

MONETARY ANALYSIS IN AN ENVIRONMENT OF FINANCIAL TURMOIL

ARTICLES

Monetary analysis
in an environment
of financial turmoil

The ECB's monetary policy strategy assigns a prominent role to monetary analysis, reflecting the robust relationship between money and prices over the medium to longer term. Monetary analysis helps the central bank not to lose sight of longer-term nominal developments, for which monetary policy is ultimately responsible – a role particularly relevant in a period of financial turmoil, when short-term, volatile developments could overwhelm the appropriate medium-term perspective of monetary policy. The turmoil in financial markets that began in the summer of 2007 has posed considerable analytical challenges. The ECB's real-time monetary analysis combines model-based information with detailed institutional knowledge. The latter has been particularly useful in the last two years in addressing key questions on the robustness of monetary trends, financing conditions over the business cycle and adjustments taking place in the banking sector.

With regard to these questions, the conclusions of monetary analysis during the turmoil have been that, first, monetary trends point to subdued inflationary pressures, but not to a deflationary outcome; second, loan growth has predominantly been of a genuine nature; and third, banks adjusted the size and composition of their balance sheets mainly through asset reductions vis-à-vis other resident and non-resident credit institutions. Monetary analysis has thereby provided information that goes beyond what can be derived purely from financial surveys and the analysis of interest rates and yields.

I INTRODUCTION

The role of monetary analysis in the ECB's monetary policy strategy is founded on the robust relationship between money and prices in the medium to long run. This relationship has been found to hold true across countries and monetary policy regimes, suggesting that this feature is “hardwired” into the deep structure of the economy.¹ Monetary analysis thereby helps the central bank not to lose sight of longer-term nominal developments, for which monetary policy is ultimately responsible. This role is particularly relevant in a period of financial turmoil, when short-term, volatile developments could overwhelm the appropriate medium-term perspective of monetary policy.

The rapid changes in the economic environment brought on by the financial market turmoil have posed additional analytical challenges to monetary and economic analysis alike. The ECB's approach to conducting monetary analysis complements model-based information with a detailed institutional analysis. The latter has been at a premium in addressing key questions arising over the last two years. A major question for monetary analysis

has been whether the usually slow-moving underlying monetary trend that is linked to medium to long-term price developments has seen a shift. The analysis presented in this article suggests that, while such a shift cannot be excluded altogether, the moderation in underlying money growth is most likely to have been less pronounced and abrupt than that in observed monetary dynamics.

In addition, the turmoil in financial markets that began in the summer of 2007 has spurred an interest in monetary developments that goes beyond the medium to longer-term link with price developments. In an environment of financial turmoil, the detailed analysis of quantitative developments in money and credit has also proven particularly useful in addressing questions on topics of a more cyclical or temporary nature, such as financing conditions over the business cycle and adjustments taking place in the banking sector. This article shows that

¹ See L. Benati (2009), “Long-run evidence on money growth and inflation”, ECB Working Paper, No 1027. This feature does not preclude the possibility that the intensity of the relationship is a “functional of government policies”; see, for instance, T. Sargent and P. Surico (2008), “Monetary policies and low-frequency manifestations of the quantity theory”, Bank of England External MPC Unit Discussion Paper, No 26.

banks have adjusted the size and composition of their balance sheets mainly through asset reductions vis-à-vis other resident and non-resident credit institutions. This adjustment has thus far not upset the historical regularities of loan developments over the business cycle. In this respect, the examination of financial quantities, such as liquidity buffers and lending volumes, has provided insight which goes beyond the information that can be derived from an analysis based exclusively on interest rates, yields and financial surveys.

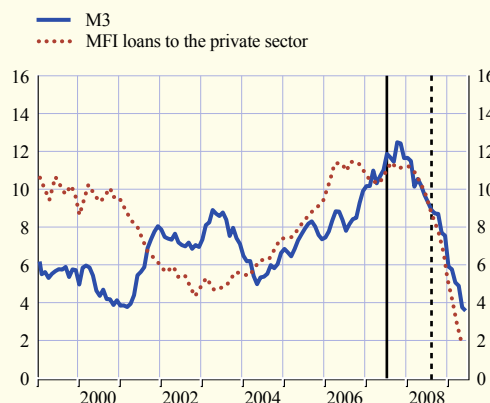
After a short description of monetary developments during the financial turmoil in Section 2, the article addresses these topics in turn. Section 3 evaluates monetary developments – in particular from a sectoral perspective – with a view to arriving at an assessment regarding the possibility of a “break” in the underlying pace of monetary expansion. Section 4 discusses the interpretation of loan and credit data in view of the impact of the financial turmoil. Section 5 illustrates some insights from monetary analysis that were used to address questions regarding the condition of the banking sector. Section 6 briefly concludes.

2 MONETARY DEVELOPMENTS SINCE THE ONSET OF THE TURMOIL IN FINANCIAL MARKETS

Monetary dynamics have fluctuated substantially since early 2007.² In the period leading up to the outbreak of the financial turmoil in August 2007, monetary dynamics strengthened substantially to reach historically high levels.³ This is illustrated by the annual growth rates of M3 and loans to the private sector, which, at the end of July 2007, stood at around 12% and 11% respectively (see Chart 1). Given that loans are one of the main counterparts of money, this joint strengthening signalled a strong pace of underlying monetary growth. However, the analysis also suggested that, owing to the boosting impact of the flat shape of the yield curve, the actual growth of M3 at the time overstated the underlying rate of monetary expansion.

Chart 1 M3 and MFI loans to the private sector

(annual percentage changes; adjusted for seasonal and calendar effects)



Source: ECB.

Note: The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

In the initial months following the onset of the turmoil in August 2007, aggregate monetary dynamics were largely unperturbed.⁴ By mid-2008, broad money and credit growth were gradually moderating, reflecting slower economic growth and the lagged impact of higher interest rates and tighter financing conditions, although their growth was still vigorous at the time. However, the direct impact of the financial turmoil was only visible in a few individual components and counterparts of M3, such as money market fund shares/units or loans to other non-monetary financial intermediaries except insurance corporations and pension funds (OFIs).

Following the collapse of Lehman Brothers and the intensification of the financial turmoil in September 2008, the annual growth rate of broad money declined from 9.1% in the third quarter of 2008 to 4.3% in the second quarter of 2009, while that of loans to the private sector

2 The latest observations for monetary data used in this article relate to the second quarter of 2009.

3 For an analysis of monetary developments between mid-2004 and the first quarter of 2007, see the article entitled “Interpreting monetary developments since mid-2004” in the July 2007 issue of the Monthly Bulletin.

