution as a ratio of new deposits until 1956, and then as a ratio of total deposits.

The same logic applied to the liquid asset ratio (*coefficient de trésorerie*) created in 1960, which obliged banks to maintain a minimum ratio between certain components of their liquid or available assets (i.e., government securities and medium-term paper that could be rediscounted at the Banque de France) and certain components of their long-term liabilities.<sup>8</sup> At the beginning of 1960, the amount of medium-term credit that was rediscountable at the Banque de France, as a share of GDP, was four times higher than in 1948. This posed a significant risk for the effectiveness of credit controls since the Banque de France was increasingly being asked to rediscount these medium-term bills. In periods when their liquidity contracted, banks tended to rediscount medium-term paper automatically at the central bank and increase their short-term lending. Increasing the liquid asset ratio led to a reduction in the amount of bank liquidity and helped to avoid the asset substitution that was liable to undermine the effectiveness of rediscount and credit ceilings.

In January 1967, both the liquid asset ratio and the Treasury bill floor were replaced by a standard system of reserve requirements along with a minimum portfolio requirement for medium-term credit.

Reserve requirements were initially set as a proportion of banks’ demand liabilities (i.e., sight and time deposits), but this definition was extended on February 23, 1971 to include a proportion of new loans (i.e., a proportion of credit growth for each bank). Until May 1970, banks exceeding their credit ceiling were sanctioned via a reduction in their rediscount ceiling; that is, a limit on their access to the central bank’s discount window. After this date, a new system of sanctions was introduced whereby banks exceeding their ceiling were obliged to deposit a share of this excess credit with the central bank. Contrary to the reserve requirement on credit growth, which was permanent, these “supplementary reserves” (or “special deposits”) were

<sup>8</sup>This decision was also motivated by the fact that the Banque de France was no longer automatically obliged to discount Treasury bills owned by banks after May 1957. It stopped doing so altogether in December 1960.

applied to the amount of credit exceeding the ceiling, and were only imposed when credit ceilings existed.

*Credit Ceilings* (Encadrement du Crédit).—Credit ceilings (i.e., direct limits on the growth of outstanding loans) were implemented in France in February 1958. Contrary to the rediscount ceilings and the reserve ratios, they were intended as a temporary restrictive policy, and were repealed when the Banque de France wanted to change the policy stance and reintroduced every time it was necessary to fight inflation. Only after 1974 did the central bank begin to use them as a permanent, though less stringent, technique.<sup>9</sup> In addition to avoiding an increase in interest rates, the primary justification for credit ceilings was their very rapid effect on lending. The exact method and definitions of direct controls fluctuated between 1958 and 1973 (see Table 1 and the Appendix). Selective relaxations were occasionally applied in order to favor certain types of lending, such as housing loans or export credit. The definition of direct controls also depended on how they complemented various reserve and liquidity ratios.

Before credit ceilings were implemented in 1958, the Banque de France's practice was to oblige banks to ask for formal authorization before granting large loans above a certain limit. During periods of restrictive monetary policy, the Bank could thus prevent banks from lending large amounts.

*Summary.*—The evolution of the Banque de France's instruments and operating procedures from 1948 to 1973 can be summarized quite easily. Rediscount ceilings and liquidity or reserve ratios were used on a continuous basis, with the Bank changing their values when it wanted to expand or restrict money and credit creation. By contrast, credit ceilings—in use from 1958 to 1973—were imposed only when the Bank decided to make the monetary policy stance more restrictive, and were lifted the rest of the time. The primary instruments used to curb inflation were rediscount ceilings in the 1950s and credit ceilings in the 1960s (rediscount ceilings were in place in the latter decade, but were less binding). Liquidity and reserve ratios, sanctions and penalty rates were used throughout the period but their definitions changed several times to avoid adverse asset substitution by banks and to maintain the effectiveness of credit and rediscount ceilings.

### B. *The Problem of Measuring the Monetary Policy Stance*

There are two reasons why a single instrument or a compound index of instruments cannot be used as a measure of monetary policy when ceilings and ratios—rather than open market operations, the money base or interest rates—are the primary instruments of central bank policy.<sup>10</sup>

<sup>9</sup>As the Governor of the Banque de France noted in a statement to the Finance Minister on February 6, 1958, "These measures should not be considered as irremovable [...] They are conceived in response to a specific situation, and the stabilisation of credit will need to be changed in one way or another when the factors of this situation evolve. In the long term, if nothing is done, limitations on banking credit would probably create rents that would distort the normal rules of a competitive sector." ABF, 1427200301/334.

<sup>10</sup>One additional reason is more common and known well in the literature. Credit or money supplies cannot be used to measure monetary policy because of endogeneity problems and because the central bank does not control credit and money aggregates perfectly (Bernanke and Mihov 1998). Regarding Banque de France policy from 1948

First, no single quantitative instrument was used—or kept the same definition—over the period. A combination of different instruments always had to be applied, and the particular choice of combination varied over time. As discussed previously, direct bank credit controls had to be supplemented with various liquidity ratios (rediscount and credit ceilings) in order to be effective. For example, if a bank reached its rediscount ceiling, it could sell bonds or substitute demand deposits for time deposits or mid-term credit for short-term credit to increase its liquidity and its ability to lend. Liquidity ratios thus served to block these substitution effects. This argument was frequently advanced at the time within the Banque de France.<sup>11</sup> Tobin (1970), Davis (1971), and Cottarelli et al. (1986) discuss these adverse substitution effects from a theoretical viewpoint and assess their consequences for credit control.

Second, and more importantly, even when one instrument was used over a long period, the values of that instrument over time are not commensurable. What matters is not the nominal value of the ratio or the ceiling, but whether it is constraining. For example, an increase in the Treasury bill floor or in the liquid asset ratio is not a restrictive measure if, as in 1956 and 1962, it only serves to keep pace with the changing composition of banks' balance sheets, without actually imposing a tighter constraint. Hence, it is essential to know the intentions of policymakers, who were observing bank balance sheets and the constraining effects of their instruments, when the decision to change a ceiling or a ratio is taken. This difficulty is compounded by the fact that exemptions were applied to certain instruments at different points in time, and that the combinations of instruments used changed over time. For example, it is difficult to evaluate whether credit ceilings were tighter in 1969 than in 1963; even though 1969 ceilings were lower, they also included important exemptions on medium-term housing credit. For similar reasons, rediscount ceilings in the 1960s are not comparable with those in the 1950s because they were replaced by credit ceilings as the primary instrument of restrictive monetary policy in 1958, and banks were less indebted towards the central bank in the 1960s. Again, it is key to know the intentions of policymakers to be able to compare the stance of policy over time.

Monetary policy that uses quantitative instruments over a long period cannot be measured in the usual way with a single series. It is also impossible to build an index of several continuous series. The choice set of the policymakers is thus not observable; but intentions and objectives can be observed from archival information. For this reason, I follow Romer and Romer (1989) and use narrative evidence to build a measure of central bank actions, based on whether or not French central bankers intended to pursue a restrictive policy.

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to 1973, the latter argument is more compelling because the central bank always combined controls on the credit supply (i.e., rediscount and credit ceilings) and controls on the money supply (liquidity and reserve ratios). In the working paper version (Monnet 2012b), I present a simple model that separates controls on money from controls on credit and shows their ambiguous effect on interest rates.

<sup>11</sup> This explanation can be found in many documents, notably in a note by H. Koch, January 29, 1963, (Banque de France archives, 1331200301/10) or in a speech by M. Debré from the Ministry of Finance, at the CNC on November 9, 1966 (Banque de France archives, 1331200301/11). For example, a preparatory note for the September 1948 CNC meeting states that “the direct limitation of credit creates an excess of funds that banks can finance with deposits. This excess must be invested in government bonds in order to avoid an increase of liquidity.”



## II. Definition of Restrictive Episodes of Monetary Policy

This section reports an examination of archival evidence to identify dates when Banque de France board members implemented a restrictive policy through quantitative credit and liquidity controls. I define a dummy variable as 1 when policy is restrictive, and as zero at all other times. I discuss the information set that was available to policymakers, since this is an important factor for the identification of the VAR model in the next section. The dummy variable will be endogenous in the VAR since the Bank reacted to primary economic variables, and it will be ordered first in the VAR since policymakers knew only lagged values of nonpolicy variables.<sup>12</sup> Readers interested only in empirical results should skip to Section IIIB.

In Banque de France's archives, discussions of monetary policy instruments, including the discount rate, appear under the same heading: Credit Policy (*Politique du Cr dit*). At each meeting, the Bank's General Council discussed and stated whether credit policy should be restrictive.

The sources I use (cf. Appendix) are largely the minutes from weekly meetings of the General Council (denoted PVCG), minutes from sessions of the National Credit Council (denoted CNC), which met irregularly, and numerous staff documents, notes, and letters from the central bank archives. Original quotations in French and supplementary material are available in an online Appendix.

### A. Six Restrictive Episodes

*September 30, 1948 to June 8, 1950.*—The first episode of quantitative credit control occurred in a context of political instability. To push the government to accept credit restrictions, the Banque de France increased its discount rate by 1 percentage point on September 2, without much effect, and finally decreased it on September 30 by 0.5 percentage point once the government and the National Credit Council had approved restrictive credit controls. The objective of this quantitative credit control was straightforward: to combat inflation by reducing the rate of credit growth. One of the reasons for reducing inflation was that the inflation tax (seigniorage) was so high that the government had lost its credibility and could not increase its deficit further.<sup>13</sup>

This new policy had two objectives: first to limit credit expansion in order to reduce the development of monetary facilities; second, to guarantee to the Treasury the resources that it has the right to expect from the banking system.<sup>14</sup> The Bank obtained a commitment from the government that it would continue its financing in a noninflationary way (i.e., through bond issuance, but with no new advances from the central bank).

<sup>12</sup>The approach in this paper is first similar to the Boschen and Mills (1995) type of analysis whose main objective was to deal with the disparate set of instruments used by the US Federal Reserve. According to this approach, in a period when an interest rate was the main instrument of monetary policy, one would measure the changes in the policy stance as the changes in this interest rate. The Romer and Romer approach, in contrast, is mostly concerned with the issue of the possible correlation between policy decisions and other influences on future economic activity. Section III takes a step from the Boschen and Mills approach towards the Romer and Romer-type analysis in providing a longer discussion of identification. I would like to thank David Romer for helping me to clarify this point.

<sup>13</sup>ABF, 1427200301/8, Letter of the Governor, Emmanuel Monick, to M. Filippi, September 17, 1948.

<sup>14</sup>ABF, 1427200301/8, Preparatory notes for the CNC meeting, September 29, 1948.

In addition to discount ceilings, the following measures—considered excessive by many bankers—were introduced: a lower limit on the amount of government securities owned by banks (*floor*), equal to 95 percent of the amount held by each bank in September 1948, and an obligation for each bank to devote 1/5 of new loans to government bonds.

The end of this episode was more gradual. Throughout 1949, the Banque de France insisted on the importance of these measures (ABF, PVCG, 01/09/1949). Then, at the beginning of 1950, French monetary authorities began to encounter considerable resistance to their restrictive policy from firms and banks. A relaxation of the policy, consisting primarily in the lifting of rediscount ceilings at the Banque de France, was repeatedly advocated in the Parisian financial press and by business groups. In April 1950, the National Assembly requested that the government and the Bank relax their controls, despite warnings from the Secretary of State for Economic Affairs that it would create inflationary pressures. In May, the Banque de France agreed to shift its policy stance, but kept a constant watch on inflation, especially after the outbreak of the Korean War at the end of June (Kriz 1951). There is some consensus dating the shift of credit policy to between April and June 1950 (Kriz 1951, Barrère 1951, Guillaumont Jeanneney 1969) due to the adoption of three measures: an increase in the ceilings on loans requiring authorization from the Banque de France (from 50 to 100 million francs) on April 27, an increase in the discount ceiling on May 11, and a reduction of the discount rate on June 8.

