



EUROPEAN CENTRAL BANK

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by David Marqués Ibañez

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by Domenico Giannone and Michele Lenza

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by Lucia Alessi and Carsten Detken

Based on historical experience across 18 major OECD countries over the past 30 years, this article shows that measures of global liquidity perform well as early warning indicators of costly asset price booms. These indicators are able to signal in real time whether a developing asset price boom will have serious consequences for the real economy.

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Banks, credit and the transmission mechanism of monetary policy

By David Marqués Ibañez¹



The current period of crisis in credit markets has highlighted the crucial role of the behaviour of banks in the transmission mechanism of monetary policy. In this regard, the recent literature stresses the role of banks' capital positions and financial innovation as major determinants of the supply of bank loans and thereby the transmission of monetary policy. This article summarises this research with particular emphasis on recent results that highlight the key role of frictions in banking markets. In particular, these results show that bank capital, securitisation and incentives for risk-taking can have a sizeable impact on banks' ability and willingness to lend.

One of the most urgent issues for policy-makers is the impact of the current strains in credit markets on the supply of credit and, ultimately, on economic activity. In particular, the current discussion on the possibility of a credit crunch has brought the role of banks in the monetary policy transmission mechanism to centre stage in both policy and research agendas.

Until recently, the macroeconomic literature tended to ignore or overlook the role of banks as a source of frictions in the monetary policy transmission mechanism. The introduction of financial imperfections into state-of-the-art macroeconomic models to provide a quantitative assessment of the macroeconomic impact of financial intermediaries' behaviour and the financial situation of borrowers is therefore an important research topic.² At the same time, empirical evidence on the traditional bank lending channel of monetary policy

“... empirical evidence on the traditional bank lending channel of monetary policy transmission has yielded mixed results”

transmission has yielded mixed results, particularly with regard to the euro area. Recent papers provide evidence that in both the United States and the euro area banks' incentives and financial innovation play a

key role in the supply of credit and the transmission mechanism of monetary policy.

The transmission mechanism

The “economics of information” used to study credit markets has been applied to analyse the transmission mechanism of monetary policy. Specifically, studies of the credit channel of monetary policy transmission are concerned with the issue of how financial factors

have an impact on the transmission mechanism.

Analysis of the so-called “narrow credit channel” or “traditional bank lending channel” focuses on the financial frictions derived from banks' special role in the financial system. It assumes that a monetary policy tightening results in a decrease in reservable liabilities, which in turn leads banks to reduce lending due to the fall in funding sources. In other words, it contends that after a monetary policy tightening banks are forced to reduce their loan portfolio due to a decline in total reservable bank deposits.

It is very questionable, however, whether this transmission channel would operate in euro area countries. In this respect, the operational framework aims to steer short-term interest rates to be close to the policy rate defined by the ECB by providing necessary liquidity to the banking system partially offsetting a deposit outflow (subject to the availability of collateral). Hence, the effect of deposit outflows (due to a rise in currency demand or purchases of treasury bills for example) on the banking system would in principle be offset by liquidity provision from the ECB. In addition, reserve requirements are very low and normally not binding in the euro area. Therefore it is highly unlikely that they could have an impact on the supply of bank loans.

Probably partly reflecting this, the seminal results from the Eurosystem Monetary Transmission Network (MTN) on the traditional bank lending channel for the euro area were mixed (see Ehrmann et al., 2003, and Angeloni et al., 2003).³ The results from the MTN suggested that only a small part of the reduction in loan growth in most euro area countries resulting from increases in interest rates was transmitted via supply effects. These supply effects were, moreover, weaker than those seen in the United

¹ This article partly draws on previous work with Leonardo Gambacorta, Yener Altunbas and Gabe de Bondt.

² For seminal models incorporating financial frictions, see Kiyotaki and Moore (1997) who assume that borrowing is limited to a given fraction of the value of collateral and use limited enforcement contracts; and Bernanke, Gertler and Gilchrist (1999) who focus on information asymmetries between financial intermediaries and firms. For more recent papers see, for instance, Iacoviello (2005), Goodfriend and McCallum (2007) and Christiano, Motto and Rostagno (2007).

³ The MTN was an extensive three-year joint effort by the European Central Bank and the other Eurosystem central banks.

States. Furthermore, unlike in the United States, they were not related to bank size or to bank capitalisation but rather to bank liquidity.

The question is whether the mixed results obtained for several euro area countries imply that banks have no effect on this transmission mechanism of monetary policy. Alternatively it could also be the case that recent developments in the euro area financial system, such as financial deregulation or financial innovation, could lead to different results when a more recent data window is studied than that of the MTN. It could also be the case that banks do have an effect on the supply of loans but in a rather different form than is depicted in traditional bank lending channel models. In this regard, the current focus of the literature is on how various financial frictions within the banking system (which are not included in models of the traditional bank lending channel) may affect the transmission mechanism of monetary policy (see Bernanke, 2008). Foremost among these frictions are the role of bank capital, an increase in market funding and innovation in credit markets.

A common feature of such studies is that they use micro data from individual banks. This is mainly because it is difficult to measure the effect of banks' conditions when using aggregate data, as it is not easy to disentangle demand and supply factors. Other additional efforts to solve this identification problem include the use of generalised method of moments (GMM) estimation procedures or the use of sampling procedures to isolate certain shocks to the banking sector. Overall, identification issues and endogeneity problems remain one of the most challenging aspects to be tackled by this literature (see Peek and Rosengren, 2008).

