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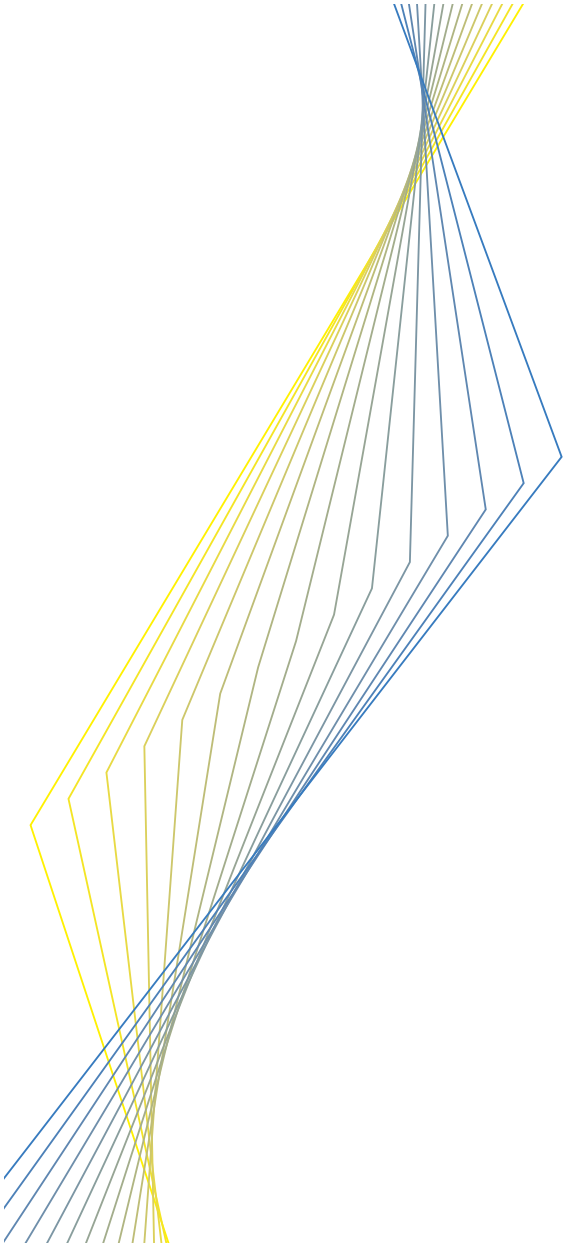

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MONETARY POLICY AND BANK LENDING IN FRANCE: ARE THERE ASYMMETRIES?

BY CLAIRE LOUPIAS[1], FRÉDÉRIQUE SAVIGNAC AND PATRICK SEVESTRE[2,3]

December 2001

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3 *The views expressed in this paper do not necessarily reflect those of the Bank of France. We wish to thank A. Duchateau and S. Matherat, for having allowed us the access to the individual banks data from the "Commission Bancaire", as well as I. Odonnat (formerly head of the "Service des Analyses et des Statistiques Monétaires") for his help in this respect. Thanks also to the "Service des Synthèses Conjoncturelles" for data from "the cost of credit survey" and to L. Baudry and S. Tarrieu for their wonderful research assistance. This paper also owes a lot to comments and suggestions made by A. Kashyap, S. Avouyi-Dovi and to informal discussions with M. Ehrmann, L. Gambacorta, J. Martinez-Pages, A. Worms, C. Cortet, B. Longet and J.L. Cayssials. We also thank P. Blanchard for the SAS-IML program used to estimate the model.*

The Eurosystem Monetary Transmission Network

This issue of the ECB Working Paper Series contains research presented at a conference on "Monetary Policy Transmission in the Euro Area" held at the European Central Bank on 18 and 19 December 2001. This research was conducted within the Monetary Transmission Network, a group of economists affiliated with the ECB and the National Central Banks of the Eurosystem chaired by Ignazio Angeloni. Anil Kashyap (University of Chicago) acted as external consultant and Benoît Mojon as secretary to the Network.

The papers presented at the conference examine the euro area monetary transmission process using different data and methodologies: structural and VAR macro-models for the euro area and the national economies, panel micro data analyses of the investment behaviour of non-financial firms and panel micro data analyses of the behaviour of commercial banks.

Editorial support on all papers was provided by Briony Rose and Susana Sommaggio.

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ISSN 1561-0810

Contents

Abstract

This paper aims at providing some empirical evidence about the impact of monetary policy on bank lending at the microeconomic level. We estimate a model close to that proposed by Kashyap and Stein (2000) using a panel data set comprising 312 banks observed quarterly over the period 1993-2000.

We find that bank lending decreases after a monetary policy tightening. Moreover, as in several other Euro area economies, banks' liquidity appears to impact significantly on their lending behavior.

JEL classification system: E51, E52, G21

Key words: monetary policy, credit channel

Non technical summary:

The aim of this paper is to check for the possible existence of a bank lending channel in France. As it has already been documented in several papers for the US, following a monetary policy tightening, not all banks adjust their lending in the same way. In particular, small banks as well as undercapitalized ones have been shown to react more strongly than large and/or highly capitalized banks. The share of liquid assets has also been shown to play a role in this respect, with liquid banks being able to maintain their loan portfolio more easily than illiquid ones.

In order to assess whether French banks exhibit similar behaviors, we have estimated a dynamic reduced form model close to that proposed in Kashyap and Stein (2000). This model allows for asymmetries in loan supply across banks, depending on their size, liquidity and capitalization. The estimates are run on a panel of 312 French banks observed quarterly over the period 1993-2000.

We do find some asymmetry between liquid and illiquid banks, with the latter being more sensitive to a monetary policy tightening. This result is in accordance with that obtained for several other countries of the Euro area (see Ehrmann et al. (2001)). It constitutes an indication that, as far as they can, banks somehow reduce their portfolio of liquid assets in order to maintain their loan portfolio.

Contrary to what has been found for the US (e.g. see Kashyap and Stein (1995, 2000) and Kishan and Opiela (2000)), we do not find the two other banks characteristics we consider (size and capitalization) to have any significant impact on bank lending. Several explanations can be proposed for this result. First, small French banks are, relatively speaking, most often better capitalized than large ones. Then, there might be a kind of compensation between the impacts of those two variables. However, including a double interaction of monetary policy with size and capitalization does not lead to a significant coefficient. In other words, we have not been able to show that, after a restrictive monetary policy, small and under-capitalized banks shrink their loan supply more strongly than others. Another possible explanation of this result, at least for size, is that the loan demand addressed to small banks is less elastic with respect to the interest rate than that addressed to large banks (see Baumel and Sevestre

(2000)). This might explain why we do not get a significant coefficient for size. In our reduced form model, this coefficient might not only account for loan supply differences across small and large banks but also for loan demand differences, which go the other way round and thus compensate each other.

At the "aggregate" level, our estimates show a significant impact of monetary policy on bank lending. An increase of 100 basis points in the interest rate leads, in the long run, to a 1.5-2% decrease in the outstanding amount of loans for the "average bank", and of around 2.5-3% at the "aggregate level".

Nevertheless, some more work needs to be done to assess better the influence of monetary policy decisions on bank lending. First, it would probably be more satisfactory to get an evaluation of the impact of those decisions on new loans granted by banks rather than on their outstanding amount. Indeed, banks cannot easily adjust downward their loan portfolio, at least for long-term loans, which represent a significant proportion of bank lending. Second, one should also have a look at the impact of monetary policy on the interest rate charged by banks to their customers (e.g., see Mojon (2001)). Indeed, the availability of banks' loans to households and businesses is important but does not totally reflect the consequences of monetary policy decisions on the financing of non-bank economic agents.

1 Introduction

Most economists would agree that, at least in the short run, monetary policy can significantly influence the course of the real economy. There is far less agreement, however, about exactly how monetary policy exerts its influence. To a great extent, empirical analysis of the effects of monetary policy has treated the monetary transmission mechanism itself as a "black box" (Bernanke and Gertler (1995)).

In Europe, the launch of the Euro has raised, and still does, questions about possible asymmetries in the response of the Euro zone economies to the ECB monetary policy. Indeed, one can suspect the existence of differences in the monetary policy transmission mechanisms across countries which could lead to uneven impacts of the ECB decisions (e.g., see L. Guiso et alii (1999), C. Favero et alii (1999) and C. Favero and F. Giavazzi (2001)). Although much work has already been done for analyzing this issue using a macroeconomic approach, a growing literature argues about the interest, if not the necessity, to use microeconomic data, either on banks or on firms to get more appropriate evaluations of these effects. Indeed, over (or besides) possible cross-country differences, a strong heterogeneity of monetary policy responses seems to exist across agents within countries. Concerning banks in particular, several papers have analyzed the response of US banks to monetary policy decisions. They show that responses differ depending on banks' size and the structure of their balance sheet (e.g. see R. Kishan and T. Opiela (2000) and A. Kashyap and J. Stein (1995 and 2000)). A few papers have, along the same lines, specifically focused on European countries (e.g. see C. Favero et alii (1999)).

This paper fits in this literature. Its aim is to look for the existence of cross-sectional differences in the way banks with varying characteristics respond to policy shocks, or, in other words, whether it is possible to find evidence for the lending view for France. We estimate a dynamic reduced form model close to that proposed in Kashyap and Stein (2000). This model allows for asymmetries in loan supply across banks, depending on their size, liquidity and capitalization. The estimates are run on a panel of 312 French banks observed quarterly over the period 1993-2000.

The structure of the paper is as follows: Section 2 is devoted to a brief recollection of the credit channel and the available empirical evidence about it in France. We describe the main features of the French banking system in section 3. We present the model we estimate, the data we use and our econometric results in section 4. Section 5 concludes.

2. The lending channel: theory and empirical evidence for France

2.1 The lending channel theory: a brief reminder

According to the “interest rate channel”, or “money channel”, a change in interest rates affects households’ and firms’ spending (i.e. consumption and investment expenses) by modifying the user cost of capital and borrowing conditions. As regards consumption, the impact of a monetary policy tightening can be, as usual, decomposed into a substitution and an income effect. While the former is unambiguously negative, the latter depends on the net asset positions of consumers, the proportion of consumer debt at floating rates, as well as the maturity of debts. Higher interest rates induce a wealth increase of net creditors but a decrease of the cash-flow of debtors, at least for those indebted at a floating rate. Indeed, the proportion of bank lending at short, or adjustable, rates strengthens the transmission mechanism. This effect is generally believed to be stronger on consumer durables than on other consumer spending. The impact on firms’ investment also depends on the structure of loans, especially on their maturities and on how much is given at adjustable rates.