Given the uncertainty over the end-date of this episode, I try these three different end months (April, May, June 1950) as a robustness check in the econometric analysis with monthly data. This does not apply when using quarterly data.

*October 11, 1951 to September 17, 1953.*—The reasons for implementing credit restrictions in October 1951 were clear, and they were repeated widely at the General Council: inflation kept rising and France was running a permanent current account deficit. Once again, the central bank pointed the finger at the rate of credit growth, which it blamed for fueling the current account deficit (ABF, PVCG, 11/10/1951).

To reduce demand for credit, the Bank began a new and more rigorous application of discount ceilings. Largely due to financial outflows (ABF, PVCG, 11/10/1951), it also increased the discount rate from 2.5 to 3 percent, and then to 4 percent on November 8, 1951.

These measures did not go down well with bankers and the business community. For example, there was an interesting exchange between the Governor of the Banque de France and the President of the Chamber of Commerce of Paris (letters dating from October 15 and 25, November 30, and December 8), in which the latter complained that the restrictive monetary policy was threatening the development of production and business. The Governor replied that combating inflation was a prerequisite for future growth.<sup>15</sup> This exchange highlights the motives behind

<sup>15</sup>“I do not deny that a rigorous monetary policy is likely to cause some troubles and real difficulties to the firms, but there is no sign today (looking at the index of industrial production and the level of unemployment) that this policy has pushed the country into a crisis. [...] To tell you the truth, the difficulties that firm managers are facing today are essentially due to the recent worsening of an old inflationist situation and not to the monetary policy that has been implemented to fight it.” ABF, 1427200301/15, letter, November 30, 1951.

credit restrictions, and demonstrates that, up to a point, inflation was a clear priority. Production, corporate profits and unemployment were of little concern in monetary policy choices, at least in the short-term or at the time of the decision.

The end of the restrictive period came on September 17, 1953, after three weeks of negotiations between the government and central bank. In early September, rumors were already beginning to circulate in the press and among bankers. The central bank lowered the discount rate from 4 percent to 3.5 percent, and the National Credit Council adopted important measures to ease credit conditions: rise in the discount ceilings and a 50 percent reduction in bank tariffs.<sup>16</sup>

(June 26, 1957) February 5, 1958 to February 5, 1959.—Faced with inflationary pressures in June 1957, the newly appointed Economy and Finance Minister, Felix Gaillard, changed the direction of economic policy and proposed a series of new measures. To fight inflation, he gave up price controls, which had a counterproductive effect, and to solve the trade deficit, he chose a disguised “devaluation,” beginning in August, whereby purchases of foreign currencies were taxed at 20 percent (Koch 1983, 309). Gaillard also requested new advances from the central bank (300 billion French francs) to finance government policies. In reaction to this decision, the Banque de France wanted to “implement limitations on credit in order to neutralize the flow of money that is going to rush into the money market as a consequence of the new advances to the government. [...] The limitations can be implemented by two means: liquidity reserves or credit ceilings.”<sup>17</sup> Government pressure prevented monetary policy from turning very restrictive. On June 26, the Bank imposed restrictions on consumer credit, extending the Treasury floor (25 percent of bank assets must be comprised of Treasury bonds). In July, discount ceilings were lowered by 10 percent, and the super *enfer* penalty rate was increased to 10 percent. In August, to sustain the disguised “devaluation,” discount ceilings were again cut by 10 percent, and the discount rate was increased from 4 to 5 percent (from 6 to 7 percent for the *enfer* rate). On November 28, discount ceilings were lowered by 10 percent again, and the *enfer* rate increased to 8 percent, but the Governor predicted that these measures “would not create too much difficulty on the money market” (ABF, PVCG, 28/11/1957).

Despite a positive effect on the balance of payments, these restrictive measures were insufficient to curb inflation.<sup>18</sup> For these reasons, the Banque de France—strongly supported by the International Monetary Fund—adopted a stricter policy intended to stabilize internal demand and price levels.<sup>19</sup> Credit ceilings were implemented for the first time on February 5, 1958, drawing opposition from two members of the

<sup>16</sup>The Governor of the Banque de France—supported by the government—considered these measures necessary, but he also pointed out the contradictions in the government’s claims: “We must consider how difficult the government’s task is. Indeed, on the one hand it wants French prices to become more competitive and the threat of a rise in wages to disappear, and on the other hand it wants the economic trend to be stronger than in the past. For this reason, one can speak of contradictory views.” ABF, PVCG, 17/09/1953.

<sup>17</sup>ABF, PVCG, 26/06/1957. Note that the term “reserves” here denotes “liquidity ratios” and not “reserve requirements.”

<sup>18</sup>The insufficient impact on credit and inflation was discussed at the CNC meeting of February 7, 1958. ABF, 1427200301/334.

<sup>19</sup>The IMF pressures were a strong constraint on the Banque de France’s General Council, as was evident in the debates of the February 5, 1958 meeting. ABF, PVCG, 05/02/1958.

Bank's General Council (M. Laurent and M. Lambert), who feared an increase in unemployment and a decrease in industrial production (ABF, PVCG, 06/02/1958). The new decision of the CNC forced banks to restrict their lending to the economy to the same level as in the last quarter of 1957 (+3 percent, provided banks provided justifications). Banks that exceeded this percentage could be kept away from discounting facilities. The motives were clearly stated in letters from the Governor to the Economy and Finance Minister, and to the President of the Professional Bankers' Association: "Regarding private credit, a relentless action had been carried out for a long time in order to fight inflationist pressures. The measures taken in 1957 have led to a slowdown of the growth of bank credit. But these credits have nevertheless continued to grow. Thus, in order to maintain the ongoing effort, it seems necessary to adopt new measures to stabilize the amount of credit directly."<sup>20</sup> This official quantitative credit control ended on February 5, 1959. The reasons for ending the restrictive episode were first a balance of payment surplus, second a need to increase medium-term credit to finance public and private investment, and third a commitment by the new political regime in January to run a balanced budget (ABF, PVCG, 05/02/1959).

There are two possible start dates for this restrictive episode. July 1957 is a meaningful choice since that was when the Banque de France began to lower its discount ceilings. However, the reduction was mild according to the Bank, and above all, it was combined with an increase in advances to the government which were a signal that the Banque de France was not running a contractionary policy at any cost. According to most criteria, the true restrictive policy started in February 1958 when the Banque de France admitted and, with the help of the IMF, managed to convince the government that the instruments in place were either too loose or ineffective, and finally implemented stronger measures in line with its objectives. The impact of a different start-date for this episode is discussed in Section IIIC.

*February 28, 1963 to June 24, 1965.*—On February 28, 1963, the Banque de France reintroduced a ceiling on the expansion of bank credit. As explained by the Bank's General Council, the reason for the restriction was that "there was an abnormal rise of flows in the money market threatening the internal and external equilibrium of the currency (ABF, PVCG, 28/02/1963)." Thus, whereas bank credit increased by 17.4 percent in 1962, monetary authorities stated that the total rate of credit growth in 1963 could not exceed 12 percent. In September 1963, this limit was changed to 10 percent (from September 1963 to September 1964). The Treasury floor was also increased from 32 to 35 percent, and then to 36 percent in May. The 10 percent limit on credit was renewed in September 1964 for another year. Then in June 1965, the Bank ended its official credit control prematurely, a move which the Governor said was a strong signal, because "this regulation would have been maintained if the monetary situation had remained the same as it was until recently." It follows that "the suspension of credit ceilings is essentially justified by the fact that banks have recently managed to maintain their credit quite easily within the limits that have been imposed. [...] It seems that the moment is well-suited to end these

<sup>20</sup> ABF, 1427200301/334, letters, February 12, 1958.

measures. Even though they may not disturb banking activities in general anymore, they cause some malfunctionings because they apply to all kinds of companies and thus create rents and discourage the dynamism of more active firms. There is no reason for maintaining measures that would, in one way or another, lead to a sclerosis of the economy” (ABF, PVCG, 24/06/1965).

Since this restrictive episode was due primarily to inflationary pressures rather than a balance of payments problem, the discount rate was not increased as much as in 1957; it was raised from 3.5 to 4 percent in November 1963 and then cut back to 3.5 percent in April 1965.

*November 12, 1968 to October 27, 1970.*—Due to another large balance of payments deficit, the Banque de France increased its discount rate from 3.5 percent to 5 percent on July 3, 1968. The reason was purely to attract capital inflows: “Because of the state of our foreign reserves, in such a situation, it is no longer possible to maintain interest rates clearly inferior to those prevailing on international money markets—especially the US market and the euro-dollar market—[...] The interest rate must be increased in order to stop the hemorrhage (ABF, PVCG, 3/07/1968).” This decision regarding the interest rate was taken without any further regard to credit or inflation.

Conversely, the rise in the official discount rate (from 5 to 6 percent) on November 12 reflected a different motivation. First, the justification given for the measure was much broader, highlighting a general demand problem that needed to be addressed through monetary policy: “the evolution of the foreign exchange market, as well as the domestic monetary situation reveal that the abundance of liquidity is not an accident but has been accepted to contribute to a new acceleration of the economy in a context of sustained expansion” (ABF, PVCG, 12/11/1968). Second, and more importantly, the measures taken were not only “qualitative” (discount rate) but also quantitative; the reserve requirement rose from 4.5 to 5.5 percent, and new official limits were imposed on credit (a maximum of a 4 percent rise in lending from September 30 to December 31).<sup>21</sup> Contrary to previous restrictive episodes, important exemptions were applied, not just to export credit (the discount rate for export credit was kept at 2 percent), but also to midterm housing and consumer credit. According to the Governor of the Banque de France, the nature and strength of these restrictions did not differ significantly from 1958 and 1963 because banks had always been told to impose restrictions on loans that were not used to finance priority investment, housing construction and exports (ABF, PVCG, 12/11/1968).

The imitations were extended in 1969 and 1970, although the same exemptions applied, and the rate of credit growth was restricted to 3 percent for each of those years. In August 1970, a heated debate took place between the Finance Minister and the Banque de France: although the rate of credit growth had been stabilized, the Bank wanted to wait a few months to be certain of the improvement. By contrast, the Finance Minister argued that French monetary policy was too strict in comparison with other countries, and that the main indices showed a slowdown in economic activity that would justify a slight relaxation of credit controls (ABF, PVCG, 27/08/1970).

<sup>21</sup> The liquid assets ratio had been replaced by the reserve requirement in 1967. Credit growth in the last quarter of that year was 9 percent.

The Bank agreed to decrease its discount rate from 8 percent to 7.5 percent to bring it more in line with international standards (Germany and the UK had a 7 percent bank rate) but insisted on officially maintaining a restrictive policy as well as keeping its credit controls in place (ABF, PVCG, 27/08/1970). In October 1970, the ceilings on credit expansion were abolished and the discount rate lowered to 7 percent.