Bank capital

There is mounting evidence to suggest that bank capital is a potentially critical factor affecting banks' behaviour, particularly in times of stress. Van den Heuvel (2007) shows theoretically that bank capital affects lending even when regulatory constraints (e.g. those specified under the Basle framework and national capital requirements) are not binding, and that shocks to bank profits, such as loan defaults, can have a persistent impact on lending.⁴ He also

suggests that monetary policy affects bank lending via the net worth position (or perceived solvency) of banks, indicating the existence of a bank capital channel which is different from the traditional textbook case. These results are in line with recent euro area evidence which suggests that bank capital can indeed have an impact on bank lending (see Gambacorta and Mistrulli, 2004)⁵ and earlier US evidence (see Kishan and Opiela, 2000).

Market funding, securitisation and credit supply

Since the introduction of the euro, innovations in credit markets in the euro area have had a significant impact on banks' ability and incentives to grant credit and, more specifically, on the effectiveness of the bank lending channel. Two major innovations in this respect have been the greater reliance of banks on market sources of funding (i.e. expansion of the covered bond market) and a dramatic increase in securitisation activity.

Financial innovation in the form of the increased use of market funding seems to have buffered the effect of the bank lending channel prior to 2007, as under normal conditions banks were able to easily switch from deposit to alternative forms of financing.⁶ Specifically, banks could use non-deposit sources of loan funding, for instance by issuing certificates of deposit or covered bonds or obtaining funds from affiliates. Regarding the latter option, subsidiaries could also obtain funding more easily than banks not belonging to a larger banking group or network. This suggests that the role of the bank lending channel is reduced in the case of banks affiliated to a larger entity that are able to benefit from inter-company funding (see Ashcraft, 2006, Ehrmann et al., 2004, and Altunbas, Marqués Ibañez and Zhussupova, 2008). At the same time, the recent crisis suggests that due to the increase in funding via financial markets, when banks are more dependent on market funding there is a closer connection between financial markets and the funding of bank credit. As a result, banks' incentives and ability to lend are likely to be more sensitive to financial market conditions than was the case in the past when banks were overwhelmingly funded via bank deposits.⁷

“... financial frictions within the banking system may affect the transmission mechanism of monetary policy”

⁴ See also Bolton and Freixas (2006).

⁵ See also Altunbas, de Bondt and Marqués Ibañez (2004).

⁶ This argument is equivalent to the Romer and Romer (1990) critique and hinges on the demand from financial markets for certificates of deposit and other bank securities, which might not always exist, particularly during periods of banking problems.

⁷ This is mainly because deposits tend to secure more stable remuneration and are, by definition, less dependent on financial market conditions than tradable instruments.

Another strand of the recent literature focuses on the role of securitisation (see Marqués Ibañez and Scheicher, 2008). The idea is that the spectacular growth in securitisation activity in recent years has modified the functioning of credit markets and has also had implications for the incentives of banks to grant credit and react to monetary policy changes.

“... monetary policy could also have an impact on banks’ incentives to take on risk”

First, there is significant US evidence that securitisation has led to laxer screening of borrowers (see Dell’Ariccia, Igan and Laeven, 2008, and Keys, Mukherjee, Seru and Vig, 2008). These papers assume that when securities are passed from banks’ balance sheets to the markets there could be fewer incentives for financial intermediaries to screen borrowers. In the short term, this change in incentives would contribute to looser credit standards, so that some borrowers who in the past were denied credit would be able to obtain bank funding. In the long term, this would lead to higher default rates on bank loans. The laxer screening of borrowers seems to be linked to an expansion in the granting of credit. Indeed, a recent US study uses comprehensive information, broken down by US postal zip codes, to isolate demand factors and shows that securitisation played an important role in credit expansion (see Mian and Sufi, 2008).⁸

Second, there is tentative evidence that securitisation has detached credit supply from monetary policy changes. Altunbas, Gambacorta and Marqués Ibañez (2008) found that, prior to the current financial crisis, banks making more use of securitisation were more sheltered from the effects of monetary policy changes. This is in line with findings for the US jumbo mortgage market and suggests that securitisation could make the bank lending channel less effective (see Loutskina and Strahan, 2006). An interesting topic of research would be whether these effects are reversed during a crisis of confidence in securitisation markets.

Bank risk taking channel

While standard transmission mechanism models assume that the direction of causality goes from monetary policy impulses to the supply of credit, some recent work argues that monetary policy could also have an impact on banks’ incentives to take on risk. The question is whether the stance of monetary policy could affect the “risk tolerance” of banks

which could possibly trigger a credit supply shock if risk taking became excessive (see Rajan, 2006). This is the broad philosophy regarding the “risk taking” channel of monetary policy transmission (see Borio and Zhu, 2007), which suggests that financial innovation is likely to have enhanced the importance of the perceptions and pricing of risk as factors influencing the

behaviour of banks. This could have strengthened the link between the stance of monetary policy and banks’ incentives for risk taking. In turn, this would suggest the existence of an additional “behavioural” channel for the transmission of monetary policy. Building on this idea, Jiménez et al. (2007) and Ioannidou, Ongena and Peydró-Alcalde (2008) provide convincing evidence of this link. They use two comprehensive databases from Bolivia and Spain and find that an expansive monetary policy stance may lead to additional (and probably excessive) risk taking by banks.