4 See the box entitled “The impact of financial market tensions on monetary developments” in the ECB’s Annual Report 2008.

decreased from 9.1% to 2.2%. This joint decline pointed to a stronger deceleration in the pace of underlying monetary expansion than before. Moreover, the direct impact of the turmoil became discernible in additional components and counterparts, such as MFI debt securities and MFI holdings of debt securities.

When exploring whether the intensification of the financial turmoil marked a break in the pace of actual – and, ultimately, underlying – monetary expansion, the inherently backward-looking nature of annual growth rates may not provide a timely description of the relevant dynamics.⁵ Under such circumstances, it may also be useful to analyse the shorter-term dynamics as illustrated, for instance, by the annualised three-month growth rate. Chart 2 shows that, while the annual growth rate of M3 continued to decline in a more steady fashion, the shorter-term dynamics slowed sharply after the intensification of the turmoil. Since November 2008, the month-on-month growth

rates have fluctuated rather erratically around zero, indicating, on balance, a standstill in monetary expansion, which has persisted up to mid-2009. The three-month annualised growth rate averages out some of this volatility, illustrating more clearly that the pace of monetary expansion was lower than before the Lehman incident.

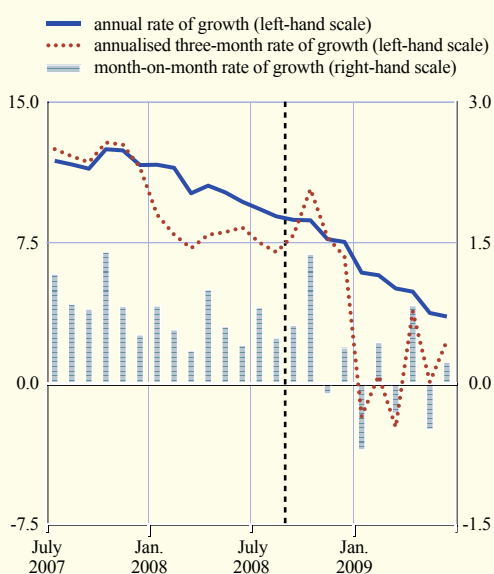
3 ANALYSING MONETARY DEVELOPMENTS DURING THE FINANCIAL TURMOIL

3.1 OBSERVED AND UNDERLYING MONETARY DYNAMICS IN A PERIOD OF FINANCIAL TURMOIL

The intensification of the financial turmoil in September 2008 raised the possibility of a watershed in monetary dynamics. Monetary analysis was faced with the need to monitor and assess in real time whether the sharp movements in monetary developments signalled a short-lived episode or a longer-lasting regime shift to a deflationary outcome. Chart 3 illustrates this challenge at a conceptual level. In “normal” times, the underlying rate of monetary growth, which provides the relevant signal for risks to price stability, is slow-moving, thereby facilitating the extraction of the signal. In a pronounced boom/bust episode, it is more difficult to draw inference from past historical regularities. On the basis of the information available at each point in time, monetary analysis needs to distinguish whether the unusually large movements in observed money growth constitute a “break” in underlying monetary growth – reflecting an aggressive and lasting balance sheet adjustment by banks, firms and households – or an episode that, possibly also owing to the impact of government interventions and endogenous stabilising forces, will be short-lived and will not affect underlying

Chart 2 Shorter-term dynamics of M3

(percentage changes; adjusted for seasonal and calendar effects)

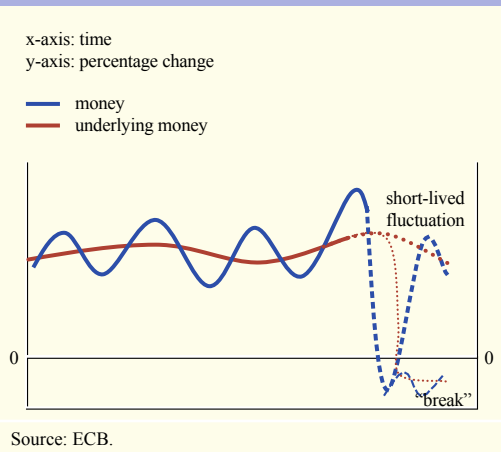


Source: ECB.

Note: The vertical dashed black line denotes the intensification of the financial market turmoil following the collapse of Lehman Brothers.

5 In a rapidly changing environment, an annual growth rate may be considered a somewhat backward-looking measure of developments as it compares a current observation with that of a year ago, thereby aggregating recent and past changes with equal weight. Being restricted to the recent past, measures of shorter-term dynamics do not suffer from this problem, but may be subject to much more “noise”.

Chart 3 The monetary signal in a period of financial market turmoil



monetary growth. Ultimately, such an assessment is needed in order to establish whether or not such a development has an impact on the real economy and prices.

The notion of underlying monetary expansion looks beyond money holdings resulting from temporary considerations related to income, the interest rate configuration and uncertainty. The additional uncertainty prevailing in a period of financial turmoil raises, for instance, the important analytical consideration of whether extraordinary portfolio shifts into or out of money have occurred, as, in this case, the information provided by observed monetary dynamics regarding price developments would temporarily be blurred. A detailed monetary analysis that looks at the individual components and sectors of broad money plays a particularly crucial role in such a situation because the impact of uncertainty and of changes in interest rates is typically reflected very differently across components and sectors. For instance, in the period of large uncertainty-related portfolio shifts between 2001 and 2003, marketable instruments within M3 absorbed a large part of these shifts and they were thus given a lower weight when gauging the strength of underlying monetary growth from M3 developments. Similarly, from the sectoral perspective, the money holdings of corporations typically display stronger cyclical

behaviour than those of households, which suggests that the latter may be given a higher weight when gauging the strength of underlying monetary growth from M3 developments. A detailed monetary analysis should therefore take into consideration various different perspectives in order to arrive at an assessment of underlying money growth.