*November 2, 1972 to September 1973.*—The final restrictive episode is a special case because the end of 1973 was marked by a dramatic change in the way French monetary policy was implemented. One of the reasons for this was the major reform of the money market in 1971, which allowed money market rates to fall below the Banque de France's discount rate (Figure 4). This reform was recommended in the influential 1969 "Report on Monetary Policy" by Marjolin, Sadrin, and Wormser. Discount ceilings were abolished in 1972, and the Bank's discount rate, which influenced the money market rate, became a penalty rate. The Bank increased its rate slightly on November 2 from 5.75 to 6 percent to fight inflation, as stated by the General Council: "this measure will first mean, in a symbolic way, that we have entered a period in which money will be more expensive and more difficult to obtain. Second, it will set at a reasonable level the penalty rate applying to banks that do not own enough assets to be traded on the money market," (ABF, PVCG, 02/11/1972). For similar reasons, the discount rate increased to 7.5 percent on November 30. Changes in the discount rate were thought to have a similar effect as the former discount ceilings. Most importantly, reserve requirements for credit were raised from 4 percent to 33 percent of banks' outstanding loans. No other quantitative measures were taken until December 12, 1972 when reserve requirements were raised and ceilings on credit growth were reestablished: the amount of outstanding bank loans on April 3, 1973 could not be more than 19 percent higher than the amount at April 5, 1972. Since total credit had already grown by more than 12 percent from April to December 1972, this measure was restrictive. On December 28, the Bank's discount rate was increased to 8 percent.

For a number of reasons, credit ceilings were not abolished until 1984. However their role changed radically at the end of 1973.<sup>22</sup> Originally introduced as a temporary, highly restrictive tool, they became a permanent, albeit far less restrictive, upper limit. The credit ceiling was increased in 1974 rather than being abolished and, in June, reserve requirements for credit decreased from 33 percent to 0 percent (cf. Appendix.). The reasons for this change are beyond the scope of this paper; due to economic (e.g., oil shocks and stagflation and end of the Bretton Woods system) and political factors (i.e., a new President and new Prime Minister at the beginning of 1974), the objectives and instruments of the Banque de France changed in the second half of the 1970s. For these reasons, I end my study in October 1973, before the first oil shock. By doing so, I avoid any bias in my analysis caused by a huge supply shock. I also consider that the shock changed the nature of monetary policy. From 1974 onwards, another method of identifying restrictive episodes of monetary

<sup>22</sup>General limitations on credit (i.e., the same for all banks), ended in 1984. Individual limits were abolished in 1987.

TABLE 2—DUMMY VARIABLE OF RESTRICTIVE MONETARY POLICY

Monthly data	Alternative	Quarterly data	Alternative
10/1948–06/1950	04/1950	1948:IV–1950:II	—
10/1951–09/1953	—	1951:IV–1953:IV	—
02/1958–02/1959	07/1957	1958:II–1959:I	1957:III
03/1963–07/1965	—	1963:I–1965:III	—
11/1968–11/1970	—	1968:IV–1970:IV	—
11/1972–10/1973	end in 10/1972	1972:IV–1973:IV	end in 1972:III

policy would be required. The primary conclusions of this paper are unaffected by the elimination of the period November 1972 to September 1973.

### B. Restrictive Monetary Policy and the Economy: A Graphical View

Table 2 summarizes the dates when a restrictive policy was implemented, as identified from narrative evidence (i.e., when the dummy variable is equal to 1).

It is useful to examine simple graphs to see whether there is a correlation between restrictive episodes and economic variables.

Figures 1, 2, and 3 show that the cyclical components of the money stock (M2), the industrial production index and the price level experienced a drop during restrictive episodes.<sup>23</sup> The dummy variable is associated with negative monetary downturns of a similar magnitude (between 2 and 4 percent deviation from trend; see Figure 1). Most of the downturns in money, production, and prices over the sample are contemporaneous to monetary policy actions. Note that fluctuations in prices are much larger in the first part of the sample.

The pattern of nominal interest rates (Figure 4) during restrictive monetary policy episodes is also informative. Overall, there is no clear link between monetary policy stance and the value of these rates.<sup>24</sup> Figure 4 shows that the rise in the Bank's discount rate was very modest or inexistent during restrictive episodes. The money market (interbank) rate sometimes experienced a larger increase, but only in the second half of the sample, and especially during the 1968 political crisis. The base lending rate is disconnected broadly from monetary policy stance. The ten-year interest rate on government bonds is very stable throughout the sample. The short-term (three month) interest rate on government bonds is also very stable during restrictive episodes in the first part of the sample. It only rises during the 1963 to 1965 and 1968 to 1970 episodes, but never immediately after the beginning of credit controls.

<sup>23</sup>The cyclical component of the series was derived using a Hodrick-Prescott filter over the period 1947 to 1973. The black vertical line within the 1957 to 1959 episode represents the date February 1958 when monetary policy became highly restrictive. In Figure 2, the industrial production cycle shows a sharp decline in May–June 1968 (a few months before the start of restrictive credit controls) because of protests and massive strikes by students and workers.

<sup>24</sup>Real short-term rates were very low throughout the sample, and negative during inflation peaks (1948, 1951, and 1957 to 1958).

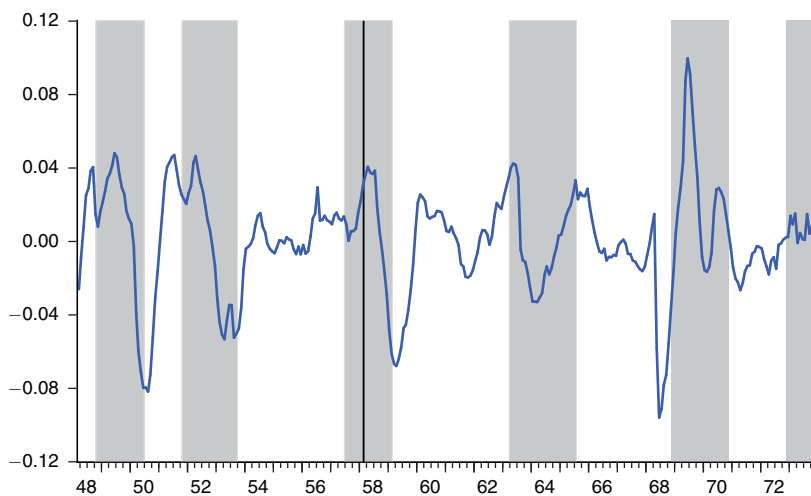


FIGURE 1. CYCLICAL COMPONENT (HP FILTER) OF MONEY (M2) AND CREDIT CONTROL EPISODES

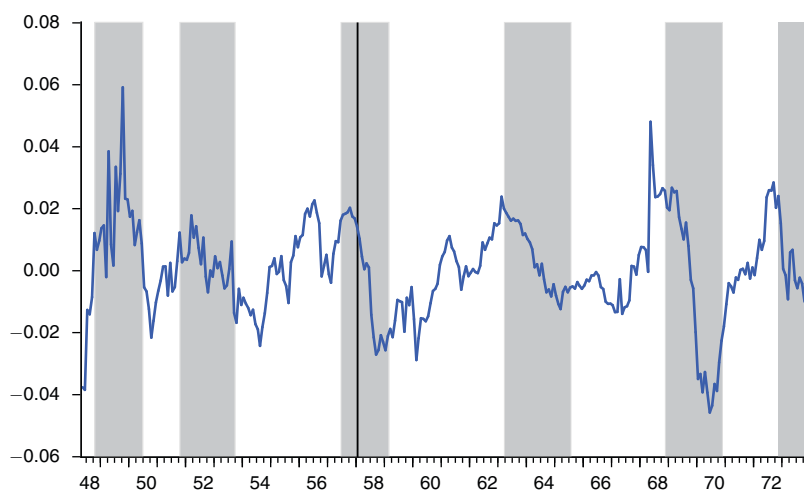


FIGURE 2. CYCLICAL COMPONENT (HP FILTER) OF INDUSTRIAL PRODUCTION AND CREDIT CONTROL EPISODES

### III. VAR Estimations

#### A. Identification and Specification

I use narrative evidence from the previous section to inform an identification strategy in the VAR.

First, since monetary policy decisions appear to be endogenous to most economic variables (i.e., credit, money, inflation, and production), I specify that the dummy variable is endogenous in the VAR. This is the same approach used by Shapiro (1994), Boschen and Mills (1995), and Leeper (1997) in their narrative measures of postwar US monetary policy (“Romer dates” or “Boschen and Mills index”).



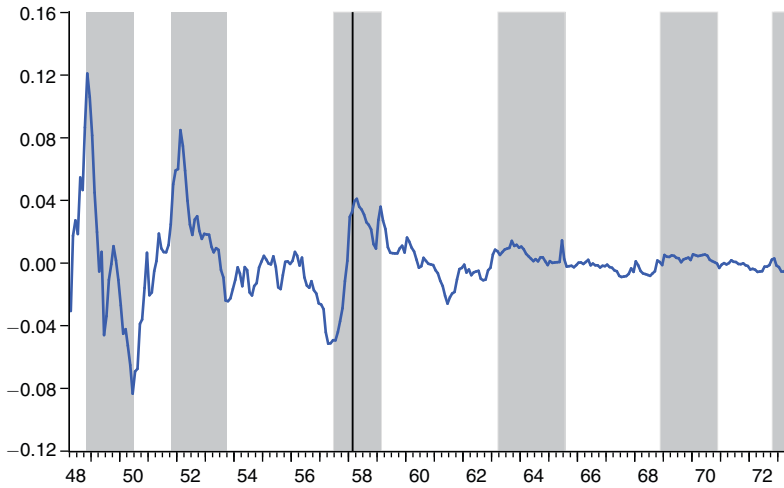


FIGURE 3. CYCLICAL COMPONENT (HP FILTER) OF THE PRICE LEVEL AND CREDIT CONTROL EPISODES

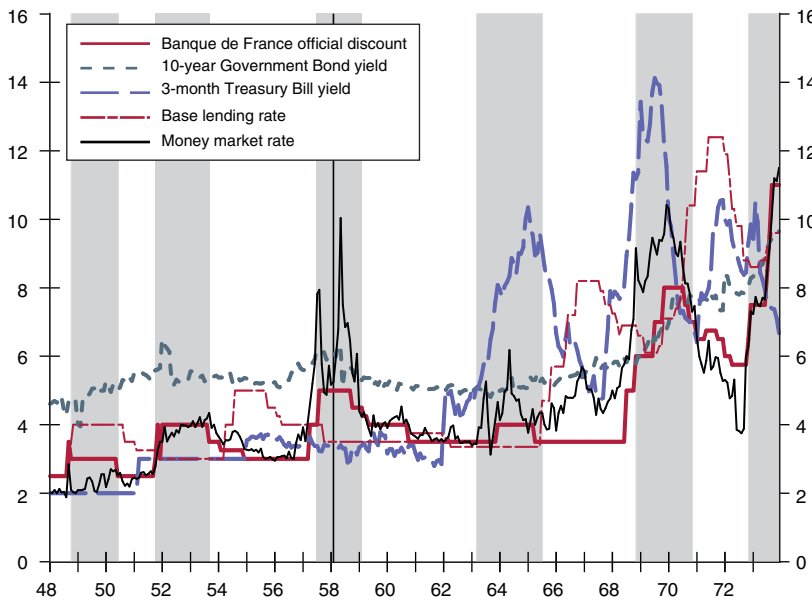


FIGURE 4. MONTHLY NOMINAL INTEREST RATES. FRANCE, 1948–1973

Second, analysis of policy decisions justifies structural identification in the VAR. Monetary policy is affected by past but not contemporaneous values of economic variables, whereas a monetary policy shock influences economic variables contemporaneously. The dummy variable is thus ordered first in the VAR.<sup>25</sup> Ordering the