Conclusions

The current period of crisis in credit markets has underlined that frictions in banking markets potentially play a major role in the transmission mechanism of monetary policy. The most recent literature stresses the role of bank solvency and of financial innovation in bank funding and securitisation markets as major determinants of the transmission mechanism of monetary policy via bank credit. Recent results also show that monetary policy could have an impact on incentives for banks to take risks, which could in turn have a sizeable impact on bank credit supply. Most of these empirical studies were undertaken prior to the recent turmoil in credit markets, and efforts are now being made to understand how these results are affected in the aftermath of the current problems in credit markets.

⁸ More tentative evidence from the euro area is consistent with these findings and suggests that securitisation may be leading to more bank lending (see Altunbas, Gambacorta and Marqués Ibañez, 2008) and looser credit standards (see Maddaloni, Scopel and Peydró-Alcalde, 2008).

Business cycles in the euro area

By Domenico Giannone and Michele Lenza



In euro area countries which had comparable economic conditions in the seventies, business cycles are very similar. The remaining euro area countries display a relatively high degree of business cycle heterogeneity. However, for both groups of countries, no significant change in business cycle patterns can be detected following the formation of Economic and Monetary Union (EMU) in 1999. As for the euro area business cycle, a large part of the slowdown in euro area per capita GDP growth since 1999 could have been predicted on the basis of historical regularities and given observed developments in the United States.

Although there is a large body of literature on the impact of EMU on the euro area business cycle, there is no consensus on the empirical findings. Moreover, little is known about the historical patterns of national and aggregate business cycles in the euro area. Against this background and drawing on our recent research (see Giannone, Lenza and Reichlin, 2008), we document some basic features of the euro area business cycle and address the question of whether there have been changes related to the formation of EMU in 1999.

Business cycles in euro area countries

In our research, we provide a descriptive analysis based on a measure of dispersion in real per capita GDP growth among euro area countries over the period from 1970 to 2006.¹ The measure of growth dispersion for an individual country is given by the mean squared growth differential with respect to the euro area aggregate. Chart 1 plots this measure of dispersion for each country against the differential in the initial condition, as measured by the gap in per capita GDP levels with respect to the euro area average in 1970.

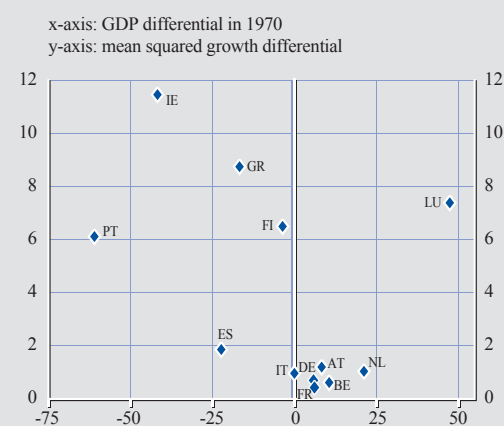
The degree of heterogeneity is found to be smaller for countries that were more similar to each other in the seventies in terms of GDP levels.² These countries are classified as the “core group” and comprise Belgium, Germany, France, Italy, the Netherlands and Austria. A second group of countries, comprising Spain, Ireland, Greece, Luxembourg, Portugal and Finland is classified as the “periphery”.

“... the degree of heterogeneity is found to be smaller for countries that were more similar to each other in the seventies”

Concerning the evolution of the cross-sectional growth dispersion over time, we show that the bulk of the decline in the dispersion of GDP growth materialised in the early 1980s.³ Hence, it cannot be associated with the process of nominal and fiscal convergence in the run-up to the formation of EMU or the acceleration in the process of financial integration that took place in the 1990s.

To gain further insights, we capture cross-country dynamic interactions in economic activity among euro area countries by means of a vector autoregressive (VAR) model. The model is used to compute the expected path for real GDP per capita growth in individual euro area countries conditional on the pre-EMU correlation structure, as well as the path of real GDP per capita for the euro area