The bank lending and balance sheet channels should not be considered as an alternative to the traditional monetary transmission mechanism. They are rather seen as complementary mechanisms possibly strengthening the direct interest rate effects (Bernanke and Gertler (1995)). Indeed, according to the credit and balance sheet channels theories, monetary policy has, besides its direct effects on consumption and spending, indirect effects passing through its impact on the cost incurred by banks and firms for raising external funds. As a matter of fact, a change in monetary policy that raises or lowers open-market interest rates tends to change the external finance premium in the same direction.

More precisely, the "balance sheet channel" or "broad credit channel", stresses the potential impact of changes in monetary policy on borrowers' balance sheets and income statements, including variables such as borrowers' net worth, cash flow and liquid assets. This channel may occur even if loans and bonds are perfect substitutes in the balance sheets of banks and

firms: it is associated with credit constraints that may arise when firms' ability to borrow depends on the availability of collateral. An increase in interest rates reduces the market value of collateral (real estate values, for instance), thus affecting a firm's access to bank lending.
The "bank lending channel" or "strict credit channel" focuses more narrowly on the possible effect of monetary policy actions on the supply of loans by depository institutions. It may only work when deposits and bonds are imperfect substitutes in the balance sheets of banks: In that case, following a reduction in liquidity, banks cannot turn freely to the bond market, due to the external finance premium. Then, they must reduce the amount of loans they supply and/or further increase the interest rate they charge for loans, thus amplifying the initial effects of the monetary policy tightening.

2.2. Previous econometric evidence on the credit channel for France

Following papers by Bernanke and Blinder (1992) and Kashyap, Stein and Wilcox (1993) on the United States, several contributions, based on the estimation of VAR models using aggregate macroeconomic time-series, have looked for the possible existence of a bank lending channel in France.

Goux (1996), studying the 1970-1994 period with a structural VAR model, finds no evidence of a bank lending channel in France. However, the strong changes that occurred in the French banking industry over these years cast some doubt about this conclusion. Coudert and Mojon (1997), studying the period 1979-Q1 to 1993-Q2 with a VAR model, find that the decrease of outstanding loans after an increase in the interest rate is significant. Barran, Coudert, Mojon (1997), studying France among nine European countries, also with a VAR model, find for the period 1976 to 1994 that after a contractionary shock to interest rates, deposits (including interest-bearing deposits) tend to increase while loans decrease more than money. This tends to prove that the banks' balance sheets structure is modified under a tightening of monetary policy. This is consistent with the credit channel view. Bellando and Pollin (1996) analyze the influence of monetary policy on the spread between bank lending interest rates and money market rates over the period 1984:2-1994:4. They show that the spreads contain information about future activity, but their tests do not provide a formal proof of the influence of monetary policy on activity via the credit channel.

A discussion of the pitfalls of these approaches is given in Kashyap and Stein (1995): while the findings of these papers are certainly consistent with the lending view, they are also consistent with other interpretations. This is why the literature has moved to using microeconomic datasets in order to assess the existence of a lending channel. Indeed, the lending view predicts that a tight monetary policy should induce more financial difficulties for small firms, which rely primarily on banks, than for large firms, who typically have greater access to nonbank sources of external finance. A number of papers provide evidence that is consistent with this prediction for the United States. A few papers also provide evidence for France. Rosenwald (1998a), using the Credit Cost Survey conducted by the Bank of France, observes that the spread of rates between loans of different amounts rises when the refunding rate is decreasing. This is explained by the existence of an external premium: decreasing refunding rates allow firms that usually do not get external finance (due to information problems) to enter the credit market. Evidence about the existence of a credit channel for non-financial firms in France is also reported in Chatelain and Teurlai (2000) and Chatelain and Tiomo (2001).

Kashyap and Stein (1995, 2000) were the first to address the lending view issue using individual bank balance-sheets data for the US. According to the lending view, the Central Bank can alter the loan supply behavior of banks because banks cannot find perfect substitutes for deposits. As regards France, the available empirical evidence does not lead to a clear conclusion. Martin and Rosenwald (1996) show that the rate served to banks issuing CD's is significantly bank dependent; which may be an indication for the existence of a lending channel. In a second paper, Rosenwald (1998b) studies the sensitivity of the CD's rate to the amount issued in order to check whether a bank can issue as many CDs as it wants without paying any premium. Using data on the CDs issued by 400 banks from January 1993 to February 1996, she finds a statistically significant, but very small, elasticity of the CD's rate to the issued amount. More recently, in a cross-country comparative paper, Favero, Giavazzi, and Flabbi (1999), do not find any evidence of a significant response of banks' loans to the monetary tightening which occurred at the very beginning of the 90's, in any of the four European countries considered. They find that in Germany, Italy and France, small banks use their excess liquidity to expand loans in presence of a monetary policy restriction.

3 The French banking system: main characteristics and recent evolutions

The structure of the banking industry, its evolution as well as that of the financial system are of a definitive importance for the way monetary policy can affect the decisions of economic agents. Indeed, the 90's have been characterized in France by a reduction in the number of institutions, an increase of market finance and a steady decline of the interest rate. Moreover, differences in the structures of banks' balance sheets may be at the origin of asymmetries in banks loan supply responses to monetary policy.

3.1 Bank lending and financial markets over the 90's

The French banking system has modernized a lot over the last 20 years. This is the consequence of the banking system law of 1984 and the modernization of capital markets initiated by the 1986 reform. The rationalization of the structure of the French banking industry, and the more intense competition that followed, has resulted in a steady decline in the number of credit institutions over the last decade (see table 1).

Concentration in the French banking industry has intensified in recent years. In terms of total assets, the share of the five largest institutions has expanded by four percentage points from 38.7 % to 42.7 % between 1993 and 1999.[4] Meanwhile, the share of the top twenty has risen by 11.1 percentage points (to reach 74.3 % at the end of 1999). As regards customer lending, concentration has also intensified since 1993 but to a lesser extent, with moderate rises in market share: +2.3 points for the top five (to 46.4 %), +3.6 points for the top ten (to 66.1 %) and +2 points for the top twenty (to 76.3 %).[5]

The reforms of financial markets that were implemented in the 1980's have improved access to the capital markets for economic agents. Indeed, the last decade has seen an increased availability of market finance. At the end of 2000, the outstanding amount of commercial paper was EUR 77.8 billions, against 23.6 in 1993; that is an increase of 200% over a seven

[4] Cf the annual report 1999 of the Commission Bancaire. These largest institutions include commercial banks and mutual and cooperative banks, the latter being considered as one entity rather than a multitude of small banks.

[5] The concentration of the French banking system is in the average of the European Union. The ratio of concentration in 1997 (defined as total assets of the top five on total assets of the country) was lower than 30% in Germany, United Kingdom and Italy; between 40% and 60% for France, Belgium and Spain; and above 70% for Scandinavian countries, the Netherlands, Portugal and Greece (cf. CECEI (2000)).

years period. For CDs, those figures were 128.6 billions and 149.0[6] billions respectively and 58.5 billions, against 68.3 billions in 1993, for medium-term notes. The same evolution can be observed for bonds and shares. The outstanding volume of bonds was EUR 784 billions at the end of 2000 while it was only 591 billions in 1993. The Paris stock exchange market capitalization increased from EUR 410 billions in 1993 to 1,541 billions at the end of 2000, which means that the capitalization has been multiplied by 3.8 all over the period. At the same time, the French stock exchange index (CAC40) increased from 2212 points, at the end of 1993, to 5899 points at the end of 2000 (i.e. it has been multiplied by 2.7).

In 1993, non-financial businesses' liabilities were split into 7% bonds and negotiable debt securities, 29% loans and 64% shares. This structure, quite stable until the beginning of 1996, has seen the proportion of shares rising dramatically to 81 % at the end of 2000. But this is mostly due to the fact that bonds, negotiable debt securities, and shares are valued at their market price (even for unquoted securities). The increase would be by only 6 percentage points instead of 17 percentage points if one would look at firms' accounting data (See Chatelain and Tiomo (2001)).

As a consequence, the narrowly-defined intermediation rate has decreased from more than 55% in 1993 to less than 45% in 2000. However, this better access to market finance has essentially been significant for large firms. The financing of small businesses and households still mainly rests on bank lending (e.g., see Kremp and Sevestre (2000)).

Another consequence of the increased availability of market finance has been the slight decrease of the share of loans granted to non-financial firms (including individual corporations) as a fraction of loans to individual and non-financial businesses. In terms of outstanding amounts, this share has slightly declined from 63% in 1993 to 59% in 2000.

The repartition of the loans outstanding between short-term loans (less than a year) and medium and long-term loans (more than a year), both for non-financial firms and households has been quite stable over the period. The share of short-term (respectively, long-term) loans was around 28% (resp. 72%) for non-financial firms and around 5% (resp. 95%) for households.

[6] 138.9 for CDs + 10.1 for specialized financial institutions and financial companies notes.

Almost all short-term loans for corporations are adjustable-interest rate loans. But only one half of long-term loans belongs to this category (this proportion has decreased since the beginning of the 90s; it was then two third of total long-term loans to corporations). Fixed-interest rate loans for households represent around 90% of total loans.

Short-term loans, both because of their "natural" term difference and of this stronger proportion of variable interest rate contracts, are expected to depend more strongly on the monetary policy interest rate than long-term ones. As far as outstanding amounts are considered, this phenomenon is reinforced by the significant decrease in interest rates that has been observed over the period.

The Paris interbank offered rate (PIBOR) decreased from 12.9% at the end of January 1993 to 5.9% two years later. After an increase to 8% in April 1995, the decrease resumed to 3.3% at the end of February 1997. The rate was quite stable until the end of 1998. The EURIBOR, replacing the PIBOR with the creation of the euro, decreased from 3.1% in January to 2.6% in May 1999. It then increased to 5% at the end of 2000. This decrease in the interbank offered rate has been channeled to the cost of credit available to households and businesses. The evolution of this cost of credit to businesses and households is represented below[7]. One of the key features of the period is the global decline of the interest rates from the beginning of 1995 until the third quarter of 1999. The cost of credit to businesses declined by about 5 percentage points during this period. The decrease in the cost of credit to individuals was less pronounced (around 4 percentage points). The rate increases for business between the third quarter of 1999 and 2000 ranged from 1.5 to 2%. The variation was, here again, less pronounced for households.