<sup>25</sup>Note that Schreft (1990) also documents an immediate impact on output following the implementation of credit controls by the US Federal Reserve in March 1980. My identification considers the effect of agents' expectations more fully than the opposite ordering. Agents are likely to reduce loans, consumption, investments, etc., as

dummy variable first is justified because in the minutes, the information available to policymakers—especially the economic statistics—refers to values of economic variables in the months preceding policy decisions. Statistics concerning industrial production and consumer prices were available with three-month and two-month delays, respectively.<sup>26</sup> Regarding the effect of policy shocks, letters sent by bankers to the central bank show that banks, households and firms adjusted their behavior immediately after the announcement of the quantitative restrictions. The way I code the dummy variable is consistent with this recursive identification. When a decision is made in the second half of a month, the dummy variable takes the value 1 in the subsequent month and zero in the current month. Formally, the identification assumption means that the dummy variable  $D_t$  is influenced by a vector of past values for all the variables in the system (i.e., including  $D_{t-n}$ ):

$$D_t = f(\mathbf{Y}_{t-n}) + \varepsilon_t,$$

where  $n \geq 1$  and  $\varepsilon_t$  is the monetary policy shock. Ignoring the constant term, the estimated VAR is:

$$\mathbf{Y}_t = \mathbf{A}_1 \mathbf{Y}_{t-1} + \mathbf{A}_2 \mathbf{Y}_{t-2} + \dots + \mathbf{A}_n \mathbf{Y}_{t-n} + \mathbf{C} \boldsymbol{\eta}_t,$$

where  $\mathbf{C}$  is a lower triangular matrix with diagonal terms equal to unity, and  $\boldsymbol{\eta}_t$  is a vector of zero-mean, serially uncorrelated shocks with a diagonal variance-covariance matrix. The ordering assumption means the monetary policy shock  $\varepsilon_t$  is the first element of  $\boldsymbol{\eta}_t$ . It is worth noting, however, that ordering the monetary stance last in the VAR does not affect the results of this paper.

Third, policymakers could have used information regarding contemporaneous and future economic movements beyond the variables that can be included in the VAR. This is a common caveat of the VAR methodology. Since the French central bank neither used nor published official forecasts during this period, there is no possibility of constructing a measure of policy shock that is free of anticipatory movements as in Romer and Romer (2004). Regarding industrial production, I found no major anticipated events affecting output that motivated the change of the policy stance. The major drop in output caused by strikes in May 1968 was certainly not expected, and restrictive monetary policy started in November 1968. There is evidence of the use of alternative information concerning future movements in inflation. For example, the government deficit, for which monthly or quarterly data are not available for this period, was an issue in 1957 because the deficit led to an increase in central bank advances to the government, which boosted inflationary pressures. Section IIIB discusses how this was a particular issue for the period July 1957 to February 1958. In my benchmark measure (see Section II and Table 2), the dummy does not take the

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soon as a restrictive policy is announced. Note also that the expectation effect can operate in the opposite direction: banks that know they are going to be constrained grant more loans just before the implementation of the control. There is no reason to ignore such a potential effect in identification, whatever the direction.

<sup>26</sup>The only exceptions were the variables of the central bank's balance sheet (e.g., reserves, gold, etc.) which were available weekly, and the foreign central banks' rates, changes in which were known immediately.

value 1 during this period. A somewhat similar issue occurred in early 1951 when information about the Korean War and US policy raised inflation expectations, and in 1968 when new labor negotiations in May raised the minimum wage and the expected general cost of labor. But these two shocks had already started to influence French consumer prices when the Banque de France implemented its restrictive measures. If anything, this shortcoming in the econometric specification understates the effects of monetary policy shocks on inflation. However, the inability to provide a systematic method of accounting for policymakers' anticipations that are correlated with the information set in the VAR remains an important limitation of the analysis and the estimates.

### B. Results

I estimate a VAR model to simulate the impact of a monetary policy shock on the primary economic variables. As discussed earlier, an inversion of the moving average representation is required.<sup>27</sup>

I use monthly variables in order to have a greater degree of freedom and because the Cholesky recursive identification is better justified with high-frequency data. Data sources are presented in the Appendix. All variables are logs, except for the unemployment rate and various interest rates, which are in percentage points. The benchmark specification includes 36 lags. Romer and Romer (1989, 2004) argue that it is necessary to use 36 lags to fully consider the effects of US monetary policy. In our sample, the AIC information criterion also confirms that 36 months is the optimum lag length for all specifications.<sup>28</sup> The shape and magnitude of the impulse response functions presented in the paper are similar when using 12 or 24 lags, but estimation with 12 lags is less precise and displays broader standard error bands after ten months. Following Romer and Romer (2004) and Ramey and Shapiro (1998), my baseline specification includes only two variables. The rationale is that all other shocks affecting output are not systemic and do not correlate with monetary shocks, and will thus be considered in the output lags.<sup>29</sup> However, a two-variable VAR assumes a very narrow monetary policy reaction function.

The dummy variable is denoted Control in the graphs of the impulse response functions. The standard errors are computed using 1,000 bootstrap replications. I display one-standard-error bands. The response of the dummy variable to a monetary

<sup>27</sup> As pointed out by Leeper (1997), a standard VAR, estimated with OLS, does not respect the dichotomous nature of the dummy variable. If nonlinearities are important to determining the dummy, the linear approximation may cause misleading inferences. I checked the robustness of the results using Leeper's method (1997), that is, by estimating the dummy variable equation in the VAR, with a logit estimator (Monnet 2012b), and found similar results as with OLS (as Leeper did). Gertler and Gilchrist (1994), Carlino and DeFina (1998), and Ramey (2011), among others, also use an endogenous dummy variable in a VAR, with OLS estimations.

<sup>28</sup> The BIC favors 12 lags over 24 and 36 lags. The BIC tends to select too few lags in short samples, and the AIC asymptotically selects lag lengths that are too long (Ng and Perron 2005; Coibion 2012).

<sup>29</sup> One important argument supporting this assumption is that there were fewer important oil or commodity price shocks during the period. Thus, criticisms of the narrative approach because of the simultaneity of monetary shocks with oil shocks, such as Hoover and Perez (1994), are less relevant here. Simultaneity of shocks increases estimation imprecision. The potential effects of the wars in Indochina (1946 to 1954) and Algeria (1954 to 1962) are more important but, in combination, these wars lasted over 16 years, more than the half of the period, and thus were not temporary shocks.

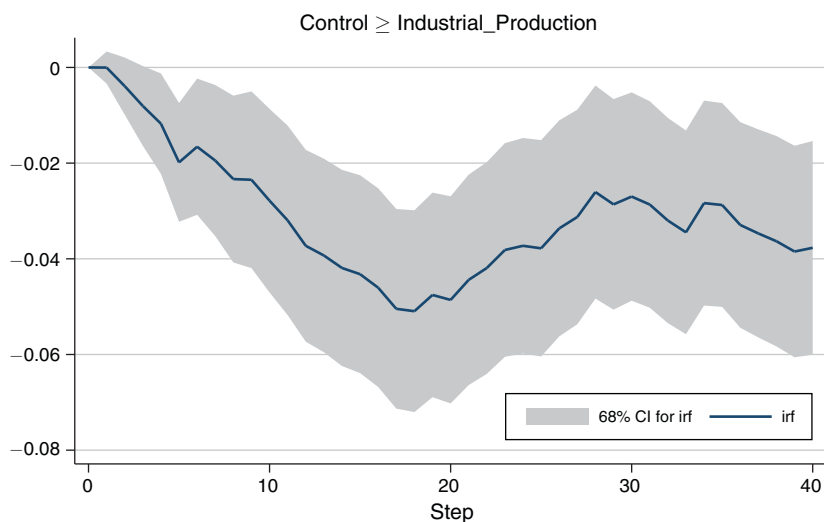


FIGURE 5. IMPACT OF A MONETARY SHOCK ON INDUSTRIAL PRODUCTION. VAR WITH TWO VARIABLES (DUMMY, PRODUCTION). SHADED AREAS SHOW ONE-STANDARD-ERROR BANDS

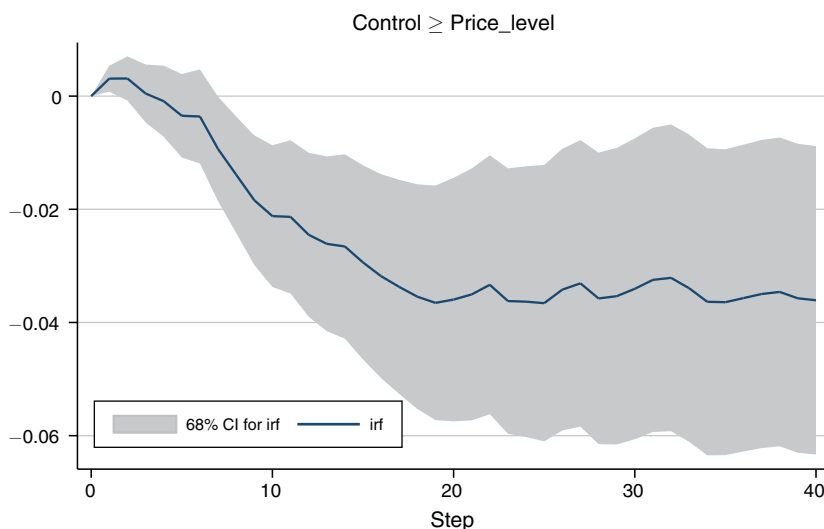


FIGURE 6. IMPACT OF A MONETARY SHOCK ON THE PRICE LEVEL. VAR WITH TWO VARIABLES (DUMMY, CPI)

shock is normalized such that the dummy takes the value 1 when monetary policy becomes restrictive (Figure 8 with four-variable VAR). For each two-variable VAR, responses read as follows: after 20 months, industrial production (Figure 5) is 5 percent lower (standard deviation = 0.018) than it would have been without a monetary shock, the price level (Figure 6) is 4.5 percent lower (standard deviation 0.012), and the unemployment rate (Figure 7) is 0.15 percent higher (Standard deviation 0.11). The estimated impact is very significant. In all specifications, the  $t$ -statistic for the estimated effect exceeds 2.5 from the tenth through to the 22nd months.