Chart 1 Cross-country heterogeneity and initial conditions

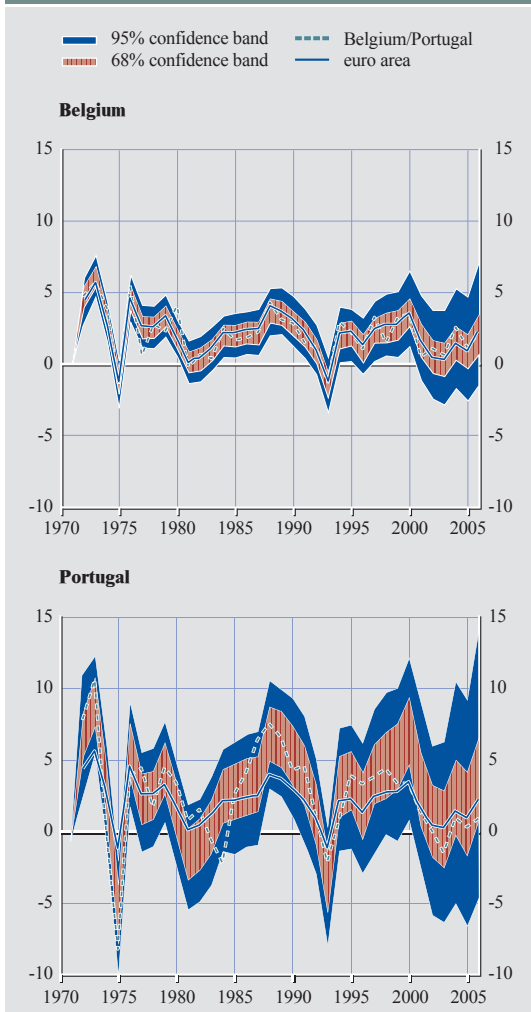


¹ The analysis focuses on the 12 countries that were members of the euro area in December 2006. Consequently, Malta, Cyprus and Slovenia are excluded from the analysis.

² An exception is Finland, which experienced a short period of heightened volatility in the early 1990s related to its banking crisis.

³ The decline in dispersion among euro area countries is associated with a world-wide moderation of business cycle fluctuations – the so-called “great moderation”. For an exhaustive documentation of the great moderation, see Stock and Watson (2005).

Chart 2 Conditional GDP predictions for member countries given euro area-wide developments

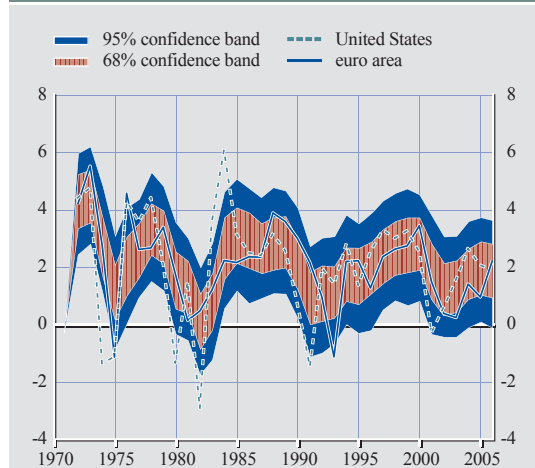


Note: The dashed green line in the two panels refers to observed annual growth in GDP per capita in Belgium (upper panel) and Portugal (lower panel), while the solid line refers to observed annual growth in GDP per capita in the euro area. The red-shaded area depicts the 68% confidence band for the predictions of GDP growth in the country concerned, while the purple-shaded area delineates the 95% confidence band. The predictions are computed conditional on the observation of euro area GDP using the VAR model estimated over the sample period 1970-1998.

as a whole.⁴ The conditional predictions obtained for the post-1998 period can then be compared to observed real per capita GDP growth in order to assess whether patterns have changed since the formation of EMU.

Chart 2 depicts the results for two selected countries: Belgium, from the core group, and Portugal, from the periphery. Other countries from the core group and the periphery show qualitatively similar behaviour. For the countries in the core group, two general results emerge. First, the uncertainty surrounding the country-specific predictions conditional on observed euro area-wide developments (as captured by the width of the confidence bands) is rather limited; and second, actual GDP growth falls within the confidence bands for the conditional predictions. These two

Chart 3 Conditional GDP predictions for the euro area as a whole given US developments



Note: The solid blue line refers to observed annual growth in GDP per capita in the euro area, while the dashed line refers to observed annual growth in GDP per capita in the United States. The red-shaded area depicts the 68% confidence band for the predictions of GDP growth in the euro area, while the purple-shaded area delineates the 95% confidence band. The predictions are computed conditional on the observation of US GDP using the VAR model estimated over the sample period 1970-1998.

facts indicate that country-specific fluctuations are rather limited. As regards the conditional predictions for the period after the start of EMU, the observed values are generally not significantly different from what would have been predicted on the basis of euro area-wide developments and the pre-EMU economic structure. This suggests that there is no evidence for a change in the pattern, even though actual GDP growth in Austria, Italy and the Netherlands is at the boundary of the 68% confidence band in the post-1998 period.

For countries on the periphery, results are more dispersed. GDP growth dynamics for these countries differ to a greater extent from the dynamics for the euro area aggregate, and the linkages between each of these countries and the rest of the euro area are relatively weak. For this reason the level of uncertainty surrounding the conditional predictions is high. This is the case not only in the pre-EMU period, but also after the start of EMU. Overall, these results suggest that the countries on the periphery are influenced by some sizeable idiosyncratic factors whose importance has not diminished over time. Moreover, there is no indication that the formation of EMU has had a significant effect on the business cycle in these countries.

Business cycles in the euro area as a whole

During the period since the start of EMU, all countries of the euro area experienced relatively low GDP growth compared with the past. The average

⁴ The conditional predictions and the associated confidence bands are computed using methods developed in Giannone and Lenza (2008).

growth rate from 1971 to 1998 was approximately 2.2%, while from 1999 to 2006 it was approximately 1.6%.⁵ To evaluate whether the performance of the euro area has been in line with historical patterns, we compute the prediction of euro area GDP growth conditional on the structure of the euro area economy before the start of EMU and the observed path for US GDP growth. US GDP is chosen as a conditioning variable because it is an important driver of global economic activity and since the relationship between US and euro area GDP growth is close and stable.⁶

As in the case of individual euro area countries, the joint dynamics of US and euro area GDP is captured by a VAR model estimated until 1998.