The period studied has thus been characterized by an increased competition among banks, a relative stability of the repartition between short and long-term borrowing, and a steady decrease of the interest rate. The improved competition among banks is favorable for finding an impact of monetary policy on bank loans. On the other hand the steady decline of interest rates might weaken the link between monetary policy and loan supply.

[7] The two graphics on the cost of credit to households and businesses are quoted from the 1999 Commission Bancaire Report.

3.2 The Monetary and Financial Institutions

At the end of 1998, the Monetary and Financial Institutions (MFIs) population was composed of 1191 entities. These included 369 “commercial” banks, 120 "mutual and cooperative banks" (“banques mutualistes”) which in fact belong to four networks (Credit Agricole, Banques Populaires, Crédit Mutuel and Crédit Coopératif), 31 savings and provident institutions (“Caisses d’Epargne”), 22 municipal credit banks (“Caisses de Crédit Municipal”) and 649 financial companies. The latter can be decomposed into 454 “Type A” finance companies (AFC), 170 “type B” finance companies (BFC) and 25 specialized financial institutions (SFI).

The main descriptive characteristics of these MFIs are given in table 2, and their relative market share in table 3.[8]

“Commercial” banks clearly play a prominent role in the French banking system as their market share was, in 1998, around 50% both in terms of bank lending and deposits[9]. The “mutual and cooperative banks” and “savings and provident institutions” come second. However, while those banks collect almost all the remaining deposits (their market share is 42%), their position is less strong on the loan market as they granted about 28% of loans in 1998. Given that municipal credit banks are negligible, the remaining 22% of loans are granted by finance companies and specialized financial institutions. One interesting feature is that the subset of specialized financial institutions, although not very numerous, accounts for more than 40% of this remaining share. This contrasts with the market share of the whole set of financial companies and specialized financial institutions on the deposits markets, as this market share is only 6%. Those figures reflect the fact that financial companies are not allowed to receive deposits for a period shorter than 2 years, a constraint which obviously reduces a lot the amount of deposits they can collect[10].

[8] The French supervisor authority (the «Commission Bancaire ») builds up « artificial » banks to take into account the network nature of « mutual and cooperative » banks, by consolidating properly the balance sheets of the regional branches and that of the head/federal institution. The figures for the four fictive entities corresponding to the four networks are also reported in table 3.

[9] Except where indicated, all subsequent figures in this section refer to the situation at the end of 1998.

[10] Given that those companies are not depository institutions, they will be taken out of our sample for our study of the lending channel; although their market share is not negligible as far as loans are concerned.

Table 3 also provides information about the structure of balance sheets. On the asset side, three items, expressed in terms of ratio over total assets, are taken into consideration: cash and interbank assets (Liquid1), loans, and securities (securities holding ratio). On the liability side, four items are reported: interbank liabilities, deposits, securities liabilities, and capital and reserves.

As liquidity will appear to be particularly important in our discussion, two other measures of liquidity (on top of Liquid1) are provided. Liquid 1 is a very simple measure of liquidity as it takes into account only cash and interbank assets on a gross basis. The second measure of liquidity (Liquid2) provided is almost as simple but includes, on top of cash and interbank assets, transaction securities and short-term investment securities. These securities are supposed to be easily marketable, and thus relatively liquid. The third measure of liquidity (Liquid3) aims at taking account of the banks' net interbank position. It is defined as the ratio of the difference "interbank assets-interbank liabilities" over the difference "total assets-min(interbank assets, interbank liabilities)". The purpose of this measure is to get rid of the interbank activity of a bank in order to measure its liquidity. This is particularly important for "mutual and cooperative banks", since they are all organized in a network.

In terms of the balance sheet structure, one can observe some important differences: the share of deposits in total assets is much higher for "mutual and cooperative banks" (65%) and for "savings and provident institutions" (79%) than it is for "commercial" banks (41%). The share of interbank liabilities is higher for the latter (32%) than it is for the former groups (13 % for cooperative banks and 14% for savings banks), while the share of securities in banks' liabilities is not very different across those categories of banks. It is 8% for "commercial" banks and 12% for "mutual and cooperative banks". On the asset side, the share of loans in total assets is higher for "mutual and cooperative banks" and "savings and provident institutions" than it is for "commercial" banks. Those discrepancies are compensated by differences in both interbank assets and securities holdings.

The fact that "mutual and cooperative banks" constitute networks entails particular relationships that are partly reflected in their balance sheet structure[11]. Indeed, the federal institution at the head of the network is legally considered to be responsible for the liquidity and the solvency of the whole network and this induces specific financial flows between the branches and the head of the network.

[11] Savings and provident institutions are considered as an independent category all over the period despite their integration into the sub-group of cooperative banks at the beginning of 2000.

For example, in one of these networks, regional branches have to send a part of the deposits they collect to the head/federal structure, a part of which does not even appear in their balance sheet. In other words, those regional branches collect more deposits than indicated in their balance sheet, which makes it impossible to rely on the balance sheets of these branches. In order to get relevant figures, the French bank supervisory authority (the "Commission Bancaire") then builds up "artificial" banks by consolidating properly the balance sheets of the regional branches and that of the head/federal institution. We shall use this kind of aggregate in our subsequent analysis for all but one of them, where the balance sheets of the regional branches do not differ much from the fictitious aggregate entity, so that each regional bank has been kept in the econometric sample used below.

3.3 Small banks versus large banks

As one of the main conclusions of previous studies about the credit channel in the US is that small banks are more strongly affected by a monetary policy tightening than large ones, it may be worth to have a look at the balance sheet structure of French banks using this discriminating criterion (see table 4).

The share of credit in small banks' balance sheets (38%) is higher than that for large banks (34%). Small banks' balance sheets include a lot more liquidity than the ones of large banks. The share of cash and interbank operations in total assets (Liquid1) stands at 45% (resp. 32%) for small (resp. large) banks, as opposed to the share of securities, which is 13% (resp. 31%). Thus, small banks are more liquid than large banks. This factor could induce a smaller impact of monetary policy on small banks than on large banks (if, because of informational asymmetries, size had a specific impact). Moreover, if one looks at capitalization, one may notice that small banks are a lot more capitalized than large banks. The capitalization ratio is 12.3% for small banks whereas it is only 3.4% for large banks. This might also go against a stronger impact of monetary policy on small banks' lending. As regards the liability side, small banks have slightly more deposits than large banks. The share of deposits in total assets is 55% for small banks against 49% for large banks. The share of interbank operations is 25% for small and large banks. The share of securities in total liabilities is only 4% for small banks, against 20% for large banks. This is consistent with the informational asymmetry

prediction that states that large banks have less difficulties in accessing external finance by issuing bonds than small banks.

Furthermore, small banks are more liquid and better capitalized than large banks. If one assumes that small, illiquid and undercapitalized banks should be more affected by monetary policy than large, liquid or more capitalized banks, the existence of a lending channel for small banks might be doubtful. Indeed, there might be a kind of compensation between the impact of size on the one hand and of liquidity and capitalization on the other hand.

4 The econometric analysis

4.1 The model

The aim of this paper is to give an estimation of the impact of monetary policy on loan supply and of the possible asymmetry of the effects depending on particular banks' characteristics. We use the same kind of model as Ehrmann et alii (2001), inspired from a generalization of the textbook IS-LM model described in Bernanke and Blinder (1988), re-written in first differences.

The first model we estimate can be written as[12] :

$$\begin{aligned}\Delta\log(L_{it}) &= \Sigma_{j=1}^{4} b_j \Delta\log(L_{it-j}) + \Sigma_{j=0}^{4} c_j \Delta r_{t-j} + \Sigma_{j=0}^{4} d_j \Delta\log(GDP)_{t-j} + \Sigma_{j=0}^{4} e_j INFL_{t-j} \\ &+ f \quad x_{it-1} + \Sigma_{j=0}^{4} g_{1j} x_{it-1} \Delta r_{t-j} + \Sigma_{j=0}^{4} g_{2j} x_{it-1} \Delta\log(GDP)_{t-j} + \Sigma_{j=0}^{4} g_{3j} x_{it-1} INFL_{t-j} + \Delta\varepsilon_{it}\end{aligned} \quad (1)$$

where $i = 1,...,N$ indexes banks and $t = 1,...,T_i$ time periods (quarters). L_{it} are the loans of bank i in quarter t to the non-financial private sector. Δr_t represents the first difference of a nominal short-term interest rate, namely the 3 months interbank interest rate. $\Delta\log(GDP)_t$ is the growth rate of real GDP[13], and $INFL_t$ the inflation rate computed as the growth rate of the consumer price index.

Including inflation and GDP growth in the model together with their interaction with bank characteristics is assumed to account for loan demand effects. Then, under the assumption that

[12] The model implicitly allows for banks fixed effects, since those effects are discarded in the first difference representation of the model.
[13] GDP evaluated on a 1995 basis.

the demand addressed to each bank is homogeneous with respect to its interest rate elasticity, the g_{1j} interaction coefficients can be interpreted as reflecting the heterogeneity of loan supply responses across banks. We consider here that size, liquidity and capitalization (denoted above as x_{it}) might have an influence on the way a bank's loan supply reacts to monetary policy.

Size (defined here as the log of total assets and centered with respect to its period by period mean) is often considered as the most obvious proxy for informational asymmetries in either firm or bank studies, as far as the problem of finding external finance is concerned. Capitalization may also be important in that respect, as one can expect under-capitalized banks to have more difficulties in raising external funds than well capitalized ones. Capitalization is defined here as the ratio of the sum of capital and reserves to total assets. This ratio has been centered with respect to its overall sample mean. Finally, liquidity may affect banks' loan supply as more liquid banks may sell a part of their liquid assets to compensate a drop in their deposits following a monetary policy tightening. Liquidity is the liquidity ratio computed by dividing liquid assets by total assets, where liquid assets are defined as the sum of cash and interbank operations (Liquid1). The ratio of liquid assets/total assets is also centered with respect to its overall sample mean. Two other measures of liquidity (Liquid2 and Liquid3, defined above) have been used in the estimations as robustness checks. These measures are also centered with respect to their overall sample mean.

To try to limit possible simultaneity problems, those interactions are always taken as their first lag value. Nevertheless, because of the first differencing of the model, there remains a potential problem of endogeneity. This problem has been tackled by using an appropriate estimation procedure.