3.2 THE SECTORAL PERSPECTIVE ON MONETARY DEVELOPMENTS IN A PERIOD OF FINANCIAL TURMOIL

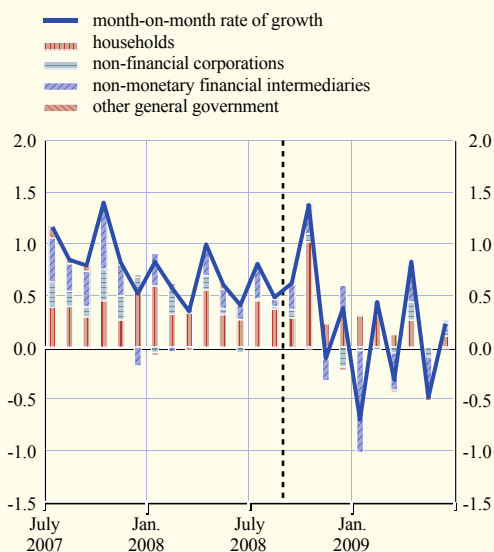
In this section, the breakdown into the individual sectoral money holdings of aggregate monetary developments is used to illustrate how the sectoral perspective can provide a richer understanding of the relative strength of forces driving overall M3 and thus aids an assessment of underlying monetary dynamics. The sectoral analysis may be particularly informative in the context of the recent financial turmoil, as the normal differences in sectoral money demand will most likely have been exacerbated by the rapidly evolving environment. Chart 4 illustrates the substantial differences in individual sectoral monetary dynamics. Non-monetary financial intermediaries contributed significantly and disproportionately to the slowdown in M3 growth, while the household sector continued to accumulate monetary assets, albeit at a moderating pace. Around the turn of the year, non-financial corporations shed monetary assets after having scaled back the build-up of liquidity buffers from early 2008 onwards.

The different behaviour across sectors reflects the difference in the relative importance of the main determinants of money holdings, namely economic activity, interest rate developments and uncertainty.⁶ This implies differences in the speed and size of the adjustment to changes in the determinants. Typically, the household sector adjusts its money holdings to the economic situation in a slow and persistent

⁶ See the article entitled "Sectoral money holding: determinants and recent developments" in the August 2006 issue of the Monthly Bulletin.

Chart 4 Breakdown by sector of month-on-month M3 growth rate

(percentage changes, contributions in percentage points; adjusted for seasonal and calendar effects)

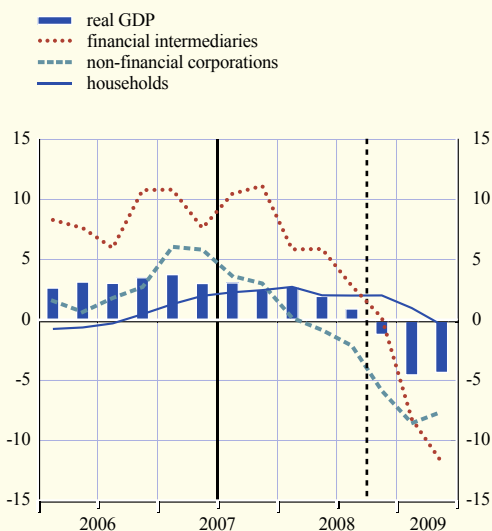


Source: ECB.

Note: The vertical dashed black line denotes the intensification of the financial market turmoil following the collapse of Lehman Brothers.

Chart 5 Sectoral M3 holdings and real GDP

(annual percentage changes; adjusted for seasonal and calendar effects)



Sources: ECB estimates and Eurostat.

Notes: The estimated M3 holdings by sector have been demeaned over the period 1999-2009 for presentational purposes. The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

manner, while non-monetary financial intermediaries' holdings are much more sensitive to the business cycle and changes in relative rates of return.⁷ As the non-financial corporation sector includes both large firms with cash management practices similar to those of financial firms, and smaller firms that are akin to households in terms of their financial sophistication, the sector's money-holding behaviour lies in between the polar cases. In order to analyse the different sectoral monetary dynamics in more detail, an examination of money holdings according to their key determinants seems warranted.

THE ROLE OF ECONOMIC ACTIVITY

The financial turmoil was accompanied by a slowdown in euro area economic activity, which is also reflected in the moderation in the growth of monetary assets. This effect is particularly visible in the annual growth of M3 holdings by non-financial corporations (see Chart 5), which

tends to be driven by the cyclical part of general economic activity, as measured, for instance, by gross value added. Households' M3 holdings continued to increase at a robust pace, in line with an inert adjustment to economic conditions that may be a result of the typically more stable developments in disposable income compared with general economic activity.

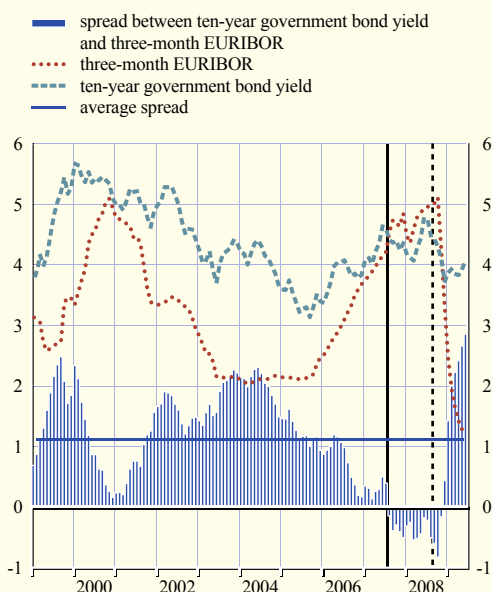
THE ROLE OF THE INTEREST RATE CONFIGURATION

The intensification of the turmoil and the decisive policy reaction triggered a sharp change in interest rates and steepened the slope of the yield curve (see Chart 6). The ensuing change in

7 For a comparative analysis of sectoral monetary demand, see J. von Landesberger (2007), "Sectoral money demand models for the euro area based on a common set of determinants", ECB Working Paper, No 741; P. Jain and C.-G. Moon (1994), "Sectoral money demand: a co-integration approach", *Review of Economics and Statistics*, pp. 196-201; and A. Brigden, A. Chrystal and P. Mizen (2000), "Money, lending and spending: a study of the UK non-financial corporate sector and households", *Bank of England Quarterly Bulletin*, May, pp. 159-167.

Chart 6 Short and long-term interest rates

(percentages per annum; spread in percentage points)



Sources: ECB and Reuters.

Note: The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

the opportunity cost of holding money induced portfolio reallocations into non-monetary assets, thereby dampening M3 growth. In particular, financial intermediaries' money growth, which, by and large, is governed by the liquidity, return and risk characteristics of a broad spectrum of assets, was strongly affected by this reconfiguration of interest rates.⁸

In addition, interest rates on short-term deposits have reacted much more quickly in recent months to the decline in short-term money market interest rates than rates on short-term loans. As a result, some non-financial corporations that, in the past, had found it attractive to park in monetary assets part of the funds they had borrowed, thus building up liquidity buffers, have reacted to the new rate constellation by using these liquidity buffers to reduce their MFI loans.⁹ Lastly, the money holdings of the household sector reacted in a sluggish manner to the observed changes in opportunity costs.