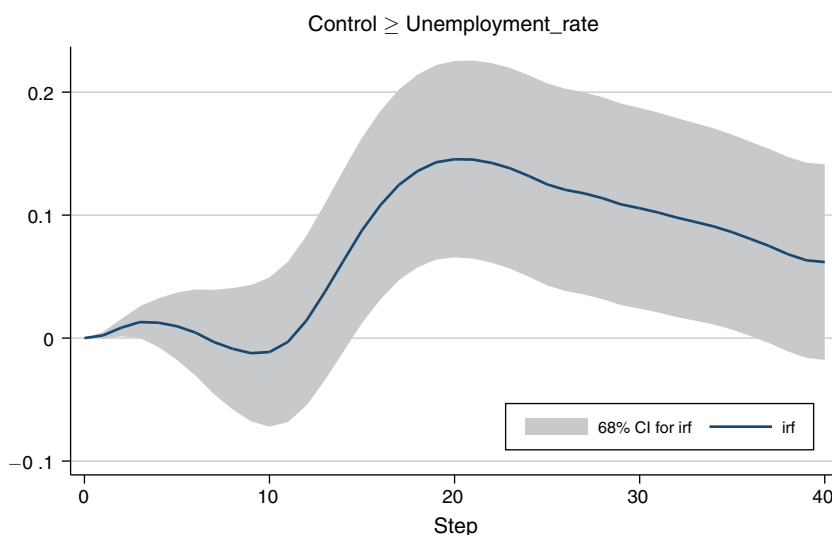


FIGURE 7. IMPACT OF A MONETARY SHOCK ON THE UNEMPLOYMENT RATE. VAR WITH TWO VARIABLES (DUMMY, UNEMPLOYMENT RATE)

A four-variable VAR, including money and the price level, is then estimated (Figure 8). The response of M2 confirms that a shock to the dummy variable is a monetary shock. If one is sceptical about the interpretation of the shock to the dummy variable, this result with the money supply perhaps offers a more intuitive interpretation; after a policy shock that decreases the money supply by 5 percent (standard deviation 0.012), industrial production and the price level also decrease by approximately 5 percent (with standard deviations of 0.016 and 0.012, respectively). The effects on industrial production and on the price level are similar and even more significant in the ten months after the shock. Estimation is more precise when money is included in the VAR and there is no price puzzle. The absence of a price puzzle highlights the fact that when sufficient information is included in the VAR and when the measure of monetary policy is accurate, there is no reason for the response of prices to a monetary policy shock to be at odds with economic theory. This finding contrasts with the results of VAR studies of US monetary policy using the Romer dates or Federal fund rates, which find a very strong price puzzle (Leeper 1997; Christiano, Eichenbaum, and Evans 1999).

The impulse response functions display three other important features:

- Industrial production starts to fall almost immediately, as early as the second month after the shock. This contrasts with many studies that often find a three- to eight-month delay. The effect on unemployment is much more delayed, around ten months. Labor market institutions in France over the period (indexed wages, powerful unions) and the general low level of unemployment may offer good explanations for the lagged response of unemployment. The response of the unemployment rate to a monetary shock is very small, especially compared to the responses of other variables, which confirms that the

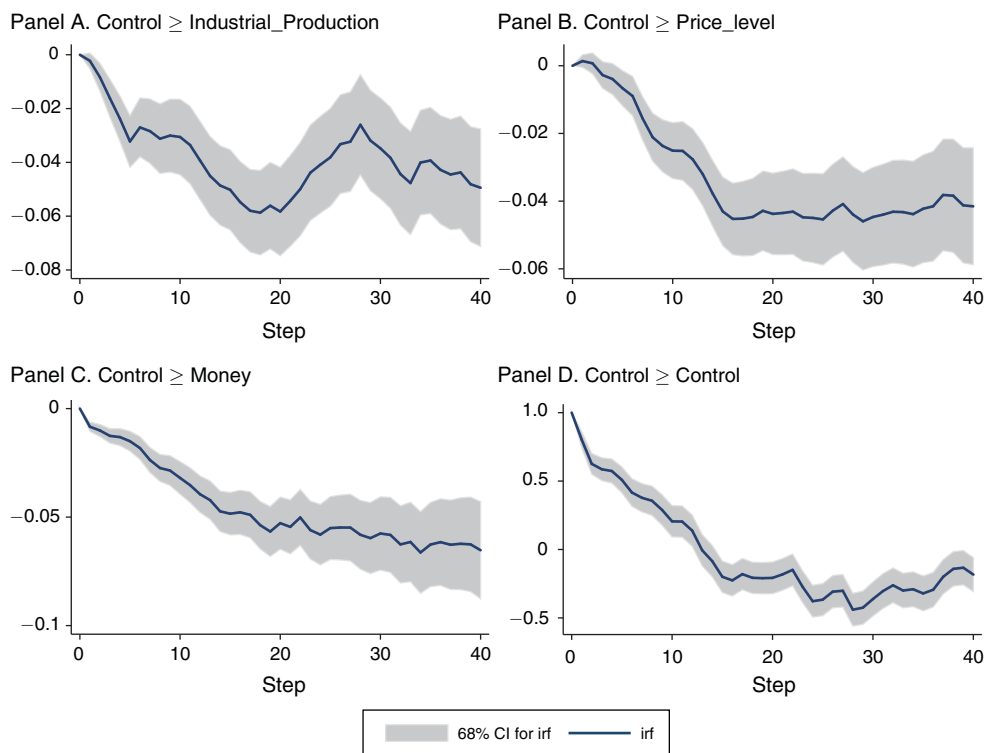


FIGURE 8. IMPACT OF A RESTRICTIVE MONETARY POLICY SHOCK.  
VAR WITH FOUR VARIABLES (DUMMY, M2, CPI, PRODUCTION)

unemployment-inflation trade-off (i.e., Phillips curve) was not an important preoccupation at the Banque de France.

- Both for industrial production and unemployment, the marginal impact is maximal after 20 to 25 months. Surprisingly, this pattern is similar to the one observed for the United States by Romer and Romer (1989, 2004), despite significant differences in the monetary policy instruments used in the United States and France, and the fact that the disinflation of the early 1980s was not included in the sample. This result is important for monetary theory since current models do not explain these long lasting effects.
- These effects are strong. According to the variance decomposition displayed in Figure 9 (with a four-variable VAR, including money, price levels, the dummy and production), a monetary policy shock explains approximately 10 percent of the variance in production and in the price level, and 20 percent of the variance in M2 after one year. After three years, monetary policy explains around 40 percent of the variance in industrial production and in the price level, and 50 percent of the variance in M2. The remainder is explained by endogenous shocks to the economy. Only about two-thirds of the variance in the dummy variable is explained by the monetary policy shock after two years, confirming the need to consider the dummy as endogenous in the VAR.

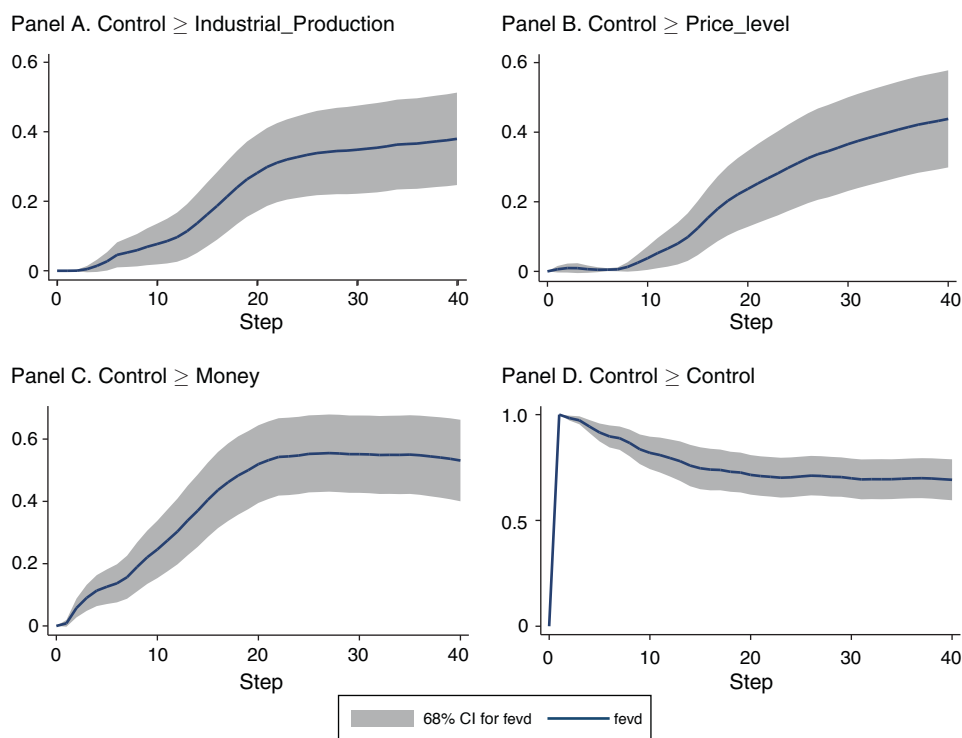


FIGURE 9. VARIANCE DECOMPOSITION. VAR WITH FOUR VARIABLES (DUMMY, M2, CPI, PRODUCTION)

Did monetary policy shocks influence interest rates? Figure 10 shows that there is no effect on the money market (interbank) rate. The same result was obtained with the Banque de France discount rate.<sup>30</sup> The response of short-term government bond rates is significant and positive, but not immediate; it reaches its maximum after ten months and therefore appears to be a medium-term effect.

Thus, the response of interest rates to a monetary policy shock shows a very strong liquidity puzzle (Leeper and Gordon 1992). Monetary policy does not influence the discount and money market rates, but it does influence production, money, price levels and unemployment in a standard way.

The measure constructed in this paper can be used to investigate the effects of French postwar monetary policy on many other variables, provided data are available. The long working-paper version (Monnet 2012b) displays results for credit, consumption, investment, central bank reserves, and the current account using quarterly data, and all are in line with the results described above. The impact of a policy shock on credit is slightly stronger than the impact on money (about  $-7$  percent after five quarters), but an estimation using quarterly data shows broader

<sup>30</sup>I present here (Figure 10) the results of a five-variable VAR that includes price levels, money, the dummy variable and the money market and three-month Treasury bill rates. The absence of a significant effect on the primary interest rate is very robust across many specifications.

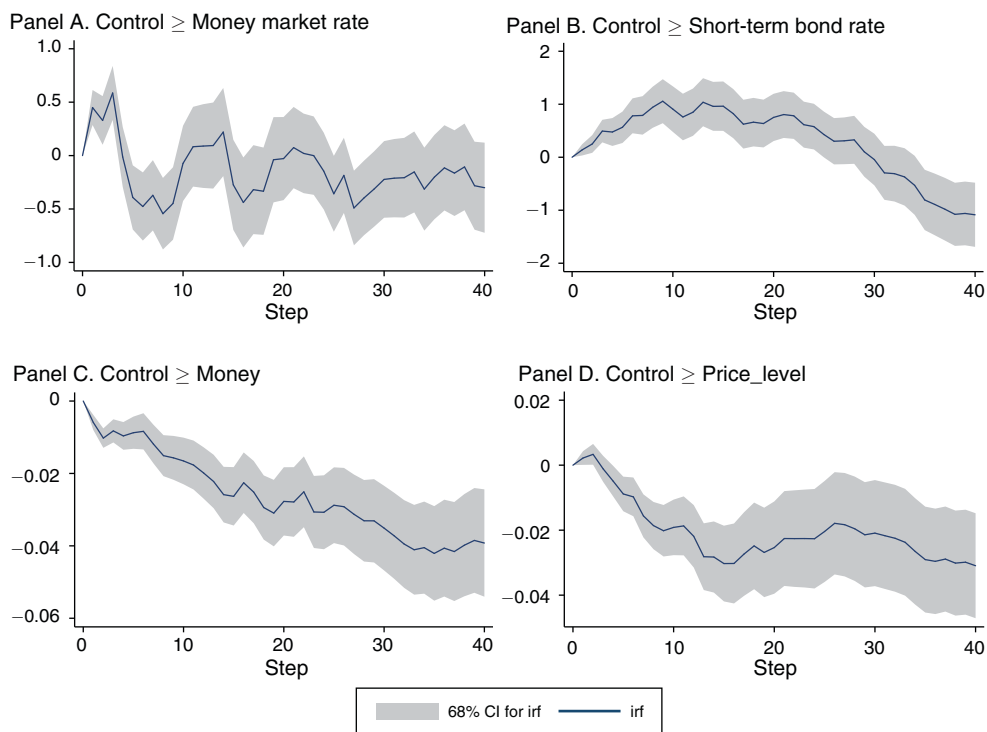


FIGURE 10. IMPACT OF A MONETARY POLICY SHOCK ON BOND AND MONEY MARKET RATES. VAR WITH FIVE VARIABLES (DUMMY, M2, CPI, THREE-MONTH TREASURY RATE AND MONEY MARKET RATE)

error bands. Introducing a wholesale price index into the VAR does not alter the response of the consumer price index (CPI). The response of the wholesale price index to a monetary shock is of a similar magnitude to the response of the CPI. Dividing the sample into two (pre- and post-1958) gives the robust result that the impact of monetary policy is stronger in the first period. The pattern of the impulse response functions is, however, similar across samples.