The counterfactual post-1998 results are then used to assess whether the correlation structure of the data has changed.

As can be seen in Chart 3, on the basis of the counterfactual analysis a large part of the slowdown in euro area GDP growth could have been predicted conditional on observed developments in the United States. In particular, from 2001 to 2005 growth in the euro area has been within the confidence band for its conditional prediction, albeit always close to its lower boundary.

“... a large part of the slowdown in euro area GDP growth could have been predicted conditional on observed developments in the United States”

⁵ The disappointing growth performance from 1999 to 2006 is largely attributable to the cyclical slowing of growth in 2001, in part influenced by developments abroad, whereas the stronger performance in the pre-EMU period relates mainly to, on average, higher growth rates in the 1970s.
⁶ On this point, see also Giannone and Reichlin (2005, 2006).

Global liquidity as an early warning indicator for asset price boom/bust cycles

By Lucia Alessi and Carsten Detken¹



Recent ECB research tests the performance of a host of real and financial variables as early warning indicators of costly aggregate asset price boom/bust cycles. Global measures of liquidity – based either on private credit or monetary aggregates – are among the best-performing indicators. Using a specific threshold these indicators predict up to 95% of costly asset price boom/bust cycles with a lead time of between five and six quarters. Furthermore, the most recent wave of asset price booms (2005-2007) is analysed to see whether indicators predict that it will be followed by a serious economic downturn. The message depends on which indicator variable is used.

The recent financial turmoil has intensified the debate on whether central banks should use policy rates in the build-up of financial imbalances in order to ward against booming asset price developments. The objective would be to dampen the degree of real and financial overheating both through the standard transmission mechanism and by forcefully signalling to the public the central bank's view about growing financial imbalances. As a result, the central bank might more effectively maintain financial and price stability in the medium to long run.

So far, proponents of the “leaning against the wind” view have rarely addressed the issue of whether indicators of growing financial imbalances perform satisfactorily and could be used to effectively support policy-makers' decisions.² This is particularly important as it is impossible to identify an asset price

bubble with certainty and many simply burst without creating larger problems for the real economy. Thus policy-makers need reliable indicators which identify harmful boom/bust cycles with sufficient lead time.

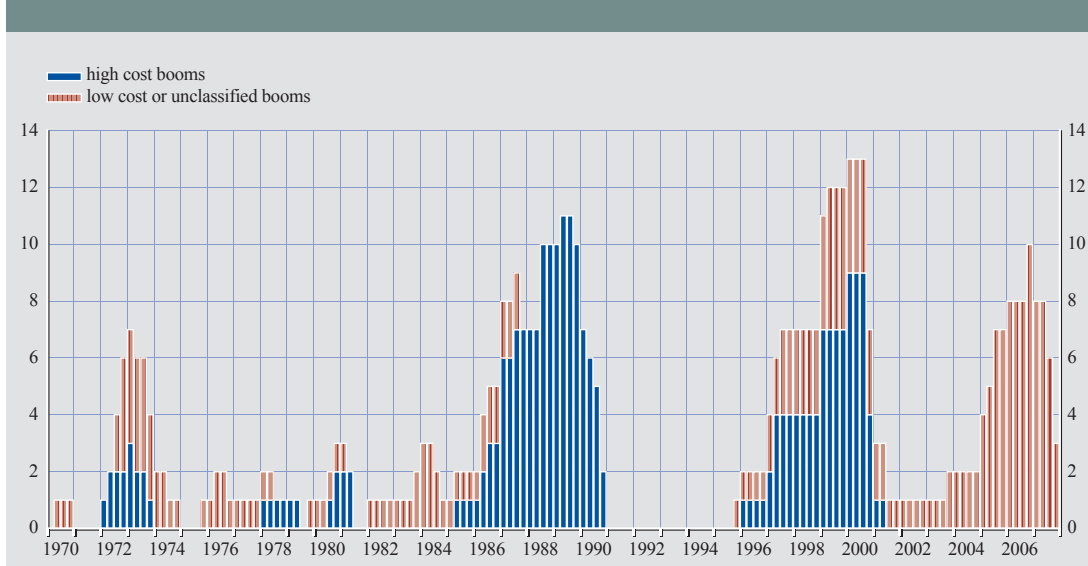
We report some evidence based on the signalling approach developed by Kaminsky, Lizondo and Reinhart (1998) which is often used to predict foreign exchange and banking crises but not, to our knowledge, for predicting asset price booms and busts.³ A warning signal is issued when an indicator exceeds a certain threshold, e.g. a particular percentile of its distribution. This approach assumes a non-linear relationship between the indicator and the event. Unlike the results reported in most of the literature, the performance of the indicators here is based on signals as they would have been obtained in the period they refer to.

¹ This article is based on Alessi and Detken (2008).

² See Borio and Lowe (2002) who analyse early warning indicators for banking crises.

³ Exceptions are Borio and Lowe (2002), (2004) and Borio and Drehmann (2008) who explore early warning indicators for banking crises.