THE ROLE OF UNCERTAINTY

The determinants of money demand analysed above may only partially explain households' M3 holding behaviour, as precautionary holdings of money could also be significant. The financial turmoil has increased households' uncertainty regarding future financial and economic developments, potentially increasing money holdings over and above the level consistent with income and interest rate developments.¹⁰ Measures that are helpful in assessing the level of household uncertainty with regard to the economic environment include the level of unemployment as well as consumer confidence, which fell sharply in the euro area after the collapse of Lehman Brothers.

With regard to the relative importance of these determinants for monetary dynamics, analysis of the period before the onset of the financial turmoil in August 2007 suggests that the stimulative impact of interest rates caused observed M3 growth to overstate the pace of underlying monetary growth.¹¹ In the period following the onset of the turmoil in August 2007 until the end of the third quarter of 2008, monetary dynamics were strongly affected by portfolio reallocations into money, which were motivated by the interest rate configuration, rather than by extraordinary portfolio shifts triggered by increased uncertainty.¹² However,

8 The decline in M3 holdings of non-monetary financial intermediaries in January 2009 was affected by a purely financial transaction relating to the change in the structure of the funding vehicles of a large euro area banking group, which resulted in a reduction of time deposits of OFIs included in M3 and a commensurate increase in longer-term OFI deposits not included in M3. Adjusting for the effect of this transaction would reduce the decline, but an exceptional shedding of monetary assets by this sector would still be discernible.

9 For a more detailed analysis, see the box entitled "Some considerations regarding the driving forces behind non-financial corporations' M3 deposit holdings" in the July 2009 issue of the Monthly Bulletin.

10 On the general relationship between money holdings and uncertainty, see the article entitled "Money demand and uncertainty" in the October 2005 issue of the Monthly Bulletin.

11 For an assessment of the forces impacting monetary developments in the run-up to the financial turmoil, see the article entitled "Interpreting monetary developments since mid-2004" in the July 2007 issue of the Monthly Bulletin.

12 For details of the analysis, see the box entitled "Tracking extraordinary portfolio shifts into money during the period of financial turmoil" in the January 2009 issue of the Monthly Bulletin.

given that both effects would have influenced monetary growth in the same direction during this period, their impact is difficult to disentangle. For the period after the intensification of the financial market turmoil at the end of the third quarter of 2008, analysis tends to suggest that there was a more significant confidence-related impact on households' M3 holdings, visible, *inter alia*, in the strong one-off increase in currency in circulation. This analysis also suggests, however, that this possible boosting impact was more than offset by the considerably stronger downward effect stemming from the interest rate configuration, discernible in the large outflows from short-term time deposits.¹³ All in all, over the course of the financial turmoil, sectoral money holdings have adjusted as would be expected on the basis of the evolution of their main determinants and historical regularities.

3.3 OVERALL ASSESSMENT OF MONETARY DYNAMICS

During the period of financial turmoil, the deceleration in aggregate M3 growth is likely to have overstated the decline in the underlying rate of monetary expansion. The detailed analysis of sectoral money holdings has shown that the decline was driven by the financial and non-financial corporate sectors, which have been disproportionately affected by the financial turmoil. At the same time, holdings of M3 by households – which have a stronger and more immediate link with consumer price inflation than corporate sector M3 holdings – continue to exhibit more resilient growth.

Aggregating monetary developments across different sectors or across different components means that idiosyncratic elements are downplayed, with substitution effects being internalised, so that the monetary trend providing the signal for medium to longer-term risks to price stability can come to the fore. The analysis presented in this article suggests that, while a “break” cannot be excluded altogether, the moderation in the monetary trend is most

likely to have been less pronounced and abrupt than that in observed monetary dynamics. The analysis of monetary dynamics, therefore, currently points to subdued inflationary pressures, but not to a deflationary outcome.

An additional consideration in assessing the possible deflationary implications of the strong decline in observed M3 growth relates to the level of monetary liquidity that has been accumulated over recent years. In this respect it should be noted that a protracted period of low or even negative money growth would be required in order to unwind the excess monetary balances. Barring such an unwinding, the existing liquidity accumulation in the euro area would still be available when the economy and financial markets recover and may then lead to rebounding pressures on both consumer and asset prices.

4 INTERPRETING LOAN AND CREDIT AGGREGATES DURING THE FINANCIAL TURMOIL

Over the period of financial turmoil, money and credit developments at cyclical and higher frequencies have provided useful insights into the availability of credit to households and firms, and more specifically, regarding the question of whether the turmoil has hampered the availability of bank credit to the non-financial sectors over and above a tightening of financing conditions that would have been expected owing to the movement of the economy along the business cycle. In the initial phase of the financial turmoil, the observed credit data did not suggest such a hampering, as the annual growth of loans to the non-financial private sector, and in particular non-financial corporations, remained robust. However, a number of economic and statistical factors were seen as potentially

¹³ Estimates suggest that if consumer confidence had remained unchanged from the level of the third quarter of 2008, the flow of household M3 during this period would have been around 15% lower. By contrast, the same framework indicates that if the interest rate configuration had remained unchanged, it would have increased the flow of household M3 during this period by around 45%.

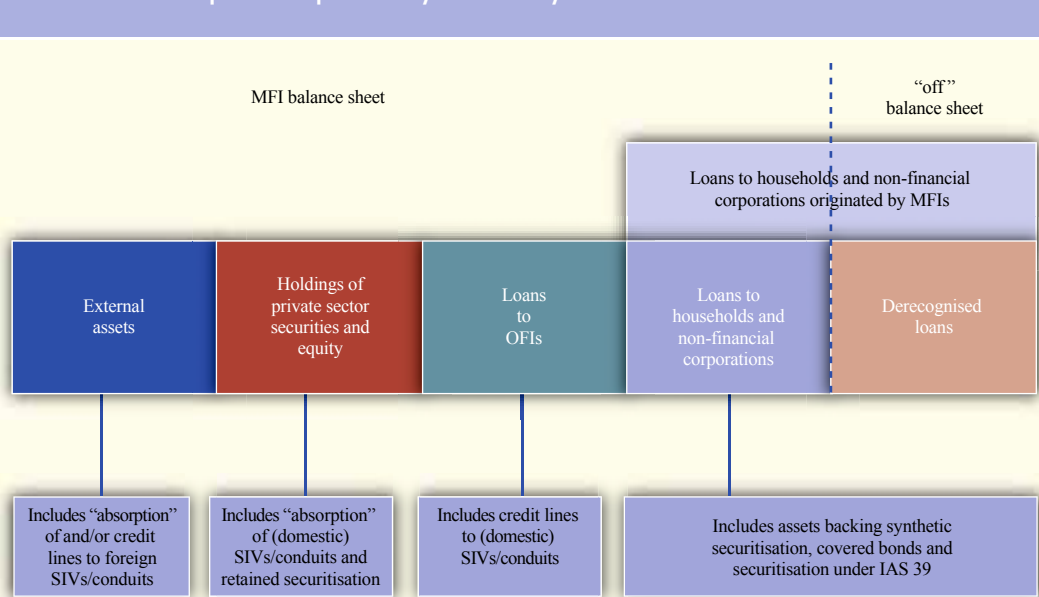
masking the effect of the financial market turmoil on the availability of financing to the non-financial sectors.

