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Monetary transmission and bank competition in the EMU

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Abstract

The introduction of the euro has led to renewed attention for monetary transmission in the European Union. This special issue of the *Journal of Banking and Finance* includes papers that contribute to the development of both the theory and empirical applications of the monetary transmission channel that assumes various types of imperfections. The issue includes papers that can best be described by the credit view and studies on concentration and competition in the European banking industry. This introduction positions the papers in this active field of research.

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1. Introduction

Since January 1, 1999 eleven continental European countries conduct a uniform monetary policy. The members of the Economic and Monetary Union (EMU) attuned monetary and even fiscal policies to common goals. The introduction of the euro seems to be an important further step in the process of rapid change within the financial structure of Europe. During the second half of the 1980s and the 1990s financial liberalisation, internationalisation, and integration changed the financial landscape of Europe to a large extent. Especially in the banking sector, (international) mergers and acquisitions are frequent occurrences. European banks thereby not only expand their scale but also extend their scope of activities. These

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rapid changes in banking structures, systems of financial markets, and behaviour of financial agents make the management of the common monetary policy by the ECB more difficult. It is most likely that the monetary transmission mechanism of the economies in the euro area will change further, which complicates the already difficult task of the new European monetary authorities. Therefore, deeper insights into the monetary transmission mechanism are of utmost importance.

The aim of this special issue of the *Journal of Banking and Finance* is to contribute to the ongoing discussion about the mechanism by which changes in monetary policy are transmitted to real decisions. The papers were presented at a conference entitled *Financial Structure, Bank Behaviour and Monetary Policy in the EMU*, organised in October 2000 at the University of Groningen in The Netherlands. The conference dealt with a variety of issues of special importance to the process of monetary transmission. The selected papers provide challenging contributions to those issues that remain controversial in both the theoretical and empirical research on the conference theme. The papers have a common flavour in the sense that they all address, in one or another way, the role of imperfections in the financial structure of the monetary transmission process. These imperfections vary from an alleged lack of competition on banking markets to asymmetric information on credit markets or financial propagation effects via balance sheets of economic agents. The papers therefore fit into the modern view of monetary transmission, known under the general label of “credit view”. This view assigns a central role to financial structure in the effectiveness of monetary policy.

This introduction briefly reviews the voluminous literature on the credit view of monetary transmission and the papers in this special issue that adhere to this standard credit view. The papers by Altunbas et al. (2002, this issue), Kakes and Sturm (2002, this issue), Mojon et al. (2002, this issue), and Chrystal and Mizen (2002, this issue) report empirical evidence on the potential effects of monetary transmission via the credit market. The introduction also summarises the main findings and contributions that address competition in the banking industry (see the contributions by Bikker and Haaf, 2002, this issue; Corvoisier and Gropp, 2002, this issue; and Toolsema, 2002, this issue). Although these papers do not explicitly deal with the monetary transmission mechanism, they provide information on the likely effectiveness of monetary policy. A more monopolistic banking sector is able to obtain larger interest rate margins. Monopolistic pricing by banks will not transmit changes of central bank interest rates as fully as pure competitive pricing will do. This probably hampers monetary policy at least to some extent.

This introduction is organised as follows. Section 2 reviews the credit view of monetary transmission. Section 3 deals with competition and concentration in the banking industry. Finally, Section 4 makes some concluding remarks.

2. The credit view of monetary transmission

Monetary transmission is the process by which changes in monetary policy affect real economic activity. As is well known, monetary transmission is only effective if

there is at least some degree of price stickiness. In addition, the structure of the monetary and financial system matters. Some authors argue that monetary transmission primarily takes place via changes in interest rates, others point at the importance of balance sheets, bank lending, asset prices and/or exchange rates. It is useful to distinguish the relative importance of various channels of monetary transmission, because better knowledge of the transmission mechanism helps policymakers to understand the link between the financial and the real sector of the economy and to make a better choice of timing when to use various monetary instruments.