### C. Robustness of the Narrative Measure

In Section II, I discussed the fact that the start and end dates of some restrictive episodes may be uncertain (cf. Table 2). Changing the end date of the first and last episodes slightly has no impact on the results and observations obtained (cf. Table 2). However, modifying the start date of the third episode (July 1957 rather than February 1958) does change the estimation results. This is because the Banque de France immediately recognized that monetary policy in the second half of 1957 was not restrictive enough to bring down inflation. As a result, new measures were implemented in early 1958, under pressure from the IMF. The econometric specification cannot state whether the measures taken in June 1957 were ineffective or whether they were offset by other factors pushing inflation upward (e.g., fiscal deficits, central bank advances to the government, etc.), which were anticipated at the time of the decision. The estimation results are shown in



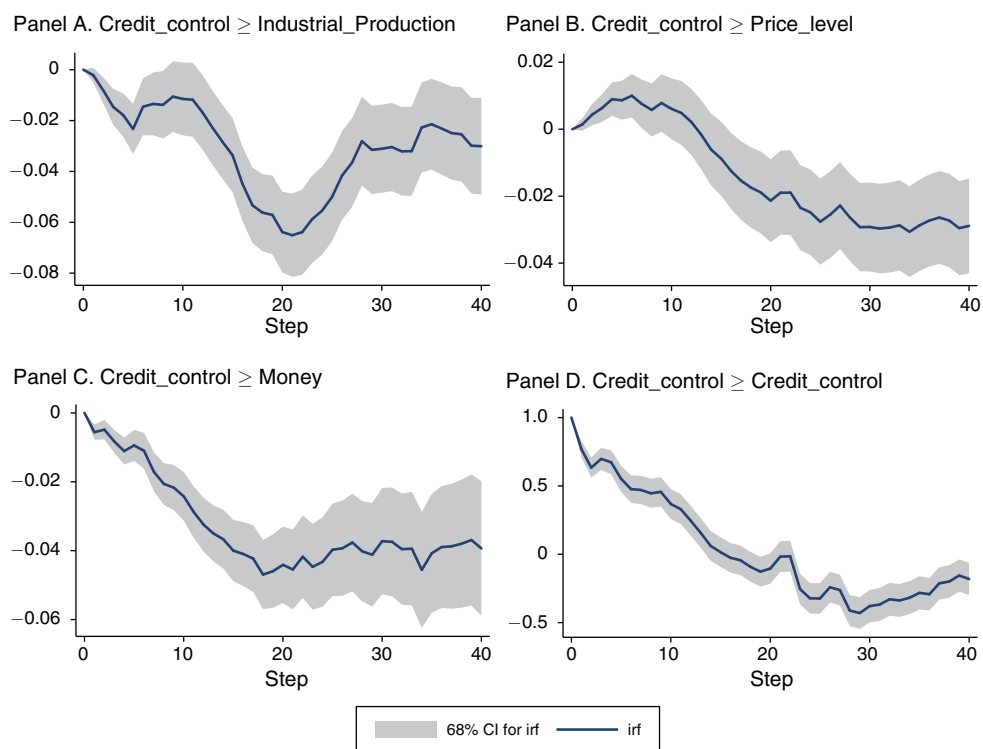


FIGURE 11. IMPACT OF A MONETARY POLICY SHOCK, USING THE JULY 1957 MEASURE.  
VAR WITH FOUR VARIABLES (DUMMY, M2, CPI, PRODUCTION)

Figure 11 (the dummy variable, including the period July 1957 to January 1958, is denoted “Credit control”).

The price level responds with a lag of about nine months.<sup>31</sup> Production and money respond immediately, but the magnitude of their responses is lower ten months after the shock, in comparison with the benchmark case in Figure 8. With the “July 1957” measure, the impact on production was around 2 percent after ten months, but between 3 and 4 percent with the “February 1958” measure. After 20 months, the magnitude of the impact on the price level, production and money was very similar regardless of the measure.

The difference between the decision and measures taken in July 1957 and February 1958 is reflected consistently and meaningfully in the estimation outcomes. Results are sensitive to the definition of the dummy variable, but I still find that monetary policy has a strong influence on real and nominal variables, and that the pattern of IRFs is similar. The next section demonstrates that this is not the case when using an interest rate as a measure of the monetary policy stance.

<sup>31</sup>This lag is even observed when wholesale and commodity prices are included in the VAR.

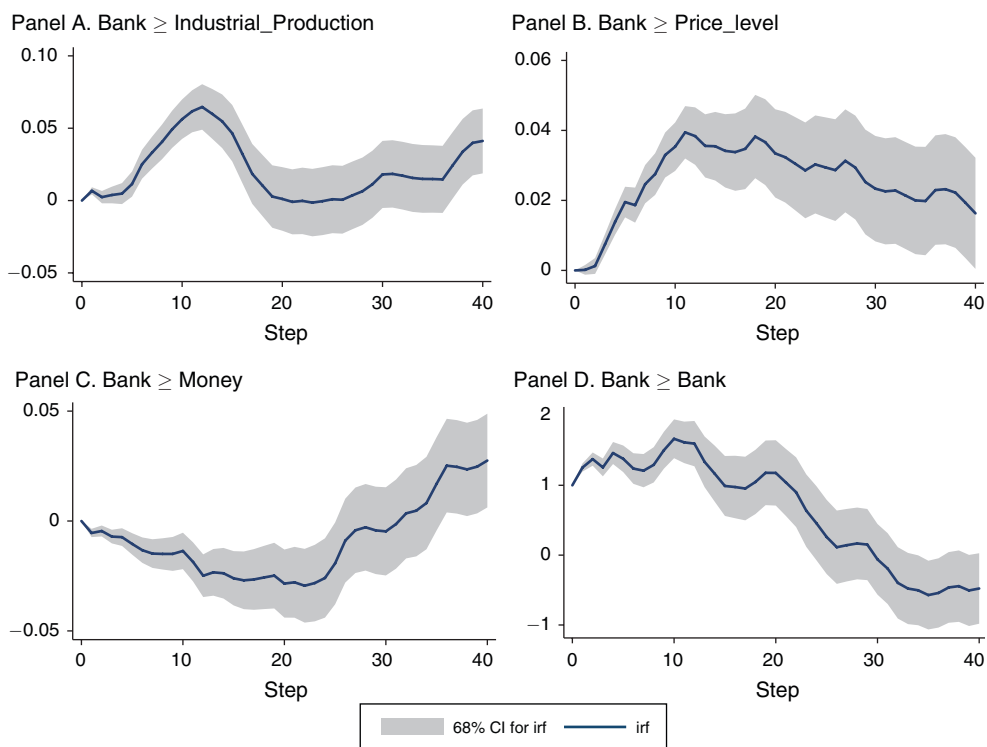


FIGURE 12. INFLUENCE OF A RISE IN THE FRENCH DISCOUNT RATE.  
VAR WITH FOUR VARIABLES (M2, CPI, PRODUCTION, BANQUE DE FRANCE DISCOUNT RATE)

#### D. Comparisons with Other Measures of Monetary Policy

To assess the relevance and contribution of the narrative approach, I compare these results with usual measures of monetary policy. Without specific institutional and historical knowledge of French monetary policy over the period, estimating a VAR with the Banque de France discount rate or with the US Federal discount rate seems reasonable. The rationale for using the Federal discount rate is that we need to find an exogenous measure of monetary policy, and the US rate is an obvious candidate under the Bretton Woods system.<sup>32</sup>

First, the results of a four-variable VAR (Figure 12) show that there are identification problems with a shock to the Banque de France discount rate (denoted “Bank”).<sup>33</sup> Industrial production and the price level respond positively to a rise in the discount rate, and similar results were obtained with the money market rate. This positive effect is inconsistent with standard economic theory. What is captured in the interest rate is not the stance of monetary policy. This can be understood only if we

<sup>32</sup>For this reason, Mojon (1998) uses the German rate in his study of French monetary policy during the 1980s, under the fixed exchange rate regime of the European Union.

<sup>33</sup>Using the money market rate as a measure of policy provides similar results. All interest rates were ordered last in the VAR, but again, the primary conclusions are insensitive to the ordering.

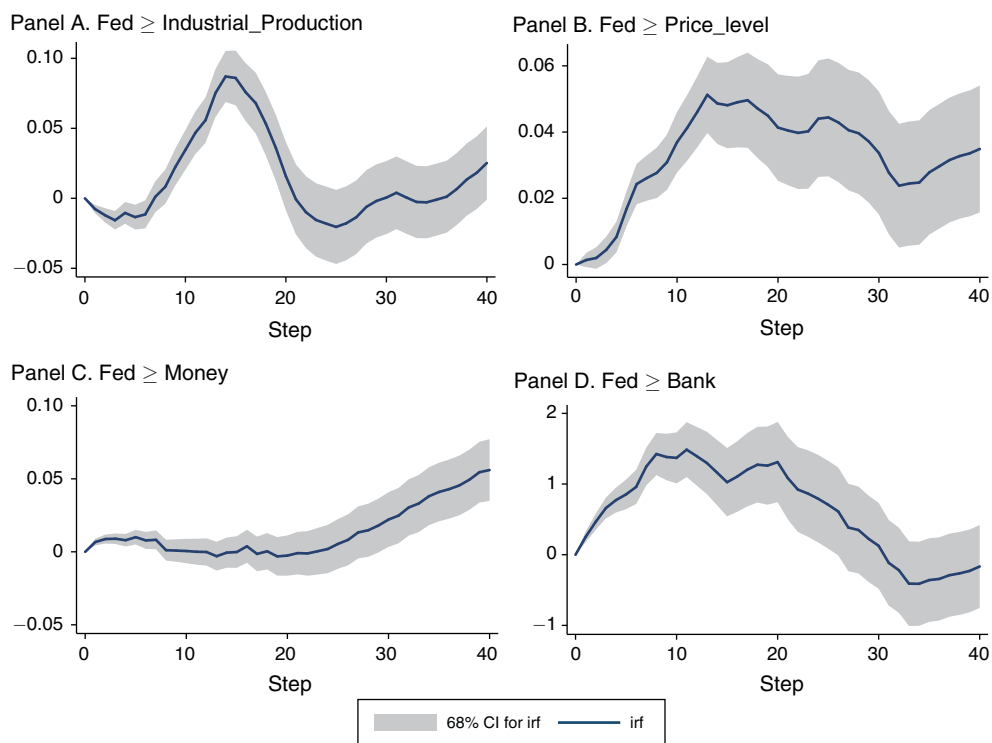


FIGURE 13. INFLUENCE OF A RISE IN THE FEDERAL DISCOUNT RATE. VAR WITH FIVE VARIABLES (M2, CPI, PRODUCTION, US FEDERAL DISCOUNT RATE, BANQUE DE FRANCE DISCOUNT RATE)

recognize that the Banque de France discount rate is not an equilibrium rate on the domestic credit market (Hodgman 1973).