Besides the assumption about the interest rate elasticity of loan demand, another important assumption is that including inflation and GDP growth in the model suffices to account for the impact of the macroeconomic environment on loan demand. In order to check whether this assumption holds, a second model has been estimated, where time dummies are included instead of the macroeconomic variables. If the latter are sufficient, the results associated with either model should be comparable as far as the interaction coefficients with monetary policy are concerned. This second model is therefore estimated as

$$\Delta \log(L_{it}) = a_i + \Sigma_{j=1}^{4} b_j \Delta \log(L_{it-j}) + f\, x_{it-1} + \Sigma_{j=0}^{4} g_{1j} x_{it-1} \Delta r_{t-j}$$
$$+ \Sigma_{j=0}^{4} g_{2j} x_{it-1} \Delta \log(GDP)_{t-j} + \Sigma_{j=0}^{4} g_{3j} x_{it-1} INFL_{t-j} + \lambda_t + \varepsilon_{it} \quad (2)$$

where all variables are defined as before, and λ_t describes the time dummies.

We have chosen to introduce the three main banks' characteristics together: size, liquidity and capitalization. So *x* stands for the three different characteristics all together. Indeed, as one can notice from the description of section 2.1, these characteristics are not independent from each other. Then, including them separately in a model is likely to generate an omitted variable bias. Indeed, estimating models including only one characteristic at once leads to unsatisfactory results (See table 6.a in Ehrmann et al. (2001)).

4.2 The econometric sample

A potentially severe problem comes from the large number of bank mergers that took place during the observation period (see table 1 above). We have considered three different options for the treatment of mergers: in the first option, merged entities are reconstructed backward as the sum of the merging banks; in the second option, the merger is considered to give birth to a new bank while the merging banks are kept in the sample for the period preceding the merger. The last option is a mix of the first two ones: option 2 is applied if merging banks are of similar size while option 1 is used for bank with significantly differing sizes (i.e. one of the two banks is at least 2.5 times larger than the other one). However, our econometric results do not change significantly whatever option is used. The results below refer to option 1.

Finally, outliers were discarded from the sample in the following way. For quarterly growth rates of total assets, loans and deposits, all observations below the 2nd and above the 98th percentile were treated as outliers. For the first difference in the capitalization and liquidity ratios, the thresholds were set to the 1st and 99th percentiles. Moreover, a bank had to have at least 6 successive observations in levels, i.e. 5 in growth rates, in order to be kept in the sample. We are then left with an unbalanced panel comprising 312 banks over the years 1993-2000 and 5327 observations.

4.3 Estimating the impact of monetary policy on bank lending

4.3.1 Econometric issues

We have estimated the models as given in equation (1) and (2). However, including four lags of the three macroeconomic variables and of their interactions with all bank characteristics led to unsatisfactory results. Indeed, we faced a strong multicollinearity problem, implying a lack of significance of almost all the estimated coefficients. We then decided to keep the interactions of monetary policy with size, liquidity and capitalization but to discard all interactions with GDP growth and inflation, which were much less significant than the ones with monetary policy. The validity of this choice was confirmed by the fact that including only one characteristic at a time interacted with monetary policy, GDP and inflation led to insignificant estimates of the latter two[14]. In other words, it seems that one can accept the assumption that the loan demand elasticities with respect to GDP and inflation are homogeneous across banks.

In order to account for the autoregressive nature of the model and for the possible endogeneity of banks' characteristics, the GMM estimator has been used. As instruments we used the second and the third lags of the quarterly growth rate of loans, the second lag of the bank characteristics and the first difference of the three months interbank interest rate. Moreover, to increase efficiency, this instrument set has been expanded according to Arellano and Bond's procedure, i.e. all instruments have been multiplied by time dummies. According to the Sargan test statistics we get, the instruments used are adequate. Then, one cannot reject the assumption that the three months interbank interest rate is exogenous. Moreover, this statistic together with the p-values of the m1 (disturbance serial correlation of order one) and m2 (disturbance serial correlation of order 2) statistics confirm our interpretation of the model as the first difference of a "theoretical" specification in log levels. Indeed, the disturbances appear to be MA(1), and thus to be uncorrelated with bank specific variables dated *t-2* or less and with lags 2 and 3 of the endogenous variable.

The results presented in table 5 are the GMM second step estimates. However, first step estimates with robust standard errors do not significantly differ from those. Moreover,

[14] The results associated with the estimation of a model with only one characteristic at a time are not reported here, but can be found in Ehrmann et al. (2001).

robustness checks have been done with respect to seasonality. Neither the inclusion of seasonal dummies nor the inclusion of the fourth lag of the growth rate of loans in the instrument set indicated any significant seasonality beside that implicitly taken into account by the macro variables.

One can notice on table 5, that the results obtained with model (1), including macroeconomic variables (column 1), are very similar to those obtained with model (2), including time dummies (column 2), as regards the impact of monetary policy. Hence, model (1) correctly accounts for the impact of macroeconomic evolutions. This is important in order to allow us to interpret differences in the interaction coefficients as indications about heterogeneity in banks' lending behavior.

4.3.2 The overall impact of monetary policy

The first lines of the first panel in table 5 report the sum of coefficients of loans growth, of the monetary policy indicator (i.e. the first differences of the interest rate), of real GDP growth, and of inflation, while those of the second panel present the corresponding long run coefficients. As previously mentioned, since bank characteristics have been normalized, these coefficients give the impact of monetary policy, GDP and inflation on bank lending for a bank with the average characteristics of the sample.

We find a significant response of banks' loans to monetary policy. The average impact on outstanding loans of banks is significant and amounts to a reduction of 1.4% in the "short-run", and 2% in the long run, for an increase of 100 base points in the interest rates. One has to keep in mind that this average effect should not be interpreted in terms of a macroeconomic effect as all banks are equally weighted in our econometric analysis (in particular, small and large banks are all given a weight equal to 1).

4.3.3 The bank lending channel

The existence of asymmetries across banks in their reaction to a monetary policy tightening can be assessed from the interaction coefficients, depending on whether they are significantly positive or not. Those coefficients appear in the second part of the first two panels. Moreover, to get an idea of the differential impact of monetary policy on bank lending, it is useful to

compute this impact for some sub-sample of banks. We have chosen to use 6 sub-samples defined according to size, liquidity and capitalization characteristics of banks. For each sub-sample we have computed the average size, liquidity and capitalization, in order to be able to determine the impact of the kit of the three interaction terms for each sub-sample (see the description of table 6 in appendix for further details). These figures are reported for "short" and long run as MP interactions in the third panel of table 5.

Contrary to Favero, Giavazzi, and Flabbi (1999), who made a multinational comparative study using BankScope data, we find some evidence of a lending channel in France. However, one can have some doubts about their conclusions as they did not control for loan demand in their model.

The impact of liquidity

Indeed, the existence of a lending channel can be assessed since our econometric results show that more liquid banks do not respond to a monetary policy tightening as strongly as less liquid banks do. The former use their liquidity to compensate the effects of a monetary policy tightening. Indeed, the interaction coefficient with liquidity is positive and highly significant. Banks appear to draw on their short-term interbank assets to soften the consequences of an interest rate increase on their loan supply.

As liquidity appears to be important, two robustness checks have been done using the two other alternatives (liquid 2 and liquid 3) which have been previously defined.

The third column of table 5 presents a first regression with the second measure of liquidity. This measure is defined as the ratio of cash and interbank assets plus transaction and short term investment securities over total assets. As one can notice the results are qualitatively about the same than with a more restricted definition of liquidity. Nevertheless, although still significantly positive, the magnitude of the interaction coefficient with liquidity appears to be about one half that with the first definition of the liquidity ratio while there is less than a 1 to 2 ratio from one to the other. This is an indication that the impact of a restrictive monetary policy on the banks' securities portfolio is less important than that on its interbank assets. This result is in accordance with one of the conclusions obtained by Baumel and Sevestre (2000) about banks' loans financing and with the results of Worms (2001) for German banks.

A third definition of the liquidity ratio, aimed at taking account of the net liquidity position of banks[15], leads to qualitatively similar results (column 4) as far as liquidity is concerned. Indeed, the liquidity interaction term is still significant, although this is not the case anymore for the direct impact of monetary policy. Moreover, as shown below, this conclusion appears to be robust to the particular treatment we applied to "mutual and cooperative banks" networks.

The impact of size

Contrary to the results obtained by Kashyap and Stein (2000) for the US, size does not appear to have any impact on the way banks respond to an increase in the monetary policy interest rate. This result is similar to the one obtained for several other European countries (see Ehrmann et al. (2001)). One possible explanation rests in the fact that, as previously shown, small banks are significantly more liquid and capitalized than large ones[16], two factors that may counter-balance the possible "negative" effect of size, as far as size induces asymmetric information problems when banks look for external finance to compensate the decrease in deposits they may experience after a monetary policy tightening. Another possible explanation comes from the identification problem we might have. As underlined above, the interaction coefficients we get account for differences in the loans supply behavior of banks as long as one assumes that all banks face the same demand function as regards its interest rate elasticity. However, Baumel and Sevestre (2000) have shown that the elasticity of demand addressed to large banks is higher than that of the demand faced by small banks. A first possible explanation of this discrepancy can be found in a possible heterogeneity in the banks' clientele. Indeed, large banks' customers are likely to be more frequently large firms than those of small banks. Since access to non-bank external finance is easier for large firms, the elasticity of loan demand by large firms is higher than that by small firms. Another explanation might be the existence of stronger banks/firms relationships in small banks. In any case, the interaction coefficient we get in our reduced form model results from the composition of two different impact coefficients of interest rate variations, coefficients which exhibit opposite magnitudes: for large banks (resp. small banks), the elasticity of supply may be low (resp. high) while that of demand is large (resp. small), thus leading to a non significant impact of size on bank lending.

[15] This ratio (liquid 3) is defined as cash and interbank assets minus interbank liabilities divided by total assets minus the minimum of interbank assets and liabilities.
[16] Those differences exist in the US, too. However, they are of a much smaller magnitude.

The impact of capitalization

The third bank characteristic we have considered, namely capitalization, does not seem to impact significantly on bank lending behavior, everything else being equal. This result cannot be explained by a lack of precision due to the correlations between size, liquidity and capitalization. If this were the case, one would obtain significant coefficients when only one interaction is included in the model (see table 6 in Ehrmann et al. (2001)). Again, most banks with a low capitalization ratio are large banks, which may explain why this characteristic does not appear to impact on banks' loans supply. However, it might be the case that capitalization matters for small banks only. In that case, one would expect to get a significant positive coefficient when introducing the double interaction size-capitalization in the model. This is not what we find when we estimate a model with a double interaction size-capitalization with monetary policy, as we get an insignificant coefficient for this double interaction.