In the traditional or money view (see Taylor, 1995) monetary policy influences prices and the rates of returns on assets, such as bond prices, interest rates and exchange rates. The changes in the rates of return on assets affect the real decisions of households and firms. In this view private banks only provide a medium of exchange by issuing deposits and therefore transmit the initial policy change automatically. In this view money is 'special' and bonds and bank credit are perfect substitutes. Therefore, bank lending to the private sector is equivalent to the purchase of company bonds by banks in the open market. Banks are passive and their behaviour does not influence the real economy.

The credit view assumes bonds and credit to be imperfect substitutes (credit is 'special') and points at factors that amplify the impact of initial policy changes as suggested by the "money view". Private banks, as providers of credit, play a crucial role in the transmission of monetary policy (for excellent surveys on the credit view see e.g. Bernanke and Gertler, 1995; Cecchetti, 1995). The literature on the credit view distinguishes two channels through which this might occur: a narrow view that focuses on bank lending only and a more broad view that is labelled by the balance sheet channel.

2.1. The bank lending channel

The bank lending channel emphasizes the impact of monetary policy on real activity via direct effects on credit supply by banks. The idea is that open market sales by the central bank drains reserves from the banking system so that the banks access to loanable funds and thus the supply of bank loans, will decrease. For the bank lending channel to work, the following conditions should be met (Kashyap and Stein, 1995a). First, as for all forms of monetary policy, nominal rigidities must exist. Second, some (classes of) firms must be dependent on bank loans, because they do not have access to public markets. Thirdly, the central bank must be able to shift the loan supply schedules of private banks.

The last two assumptions have been subject to some doubt. The reason is that large groups of firms and private banks, especially in times of financial deregulation and innovation, can probably undo the effects of a monetary contraction by replacing a reduction in loans and deposits (reserves) with other sources of funds through the issuance of e.g. equity by firms and banks or certificates of deposits by banks that do not require reserve backing (Romer and Romer, 1990). In that case, the capital structure of firms and private banks does not affect the other decisions, confirming the Modigliani–Miller results.

From a theoretical point-of-view there appears to be a lack of consensus about the relevance of the credit view in general and the bank lending channel in particular. Empirical research should therefore provide more evidence on the relevance of the bank lending channel. Since the end of the 1980s many studies have been published, especially for the US economy. An early empirical paper using aggregate US data that supports the bank lending channel is Bernanke and Blinder (1992). However, empirical research trying to examine the response of bank lending to a monetary shock may be seriously hampered by an identification problem (for references, see Kakes and Sturm, 2002, this issue). The problem with studies that use macro-data is that they are unable to disentangle credit supply and demand effects, which is fundamental in proving the impact of the credit channel. It may be the case that a monetary contraction leads to a decline in credit due to demand effects in response to a rise in the interest rate. Despite the fact that there seems to be a correlation between monetary policy and bank lending, the actual situation is then perfectly in agreement with the money view. Recent work solves the identification problem by considering disaggregated data (see e.g. Fazzari et al. (1988), for firms). For private banks we refer to Kashyap and Stein (1995b, 2000). Kashyap and Stein (1995b) is the first empirical paper using data for individual banks that finds evidence for the fact that small banks are more affected by contractionary monetary policies than large banks. The reason is that small banks have more problems of asymmetric information than large banks and so have more difficulties substituting nondeposit sources of external finance. In general, most empirical studies using US data provide evidence on the empirical relevance of the bank lending channel, especially for small banks (see the references cited in Altunbas et al., 2002, this issue). There is much less empirical research for Europe and the existing evidence is much less conclusive (see Altunbas et al., 2002, this issue), while the need for this kind of work is especially high in the euro area.