Chart 1 Number of countries with aggregate asset price booms



We first define aggregate asset price booms (based on a price index consisting of weighted real private property, commercial property and equity prices) across 18 OECD countries using quarterly data between 1970 and 2007.⁴ Asset price booms are identified for each country and a high cost boom is defined as a boom which is followed by a three-year period in which overall real GDP growth was at least three percentage points lower than potential growth.⁵

Chart 1 shows the number of countries in each quarter which, according to this method, were experiencing a boom, and also visualises high cost booms. There have been three major waves of asset price booms since the early 1980s. In terms of the number of countries affected, the first wave peaked in 1989, the second in 2000 and the third in early 2007. While in the first wave all the booms were high cost booms, only about 60% of booms in the second wave have been classified as such. Concerning the third wave there is still no final verdict as the validation data are not available yet.

We test a set of 5 economic⁶ variables and 13 financial⁷ variables, and up to six different transformations of these variables⁸ – overall 89 indicators – to ascertain their suitability as early

warning indicators for high cost asset price boom/bust cycles within a six-quarter forecasting horizon.

In analysing the performance of warning indicators, policy-makers will be most concerned with two types of possible errors. A “type I error” occurs when a costly asset price boom/bust cycle develops without any warning signal having been issued (i.e. missed crisis). A “type II error” occurs when an indicator issues a warning signal but no dangerous financial imbalances subsequently develop (false alarm or noise).

In order to define a loss function, the policy-maker has to reveal his/her relative aversion with respect to missing crisis versus receiving false alarms.⁹ We first derive the optimal percentile (and time varying threshold) for each indicator and each country using different preference parameters. The optimal threshold is established by minimising the loss function of the policy-maker.

“... the ‘global’ M1 gap and the ‘global’ private credit gap are the best early warning indicators”

The results reveal that over the average of all countries and in the case of many preference parameters the “global” M1 gap and the “global” private credit gap¹⁰ are the best early warning indicators. If the policy-maker is relatively more averse to receiving false alarms than

⁴ Asset price indices were supplied by the BIS. The countries concerned are Australia, Belgium, Canada, Switzerland, Denmark, Germany, Spain, Finland, France, Ireland, Italy, Japan, the Netherlands, Norway, New Zealand, Sweden, the United Kingdom and the United States.

⁵ This is an extension of the definition in Detken and Smets (2004) and Adalid and Detken (2007). The latter provide evidence that broad money growth precedes high cost booms.

⁶ GDP, consumption, investment, housing investment and consumer prices.

⁷ Deflated equity, housing, aggregate asset prices, real and nominal bond yields, term spreads, real effective exchange rates, real and nominal three-month interest rates, M1, M3, private credit, domestic credit and GDP-weighted averages of the 18 countries for the latter five variables, which we label “global” variables.

⁸ Among which are detrended levels, growth rates, cumulative growth rates, detrended ratios to GDP and shocks (for the money and credit variables) from recursive VARs.

⁹ Similar to Bussière and Fratzscher (2008).

¹⁰ Gaps refer to variables which have been detrended by means of a recursive, slowly adjusting, Hodrick-Prescott filter.

to missing a crisis, money is better than credit and vice versa, but differences in performance between the two are small. Interestingly, the best indicators are “global” variables, which can be explained by the fact that asset price boom/bust cycles are largely international phenomena as depicted in Chart 1. In terms of the absolute performance of the best indicators, the global private credit gap using the optimal 70% percentile across countries predicted on average 95% of high cost booms by issuing a signal in at least one of the six preceding quarters. The share of correct signals as a percentage of periods in which a high cost boom actually developed within the following six quarters is 82%. The share of false alarms as a percentage of periods in which no high cost boom followed is 32% and the average lead time for the first warning signal is 5.5 quarters.

The performance of the liquidity indicators can be further improved by defining a signal to be issued only when two indicators simultaneously exceed their respective thresholds, which, in particular, reduces the proportion of false alarms.

Finally, we are interested in confirming whether the asset price booms which started in the mid-2000s are predicted to be high cost booms. In order to do so we count the warning signals issued by the two best indicators in the 11 quarters between the first quarter of 2005 and the third quarter of 2007. With respect to the global private credit gap, the optimal 70% threshold was breached in seven quarters, thus showing a clear and persistent warning signal. Global M1, however, provided no signal at its optimal 90% threshold, possibly representing a “type 1 error”, or missing crisis.¹¹

The results show that it is possible to identify early warning indicators for individual countries and also groups of countries which perform reasonably well. Nevertheless, as recent events show, indicators that have historically performed equally well can provide different messages. Signals obtained should thus be interpreted carefully and should only be regarded as one of several inputs in the information set of decision-makers.

¹¹ Borio and Drehmann (2008) perform a similar exercise. How good their indicators perform out-of-sample depends crucially on the definition of the banking crisis.

ECB Central Banking Conference

Boxes

The 5th ECB Central Banking Conference took place in November 2008. This conference is a bi-annual event organised by the ECB for academics and central bankers. The topic of this year’s conference was the 10th anniversary of the euro.

In his opening address, Lucas Papademos (ECB) highlighted a number of lessons learnt from the financial crisis and the pertinent challenges for central banks, and the ECB in particular, in preserving price stability and safeguarding financial stability. Charles Wyplosz (Graduate Institute of International Studies) presented a paper written jointly with Francesco Mongelli (ECB). Wyplosz argued that the essentials of the monetary union have gone well: the euro has been stable, and inflation has been low. The threats identified prior to the launch of the euro have failed to materialise: the ECB has achieved credibility, and there has been fiscal discipline. Unexpected challenges have appeared: current account imbalances, and persistent changes in real exchange rates. The discussants were Francesco Caselli (LSE) and Vítor Constâncio (Banco de Portugal).