Estimating the VAR with the Federal discount rate (Figure 13)—denoted “Fed”—provides puzzling results. Industrial production and the price level increase after ten months while the Banque de France discount rate (“Bank”) also rises. The absence of a negative influence on French production and prices from an increase in the US Federal rate provides additional support for the idea that French monetary policy was strongly autonomous under the fixed-exchange rates regime.<sup>34</sup> It is also consistent with the fact that the policy dummy variable I derived in this paper takes values that are unrelated to the dummy variable computed by Romer and Romer (1989, 1994) for the United States.<sup>35</sup> As explained in Section II, the Banque de France discount rate followed the US discount rate because of the exchange rate regime but was largely disconnected from the domestic policy stance.

The “narrative” measure of monetary policy yields better estimations, and is the only one to produce findings that are consistent with economic theory and previous empirical studies on the effects of monetary policy. Using series of interest rates to

<sup>34</sup> Results for the Bretton Woods period, 1948 to August 1971, are similar.

<sup>35</sup> The dates are October 1947, September 1955, December 1968, and April 1974. The only restrictive episode that took place in both countries at the same time is the policy implemented at the end of the year 1968, but it was implemented in France first.

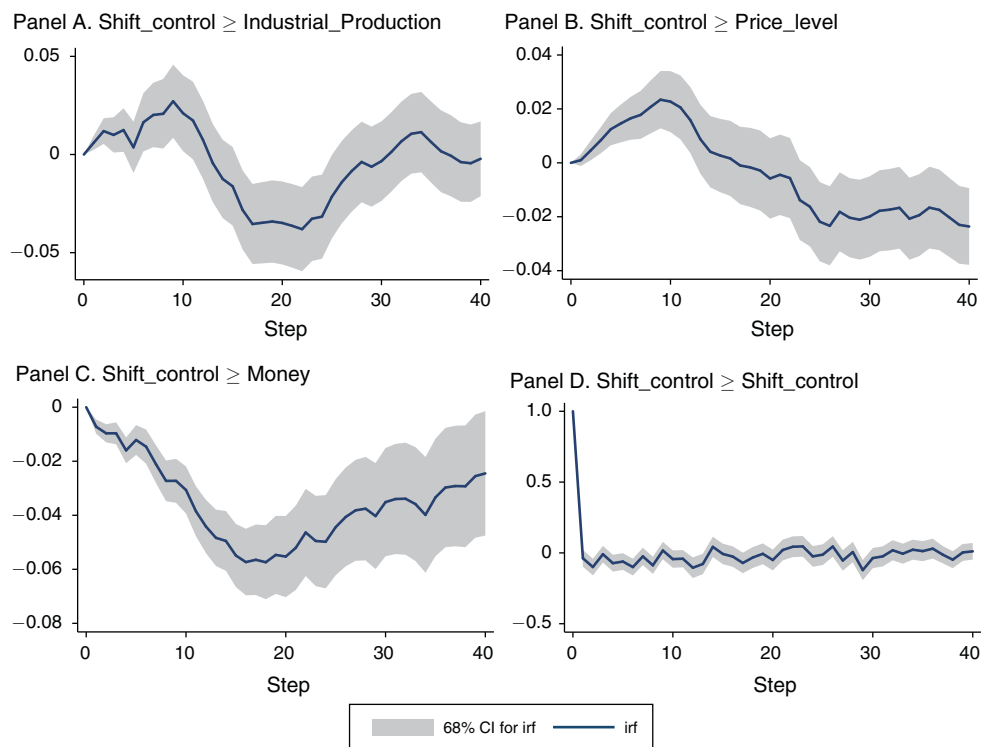


FIGURE 14. IMPACT OF A ONE-MONTH RESTRICTION. VAR WITH FOUR VARIABLES (DUMMY, M2, CPI, PRODUCTION)

measure the stance of monetary policy leads to a misunderstanding of Banque de France policy from 1948 to 1973.

### E. *The Duration of Restrictive Episodes and the Timing Problem*

In the previous sections, I consider the duration of the monetary restrictions, but one could argue that only the immediate change to restrictive quantitative controls is important in terms of monetary policy stance. Thus, I construct a new dummy variable called “shift control” that takes a value of 1 only in the first month of the monetary restriction. This measure turns out to be similar in kind to the Romer dates. Figure 14 shows that although the maximum effect of the shock after 25 months and the hump-shaped pattern remain unchanged, industrial production and the price level respond to monetary shocks with a longer delay than in previous estimations (respectively, 12 and 10 months). There is a price puzzle, and the error bands of the short-term response are broader. This pattern is similar to that found by Romer and Romer (1989, 1994) and Leeper (1997) using their dummy for US monetary policy.<sup>36</sup> Thus, estimation is much less precise than in previous specifications. In

<sup>36</sup>Figure 14 shows that even when the dummy is endogenous in the VAR, its value falls to zero one period after the shock. Subsequent values are only white noise. Impulse response functions are similar if the “shift control” dummy is endogenous or exogenous, as in Ramey (2011).

particular, the  $t$ -statistic for the estimated effect on production and the price level never exceeds 1.96 (it only does so for M2). This contrasts with estimations that account for the duration of restrictive episodes.

Using only the change from an accommodative policy to a restrictive policy does not fully take into account the behaviour of firms and households. Their behavior is not only influenced by a change in monetary policy that happened several months previously, but also by ongoing restrictions on credit and by the fact that if the change in monetary policy is credible, they expect the restriction to last for months or even years. Not considering the duration reduces the accuracy of the estimation since variations in production, money, and prices that should be attributed to policy are left unexplained in the model.

These findings regarding the duration of the shock may explain the “timing problem” highlighted by Ramey (2011), i.e., the differences in the timing of responses between narrative measures of fiscal policy shocks (dummy variable) and other measures. Regarding fiscal shocks measured by military dates, Ramey suggests that the timing problem is due to a delay in the implementation of the policy and then expectations. This paper suggests that, with regard to monetary policy, it is important and sufficient to consider the duration of monetary restriction. This reminds us that the more precise the measure, the more precise the estimate.

#### IV. Conclusion

Many studies of US monetary policy use narrative measures (e.g., “Romer dates” or “Boschen and Mills index”) and single variables (e.g., interest rate or nonborrowed reserves) to investigate the influence of policy on the economy (Kashyap, Stein, and Wilcox 1993; Gertler and Gilchrist 1994; Eichenbaum and Evans 1995; Boschen and Mills 1995; Carlino and DeFina 1998; Bernanke and Mihov 1998; Christiano, Eichenbaum, and Evans 1999). In these studies, both types of measure produce similar conclusions. This similarity is probably specific to the US economy, and is unlikely when monetary policy is “unconventional” and uses numerous different quantitative instruments.<sup>37</sup> Surprisingly, the narrative approach has never been used to investigate this type of quantitative policy.

This paper examines the French experience with temporary quantitative controls from 1948 to 1973.<sup>38</sup> Measuring monetary policy using a narrative approach produces different results from a shock to an interest rate in a VAR. French quantitative monetary policy had an influence on the economy, and the impulse response functions are similar to the ones derived in other VAR studies carried out on different countries and periods, and with different identifications. As long as monetary policy is measured accurately and there is sufficient information in the VAR, there

<sup>37</sup> Credit controls have been used by the Federal Reserve, but were never the primary instrument of its monetary policy. The distortion of interest rates caused by credit controls remained limited during the postwar period. However, since the widespread use of credit controls by the Federal Government in 1980 (Schreft 1990), VAR estimations that measure monetary policy with an interest rate greatly underestimate the impact of the Volcker disinflation on the US economy, as shown by Coibion (2012).

<sup>38</sup> Velde (2009) also uses a particular period of French history, the 1720s, as a quasi-natural experiment to investigate the effect of a cut in the nominal money supply on prices and production.

is no price puzzle. Using interest rates (discount rate or money market rate) as a measure of French monetary policy does not provide consistent results and robust identification. The Banque de France discount rate was used for purposes other than the management of domestic money and credit supply.

This study elucidates the fact that monetary policy was neither absent nor passive during the early postwar period in Europe, before the Great Inflation.<sup>39</sup> It shows that quantitative controls on money or credit can be effective in the short-term to decrease output and prices. It corroborates the case for a combination of VAR methodology and the narrative approach to offer robust, stylized facts useful to the construction of business-cycle models. This is especially useful for assessing monetary policy in countries that used or still use quantitative controls. For example, recent studies of Chinese monetary policy find no effect of interest rates (Mehrotra 2007), but evidence suggests that the central bank is using quantitative tools to fight inflation. The narrative approach may be the most efficient method to draw cross-country comparisons of the influence of monetary policy even when central banks use disparate instruments.

The fact that monetary policy without interest rates is effective for the short-term stabilization of the price level in a specific context and period may raise interesting issues for macroeconomic modeling. What we learn from the French experience is that the well-known hump-shaped impulse response functions can be obtained without a liquidity effect. A decrease in quantities is not necessarily equivalent to an increase in prices.

#### APPENDIX: SOURCES AND DATA

##### *Archival Sources at the Banque de France (ABF)*

- Minutes of meetings of the Banque de France General Council: *PVCG du Conseil Général*.
- Archives of the National Credit Council (minutes, speeches, preparatory notes and documents): Fonds du Conseil National du Crédit, No. 1427200301.
- Archives of the Direction of Credit (notes and documents): Fonds de la Direction Générale du Crédit, sous Fonds Cabinet, n°1331200301.
- Archives of the Directorate General Economics, Monetary Analysis and Statistics: *Fonds de la Direction Générale des Etudes, Direction des analyses et statistiques monétaires*, No. 1417200405.

##### *Data*

- Monthly price levels and industrial production are from the National Credit Council reports (*Rapports du Conseil National du Crédit*). The price level is the consumer price index from 1950 to 1973. For 1947–1949, I use the wholesale price index since the CPI is not available.
- Money (monthly M2) is from Jean-Pierre Patat and Michel Lutfalla (1986), *Histoire Monétaire de la France au XXe siècle*, Paris, Economica.

<sup>39</sup>In their studies of US monetary policy, Romer and Romer (2002) vindicate US monetary policy in the 1950s.

## SUPPLEMENT TO TABLE 1—CHANGES IN THE VALUES OF THE POLICY INSTRUMENTS IN USE, 1948 TO 1973

*Bank by bank discount ceiling*

Fixed in September 1948; 20 percent decrease in July and August 1957; 15 percent decrease in November 1957; 20 percent increase in June 1968; 20 percent decrease in November 1968; 10 percent decrease (20 percent for discounts above 30 million French francs) in October 1970.

*Enfer and super enfer*

“Enfer” was 2 percent above the Bank discount rate until April 1958, 3 percent above until March 1959, 2.5 percent until July 1959 and then 1 percent above. “Super enfer” was 3 percent above until July 1957, 5 percent above until April 1958, 7 percent until July 1958, 5 percent until March 1959, 2 percent above until June 1964, 3.5 percent until April 1965 and then 2.5 percent.

*Fixed rate pension*

Set 2.5 percent above the Banque de France’s discount rate.

*Government paper floor*

95 percent of the 1948 level and 20 percent of new deposits in September 1948; 25 percent of total deposits in July 1956; 20 percent in December 1960; 17.5 percent in June 1961; 15 percent in March 1962; 13 percent in January 1964; 10 percent in May 1964; 7.5 percent in October 1964; 5 percent in December 1965.

*Liquid asset ratio (coefficient de trésorerie)*

30 percent in December 1960; 32 percent in January 1962; 35 percent in February 1963; 36 percent in May 1963; 34 percent in June 1964; 36 percent in July 1964; 34 percent in October 1964; 36 percent in August 1965; 34 percent in November 1965; 32 percent in December 1965; 35 percent in January 1966; 32 percent in March 1966; 31 percent in June 1966; 32 percent in October 1966.