The contributions by Altunbas et al. (2002, this issue) and Kakes and Sturm (2002, this issue) provide additional evidence on the importance of the bank lending channel in Europe. In the spirit of Kashyap and Stein (1995b, 2000), both papers try to provide additional empirical evidence for the claim that small banks have more difficulties in neutralising monetary shocks than large banks. In addition, Altunbas et al. (2002, this issue) examine whether the bank lending channel differs for banks classified according to capital strength, as suggested by e.g. Kishyan and Opiela (2000). With this analysis they indirectly provide more evidence on the relevance of the capital crunch literature (Berger and Udell, 1994; Hancock et al., 1995; Peek and Rosengren, 1995). The capital crunch hypothesis argues that poorly capitalized banks are more restrictive in their lending and deposit taking behaviour than better capitalized banks. This literature argues that the introduction of capital standards increases the costs for banks to hold loans in comparison to government securities, so that a credit crunch will take place. Kakes and Sturm (2002, this issue) study the lending activities of so-called banking groups in Germany. Altunbas et al. (2002, this issue) estimate the response of bank lending to changes in monetary policy for a panel of eleven EMU countries and for the four largest banking systems – France, Germany, Italy and Spain – individually.

The German case analysed by Kakes and Sturm (2002, this issue) is highly interesting, since the German financial system is the most prominent example of the bank-based model. Moreover, the German banking sector is less concentrated when compared to other euro-countries on average, and so more receptive to monetary policy shocks. The key feature of the German banking system is its fragmentation. Different types of banks co-exist during a long period of time. Especially smaller banks (credit co-operatives) have historical roots in the German financial system. Kakes and Sturm (2002, this issue) estimate a vector error-correction model of the behaviour of banking groups and provide impulse-response simulations of their models. This dynamic time series approach illustrates that small German banks are indeed typically more sensitive to monetary shocks, while the bigger commercial banks are able to insulate credit supply.

In contrast to Kakes and Sturm (2002, this issue), Altunbas et al. (2002, this issue) use individual bank balance sheet data to analyse the empirical relevance of the bank lending channel. As we have argued above, the main reason to analyse individual bank data is the exploitation of the information with respect to heterogeneity between banks in the process of identifying supply and demand effects in changes in credit. The panel estimates for eleven EMU countries presented by Altunbas et al. (2002, this issue) suggest that a bank lending channel exists for undercapitalised banks, since these banks appear to be most responsive to a change in monetary policy. In contrast to e.g. Kashyap and Stein (1995b), the panel estimates do not support the view that there are major differences between small and big banks regarding the relevance of the bank lending channel. However, the individual country estimates for the four largest banking systems – Germany, France, Italy and Spain, provide a totally different picture. Altunbas et al. (2002, this issue) find only some evidence for a bank lending channel in Italy, where all banks are adequately capitalised, and in Spain for the largest undercapitalised banks and the adequately capitalised banks. The differences in the results between the panel estimates and the individual country estimates may imply that a bank-lending channel in the EMU area mainly exists for the undercapitalised banks in countries with an overrepresentation of small banks. A challenging outcome for future research is that the analysis of Altunbas et al. (2002, this issue) suggest that there is no bank lending channel in Germany, whereas Kakes and Sturm (2002, this issue) find strong evidence for a bank lending channel in Germany for small banks. It is no surprise that the analyses provide different outcomes, given that the authors use different methodologies, analyse different time periods, and consider different levels of aggregation.

2.2. The balance sheet channel

The balance sheet channel emphasizes a link between a lending contract and the financial health of the borrowing firm. The hypothesis is that the external finance premium is inversely related to the borrowers net worth. Since borrowers' financial positions affect the external finance premium, and thus the overall terms of credit they face, fluctuations in the quality of borrowers' balance sheets affect their investment and spending decisions. The borrowers financial position may be affected by a

contractionary monetary policy due to an increase in interest expenses, a decline in the value of collateral as a result of declining asset prices, or a decrease of consumer spending. This may lead banks to curtail their lending, even if monetary contraction does not directly affect credit supply (Ramey, 1993).