Philip Lane (Trinity College) presented a paper documenting that financial integration has deepened among euro area member states. José Luis Peydró-Alcalde presented a paper written jointly with Sebnem Kalemli-Ozcan (University of Houston), Simone Manganelli (ECB), and Elias Papaioannou (Dartmouth College). The paper presents new empirical results to suggest that EMU has deepened banking integration, and greater banking integration has led to more consumption smoothing among the member states. The discussants were Marco Pagano (University of Naples) and Axel Weber (Deutsche Bundesbank).

Raghuram Rajan (University of Chicago) presented a paper written jointly with Anil Kashyap (University of Chicago) and Jeremy Stein (Harvard University). The paper analyses the causes of and the lessons from the current financial crisis. A specific policy proposal, capital insurance, is advanced. The discussants were Stephen Cecchetti (BIS) and Seppo Honkapohja (Suomen Pankki).

Francesco Giavazzi (Università Bocconi) introduced the first panel, on the enlargement of the euro area. Erik Berglöf (EBRD) argued that the euro is a mechanism to prevent and resolve crisis

as well as to promote institutional reform. Vítor Gaspar (European Commission) emphasised that the criteria for joining the euro area must not be changed. In particular, measures of financial stability should not be added. Athanasios Orphanides (Central Bank of Cyprus) argued that the optimal mix of monetary policy and exchange rate policy before accession is country-specific. András Simor (Magyar Nemzeti Bank) described the experience of Hungary during the current financial crisis.

Wolfgang Schill (ECB) introduced the second panel on the theory of optimal currency areas (OCA). According to Martin Feldstein (Harvard University), the euro has been a success. Fiscal responsibility of the member states is necessary to make the success permanent. Andrew Rose (University of California, Berkeley) argued that the euro has had a sizeable positive effect on trade. André Sapir (Université Libre de Bruxelles) argued that the OCA theory becomes relevant again, as the periphery countries see government bond spreads widen during the current financial crisis. Jaume Ventura (CREI) argued that, in a set of interdependent economies, lending of last resort entails externalities. This could provide a convincing case for a monetary union.

Lucrezia Reichlin (LBS) introduced the third panel, in which central bankers spoke about international interdependencies in the conduct of monetary policy. Ben Bernanke (Federal Reserve Board) emphasised that the current financial crisis shows the importance of cooperation between central banks. Stanley Fischer (Bank of Israel) argued that globalisation would push countries either to adopt flexible inflation targeting or to join a monetary union. Su Ning (People's Bank of China) and Guillermo Ortiz (Banco de México) discussed the recent experiences of China and Mexico, respectively. Jean-Claude Trichet (ECB) emphasised that the current financial crisis has led to intimate cooperation between central banks.

In his closing address, Jürgen Stark (ECB) argued that the euro has been a remarkable success. Yet, he pointed out that the current global financial distress poses challenges of an unprecedented nature to the ECB and other central banks around the globe.

The contributions to this conference can be downloaded from the ECB website at:
<http://www.ecb.europa.eu/events/conferences/html/cbc5.en.html>

International Research Forum on Monetary Policy

In June 2008 the ECB hosted the 5th International Research Forum on Monetary Policy. The Forum is sponsored and organised by the ECB, the Federal Reserve Board, the Center for German and European Studies at Georgetown University and the Center for Financial Studies at the Johann-Wolfgang-Goethe University. The Forum aims to foster a transatlantic dialogue, based on rigorous theoretical and empirical research, on issues of relevance to monetary policy in the United States and the euro area.

Several contributions addressed the financial crisis. Markus Brunnermeier (Princeton University) presented a detailed explanation of the events that led to the recent financial turmoil. He argued that crucial amplification mechanisms have been the liquidity spirals generated by the deterioration in borrowers' balance sheets; hoarding behaviour and interest rate surges in the interbank market; runs on financial institutions; and gridlock effects generated by the fact that financial institutions are lenders and borrowers at the same time. In his dinner speech, Lucas Papademos (ECB) emphasised that the ECB's actions during the financial turmoil had been guided by a fundamental principle: the separation of the monetary policy stance, geared to price stability, and liquidity management, aimed at ensuring the orderly functioning of money markets and mitigating financial stability risks. He also argued that monetary policy cannot effectively control asset prices, but that the monitoring and analysis of monetary and credit aggregates can provide useful early warning signals about the build-up of asset price bubbles and their potential longer-term implications for price stability and output volatility. He also stressed that there may be certain circumstances when monetary policy can play a role in preventing unsustainable asset price developments, by "leaning against the wind" in a manner that is consistent with the preservation of price stability.

A second theme addressed in the conference was the relationship between monetary policy and asset markets. Robert King (Boston University) presented a model with asset market segmentation induced by adjustment costs in households' money balances. This mechanism generates an evolving distribution of money across households, implying a monetary transmission mechanism in which demand depends on monetary aggregates. By using an affine term structure setting, John Taylor and Josephine Smith (Stanford University) showed that a large secular shift in the estimated response of the entire term structure of interest rates to inflation and output occurred in the United States in the early 1980s.