4.3.4 A tentative evaluation of the macroeconomic impact

As a consequence of these results, the "total long run" MP effect appears to be the strongest for illiquid banks[17]: an increase of 100 base points in the interest rates leads, in the long run, to a reduction of 4.2 % in their outstanding loans. Conversely, for liquid banks, such an increase in the monetary policy indicator induces an increase in bank lending, which however, is not statistically significant.

This evaluation of the total response of bank lending to a monetary policy change can be made for each bank separately. We can then compute a "macro" effect by weighting those individual responses by the size of each bank, as measured by its market share on the loans market, evaluated from our sample. We get a "macroeconomic" impact of -3.1%, stronger than the above mentioned average effect. However, this macroeconomic effect should be considered with some caution since, as stated above, all financial companies and specialized financial institutions (which represent about 22% of all loans granted) have been discarded from our sample.

[17] Illiquid banks are those banks with a liquidity ratio below the first decile, while liquid ones are those with a ratio above the 9th decile.

4.3.5 Robustness checks

Two types of robustness checks have been undertaken. The first one deals with the definition of liquidity (see above), the second one with the convention chosen to tackle "mutual and cooperative banks" as either individual entities or as global entities.

We report the results for three different samples: a sample including only commercial banks (table 7), a sample including commercial banks and the four fictive banks as a representation for the four "mutual and cooperative" banks' networks (table 8), and a sample with commercial banks, all the entities of the "mutual and cooperative banks", and "savings and provident institutions" (table 9).

One may notice from table 9, that the model is not accepted when all individual entities are kept in the sample. The marginal significance of the Sargan test is below 5%. This is an indication that treating all "mutual and cooperative" banks as independent banks is not the best way to study their behavior.

Obviously, table 7 and 8 are very close to each other, since there are only three banks added in the sample of table 8 (the periodicity of the data for one of the "mutual and cooperative banks" networks is only annual instead of quarterly, so this bank has been discarded from the sample). Contrary to the results in table 5, the direct impact of monetary policy does not appear to be significant here (except in one case: when the second liquidity ratio is used and the sample restricted to commercial banks). But the absolute values of the long-run monetary coefficient are very close to each other in table 5 and 7. The lack of significance is thus probably mostly due to the smaller number of banks involved in this set of regressions.

Nevertheless, our main conclusion remains: liquidity significantly affects bank lending supply. This result is in accordance with that obtained for several other countries of the Euro area (see Ehrmann et al. (2001)).

5. Conclusion

The aim of this paper was to check for the possible existence of a bank lending channel in France. For that purpose, we have estimated a dynamic reduced form model allowing for asymmetries in loan supply across banks, depending on their size, liquidity and capitalization. We have used a panel of 312 French banks observed quarterly over the period 1993-2000.

We find some asymmetry between liquid and illiquid banks, the latter being more sensitive to a monetary policy tightening. This result is in accordance with that obtained for several other countries of the Euro area (see Ehrmann et al. (2001)). It constitutes an indication that, as far as they can, banks somehow reduce their liquid assets portfolio in order to maintain their loan portfolio.

Contrarily to what has been found for the US (e.g., see Kashyap and Stein (1995, 2000) and Kishan and Opiela (2000)), we do not find the two other banks characteristics we consider (size and capitalization) to have any significant impact on bank lending. Several explanations can be proposed for this result. First, French small banks are, relatively speaking, most often better capitalized than large ones. Then, there might be a kind of compensation between the impacts of those two variables. However, including a double interaction of monetary policy with size and capitalization does not lead to a significant coefficient. In other words, we have not been able to show that small and under-capitalized banks shrink their loan supply after a restrictive monetary policy more strongly than others. Another possible explanation of this result, at least for size, is that the loan demand addressed to small banks is less elastic with respect to the interest rate than that addressed to large banks (see Baumel and Sevestre (2000)). This might explain why we do not get a significant coefficient for size. In our reduced form model, this coefficient may not only account for loan supply differences across small and large banks but also for loan demand differences, which go the other way round and thus compensate each other.

At the “aggregate” level, our estimates show a significant impact of the monetary policy on bank lending. An increase of 100 base points in the interest rate leads, in the long run, to a 1.5 to 2% decrease in the outstanding amount of loans for the “average bank” and of around 2.5 to 3% at the “aggregate level”.

Nevertheless, some more work needs to be done to assess better the influence of monetary policy decisions on bank lending. First, it would be probably more satisfactory to get an evaluation of the impact of those decisions on new loans granted by banks rather than on their outstanding amount. Indeed, banks cannot easily adjust downward their loan portfolio, at least for long-term loans which represent a significant proportion of bank lending. Second, one should also have a look at the impact of monetary policy on the interest rate charged by banks to their customers (e.g. see Mojon (2001)). Indeed, the availability of bank loans to households and businesses is important but does not totally reflect the consequences of monetary policy decisions on the financing of non-bank economic agents.

6 References

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7 Appendix: Decomposition of the differential impact of monetary policy on bank lending

Table 6 gives the decomposition of the computation of the MP interaction term for each sub-sample as they appear in table 5. The first block column contains the average characteristics' level (before normalization) for the whole sample and the 6 sub-samples. The bank characteristics as well as the number of banks are given for the end of year 1998. The second block column gives the values of these characteristics once they have been normalized (i.e. as they are used in our computations). The third block gives the decomposition of the computation of the "short-run" impacts while the fourth and last one gives that of the long-run impacts. For example, the first column of the fourth block reports the direct long-term impact, which is the total impact for the average of the sample. The second column reports the long-term interaction coefficients (one line by characteristic), the third column is the product of the previous column with the normalized value of the characteristics for the considered sub-sample. Thus, the total for each sub-sample of the column "monetary interaction" is the same figure than the one reported in table 5. The last column of the last block gives the long-run total impact, which is obviously the total of the direct impact and of the sum of monetary interaction impacts.

Table 1 : Number of MFIs in France
(end of each year)

Date	Number	Net variation	Number of creations	Number of mergers	Number of closures
1993 (*)	1630				
1993	1598	-32	45	-42	-35
1994	1561	-37	38	-43	-32
1995	1400	-161	23	-27	-157
1996	1352	-48	19	-30	-37
1997	1240	-112	31	-24	-119
1998	1191	-49	27	-23	-53
1999	1121	-70	30	-43	-57
2000 (**)	1082	-39	11	-2	-48

(*) end of march 1993
(**) end of september 2000

Source: authors'calculations based on data from banks reports to the banks' Supervisory Authority (the Commission Bancaire)

Table 2: characteristics of MFIs

Type of MFI	Belong to network?	Customer restrictions	Product restrictions	Geographic restrictions	Comments
Commercial Banks (AFB)	no	none	Can offer anything	Nationwide	
Mutual and Cooperative banks	yes	none (for most of them)	Can offer anything, but there exist specific additional products (e.g. specific savings accounts: livret bleu Passbook for "mutual credit banks").	Regional areas	
Savings and Provident Institutions (*)	yes	none	Can offer anything, but there exist specific additional products (e.g. specific savings accounts: livret A Passbook).	Regional areas	
Municipal Credit banks	no	mostly individuals and some legal entities	Pawn broking and consumer credits	Localwide (Municipality areas)	Local public institutions
Finance companies of type A	no	Each institution has a specific Customer restriction.	No deposits of less than two years. Each institution has a specific activity or product restriction (e.g. home loan companies, Mortgage credit institutions).	Nationwide	Finance companies authorised to carry out banking operations under laws and regulations proper to them
Finance companies of type B	no	Each institution has a specific Customer restriction.	No deposits of less than two years. Each institution has a specific activity or product restriction (e.g. consumer credit, Real-estate finance, equipment leasing companies).	Nationwide	Finance companies authorised to carry out banking operations by individual authorization
Specialized financial institutions	no	Each institution has a specific Customer restriction. It might be: small firms and medium size firms, for example.	no deposits of less than two years	Nationwide	

(*) Savings and Provident Institutions belong to "mutual and cooperative banks" since the beginning of the year 2000.

Table 3: MFIs characteristics by category
(December 1998)

	Total	COM	COOP	fict coop	SP	MCB	AFC	BFC	SFI
Number of MFIs	**1191**	369	120	4	31	22	170	454	25
Mean assets (millions of euro)	**2396**	4076	5763	127198	6606	88	199	572	6316
Fraction of total assets	**1**	0.53	0.24	-	0.07	0.00	0.01	0.09	0.06
Mean deposits	**1018**	1683	2949	88030	5124	38	1	108	1163
Fraction of total deposits	**1**	0.51	0.29	-	0.13	0.00	0.00	0.04	0.02
Mean loans	**951**	1521	2166	64854	2003	59	110	286	3968
Fraction of total loans	**1**	0.50	0.23	-	0.05	0.00	0.02	0.11	0.09
Loans/total assets	**0.51**	0.38	0.65	0.52	0.31	0.62	0.68	0.52	0.32
Deposits/total assets	**0.24**	0.41	0.49	0.65	0.79	0.28	0.01	0.10	0.04
Capital and reserves/total assets	**0.18**	0.14	0.08	0.05	0.03	0.35	0.22	0.25	-0.04
Liquid1	**0.26**	0.41	0.21	0.22	0.48	0.23	0.09	0.18	0.42
Liquid2	**0.33**	0.48	0.24	0.31	0.59	0.26	0.18	0.26	0.55
Liquid3	**-0.16**	0.10	-0.17	0.10	0.39	-0.05	-0.54	-0.25	-0.50
Securities holding ratio	**0.14**	0.16	0.10	0.22	0.19	0.08	0.14	0.14	0.19
Interbank liabilities ratio	**0.40**	0.32	0.37	0.13	0.14	0.26	0.61	0.42	0.63
Securities liabilities ratio	**0.09**	0.08	0.04	0.12	0.02	0.05	0.08	0.12	0.22

Notes:

1) Source: authors'calculations based on data from banks reports to the banks' Supervisory Authority (the Commission Bancaire)
2) COM="commercial banks"; COOP="Mutual and Cooperative banks: all entities"; fict coop="Mutual and Cooperative banks: fictive entities" SP="Savings and Provident institutions"; MCB="Crédit Municipal"=Municipal credit banks; AFC= finance companies of type A; BFC=finance companies of type B; SFI=Specialised Financial Institutions.

