



## Monetary policy without interest rates

### The French experience with quantitative controls (1948 to 1973)

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Business Conditions  
and Macroeconomic Forecasting

*This letter presents the findings of research carried out at the Banque de France. The views expressed in this post are those of the authors and do not necessarily reflect the position of the Banque de France. Any errors or omissions are the responsibility of the authors.*

*The global crisis has fostered a debate about the use of quantitative instruments by central banks. This issue of Rue de la Banque looks at French monetary policy, during the period known as the Trente Glorieuses, when the central bank relied on quantitative instruments rather than on interest rates. The specific effect of quantitative controls on money and credit has to be taken into account in order to identify correctly the stance of monetary policy. Using a narrative approach to assess the monetary policy stance suggests that quantitative instruments can have substantial effects. This experience shows that one major issue for unconventional policies based on quantitative controls is how to keep monetary policy effective without making central bank instruments and announcements excessively complex.*

Recent central bank interventions following the financial crisis have sparked renewed interest in quantitative instruments as instruments of monetary<sup>1</sup> or macroprudential policies (Borio 2011, Galati and Moessner 2013). In fact, both quantitative controls (credit ceilings, liquidity and reserve requirements) and balance sheet policy (credit and quantitative easing) have been used as primary tools of monetary policy for decades in Western Europe and East Asia, usually during 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 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, and Eichenbaum and Evans (1999) concerning conventional monetary policy.

French post-war 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. Monnet (2014) provides a detailed analysis of the way credit controls and other quantitative tools were used in France and proposes a new method to assess their macroeconomic effects.

<sup>1</sup> In what follows, for simplicity, the author uses the term monetary policy to refer to the whole set of central bank operations but also those operations aimed at influencing credit allocation (Monnet, 2013).

## Quantitative instruments

### **Credit control instruments: rediscount ceilings and constraints on credit expansion**

The “rediscount ceiling” was a cap on the total value of loans that the central bank would discount for each bank or credit institution. The ceiling was generally a percentage of the bank’s deposits and was entirely discretionary, varying from one institution to another according to the quality of their assets and their individual risk exposure. As such, it was primarily a microprudential tool. However, it could also be used for macroeconomic purposes, in a similar way to an industrial, agricultural or trade policy, as certain institutions, sectors or types of loan could be given priority access to central bank funding.

In addition to the official ceilings applied to each institution, the central bank could impose temporary ceilings on loans used to finance specific products, in order to avoid the risk of a bubble caused by excess credit growth. In the 1950s and 1960s, for example, the Banque de France frequently set rediscounting quotas for agricultural products (cereals and poultry) whenever the Ministry of Agriculture and the Bank’s own departments identified an “overproduction crisis” (Monnet, 2013).

As well as being used to target specific sectors, these ceilings also had a macroeconomic and cyclical function. By simultaneously lowering or raising all ceilings by a fixed percentage, the central bank could adjust credit growth, money supply and prices to combat inflation or, conversely, stimulate the economy. Thus, the quantitative and countercyclical limitation of credit growth via a reduction in rediscount ceilings (credit rationing) was used as monetary policies tool in that it was intended to limit inflation.

Rediscount ceilings could help to control money creation if banks were substantially in debt to the central bank. From the 1950s onwards, as commercial banks relied less on central bank liquidity, many Western European central banks chose to impose direct limits on credit expansion (“credit ceiling” or encadrement du crédit). This involved imposing a cap on the actual amount banks could lend to households and corporations rather than on their central bank refinancing. As with rediscount ceilings, the countercyclical nature of credit ceilings also extends beyond the realms of monetary policy. First, they could be used for preventing any financial bubbles which might have appeared in the form of an overall rise in prices. Second, they were an effective tool for influencing the allocation of credit, as certain types of loan could be exempted (export credit, housing loans, occasionally medium-term loans).