A third theme was the role of agents' learning in dynamic stochastic general equilibrium (DSGE) models. Fabio Milani (University of California, Irvine) showed that agents' learning about the economy generates endogenous time-varying volatility. Oreste Tristani (ECB) presented a DSGE model in which agents filter permanent changes in productivity growth in real time from temporary changes. This model is used to estimate the natural rate of interest. Euro area estimates show that monetary policy has been successful at eliminating inflationary pressures.

Finally, some contributions focused on the implications of labour market structure for monetary policy. Francisco Ruge-Murcia (Université de Montréal) analysed Tobin's proposition that inflation "greases" the wheels of the labour market. By estimating a DSGE model with asymmetric wage adjustment costs, he showed that the optimal level of "grease" inflation for the US economy is about 1.2%. Federico Ravenna (University of California, Santa Cruz) described the monetary policy trade-offs in a DSGE model with search frictions. He showed that pursuing price stability closely mimics the optimal policy in contexts like the euro area, where labour flows are not as volatile as in the United States.

The contributions to this conference can be downloaded from the ECB website at:
<http://www.ecb.europa.eu/events/conferences/html/intforum5.en.html>

Conference of the Eurosystem/ESCB Wage Dynamics Network

In June 2008, the Eurosystem/ESCB Wage Dynamics Network (WDN) held a conference at the ECB's premises to present its preliminary research findings to a wider academic audience. Twenty WDN papers were selected for presentation by a Scientific Committee comprising Giuseppe Bertola (Università di Torino), Jordi Galí (CREI and Universitat Pompeu Fabra), Thomas Lemieux (University of British Columbia) and Frank Smets (ECB).

Following the opening address by Jean-Claude Trichet (ECB) the first session set the stage by dealing with the topic of wage bargaining institutions, wage structure and wage dynamics in Europe. The first presentation discussed the institutional features of wage bargaining in 22 EU countries, the United States and Japan. This was followed by presentations of two papers that, using a rich micro dataset (the Structure of Earnings Survey), systematically examined cross-country differences in changes in the distribution of wages as well as the existence and evolution of wage differentials across sectors in EU countries over the period 1995-2002. The fourth presentation examined how well search and matching models fit important observed features of the labour market, emphasising that real wage rigidity is crucial in explaining the observed volatilities in labour markets. Christian Dustmann (University College London) and Robert Hall (Stanford University) led the discussion in this session.

The second session focused on the core questions of the WDN, i.e. the empirical evidence on the link between wage and price setting. The first paper presented new evidence based on firm-level information recently collected in a survey on wage and price setting coordinated by the WDN and carried out by 17 national central banks that covers about 17,000 firms. The second paper provided evidence on the interrelation between prices and labour costs in France using micro data. Finally, two papers closed the session. The first looked at the impact of reference norms on inflation persistence when wages are staggered; and the second surveyed alternative specifications for models of inflation dynamics with search and matching frictions in the labour market. Alan Blinder (Princeton University), Etienne Wasmer (Sciences-Po Paris), Andrew Levin (Federal Reserve Board) and Robert King (Boston University) conducted the discussion.

The third session reviewed recent evidence of downward wage rigidities (DWR) in the European Union using both micro data from administrative sources and the firm-level information collected by the WDN survey. The last two presentations in this session discussed some of the implications of DWR for optimal monetary policy. Friedhelm Pfeiffer (ZEW), William Dickens (Northwestern University) and Steinar Holden (University of Oslo) discussed the papers presented in this session.

Evidence on how wages respond to various shocks both at the macro and micro levels was presented in the fourth session. The first presentation gave an overview of new evidence derived from the WDN survey about how unanticipated shocks in demand, intermediate input costs and wages are accommodated by firms. The second presentation provided evidence on how wages react to firm-specific shocks in Hungary and to what degree Hungarian firms insure their workers against these shocks. The third presentation shed some light on the elasticity of employment and real wages with respect to changes in firms' total factor productivity in Belgium. The fourth presentation in the session assessed the persistence of aggregate wages and prices in Portugal, unveiling a series of links between import prices, unemployment and productivity, and wages and prices. Julio Rotemberg (Harvard Business School), Fabiano Schivardi (University of Cagliari) and James Malcomson (Oxford University) led the discussion.

Finally, the fifth session focused on the determination of the wages of new hires, a hot issue in the current academic debate. Again, the first presentation gave an overview of the new evidence on this topic derived from the WDN survey. The second presentation analysed the heterogeneity in the response of wages to aggregate labour market conditions for existing employees and newly hired workers in Portugal over the period 1986-2005. The third focused on the loss of earnings suffered by young workers who entered the Italian labour market in the 1990s. Finally, the fourth presentation showed that wage rigidity for new entrants in a new-Keynesian model with frictional unemployment and staggered wage bargaining is important for generating a realistic amplitude of employment dynamics. This session was led by Truman Bewley (Yale University), Antonella Trigari (Università Bocconi), Thomas Lemieux (University of British Columbia) and Christian Haefke (Institute for Advanced Studies, Vienna).

The conference finished with a panel discussion by Jorgen Elmeskov (OECD), Christopher Pissarides (London School of Economics) and Lucrezia Reichlin (ECB) on the findings, open questions and policy implications of the WDN results.

The contributions to this conference can be downloaded from the ECB website at: http://www.ecb.europa.eu/events/conferences/html/wage_dynamics_network.en.html

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