3) Loans are loans granted to non financial businesses. Deposits include certificate of deposits (CDs) and medium term notes (MTNs). Liquid1 is the ratio of the sum of cash and interbank assets over total assets, Liquid2 is the ratio of the sum of cash, interbank assets and the so-called "transaction" and "short-term investment" securities over total assets. Those two categories are made of securities that the bank does not consider as "long term investments" and can thus be considered to be a part of the banks liquidity. Liquid3 is a measure aiming at taking account of the banks net interbank position. It is defined as the ratio of the difference "interbank assets - interbank liabilities" over the difference "total assets – min(interbank assets, interbank liabilities)". Securities liabilities do not include CDs and MTNs. Capitalization is the ratio of the sum of capital and reserves to total assets.

Table 4: Banks description with respect to absolute and relative sizes
(December 1998)

Banks characteristics	absolute size		relative size		Total
	Small	Large	Small	Large	
Number of banks	182	24	249	16	332
Mean assets (billions of euro)	0.313	66.741	0.770	92.326	6.398
Fraction of total assets	0.027	0.754	0.090	0.695	1
Mean deposits	0.182	33.000	0.492	44.885	3.393
Fraction of total deposits	0.029	0.703	0.109	0.638	1
Mean loans	0.124	26.788	0.343	37.907	2.576
Fraction of total loans	0.026	0.752	0.100	0.709	1
Loans/total assets	0.379	0.335	0.411	0.358	0.403
Deposits/total assets	0.549	0.491	0.581	0.438	0.585
Capital and reserves/total assets	0.123	0.034	0.106	0.037	0.089
Liquid1	0.455	0.317	0.416	0.294	0.401
Liquid2	0.523	0.491	0.481	0.454	0.481
Liquid3	0.236	0.095	0.216	0.034	0.203
Securities holding ratio	0.132	0.311	0.140	0.304	0.163
Interbank liabilities ratio	0.246	0.246	0.226	0.281	0.227
Securities liabilities ratio	0.040	0.196	0.046	0.206	0.062

Notes:

1) The sample excluding finance societies, specialized financial institutions and municipal credit banks then includes 520 banks at the end of 1998. This sample should reduce to 435, when replacing regional banks of three of the "mutual and cooperative" banks networks by the corresponding global entities. But four banks classified as ''commercial'ònes are in fact included in the ''mutualand cooperative banks''global entities. Then, they are also deleted and only 431 banks are kept in the sample. Moreover, with the 1984 banking law, some finance societies decided to be classified as banks, despite they still have almost no deposits. Numerous foreign banks affiliates have also almost no deposits. So banks with less than 10 % of deposits are discarded from the sample. So we are left with 341 banks. Finally, banks with a share of loans over total assets lower than one percent have been deleted too. So we are left with 332 banks in the population of banks having ''significant'' deposits and loans.

2) Absolute size: "Small" banks have assets less than 1 billion, while "big" banks have assets more than 10 billions.

3) Relative size: A "small" bank has the average size of the banks below the third quartile, while a "big" bank has the average size of the banks above the 95th percentile.

Table 5: Econometric results (to be continued)

Dependent variable : growth rate of loans (first difference of log)

	MODEL 1: MP interaction All Bank characteristics		MODEL 2: MP interaction All Bank characteristics		MODEL 1: MP interaction check on liquidity definition Liquid2		MODEL 1: MP interaction check on liquidity definition Liquid3	
	Coeff.	S.Error	Coeff.	S.Error	Coeff.	S.Error	Coeff.	S.Error
direct coefficients								
sum of lags	0.289 ***	0.050	0.301 ***	0.056	0.307 ***	0.053	0.381 ***	0.053
Monetary policy(MP)	-1.400 ***	0.403			-1.350 ***	0.432	-0.433	0.410
Real GDP	2.115 ***	0.318			2.392 ***	0.343	2.352 ***	0.338
Prices(CPI)	-2.615 ***	0.393			-2.716 ***	0.401	-2.492 ***	0.412
interaction coeff.								
Monetary policy(MP)*size	-0.045	0.156	-0.093	0.163	-0.166	0.164	-0.257	0.174
Monetary policy(MP)*liquidity	5.762 ***	1.389	5.743 ***	1.539	2.810 **	1.104	4.176 ***	0.856
Monetary policy(MP)*capitalization	1.638	4.969	1.546	5.271	3.875	5.097	-10.840 **	4.978
Long-run								
direct coefficients								
Monetary policy(MP)	-1.969 ***	0.566			-1.948 ***	0.614	-0.700	0.662
Real GDP	2.975 ***	0.374			3.453 ***	0.412	3.801 ***	0.424
Prices(CPI)	-3.678 ***	0.512			-3.920 ***	0.553	-4.028 ***	0.596
interaction coeff.								
Monetary policy(MP)*size	-0.063	0.218	-0.132	0.233	-0.240	0.236	-0.416	0.287
Monetary policy(MP)*liquidity	8.106 ***	1.931	8.211 ***	2.102	4.055 **	1.588	6.750 ***	1.482
Monetary policy(MP)*capitalization	2.304	7.007	2.210	7.537	5.593	7.395	-17.530 **	7.999
MP interaction for:								
high value of bank size.	-0.623	0.568	-0.802	0.599	-0.711	0.570	-1.141 *	0.592
low value of bank size.	-0.041	0.114	-0.007	0.122	0.133	0.112	0.085	0.113
high value of bank liquidity.	2.793 ***	0.707	2.817 ***	0.764	1.570 ***	0.521	2.184 ***	0.519
low value of bank liquidity.	-1.555 ***	0.389	-1.517 ***	0.432	-0.878 **	0.366	-2.131 ***	0.524
high value of bank capitalization.	0.541	0.948	0.626	1.009	1.459	0.926	-1.455	0.886
low value of bank capitalization.	0.698 **	0.291	0.684 **	0.331	0.196	0.324	0.814 ***	0.251
MP interaction (long run) for:								
high value of bank size.	-0.876	0.793	-1.147	0.851	-1.027	0.819	-1.844 *	0.991
low value of bank size.	-0.058	0.160	-0.009	0.175	0.192	0.162	0.137	0.185
high value of bank liquidity.	3.928 ***	0.987	4.028 ***	1.045	2.266 ***	0.753	3.531 ***	0.906
low value of bank liquidity.	-2.188 ***	0.543	-2.169 ***	0.594	-1.267 **	0.528	-3.445 ***	0.885
high value of bank capitalization.	0.760	1.337	0.895	1.442	2.106	1.349	-2.352 *	1.409
low value of bank capitalization.	0.982 **	0.403	0.978 **	0.466	0.284	0.467	1.316 ***	0.403
Total MP effect (long run) for:								
high value of bank size.	-2.846 ***	0.951			-2.975 ***	1.041	-2.545 **	1.240
low value of bank size.	-2.027 ***	0.604			-1.756 ***	0.645	-0.563	0.687
high value of bank liquidity.	1.959	1.192			0.318	1.038	2.831 **	1.134
low value of bank liquidity.	-4.157 ***	0.764			-3.215 ***	0.769	-4.157 ***	1.095
high value of bank capitalization.	-1.209	1.541			0.158	1.606	-3.053 *	1.651
low value of bank capitalization.	-0.987	0.660			-1.665 **	0.713	0.615	0.714
Macroeconomic MP impact								
weighted average by loans market share	-3.134 ***	0.958			-3.320 ***	1.062	-2.450 **	1.242
Residual autocorr. tests								
m1	-3.588	0.000	-3.584	0.000	-3.260	0.001	-4.224	0.000
m2	-0.863	0.388	-1.058	0.290	-0.751	0.453	-0.717	0.474
Sargan test (2-step)	122.669	0.231	105.892	0.376	126.309	0.168	137.486	0.051
Number of banks	312		312		312		313	
Number of observations	5327		5327		5320		5279	
Degrees of freedom	5290		5280		5283		5242	

Note: Large and small banks are defined here as the top 5 % and bottom 75 % of the sample. Liquid (illiquid) and capitalized (low capitalized) banks are both defined as the top (bottom) 10 % of the sample.

Table 5: Econometric results (continued)