### **Liquidity and reserve requirements**

Banks were subject to liquidity and reserve requirements, designed to channel resources towards specific sectors of the economy and encourage the issuance of medium and long-term loans. Over time, these requirements have been variously called “liquidity ratios” or “liquid asset ratios”. For example, obliging banks to increase the volume of long-term treasury bonds in their portfolios in order to curb the growth of short-term lending to the economy. Liquidity ratios were used countercyclically in a similar way to the credit ceilings described previously. If the central bank wanted to lower inflation and considered that there was an excess supply of credit to the economy, it could raise liquidity ratios to force banks to keep a higher proportion of liquid assets on their balance sheets, thus reducing the supply of credit to the economy. Finding the optimal balance between liquidity ratios and credit ceilings was one of the key concerns of central bank discussions: if a bank was rationed at the central bank discount window through a reduction in its discount ceiling, then it also had to be prevented from selling its long term securities in order to limit money creation and maintain a restrictive policy. In order to meet the desired policy objective, it was therefore essential for the central bank to use a combination of instruments to prevent banks from substituting their assets. This mechanism was helped by the fact that the financial system was primarily dependent on banks, so asset substitution was limited to bank assets. When the possibility of exchanging one asset for another increases, the task of the central bank becomes more difficult.

In 1967, the Banque de France moved towards a German model which focused more on reserve requirements. The reserve requirement or reserve ratio is the minimum share of customer deposits and/or loans that banks have to hold at the central bank in interest-earning or non-interest earning accounts. The central bank could change the reserve ratio in order to control money supply. Like the other instruments described above, reserve requirements could be used for a variety of purposes. They enabled the regulation of money supply, and could also be used to favour specific sectors or for the prudential regulation of liquidity.

The first contribution of this study is to demonstrate that an effective way of assessing 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 policymakers' intentions and decisions directly. 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. Hence, this study highlights the difficulties of measuring the monetary policy stance when quantitative controls are used by central banks and when the effect of monetary policy is not transmitted through interest rates.

The second contribution of the paper is to demonstrate that quantitative controls on credit and money had a strong influence on nominal and real variables, but not on interest rates. There was a complete disconnect between quantities (of money and credit) and prices (interest rates).

### **Quantitative instruments and the problem of measuring the monetary policy stance**

From 1948 to 1973, the Banque de France used more than 15 different tools to control bank credit or liquidity directly. None of them were used over the entire period. The main tools were bank-by-bank rediscount ceilings (a cap on the amount of bills that banks can refinance/rediscount at the central bank), credit ceilings (a quantitative limit on the growth of the supply of bank loans), liquidity ratios (banks were forced to hold a fixed proportion of non-liquid assets, such as long term bonds) and reserve requirements (as a proportion of deposits or of outstanding loans). 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 (see Box).

There are two main reasons why a single instrument or a compound index of instruments cannot be used as a measure of monetary policy when, as in post-war France, ceilings and ratios – rather than open market operations, the money base or interest rates – are the primary instruments of central bank policy.

First, no single quantitative instrument was used – or kept the same definition – over the entire period. A combination of different instruments always had to be applied, and the particular choice of combination varied over time (see Box). 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.

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. 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.

Hence, it is essential to know the actual intentions of policymakers when the decision to change a ceiling or a ratio is taken, to be able to compare the stance of monetary policy over time.

### **Measuring the impact of central banks' actions**

For this reason, the author follows Christina and David Romer (1989) and uses narrative evidence to build a measure of central bank actions. He examines archival evidence concerning policymakers' intentions and decisions and constructs a dummy variable that is equal to 1 when quantitative tools are implemented by the central bank in order to fight inflation. Six episodes of restrictive monetary policy are identified (see Table).

#### **Dates of restrictive monetary policy**

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30 September 1948 to 8 June 1950  
 11 October 1951 to 17 September 1953  
 5 February 1958 to 5 February 1959  
 28 February 1963 to 24 June 1965  
 12 November 1968 to 27 October 1970  
 2 November 1972 to September 1973

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Then the author estimates a system of equations (VAR) using monthly data from January 1948 to September 1973, where he simulates a shock to the dummy variable measuring the policy stance in order to estimate the effect of a shift to a restrictive policy. He finds that a shift to a restrictive policy (a monetary policy shock) had a significant and sustained impact on production and on the price level (see Chart 1). When policy turned restrictive, industrial production, prices and the money supply decreased by 5% within 20 months. Furthermore monetary policy shocks in France explain

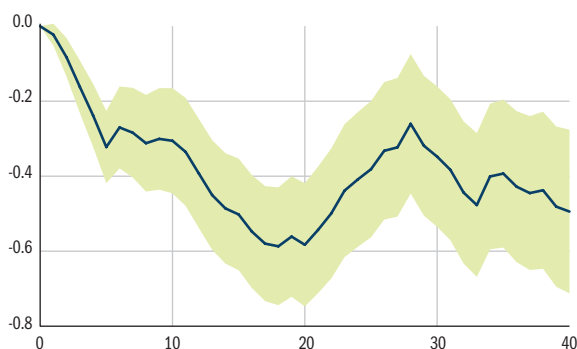
approximately 40% of the volatility of industrial production and inflation.