*Reserve requirements on liabilities*

2.5 percent in January 1967; 4.5 percent in April 1967; 6.5 percent in July 1967; 8.5 percent in October 1967; 10.5 percent in November 1968; 6.5 percent in June 1969; 6 percent in January 1970; 8 percent in June 1970; 10 percent in July 1970; 9.5 percent in April 1971; 11.5 percent in May 1971; 14 percent in December 1972; (on residents) 11 percent in March 1972; 15 percent in July 1972.

*Reserve requirements on credit*

0.25 percent in April 1971; 0.5 percent in May 1971; 1.5 percent in July 1971; 3 percent in August 1971; 2 percent in December 1971; 4 percent in June 1972; 33 percent in November 1972; 0 percent in June 1974.

*Minimum portfolio of medium term credit*

20 percent in January 1967; 19 percent in May 1967; 18 percent in June 1967; 17 percent in July 1967; 16 percent in November 1967; 14 percent in June 1968; 13 percent in July 1968; 14 percent in November 1968; 15 percent in October 1969; 16 percent in April 1970; 14 percent in July 1971; 12.5 percent in May 1972; 10 percent in December 1972; 7 percent in January 1973.

*Supplementary reserves*

Proportion of credit exceeding the legal limit and of the institution’s total outstanding credit. February to June 1970. Reintroduced in December 1972.

*Central bank authorization for large loans*

Loans over 30 million francs in October 1947; 50 million in February 1948; 100 million in April 1950; 500 million in October 1951.

*Maximum growth in bank credit (credit ceilings)*

Introduced in February 1958 no credit growth (except export credit) allowed. Abolished in February 1959. Reintroduced in February 1963: annual growth in total credit limited to 12 percent, then 10 percent in September 1963. Abolished in June 1965. Reintroduced in November 1968: growth in total credit limited to 4 percent (except rediscountable medium-term credit and housing credit) between September and December 1968, and 1 percent between September 1968 and January 1969. Then 10 percent annual growth in 1969, and 6 percent in the first half of 1970. Abolished in June 1970. Reintroduced in November 1972: 16 percent maximum growth between September 1972 and September 1973; 12 percent maximum growth between January 1973 and January 1974.

- The monthly unemployment rate is from Pierre Villa’s website: <http://www.cepii.fr/francgraph/bdd/villa/mode.htm>, published in “Séries macro-économiques historiques », INSEE Méthodes, No. 62-63, Paris, 1997. There was no official unemployment rate computed by INSEE before 1968.
- Interest rates are from the National Credit Council reports, and Global Financial Data.

## REFERENCES

- Barrère, Alain.** 1951. "La politique du crédit en France depuis 1945." *Revue économique* 2 (5): 513–42.
- Battilossi, Stefano, James Foreman-Peck, and Gerhard Kling.** 2010. "Business Cycles and Economic Policy, 1945–2007." In *The Cambridge Economic History of Modern Europe*, Vol. 2, edited by Stephen Broadberry and Kevin H. O'Rourke, 360–89. Cambridge: Cambridge University Press.
- Bernanke, Ben S., and Ilian Mihov.** 1998. "Measuring Monetary Policy." *Quarterly Journal of Economics* 113 (3): 869–902.
- Boschen, John F., and Leonard O. Mills.** 1995. "The Relation between Narrative and Money Market Indicators of Monetary Policy." *Economic Inquiry* 33 (1): 24–44.
- Bruneau, Catherine, and Olivier De Bandt.** 1999. "La modélisation VAR 'structurel': application à la politique monétaire en France." *Economie et Prévision* 137 (1): 67–94.
- Carlino, Gerald, and Robert DeFina.** 1998. "The Differential Regional Effects of Monetary Policy." *Review of Economics and Statistics* 80 (4): 572–87.
- Casella, Alessandra, and Barry Eichengreen.** 1991. "Halting Inflation in Italy and France after World War II." National Bureau of Economic Research (NBER) Working Paper 3852.
- Christiano, Larry J., Martin Eichenbaum, and Charles L. Evans.** 1999. "Monetary Policy Shocks: What Have We Learned and to What End?" In *Handbook of Macroeconomics*, Vol. 1A, edited by John B. Taylor and Michael Woodford, 65–148. Amsterdam: Elsevier.
- Clarida, Richard, Jordi Galí, and Mark Gertler.** 1998. "Monetary Policy Rules in Practice: Some International Evidence." *European Economic Review* 42 (6): 1033–67.
- Coibion, Olivier.** 2012. "Are the Effects of Monetary Policy Shocks Big or Small?" *American Economic Journal: Macroeconomics* 4 (2): 1–32.
- Cottarelli, Carlo, Giampaolo Galli, Paolo Marullo Reedtz, and Giovanni Pittaluga, Giorgio Basevi, and Jacques Melitz.** 1986. "Monetary Policy Through Ceilings on Bank Lending." *Economic Policy* 1 (3): 673–710.
- Davis, Richard G.** 1971. "An Analysis of Quantitative Credit Controls and Related Devices." *Brookings Papers on Economic Activity* 2 (1): Article 2.
- Eichenbaum, Martin, and Charles L. Evans.** 1995. "Some Empirical Evidence on the Effects of Shocks to Monetary Policy on Exchange Rates." *Quarterly Journal of Economics* 110 (4): 975–1009.
- Friedman, Milton.** 1969. *The Optimum Quantity of Money*. Piscataway, NJ: Transaction Publishers.
- Friedman, Milton, and Anna Jacobson Schwartz.** 1963. *A Monetary History of the United States, 1867–1960*. Princeton: Princeton University Press.
- Gertler, Mark, and Simon Gilchrist.** 1994. "Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms." *Quarterly Journal of Economics* 109 (2): 309–40.
- Guillaumont-Jeanneney, Sylviane.** 1969. *Politique monétaire et croissance économique en France, 1950–1966*. Paris: Armand Colin.
- Hodgman, Donald.** 1973. "Credit Controls in Western Europe: An Evaluative Review." In *Allocation Techniques and Monetary Policy*, 137–61. Boston: Federal Reserve Bank of Boston.
- Hoover, Kevin D., and Stephen J. Perez.** 1994. "Post hoc ergo propter once more An evaluation of 'Does monetary policy matter?' in the spirit of James Tobin." *Journal of Monetary Economics* 34 (1): 47–74.
- Johnson, Omotunde E. G.** 1974. "Credit Controls as Instruments of Development Policy in the Light of Economic Theory." *Journal of Money, Credit and Banking* 6 (1): 85–99.
- Kashyap, Anil K., Jeremy C. Stein, and David W. Wilcox.** 1993. "Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance." *American Economic Review* 83 (1): 78–98.
- Koch, Henri.** 1983. *Histoire de la Banque de France et de la monnaie sous la IVe République*. Paris: Dunod.
- Kriz, M. A.** 1951. "Credit Control in France." *American Economic Review* 41 (1): 85–106.
- Kuisel, Richard F.** 1981. *Capitalism and the State in Modern France: Renovation and Economic Management in the 20th Century*. Cambridge: Cambridge University Press.
- Leeper, Eric M.** 1997. "Narrative and VAR Approaches to Monetary Policy: Common Identification Problems." *Journal of Monetary Economics* 40 (3): 641–57.
- Leeper, Eric M., and David B. Gordon.** 1992. "In Search of the Liquidity Effect." *Journal of Monetary Economics* 29 (3): 341–69.
- Marjolin, Robert, Jean Sadrin, and Olivier Wormser.** 1969. *Rapport sur le marché monétaire et les conditions de crédit*. Paris: La Documentation Française.
- Mehrotra, Aaron N.** 2007. "Exchange and Interest Rate Channels during a Deflationary Era—Evidence from Japan, Hong Kong and China." *Journal of Comparative Economics* 35 (1): 188–210.



- Mojon, Benoît.** 1998. “Monetary Policy under a Fixed Exchange Rate Regime, the Case of France 1987–1996.” Centre d’Etudes Prospectives et d’Informations Internationales (CEPII) Research Center Technical Report 1998–14.
- Monnet, Eric.** 2012a. “Financing a Planned Economy: Institutions and Credit Allocation in the French Golden Age of Growth (1954–1974).” Berkeley Economic History Lab Working Paper WP2013–02.
- Monnet, Eric.** 2012b. “Monetary Policy without Interest Rates. Evidence from France’s Golden Age (1948–1973) Using a Narrative Approach.” European Historical Economics Society (EHES) Working Paper 32.
- Monnet, Eric.** 2013. “The Quantities vs. Prices Tradeoff in Monetary Policy. An Interpretation of Credit Controls.” Unpublished.
- Monnet, Eric.** 2014. “Monetary Policy without Interest Rates: Evidence from France’s Golden Age (1948 to 1973) Using a Narrative Approach: Dataset.” *American Economic Journal: Macroeconomics*. <http://dx.doi.org/10.1257/mac.6.4.137>.
- Ng, Serena, and Pierre Perron.** 2005. “A Note on the Selection of Time Series Models.” *Oxford Bulletin of Economics and Statistics* 67 (1): 115–34.
- Ramey, Valerie A.** 2011. “Identifying Government Spending Shocks: It’s All in the Timing!” *Quarterly Journal of Economics* 126 (1): 1–50.
- Ramey, Valerie A., and Matthew D. Shapiro.** 1998. “Costly Capital Reallocation and the Effects of Government Spending.” *Carnegie-Rochester Conference Series on Public Policy* 48 (1): 145–94.
- Romer, Christina D., and David H. Romer.** 2004. “A New Measure of Monetary Shocks: Derivation and Implications.” *American Economic Review* 94 (4): 1055–84.
- Romer, Christina, and David Romer.** 1989. “Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz.” In *NBER Macroeconomics Annual 1989*, Vol. 4, edited by Olivier Jean Blanchard and Stanley Fischer, 121–84. Cambridge: MIT Press.
- Romer, Christina, and David Romer.** 1994. “Credit Channel or Credit Actions? An Interpretation of the Postwar Transmission Mechanism.” In *Proceedings of Jackson Hole Symposium*, 71–149. Jackson Hole, WY: Federal Reserve Bank of Kansas City.
- Romer, Christina, and David Romer.** 2002. “The Evolution of Economic Understanding and Postwar Stabilization Policy.” In *Proceedings of Jackson Hole Symposium*, 11–78. Jackson Hole, WY: Federal Reserve Bank of Kansas City.
- Schreft, Stacey.** 1990. “Credit Controls: 1980.” *Federal Reserve Bank of Richmond Economic Review* 76 (6): 25–55.
- Shapiro, Matthew.** 1994. “Federal Reserve Policy: Cause and Effect.” In *Monetary Policy*, edited by N. Gregory Mankiw, 307–34. Chicago: University of Chicago Press.
- Sims, Christopher A.** 1992. “Interpreting the Macroeconomic Time Series Facts: The Effects of Monetary Policy.” *European Economic Review* 36 (5): 975–1000.
- Temin, Peter.** 2002. “The Golden Age of European Growth Reconsidered.” *European Review of Economic History* 6 (1): 3–22.
- Tobin, James.** 1970. “Deposit Interest Ceilings as a Monetary Control.” *Journal of Money, Credit and Banking* 2 (1): 4–14.
- Velde, François R.** 2009. “Chronicle of a Deflation Unforetold.” *Journal of Political Economy* 117 (4): 591–634.