The broad-based monetary analysis conducted at the ECB made it possible to assess the extent to which such factors were material in the euro area after the start of the financial turmoil. For instance, in the initial phase of the turmoil, the continued buoyancy of lending to the non-financial private sector in the euro area was argued by some financial market commentators to have resulted from the supposed reduction in the availability of market-based financing to non-financial corporations, compensated for by additional borrowing from banks – partly through an increased drawdown of credit lines. As a result, the data on MFI lending to firms was seen as being upwardly affected by a substitution effect, while the total new financing available to non-financial corporations had, in fact, stalled. A comprehensive analysis of the amount of financing made available to non-financial corporations provided evidence against this argument. More specifically, the

data at the euro area level pointed to some limited moderation in the flow of financing to non-financial corporations stemming from developments in the issuance of debt securities and equity, which did not, however, provide scope for material substitution effects.

A further hypothesis given consideration suggested that the strength of MFI lending to the non-financial private sector was misleading because it resulted from “re-intermediation” effects. Chart 7 provides a stylised representation of the different positions on the MFI balance sheet that may have had to accommodate such effects. For instance, the hypothesis suggested that, owing to the drying-up of the asset-backed commercial paper market, credit institutions would have to provide support to issuers of such paper – such as “structured investment vehicles” (SIVs), classified as OFIs. The support provided could take the form of either outright loans or the absorption of SIV assets that had previously been securitised. On the MFI balance sheet, it would in principle be reflected in the positions for either loans to

Chart 7 MFI asset positions potentially affected by turmoil-related effects



Source: ECB.

OFIGs, MFI holdings of debt securities or external assets, but the actual data suggested that the impact was, at best, marginal.

In addition, the loan data may possibly have been distorted by the inability of banks to shift loans off their balance sheets, given the effective closure of the securitisation market.¹⁴ As a result, these loans had to be retained on banks' balance sheets and thus boosted the lending figures. The detailed institutional examination conducted in the context of monetary analysis revealed, however, that owing to the use of International Financial Reporting Standards for statistical reporting purposes in some euro area countries where true-sale securitisation had been particularly prevalent, most of the loans sold in the context of such transactions remained, in practice, on the originating credit institutions' balance sheets.¹⁵ In those countries where accounting standards allowed for the derecognition of loans, the flow of loans derecognised after August 2007 was positive, in part also owing to "retained securitisation", whereby the securities issued in the context of the securitisation transaction are purchased by the MFIs themselves. Taking both cases together, this hypothesis could not explain the robustness of lending to the non-financial private sector, which was assessed to be of a "genuine" nature.

After the intensification of the financial turmoil, the decline in the annual growth rate of loans to the non-financial private sector steepened and by mid-2009 was low by historical standards. In assessing this decline, it should be borne in mind that there has also been an exceptional decline in economic activity, which would have dampened the demand for loans in any case. In this respect, notwithstanding the pressures experienced by MFIs during the turmoil, the developments observed thus far in sectoral loans have proven to be consistent with historical regularities over the business cycle.¹⁶ At the same time, pressures on the balance sheet situation of credit institutions are likely to have contributed to the evolution of lending during the period of financial turmoil.

From a monetary policy perspective, disentangling the different driving forces impacting on aggregate loan developments facilitates the identification of required monetary policy measures, given that the appropriate policy response to a lower demand for loans, a deterioration in borrowers' balance sheets and strains related to banks' balance sheets and cost of funds may differ substantially. While reductions in policy rates might be warranted in cases related to the borrowers' condition, the provision of a sufficient amount of liquidity, potentially complemented by further governmental measures, such as guarantees on bank debt and capital injections, would be crucial to counteract a severe impairment of lenders' balance sheets.

A particular challenge lies in gauging the importance of developments in general economic activity for overall MFI lending related to the demand for loans and borrowers' creditworthiness on the one hand and banks' imminent strains as regards their balance sheets and cost of funds on the other. As all of these drivers are closely related and interdependent, a clear-cut distinction is not feasible. For instance, changes in economic activity also impact banks' balance sheets and funding costs, which may affect their ability and willingness to lend. This, in turn, might be reflected in less favourable lending conditions, inducing a corresponding decrease in the

14 For an explanation of the potential effect of securitisation on MFI loan data, see the box entitled "The impact of MFI loan securitisation on monetary analysis in the euro area" in the September 2005 issue of the Monthly Bulletin.

15 According to the relevant accounting standard (IAS 39, Financial instruments: recognition and measurement), a number of specific conditions need to be met for an asset to be derecognised from a reporting entity's balance sheet, including the transfer of substantially all risks and rewards linked to the asset. In practice, in true-sale securitisation transactions, these criteria are seldom met as the originator typically maintains some continued involvement, for instance by retaining the equity tranche of the issued securities. See also the box entitled "The importance of accounting standards for interpreting MFI loan statistics" in the March 2008 issue of the Monthly Bulletin.

16 See also the boxes entitled "The cyclical pattern of loans to households and non-financial corporations in the euro area" in the June 2007 issue of the Monthly Bulletin and "Loans to the non-financial private sector over the business cycle in the euro area" in the October 2009 issue of the Monthly Bulletin.

demand for loans. Given these endogenous links between the different drivers of bank lending activity, empirical approaches to disentangling them can only serve as rough approximations.¹⁷

5 INSIGHTS PROVIDED BY MONETARY ANALYSIS REGARDING THE BEHAVIOUR OF THE BANKING SECTOR

In order to gain a comprehensive understanding of the forces impacting on bank credit, it is useful to place the analysis in a broader context, also taking into consideration available detailed information regarding both the funding and the deleveraging of credit institutions from the MFI balance sheet, which is examined regularly as part of monetary analysis. The section looks at these two issues in turn.