Conversely, an increase in the discount rate (i.e. the Banque de France's leading interest rate) had no significant or consistent impact on production, prices or the money supply (see Chart 2). Thus an increase in the interest rate was not a restrictive monetary policy. In such an economy with regulated rates and ubiquitous quantitative controls, measuring the policy stance with an interest rate is clearly misleading.

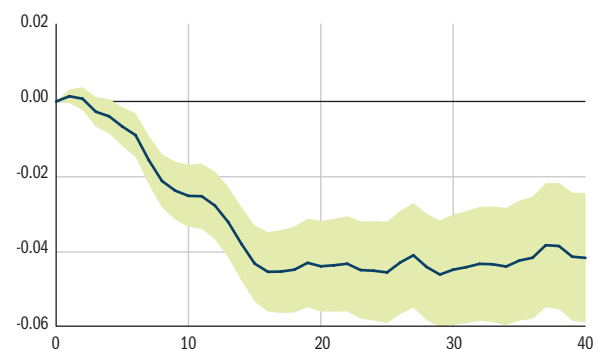
## C1 Average impact of a restrictive monetary policy shock. VAR with 4 variables (production, M2, CPI, dummy)

(x axis: month)

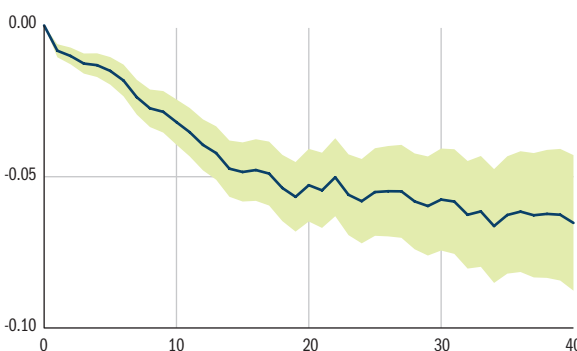
a) Shock → industrial production



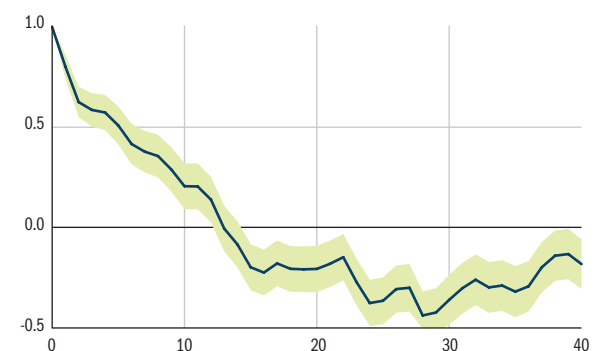
c) Shock → price level



b) Shock → money



d) Shock → shock



■ 68% confidence interval

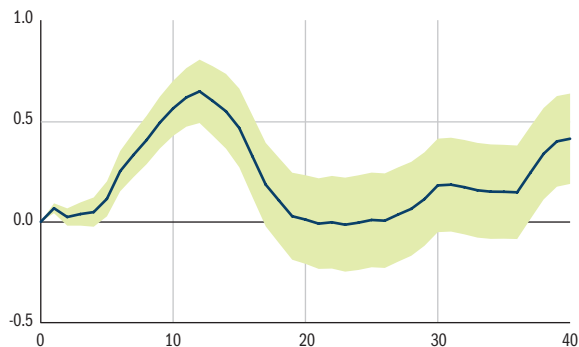
— Impulse response function

Note: In Chart 1, the graph in the bottom right-hand corner displays the impact of a shock to the dummy variable (restrictive policy shock) on a latent continuous variable representing the monetary policy stance generated endogenously in the VAR. At the beginning of the shock, the variable equals 1, as does the dummy. After around twelve months, the effect disappears.