The balance sheet channel is closely related to the financial accelerator, which is described by Bernanke et al. (1996, p. 3) as “The idea that fluctuations in borrowers’ net worth lead to fluctuations in real activity...”. The existence of a financial accelerator implies that in an economic downturn, when firms’ net worth will probably decline causing the external finance premium to rise, the initial negative shock to the economy will be amplified (Bernanke and Gertler, 1989). The literature emphasising the balance sheet channel also points out that recessions and booms probably have a greater impact on small firm investment than on large firm investment, because small firms face higher agency costs of borrowing than large firms.

Mojon et al. (2002, this issue) provide further empirical evidence on the potential relevance of the financial accelerator in the EU countries. They do this by examining the sensitivity of the firm specific user cost of capital to changes in the market interest rates for firms in three different size classes. In addition, they analyse the sensitivity of corporate investment to changes in the user cost of capital (and so monetary shocks) for these firms. Their analysis is applied to the four big continental European economies: Germany, France, Italy, and Spain. They examine investment behaviour at the industry level (17 industry classes represented in all four countries). The main contribution of their paper is their use of a uniform approach across the big EMU countries, whereas all previous studies use national evidence. They don’t find significant differences between countries, which makes monetary policy for the ECB a bit easier. Mojon et al. (2002, this issue) find support for a significant impact of the user cost of capital on private investment at the industry level, despite the fact that the user cost elasticity is known for being difficult to estimate (see Chirinko et al., 1999). Mojon et al. (2002, this issue) find a long-run elasticity of about minus unity, which exceeds normal values in absolute terms. This is in contrast to the credit channel literature, which suggests that the sensitivity of investment is low with respect to the user cost of capital, but high with respect to financial quantity variables. Moreover, they do not find support for the common notion of the credit view that small firms are more sensitive with respect to the response of borrowing rates to monetary policy changes. So, their analysis casts doubt on the empirical relevance of the financial accelerator. Therefore, Mojon et al. (2002, this issue) are more supportive to the money than to the credit view.

Whereas Kakes and Sturm (2002, this issue), Altunbas et al. (2002, this issue) and Mojon and Smets primarily deal with either the bank lending channel or the balance sheet channel, Chrystal and Mizen (2002, this issue) implicitly deal with both the bank lending and the balance sheet channel. Their paper is challenging both at the theoretical and the empirical level. Concerning the theoretical part, they derive a structural flow of funds model for households, firms, banks, and non-banks to analyse the role of bank credit. The impact of credit is usually analysed either on the micro-level (households, firms or banks) using panel data or on the macro-level using elaborate time-series (Vector Auto Regressive) models. The focus of the first class of

studies is on the heterogeneity of the cross-sectional units with respect to changes in the costs of external funds. In this way the problem of possibly endogenous credit is circumvented, because it is unlikely that all financially constrained units would reduce their credit demand at the same instance. As we have mentioned before, most macro-models typically suffer from the identification problem. Chrystal and Mizen (2002, this issue) address this problem by employing a structural approach using data for the UK. While the main focus of the papers in this issue is on the euro-countries, the case of the UK is at least as interesting from the point of view of the expansion of the euro-system. As Bikker and Haaf (2002, this issue) illustrate, the UK banking sector is characterised by a relatively low concentration, but a relatively high degree of competitiveness among medium-sized and large banks. Chrystal and Mizen (2002, this issue) identify the long-run equilibrium relations using time-series analysis (co-integration). Their empirical estimates illustrate that credit is relevant in the monetary transmission process. Moreover it is not only bank credit, but also credit provided by non-banks that is important.