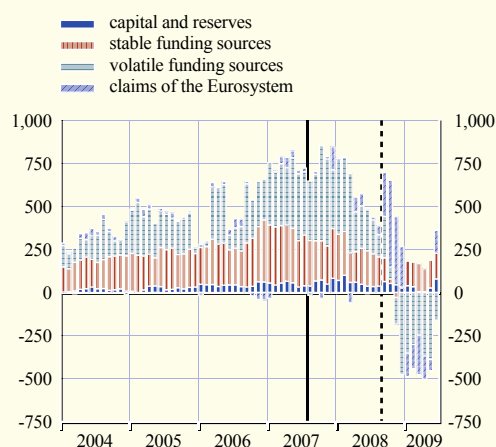
THE FUNDING OF CREDIT INSTITUTIONS

In order to monitor the funding of credit institutions, as explained in the box entitled “The aggregated versus the consolidated view of the MFI balance sheet in the context of the financial turmoil”, the aggregated view of the MFI balance sheet is informative as it makes it possible to identify the positions MFIs hold vis-à-vis each other. This detailed analysis goes well beyond the monitoring of monetary aggregates, but forms an integral part of regular broad-based monetary analysis.

Credit institutions fund their balance sheets in a stratified manner, starting with base financing through capital and reserves. Deposits and long-term debt securities held by the money-holding sector and non-residents – to the extent that they are a “stable” or long-term source of funding – form the next layer. A last source of funds comprises various shorter-term liabilities, such as short-term debt securities and deposits from non-monetary financial intermediaries, which are incurred in a dynamic manner to cover rapidly arising cash-flow needs and tend to be “volatile”. Chart 8 shows the development of these funding sources and illustrates that, before the outbreak of the turmoil,

Chart 8 Main liabilities of euro area credit institutions

(three-month flows in EUR billions; adjusted for seasonal and calendar effects)



Sources: ECB and ECB estimates.

Notes: The reporting sector is MFIs excluding the Eurosystem. Stable funding sources include deposits of the non-financial sectors excluding central government, longer-term deposits of non-monetary financial intermediaries, deposits of non-resident non-banks and MFI debt securities with a maturity of more than one year. Volatile funding sources include deposits of MFIs excluding the Eurosystem, short-term deposits of non-monetary financial intermediaries, deposits of central governments, deposits of non-resident banks and MFI debt securities with a maturity of up to one year. The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

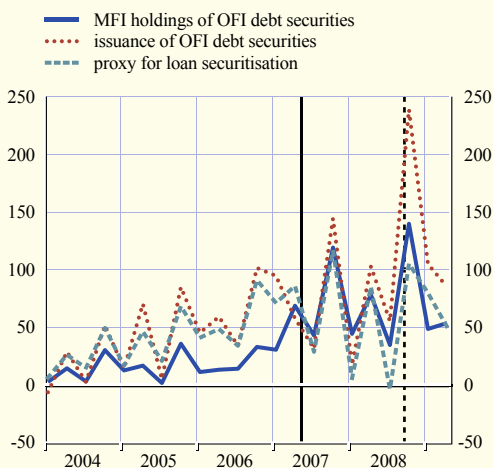
the volatile sources had come to play a dominant role. For instance, the turmoil adversely impacted the predictability of cash flows, which in turn generated additional funding needs. In the initial phase of the turmoil, this additional demand seems to have been met by increased recourse to short-term funding sources. While the funding from stable sources seems to have held up fairly well after the collapse of Lehman Brothers, it could not be expanded sufficiently to offset the withdrawals from the short-term sources, prompting the Eurosystem to step in and provide the required immediate funding.

An additional option to cover funding needs is to liquidate existing assets rather than incur additional liabilities. In the period before the onset of the financial turmoil, asset sales and

¹⁷ For a thorough discussion of loan supply from a monetary policy perspective, see the article entitled “Monetary policy and loan supply in the euro area” in the October 2009 issue of the Monthly Bulletin.

Chart 9 Securitisation activity in the euro area

(quarterly flows in EUR billions; not adjusted for seasonal and calendar effects)



Source: ECB.

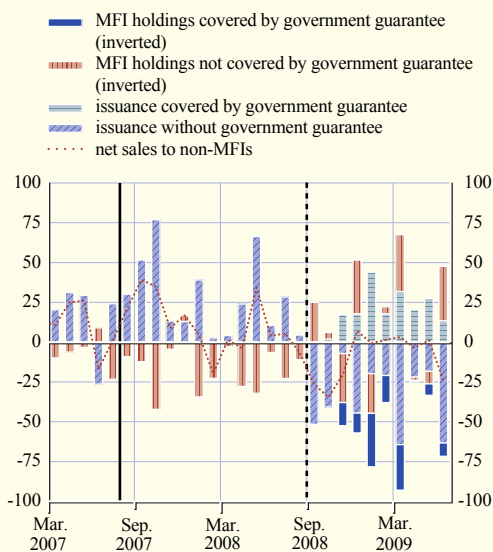
Notes: The proxy for loan securitisation comprises loan derecognition and time deposits with a maturity of more than one year held by OFIs. The latter typically host the counter-booking to securitisation transactions that have not been derecognised. The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

securitisations had become an increasingly important source of funding. The financial market turmoil resulted in the closure of these markets. However, information from the MFI balance sheet statistics indicates that credit institutions continued to securitise assets in order to store collateral that could be used in Eurosystem operations, leading to “retained securitisation”. The significant funding provided by the Eurosystem also replaced, in part, funding otherwise obtained by MFIs through market-based securitisation transactions. The monetary analysis identified the evolving character of these transactions.¹⁸ This change is reflected in the fact that, during the period of financial market turmoil, MFI purchases of securities issued by OFIs have very closely tracked a proxy measure of securitisation activity, while in the preceding period when markets were still open, there was a visible discrepancy, with MFI purchases being smaller than the securitisation flow (see Chart 9).

18 See the box entitled “The impact of traditional true-sale securitisation on recent MFI loan developments” in the September 2008 issue of the Monthly Bulletin.