	MODEL 1: MP interaction All Bank characteristics		MODEL 2: MP interaction All Bank characteristics		MODEL 1: MP interaction check on liquidity definition Liquid2		MODEL 1: MP interaction check on liquidity definition Liquid3	
	Coeff.	S.Error	Coeff.	S.Error	Coeff.	S.Error	Coeff.	S.Error
Coefficients								
Y(-1)	0.130 ***	0.033	0.145 ***	0.040	0.109 ***	0.034	0.181 ***	0.031
Y(-2)	0.118 ***	0.010	0.128 ***	0.011	0.099 ***	0.009	0.102 ***	0.008
Y(-3)	0.057 ***	0.010	0.058 ***	0.011	0.051 ***	0.010	0.052 ***	0.011
Y(-4)	-0.016	0.031	-0.031	0.035	0.048	0.032	0.047	0.037
Dr	-1.290 ***	0.280			-1.004 ***	0.269	-0.834 ***	0.308
Dr1	1.020 ***	0.266			0.698 ***	0.260	0.885 ***	0.287
Dr2	-1.127 ***	0.288			-1.008 ***	0.285	-1.012 ***	0.288
Dr3	0.186	0.194			0.126	0.189	0.221	0.196
Dr4	-0.189	0.228			-0.162	0.250	0.308	0.223
Dlrgdp	-0.025	0.083			0.044	0.081	0.131	0.083
Dlrgdp1	0.301 **	0.151			0.322 **	0.158	0.159	0.159
Dlrgdp2	0.575 ***	0.113			0.627 ***	0.120	0.630 ***	0.127
Dlrgdp3	0.524 ***	0.143			0.701 ***	0.140	0.727 ***	0.156
Dlrgdp4	0.739 ***	0.127			0.699 ***	0.138	0.704 ***	0.126
Dlp	1.054	0.746			1.561 **	0.759	1.056	0.800
Dlp1	-0.460	0.599			-1.257 **	0.592	-0.666	0.598
Dlp2	0.479	0.838			0.444	0.923	-0.656	0.759
Dlp3	-2.271 ***	0.800			-1.855 **	0.877	-0.444	0.723
Dlp4	-1.416 ***	0.539			-1.608 ***	0.518	-1.782 ***	0.543
size	0.003 ***	0.0006	0.003 ***	0.001	0.002 ***	0.0006	0.003 ***	0.0006
liq	-0.005	0.004	-0.004	0.004	-0.002	0.003	-0.001	0.003
cap	-0.035 ***	0.013	-0.037 **	0.014	-0.071 ***	0.014	-0.053 ***	0.012
size*mp0	0.102	0.092	-0.036	0.105	0.061	0.093	0.076	0.095
size*mp0(-1)	-0.260 **	0.117	-0.254 **	0.123	-0.410 ***	0.142	-0.221	0.150
size*mp0(-2)	-0.161	0.110	-0.155	0.118	-0.129	0.115	-0.211	0.139
size*mp0(-3)	0.406 ***	0.118	0.469 ***	0.122	0.456 ***	0.116	0.189	0.133
size*mp0(-4)	-0.131 **	0.060	-0.117 *	0.062	-0.144 **	0.065	-0.090	0.076
liq*mp0	1.874 **	0.783	2.313 ***	0.795	1.874 **	0.783	1.242 **	0.553
liq*mp0(-1)	2.585 **	1.075	2.008 *	1.173	0.084	0.685	0.867	0.676
liq*mp0(-2)	-0.658	0.955	-0.065	0.989	2.532 **	1.054	-0.124	0.551
liq*mp0(-3)	0.021	1.000	-0.159	1.072	-2.069 **	0.907	1.393 **	0.613
liq*mp0(-4)	1.941 ***	0.552	1.645 ***	0.634	1.912 ***	0.534	0.798 *	0.409
cap*mp0	-10.209 ***	2.903	-11.550 ***	2.969	-6.514 ***	2.457	-9.567 ***	2.485
cap*mp0(-1)	6.485 *	3.460	6.156 *	3.689	3.989	3.348	2.965	2.923
cap*mp0(-2)	-12.862 ***	4.447	-8.730 *	4.717	-5.922	4.834	-10.110 **	4.623
cap*mp0(-3)	14.090 ***	3.829	12.088 ***	4.053	9.223 **	4.077	3.984	3.954
cap*mp0(-4)	4.134 **	1.817	3.582 *	1.991	3.098 *	1.755	1.885	1.765

*/**/*** indicates significance at the 10%/5%/1% level

TABLE 6: IMPACT OF MONETARY POLICY DECOMPOSITION BY CHARACTERISTICS

(to be continued)

							long run			
All sample	before normalization	after normalization	**direct impact**	coefficient	**monetary interaction**	**total**	**direct impact**	coefficient (long run)	**monetary interaction**	**total**
size	7.051	0.000		-0.045	**0.000**			-0.063	**0.000**	
liquidity	0.355	0.000		5.762	**0.000**			8.105	**0.000**	
capitalization	0.075	0.000		1.638	**0.000**			2.304	**0.000**	
assets	6589	1.00								
number of banks	208		**-1.400**		0.000	**-1.400**	**-1.969**		0.000	**-1.969**
large size										
size	10.867	3.817		-0.045	**-0.171**			-0.063	**-0.240**	
liquidity	0.285	-0.070		5.762	**-0.404**			8.105	**-0.569**	
capitalization	0.045	-0.029		1.638	**-0.048**			2.304	**-0.068**	
assets	83530	12.68								
number of banks	11		**-1.400**		-0.623	**-2.023**	**-1.969**		-0.876	**-2.845**
small size										
size	6.300	-0.751		-0.045	**0.034**			-0.063	**0.047**	
liquidity	0.337	-0.018		5.762	**-0.104**			8.105	**-0.146**	
capitalization	0.092	0.018		1.638	**0.029**			2.304	**0.041**	
assets	1071	0.16								
number of banks	153		**-1.400**		-0.041	**-1.441**	**-1.969**		-0.058	**-2.027**

TABLE 6: IMPACT OF MONETARY POLICY DECOMPOSITION BY CHARACTERISTICS (continued)

high liquidity	before normalization	after normalization	**direct impact**	coefficient	**monetary interaction**	**total**	**direct impact**	coefficient (long run)	**monetary interaction**	**total**
size	6.278	-0.773		-0.045	**0.035**			-0.063	**0.049**	
liquidity	0.822	0.467		5.762	**2.691**			8.105	**3.785**	
capitalization	0.116	0.041		1.638	**0.067**			2.304	**0.095**	
assets	1841	0.28								
number of banks	17		**-1.400**		2.793	**1.393**	**-1.969**		3.928	**1.959**
low liquidity										
size	6.345	-0.706		-0.045	**0.032**			-0.063	**0.044**	
liquidity	0.077	-0.278		5.762	**-1.604**			8.105	**-2.256**	
capitalization	0.085	0.010		1.638	**0.017**			2.304	**0.024**	
assets	1291	0.20								
number of banks	27		**-1.400**		-1.555	**-2.955**	**-1.969**		-2.188	**-4.157**
high capitalization										
size	4.860	-2.191		-0.045	**0.098**			-0.063	**0.138**	
liquidity	0.373	0.018		5.762	**0.104**			8.105	**0.146**	
capitalization	0.281	0.207		1.638	**0.339**			2.304	**0.476**	
assets	621	0.09								
number of banks	22		**-1.400**		0.541	**-0.859**	**-1.969**		0.760	**-1.209**
low capitalization										
size	7.400	0.349		-0.045	**-0.016**			-0.063	**-0.022**	
liquidity	0.494	0.139		5.762	**0.802**			8.105	**1.128**	
capitalization	0.021	-0.054		1.638	**-0.088**			2.304	**-0.124**	
assets	5129	0.78								
number of banks	26		**-1.400**		0.698	**-0.702**	**-1.969**		0.982	**-0.987**

Table 7: Econometric results for commercial banks only

	MODEL 1: MP interaction check on liquidity definition Liquid1		MODEL 1: Robustness check on liquidity definition Liquid2		MODEL 1: Robustness check on liquidity definition Liquid3	
	Coeff.	S.Error	Coeff.	S.Error	Coeff.	S.Error
direct coefficients						
sum of lags	0.612 ***	0.054	0.420 ***	0.049	0.452 ***	0.048
Monetary policy(MP)	-0.785	0.703	-1.179 *	0.648	-0.460	0.583
Real GDP	2.088 ***	0.646	2.167 ***	0.611	2.072 ***	0.529
Prices(CPI)	-2.552 ***	0.718	-2.981 ***	0.726	-2.740 ***	0.672
interaction coeff.						
Monetary policy(MP)*size	0.146	0.243	0.433 *	0.229	0.555 **	0.235
Monetary policy(MP)*liquidity	4.022 **	1.627	3.230 **	1.536	4.329 ***	1.136
Monetary policy(MP)*capitalization	2.373	5.700	1.460	5.176	-8.126	5.876
Long-run						
direct coefficients						
Monetary policy(MP)	-2.020	1.821	-2.035 *	1.114	-0.840	1.064
Real GDP	5.376 ***	1.471	3.739 ***	0.925	3.784 ***	0.817
Prices(CPI)	-6.570 ***	1.621	-5.144 ***	1.081	-5.002 ***	1.057
interaction coeff.						
Monetary policy(MP)*size	0.375	0.629	0.748 *	0.402	1.013 **	0.432
Monetary policy(MP)*liquidity	10.353 **	4.266	5.573 **	2.67	7.905 ***	2.214
Monetary policy(MP)*capitalization	6.109	14.920	2.519	8.928	-14.840	10.682
MP interaction for:						
high value of bank size.	-0.168	0.905	1.481 *	0.829	1.799 **	0.910
low value of bank size.	-0.122	0.163	-0.304 **	0.148	-0.425 **	0.185
high value of bank liquidity.	2.011 **	0.809	1.210 *	0.671	2.308 ***	0.856
low value of bank liquidity.	-1.318 **	0.528	-1.221 **	0.535	-2.648 ***	0.727
high value of bank capitalization.	0.368	1.350	-0.101	1.072	-2.479 *	1.484
low value of bank capitalization.	0.535	0.438	0.557	0.404	1.224 ***	0.372
MP interaction (long run) for:						
high value of bank size.	-0.431	2.330	2.555 *	1.456	3.284 **	1.655
low value of bank size.	-0.313	0.415	-0.525 **	0.261	-0.777 **	0.334
high value of bank liquidity.	5.175 **	2.197	2.088 *	1.161	4.213 ***	1.634
low value of bank liquidity.	-3.392 **	1.381	-2.106 **	0.932	-4.835 ***	1.413
high value of bank capitalization.	0.948	3.515	-0.175	1.851	-4.527 *	2.688
low value of bank capitalization.	1.377	1.089	0.962	0.701	2.235 ***	0.686
Total MP effect (long run) for:						
high value of bank size.	-2.451	3.025	0.520	1.840	2.444	1.992
low value of bank size.	-2.333	1.903	-2.560 **	1.167	-1.617	1.143
high value of bank liquidity.	3.155	2.850	0.053	1.553	3.373 *	2.050
low value of bank liquidity.	-5.412 **	2.372	-4.141 ***	1.527	-5.675 ***	1.703
high value of bank capitalization.	-1.072	4.291	-2.210	2.346	-5.367 *	3.134
low value of bank capitalization.	-0.643	1.902	-1.073	1.154	1.395	1.117
Macroeconomic MP impact						
weighted average by loans market share	-2.663	2.766	-0.288	1.700	1.579	1.801
Residual autocorr. tests						
m1	-4.157	0.000	-3.696	0.000	-4.205	0.000
m2	-0.636	0.524	-0.859	0.390	-0.215	0.830
Sargan test (2-step)	115.247	0.398	111.108	0.506	120.839	0.268
Number of banks	255		256		252	
Number of observations	3910		3904		3877	
Degrees of freedom	3873		3867		3840	