3. Concentration and competition in the banking industry

The theoretical foundation of the credit view is the theory of information. Applying this theory to the target market of monetary policy, the market for bank loans, provides a micro-foundation of the credit channel. Extending these insights to other financial markets leads to the notion that the composition of the balance sheets of both financial and non-financial sectors is relevant for analysing the impact of monetary policy (see e.g. Kashyap and Stein (2000), for banks and Stein (2001), for firms). Apart from the insight that balance sheet structures and/or loan supply as such are relevant to the effectiveness of monetary policy, recent attention has focused on the influence of the industrial organisation of the banking sector. Kashyap and Stein (1997) and Cecchetti (1999) argue that the banking system's concentration and health are essential to the analysis of the effectiveness of monetary policy. These authors illustrate that within EMU there are substantial differences in banking structures, which are likely to accentuate the differential impact of monetary policy across EMU members. According to these authors smaller banks are more likely to reduce lending in case of a monetary contraction, due to their weaker balance sheet structure and poorer ability to attract reasonably priced external funds. Countries with a high concentration ratio (a relatively large fraction of bigger banks) would be affected less by the credit channel. Implicit in this type of analysis is the assumption that to some extent the increase of concentration coincides with the increasing power of efficiently operating bigger banks. This is known as the *efficient structure hypothesis*, which stresses the role of efficient management and high-quality production processes in achieving higher profitability and higher market concentration.

However, there is an alternative explanation of the correlation between profitability and market concentration in banking markets, known as the *structure–performance hypothesis*. This view suggests that some banks are able to extract monopoly rents in concentrated markets. Colluding banks probably charge lower

deposit rates and loan rates, and are able to maintain their profit maximising activities more than under perfect competition, even under monetary policy changes. Banks use their market power to extract rents, and in particular the bigger banks will be able to do so. They do not feel the necessity to transmit a looser monetary policy quickly, while smaller banks might be forced to implement the changes in monetary stance more rapidly. This implies that the effectiveness of monetary policy is equal to that suggested by the efficient structure hypothesis in case of a tightening of monetary policy, but for easing of monetary restrictions the transmission might be less strict. So the structure–performance hypothesis predicts that higher banking concentration ratios should correlate with an asymmetric impact of monetary policy. For instance it is likely that large colluding banks will increase lending rates rather promptly in case of a monetary contraction, while a looser monetary stance will not immediately lead to a reduction of the interest rates on bank loans. Consequently, the two views differ with respect to the behaviour of big banks. Under the efficient structure hypothesis we are likely to observe symmetrical effects of monetary policy (for big banks), but under the structure performance hypothesis big banks will be rather reluctant to transmit monetary easing. It is therefore interesting to know how concentrated the banking markets are.

According to the structure–performance hypothesis it is important to assess the degree of competition in European banking in order to get a better understanding of the potential (symmetrical) effectiveness of monetary policy. Is the European banking industry concentrated? If so, what markets are influenced by concentration? Is it possible to test for the degree of monopolistic competition in banking markets? The papers by Corvoisier and Gropp (2002, this issue), Bikker and Haaf (2002, this issue) and Toolsema (2002, this issue) assess the degree of concentration and competition in banking markets. They not only supply relevant information regarding the transmission of monetary policy, but also present important findings for monetary and financial regulators. Moreover, the results seem to support the idea that regulation and monetary policy should walk hand in hand in order to be successful.

Corvoisier and Gropp (2002, this issue) analyse concentration ratios of European banks with respect to the loan, deposit and savings and time deposit markets. On the one hand one would expect that the efficient structure hypothesis would be relevant to Europe due to the process of deregulation and the resulting wave of mergers. On the other hand one might doubt the gain in efficiency because of the higher concentration of banks by the mechanism described above. Corvoisier and Gropp (2002, this issue) use a Cournot model of bank pricing and apply the model to the European loan and demand deposit market. They derive country and product specific measures of bank concentration and use these indicators in a wide range of econometric models that explain interest rate margins. They find support for the efficient structure performance hypothesis with respect to the savings and time deposit markets, where margins are negatively correlated with concentration, but in contrast discover that for the loans and demand deposit market higher concentration ratios lead to higher margins. This leads to the suspicion that geographic proximity or informational asymmetries are important for some of the retail markets.