Chart 10 Issuance and purchases of short-term MFI debt securities

(flows in EUR billions; not adjusted for seasonal and calendar effects)

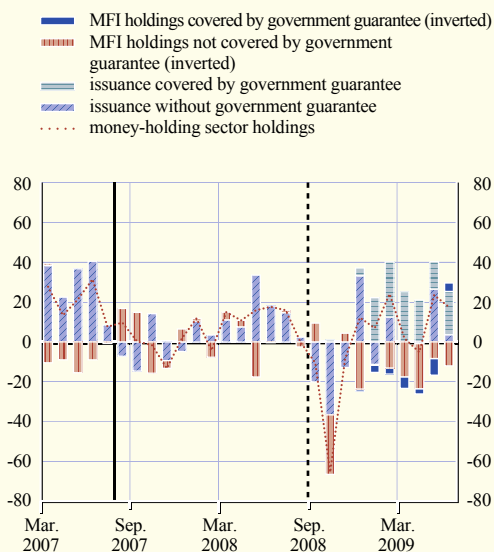


Sources: ECB and ECB estimates.

Note: The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

Chart 11 Issuance and purchases of longer-term MFI debt securities

(flows in EUR billions; not adjusted for seasonal and calendar effects)



Source: ECB.

Note: The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

After the intensification of the turmoil, the funding of credit institutions was also facilitated by measures taken by euro area governments, which, *inter alia*, established guarantee programmes for MFI debt securities.¹⁹ Charts 10 and 11 show that the introduction of government guarantees on bank debt securities has supported the issuance of debt securities by credit institutions, both for short-term and long-term paper. Some of these securities have been purchased by the MFIs themselves, while non-MFIs – both euro area residents and non-residents – have been running down their holdings of these securities. This would suggest that a subset of institutions has benefited from the introduction of this measure. However, over the period since October 2008, the funding of

the euro area credit institution sector through the issuance of short-term MFI debt securities to non-MFIs has been negative, and only slightly positive for longer-term debt securities.

Overall, credit institutions have faced significant challenges in funding their large balance sheets as the volatile market-based and financial sector sources of funds have dried up. At the same time, more stable sources of funds in the form of deposits from households and non-financial corporations have continued to support lending to the euro area economy.

19 See the box entitled “How are government measures to support the financial system reflected on the balance sheets of euro area credit institutions?” in the April 2009 issue of the Monthly Bulletin.

Box

THE AGGREGATED VERSUS THE CONSOLIDATED VIEW OF THE MFI BALANCE SHEET IN THE CONTEXT OF THE FINANCIAL TURMOIL

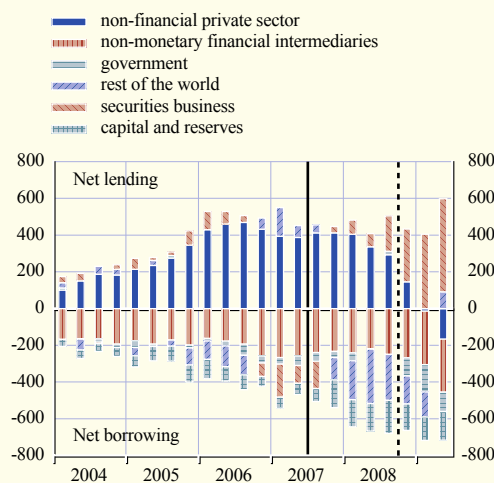
The ECB’s monetary analysis is based on euro area MFI balance sheet statistics. Two presentations of the MFI balance sheet monitored as part of the ECB’s monetary analysis, the consolidated and the aggregated balance sheet of the MFI sector, have proved informative and will be presented in this box.

The consolidated balance sheet of the MFI sector nets out positions between MFIs from the sum of the balance sheets of all euro area MFIs in order to focus on the total lending to non-MFIs and the funding received from non-MFIs. In the context of the financial turmoil, it is, however, precisely the positions between MFIs that have been of analytical interest, and this has led to a stronger focus on the aggregated balance sheet of the MFI sector.

In order to illustrate the intermediation role of the euro area MFI sector, the chart presents – using the consolidated balance sheet of the MFI sector – the net lending (as measured by the difference between loans granted and

Net lending position of euro area MFIs vis-à-vis main economic sectors

(annual flows in EUR billions; not adjusted for seasonal and calendar effects)



Source: ECB calculations.
Notes: “Securities business” represents the net position between securities held and issued by credit institutions, excluding capital and reserves. Non-monetary financial intermediaries comprise insurance corporations, pension funds and other non-monetary financial intermediaries. The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

deposits received) of the MFI sector vis-à-vis its main counterparts. The chart shows that the euro area MFI sector mainly lends to the non-financial private sector and funds this business through deposits received from non-monetary financial intermediaries and the general government, as well as from the issuance of capital and reserves. Borrowing from the rest of the world and net lending in securities (holdings minus issuance) tend to act as balancing elements.

Recent analysis by Shin¹ has highlighted the relevance of the two balance sheet presentations for understanding, at a conceptual level, the mechanisms driving banks' credit supply to the non-financial sector. This analysis stresses the interaction of three features of the banking system. The first is the distribution throughout the banking system of equity. The second is the distribution of leverage (defined as total assets to equity). Total lending to the non-financial sector increases with higher equity and more leverage. The third determining feature of banks' credit supply, as discussed in this analysis, is the structure of interlinkages resulting from inter-MFI positions, as the claim of one bank will represent a liability of another bank. Given the reciprocity of interbank claims, for the banking system to lend more to non-banks on aggregate, it has to borrow more from non-banks.

It is important to note that individual banks' leverage ratios can jointly increase (or decrease) without changing the leverage ratio of the banking sector as a whole. Indeed, banks' balance sheets can inflate or contract to the extent that banks adjust their interbank borrowing and lending exposures, but this will not change the leverage ratio at the consolidated level, nor alter the relationship between borrowing from and lending to non-MFIs. However, the emergence of constraints in interbank borrowing for banks that are net lenders to non-MFIs will hamper the efficient redistribution through the banking system of funding received by other banks from non-MFIs.

Following the intensification of the turmoil, developments observed in the aggregate balance sheet of euro area MFIs suggest that mainly positions vis-à-vis euro area MFIs (see Chart 12) and vis-à-vis non-resident banks (see Chart 13) have been divested. From a consolidated perspective, an important aspect is the fact that the balance sheet expansion is determined by the volume of MFI liabilities held by non-banks, of which the broad monetary aggregate M3 has accounted for a stable 30%.² "Traditional" monetary analysis focusing on developments in M3 may thus provide valuable insights with respect to leverage developments in the banking system, as discussed in the more recent literature on this subject.