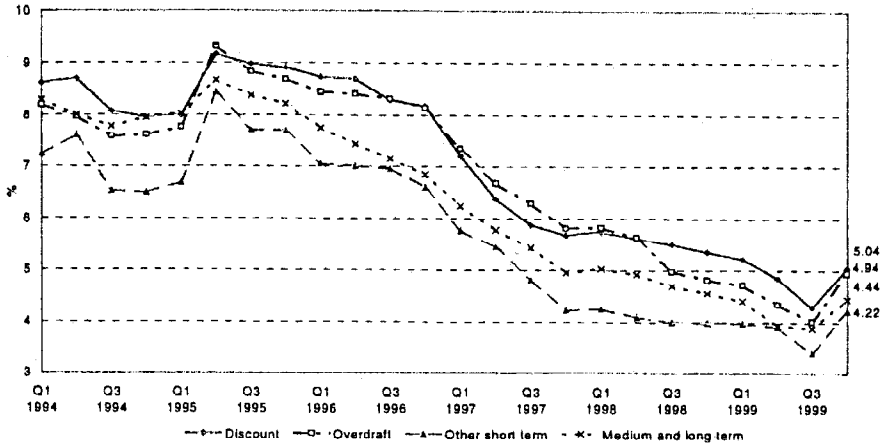
Table 8: Econometric results for commercial banks and "mutual and cooperative" banks
(each network treated as a single entity)

	MODEL 1: MP interaction check on liquidity definition Liquid1		MODEL 1: Robustness check on liquidity definition Liquid2		MODEL 1: Robustness check on liquidity definition Liquid3	
	Coeff.	S.Error	Coeff.	S.Error	Coeff.	S.Error
direct coefficients						
sum of lags	0.591 ***	0.053	0.427 ***	0.049	0.447 ***	0.044
Monetary policy(MP)	-0.822	0.695	-0.825	0.670	-0.445	0.583
Real GDP	2.099 ***	0.612	2.279 ***	0.588	2.090 ***	0.503
Prices(CPI)	-2.517 ***	0.687	-2.761 ***	0.690	-2.583 ***	0.632
interaction coeff.						
Monetary policy(MP)*size	0.037	0.209	0.272	0.194	0.301	0.195
Monetary policy(MP)*liquidity	4.102 **	1.626	2.499	1.554	4.172 ***	1.125
Monetary policy(MP)*capitalization	0.763	5.727	2.902	5.165	-9.472	5.798
Long-run						
direct coefficients						
Monetary policy(MP)	-2.012	1.708	-1.440	1.155	-0.805	1.057
Real GDP	5.138 ***	1.363	3.974 ***	0.919	3.778 ***	0.782
Prices(CPI)	-6.160 ***	1.536	-4.816 ***	1.056	-4.670 ***	1.016
interaction coeff.						
Monetary policy(MP)*size	0.091	0.512	0.475	0.344	0.544	0.356
Monetary policy(MP)*liquidity	10.039 **	4.017	4.358	2.698	7.543 ***	2.108
Monetary policy(MP)*capitalization	1.867	14.089	5.062	9.031	-17.120	10.504
MP interaction for:						
high value of bank size.	-0.420	0.917	0.982	0.854	1.186	0.890
low value of bank size.	-0.067	0.160	-0.181	0.143	-0.285 *	0.172
high value of bank liquidity.	2.005 **	0.803	1.026	0.671	2.191 ***	0.818
low value of bank liquidity.	-1.302 **	0.535	-0.986 *	0.545	-2.340 ***	0.699
high value of bank capitalization.	0.091	1.195	0.449	1.062	-2.207 *	1.269
low value of bank capitalization.	-0.524	1.779	0.262	0.422	1.291 ***	0.374
MP interaction (long run) for:						
high value of bank size.	-1.028	2.239	1.713	1.512	2.143	1.618
low value of bank size.	-0.163	0.389	-0.316	0.254	-0.515 *	0.312
high value of bank liquidity.	4.907 **	2.051	1.789	1.164	3.961 ***	1.511
low value of bank liquidity.	-3.186 **	1.320	-1.721 *	0.949	-4.231 ***	1.303
high value of bank capitalization.	0.223	2.933	0.784	1.853	-3.990 *	2.302
low value of bank capitalization.	1.489	1.066	0.456	0.733	2.334 ***	0.691
Total MP effect (long run) for:						
high value of bank size.	-3.040	2.862	0.273	1.867	1.339	1.946
low value of bank size.	-2.175	1.791	-1.756	1.221	-1.320	1.137
high value of bank liquidity.	2.895	2.670	0.350	1.585	3.156	1.943
low value of bank liquidity.	-5.198 **	2.250	-3.160 **	1.587	-5.036 ***	1.616
high value of bank capitalization.	-1.789	3.731	-0.656	2.415	-4.795 *	2.794
low value of bank capitalization.	-0.524	1.779	-0.983	1.168	1.530	1.102
Macroeconomic MP impact						
weighted average by loans market share	-3.175	2.887	0.098	1.897	1.612	1.951
Residual autocorr. tests						
m1	-3.775	0.000	-3.655	0.000	-4.200	0.000
m2	-0.771	0.441	-0.907	0.364	-0.256	0.789
Sargan test (2-step)	113.925	0.432	107.983	0.590	118.260	0.324
Number of banks	258		259		255	
Number of observations	3979		3973		3946	
Degrees of freedom	3942		3936		3909	

Table 9: Econometric results for commercial, "mutual and cooperative" banks and savings and provident institutions
("mutual and cooperative" banks treated as a multitude of entities)

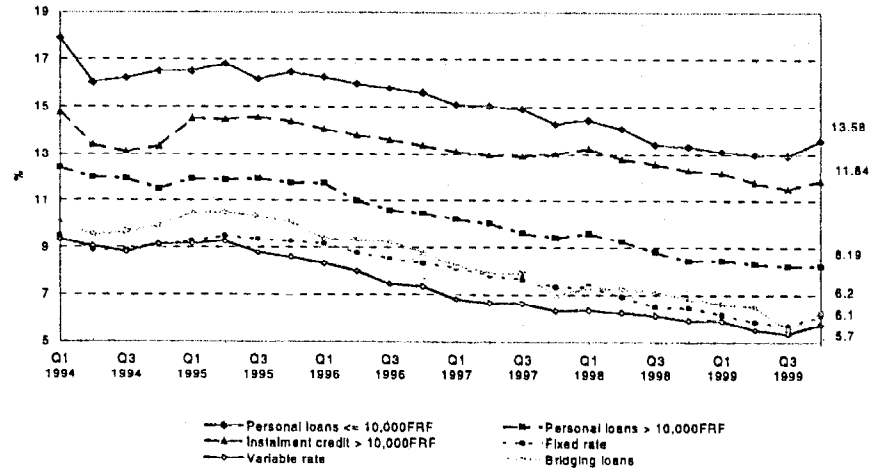
	MODEL 1: MP interaction check on liquidity definition Liquid1		MODEL 1: Robustness check on liquidity definition Liquid2		MODEL 1: MP interaction check on liquidity definition Liquid3	
	Coeff.	S.Error	Coeff.	S.Error	Coeff.	S.Error
direct coefficients						
sum of lags	0.351 ***	0.054	0.426 ***	0.050	0.400 ***	0.050
Monetary policy(MP)	-0.778 **	0.319	-0.638 *	0.329	-0.931 ***	0.309
Real GDP	2.331 ***	0.265	2.303 ***	0.247	2.317 ***	0.261
Prices(CPI)	-1.744 ***	0.278	-1.824 ***	0.285	-1.932 ***	0.278
interaction coeff.						
Monetary policy(MP)*size	-0.039	0.134	-0.071	0.129	-0.034	0.148
Monetary policy(MP)*liquidity	1.121	1.042	1.306	0.833	0.376	0.460
Monetary policy(MP)*capitalization	9.209 **	4.184	6.708	4.260	1.025	4.427
Long-run						
direct coefficients						
Monetary policy(MP)	-1.199 **	0.486	-1.110 **	0.560	-1.553 ***	0.522
Real GDP	3.592 ***	0.285	4.009 ***	0.310	3.863 ***	0.300
Prices(CPI)	-2.688 ***	0.392	-3.175 ***	0.454	-3.221 ***	0.461
interaction coeff.						
Monetary policy(MP)*size	-0.059	0.207	-0.124	0.226	-0.057	0.247
Monetary policy(MP)*liquidity	1.727	1.624	2.274	1.477	0.627	0.769
Monetary policy(MP)*capitalization	14.189 **	6.428	11.677	7.329	1.709	7.377
MP interaction for:						
high value of bank size.	-0.414	0.398	-0.285	0.409	-0.136	0.439
low value of bank size.	0.114	0.088	0.089	0.082	0.033	0.087
high value of bank liquidity.	0.801	0.501	1.089 **	0.475	0.311	0.336
low value of bank liquidity.	-0.166	0.274	-0.402	0.260	-0.279	0.280
high value of bank capitalization.	1.923 **	0.765	1.397 **	0.671	0.354	0.817
low value of bank capitalization.	-0.316	0.238	-0.140	0.238	-0.003	0.207
MP interaction (long run) for:						
high value of bank size.	-0.639	0.613	-0.495	0.715	-0.226	0.732
low value of bank size.	0.176	0.134	0.155	0.144	0.056	0.145
high value of bank liquidity.	1.234	0.784	1.895 **	0.842	0.518	0.561
low value of bank liquidity.	-0.255	0.426	-0.700	0.459	-0.465	0.468
high value of bank capitalization.	2.964 **	1.178	2.432 **	1.165	0.590	1.362
low value of bank capitalization.	-0.488	0.363	-0.244	0.412	-0.005	0.344
Total MP effect (long run) for:						
high value of bank size.	-1.838 **	0.731	-1.605 *	0.893	-1.779 **	0.887
low value of bank size.	-1.023 **	0.519	-0.955	0.588	-1.498 ***	0.549
high value of bank liquidity.	0.035	1.031	0.785	1.146	-1.035	0.819
low value of bank liquidity.	-1.454 **	0.584	-1.810 ***	0.624	-2.018 ***	0.650
high value of bank capitalization.	1.765	1.378	1.322	1.389	-0.963	1.497
low value of bank capitalization.	-1.687 ***	0.600	-1.354 *	0.709	-1.558 **	0.620
Macroeconomic MP impact						
weighted average by loans market share	-1.647 ***	0.543	-1.679 ***	0.623	-1.806 ***	0.621
Residual autocorr. tests						
m1	-3.101	0.002	-3.526	0.000	-3.203	0.001
m2	-0.760	0.447	-0.695	0.487	-0.307	0.759
Sargan test (2-step)	156.212	0.004	143.835	0.023	144.859	0.020
Number of banks	389		389		389	
Number of observations	6863		6871		6820	
Degrees of freedom	6826		6834		6783	

Cost of credit to businesses



Source: Banque de France survey

Cost of credit to individuals



Source: Banque de France survey

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