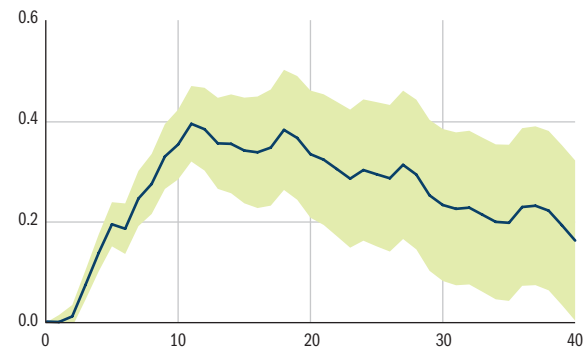
**C2 Average impact of a rise in the French discount rate. VAR with 4 variables (production, CPI, M2, Banque de France discount rate)**

(x axis: month)

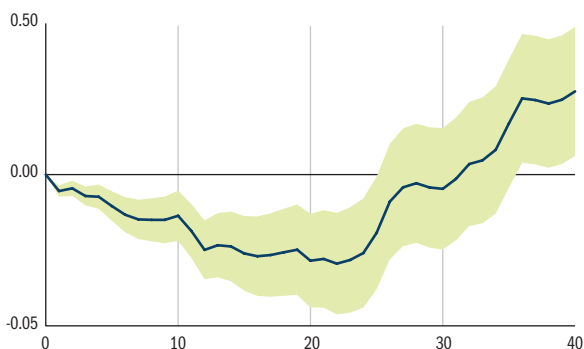
a) Discount rate → production



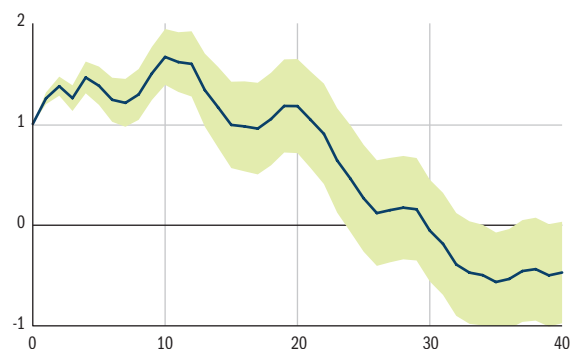
c) Discount rate → price level



b) Discount rate → money



d) Discount rate → discount rate



68% confidence interval

Impulse response function

**Lessons for today**

The results show that quantitative controls can work and impact production and prices. But historical lessons for current macroprudential policies are not straightforward (Kelber and Monnet, 2014). French 1950-60s policies under the Bretton Woods system were implemented against the backdrop of highly regulated and relatively closed national financial systems, where an excess supply of credit translated primarily into rising inflationary pressures rather than into a banking or a financial crisis (Monnet, 2013, 2015; Reinhart and Sbrancia, 2015). Quantitative instruments of monetary policy were often combined with capital controls and could thus be targeted specifically at the banking sector. More importantly, the objectives of credit controls – and more generally the objectives and nature of central banking – were very different from the current situation in Europe. Although the instruments currently associated with macroprudential policy have been implemented in the past, they were

often used to achieve completely different objectives to those currently being sought. Quantitative tools to control credit, bank liquidity or credit standards were used for a combination of monetary policy (control of inflation), industrial policy or trade policy purposes, as well as for prudential control. Central banks maintained a disconnect between quantities and prices, as well as non-market clearing interest rates, in order to influence directly the allocation of credit in the economy (Monnet, 2013). That said, history still demonstrates that the implementation of quantitative controls (including the tools now referred to as “macroprudential”) can have a significant impact on money creation and inflation (especially when the level of bank disintermediation is low). Asset substitution was key to the functioning of the quantitative instruments and most central banking debates at that time focused on the complementarities between liquidity and credit instruments. Echoes of these debates are heard today when the following questions are raised: how does the effect of lending facilities



on aggregate demand depend on which assets banks are going to buy (namely, how to discourage banks from using cheap central bank money to buy sovereign bonds or fuel real-estate bubbles)? Do banking regulation tools (liquidity ratios) complement or oppose monetary policy measures?

New issues arise when interest rates are no longer the main instrument of policy: the ways of measuring (and announcing) policy stance and the strategies to keep monetary policy effective are very different from what they are during times of conventional policy. One major issue for unconventional policies based on quantitative controls is how to keep monetary policy effective – and thus adapt both to financial innovation and to banks' reactions – without making central bank instruments and announcements excessively complex.

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