Bikker and Haaf (2002, this issue) analyse the banking sector of both the EMU countries and twelve other European and non-European developed economies. Instead of focusing on various retail markets, Bikker and Haaf (2002, this issue) analyse the impact of the size of banks (small, medium, and large) on banking competition. They use the Panzar–Rosse approach to estimate the degree of competition among banks within their country-size class. On average they find support for monopolistic competition in banking. Small banks operate on average under less competitive conditions than large banks, and conclude that European banks still face heavier competition than North-American or Japanese banks. Moreover, the authors find support for an increase in banking competition during the 1990s. In the second part of their paper, Bikker and Haaf (2002, this issue) show that the continuing process of consolidation may raise policymakers' concern about competitive conditions in the banking market (which coincides with the finding by Corvoisier and Gropp, 2002, this issue). Is it all that serious? They illustrate that for some European countries the degree of competition is sufficiently high, despite high concentration ratios. Take the Netherlands as an example, where three private banks control about 80% of the market. These three banks face heavy international competition on the market for corporate loans, but might collude on local markets, like the deposit or mortgage market. Monetary policy might therefore be more able to affect conditions for large-scale lending than for small-scale loans.

Finally, Toolsema (2002, this issue) analyses competition on another specific bank product market: the Dutch market for consumer credit. The transactions on this market are also characterised by some degree of geographic proximity. Most consumers ask for a loan at their local bank. Toolsema (2002, this issue) estimates the Bresnahan–Lau model for this market and concludes that the market behaves competitively, despite the three big players. A simple look at concentration ratios might therefore be misleading. Toolsema's (2002, this issue) finding supports the notion that a proper understanding of the industrial organisation of local financial markets is necessary for a thorough analysis of monetary transmission.

4. Conclusion

Recent work on monetary transmission in the European Union is focused on assessing the impact of changes in monetary policy on the real economies of the various member states. A natural theoretical foundation for this type of analysis is the credit view with regard to monetary policy. In this view attention is focused on the imperfections of financial markets and/or financial agents. Traditionally, models of imperfect information provide a natural vehicle to launch theoretical notions aimed at the bank lending channel or the financial propagation mechanism. In this introduction we wholeheartedly endorse the attention given to both this traditional class of work as well as additional forms of imperfections, especially the studies of competition in the financial industry. If competition among financial institutions is weak and profit margins are high, monetary policy changes will probably be transmitted less forcefully than under full competition. Large monopolistic banks will be

reluctant to pass through lower loan rates. Empirical studies that assess the relative importance of information and competition issues for the EU countries are especially needed, since the analysis of both imperfect information and imperfect competition are relevant to the analysis of monetary transmission within the EU.

The papers in this issue illustrate that research into financial imperfections, financial structure and monetary transmission is alive and kicking. The papers emphasize the following notions:

(1) The analysis of the credit view should embrace the literature on the industrial organisation of the banking sector. Not only informational asymmetries might have their impact on monetary policy and the functioning of financial markets, but also concentration of the industry with respect to various retail markets.

(2) In a European context more studies on the supra-national level with respect to firm, household, and financial institutions behaviour are required. Examples are presented with respect to corporate investment and bank lending. In order to assess the distributional impact of monetary policy European heterogeneity needs to be explained. Is the between-country variation more relevant than the between-firm or between-bank variability?

(3) It seems promising to combine the rich heterogeneity of panel data with the dynamic analysis of time series (usually exploited at the macro-level). This approach seems to offer the best of both worlds and better allows for the analysis of the convergence of real and financial behaviour of agents than could be achieved by either approach above.

(4) All analyses of financial markets should be linked with studies which examine the convergence of national business cycles. There is some preliminary evidence of synchronisation of cycles within the EMU countries (see Angeloni and Dedola, 1998), but more evidence is needed over the period following the introduction of the euro.

(5) A proper analysis of monetary transmission and financial structure should take into account the differences between national institutions. Especially within Europe different legal systems co-exist, which result in important differences in the rights of financial claimants (see Cecchetti, 1999). In addition differences in culture (see Hofstede, 1980) and political systems (leading to differences in e.g. taxes) affect the financial structure.

The list of topics for further research is long but promising.

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