1 H. Shin (2009), "Securitisation and financial stability", *The Economic Journal*, 199, March, pp. 309-332.

2 This ratio is calculated as M3 minus currency in circulation and money market funds shares/units to total liabilities (abstracting from remaining liabilities) of credit institutions.

THE DELEVERAGING PROCESS OF CREDIT INSTITUTIONS

A major element of the financial turmoil has been the pressure it has implied for credit institutions' capital positions, for instance owing to adverse movements in asset prices and credit losses. In conjunction with the funding pressures, the strains on capital positions have warranted some "deleveraging",

at least for some institutions. Such a process can comprise a range of strategies targeting both the assets and the liabilities sides of the bank balance sheet.

On the liabilities side, these strategies can entail, inter alia, capital increases. This is reflected in Chart 8 in the increased flows into the capital and reserves position.

Euro area governments have supported the recapitalisation of banks through capital injections. At the same time, evidence indicates that euro area credit institutions have been able to increase capital and reserves over and above the government capital injections, either by raising capital from non-banks or through continued profitability.

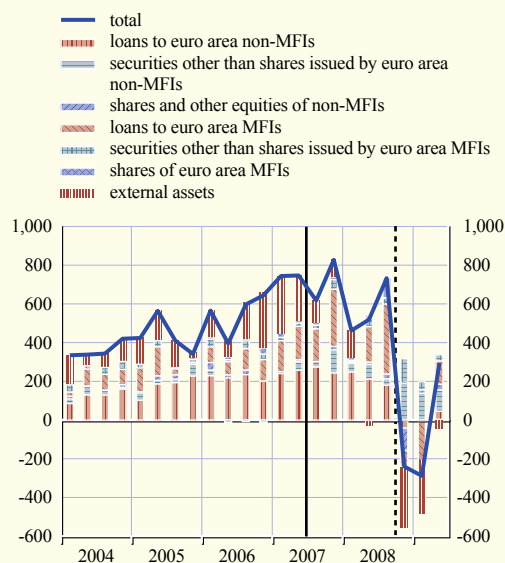
On the assets side, deleveraging strategies include the disposal of non-core assets and the dilution of concentrated exposures to risky assets. Credit institutions are likely to implement any deleveraging necessary by going through a “pecking order” of assets.²⁰ According to the pecking order view, short-term assets are liquidated first, followed by loans to foreign banks, while long-term assets are liquidated last.²¹ As loans are rather illiquid assets, particularly with the securitisation and syndication markets at a standstill, even if banks wanted to, there would be little scope for shedding loans from their balance sheets. Any reduction of credit institutions’ holdings of loans would thus mainly result from not granting new loans and the repayment of existing loans.

The banking model in the euro area has some features which may impart additional inertia to lending dynamics. In this respect, an important feature is relationship lending, as credit institutions will take into account long-term client relationships when considering whether to downsize their lending business.

In the initial phase of the financial turmoil, an overall moderation in the pace at which credit institutions accumulated asset holdings was observed (see Chart 12), with the growth of lending to the euro area non-MFI sector declining following its peak in the third quarter of 2007, but remaining at a relatively robust level. Credit institutions, inter alia, also scaled back the expansion of their external asset holdings.²² From the fourth quarter of 2008, following the intensification of the turmoil, balance sheet adjustments were more pronounced. Borrowing by the euro area non-MFI sector slowed down appreciably. The decline in the flow of loans

Chart 12 Main assets of euro area credit institutions

(quarterly flows in EUR billions; adjusted for seasonal and calendar effects)



Sources: ECB and ECB estimates.
Note: The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

to euro area non-MFIs illustrated in Chart 12 is, however, overstated as credit institutions strongly derecognised loans from their balance sheets in the context of securitisation transactions (see Chart 9), which were retained and thus reflected in higher flows of credit institutions’ holdings of debt securities issued by non-MFIs.

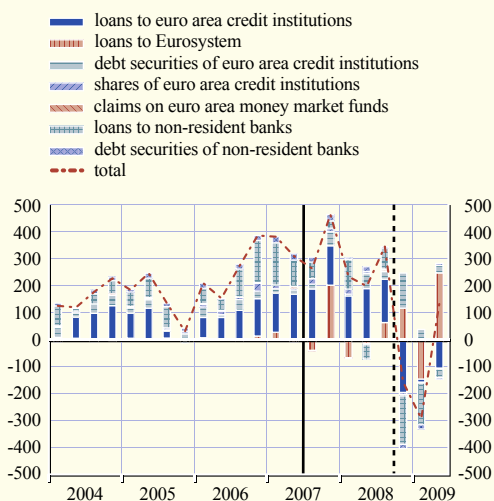
20 On the “pecking order” of the liquidation of assets, see F. Allen and D. Gale (2000), “Financial contagion”, *Journal of Political Economy*, Vol. 108, No 1, pp. 1-33. The notion of a pecking order is also implicit in bank lending channel literature, which treats assets on bank balance sheets as imperfect substitutes; see, for instance, B. Bernanke and A. Blinder (1988), “Credit, money, and aggregate demand”, *American Economic Review*, Vol. 78, No 2, pp. 435-439.

21 For a discussion on the costs of premature liquidation, see A. Shleifer and R. Vishny (1992), “Liquidation values and debt capacity: a market equilibrium approach”, *Journal of Finance*, Vol. 47, September, pp. 1343-66 and F. Allen and D. Gale (1998), “Optimal financial crises”, *Journal of Finance*, Vol. 53, August, pp. 1245-84.

22 For an analysis of credit institutions’ balance sheet developments from the start of the turmoil up to the third quarter of 2008, see the box entitled “Recent developments in the balance sheets of euro area credit institutions” in the December 2008 issue of the Monthly Bulletin.

Chart 13 Assets of euro area credit institutions vis-à-vis other MFIs

(quarterly flows in EUR billions; adjusted for seasonal and calendar effects)



Sources: ECB and ECB estimates.

Note: The vertical lines denote the start of the financial market turmoil (black line) and its intensification following the collapse of Lehman Brothers (dashed black line).

Furthermore, MFIs have purchased sizeable amounts of bonds issued by governments. These purchases were boosted by specific interest rate and risk considerations linked to the financial turmoil.²³ The most pronounced evidence of the adjustment is the considerable reduction in external assets, which largely reflects the reduction in holdings vis-à-vis non-resident banks located in major financial centres.

Lending to resident MFIs by credit institutions, which tends to be largely of a short-term maturity, also contracted sharply.²⁴ However, this decline is understated in Chart 12 owing to the large increase in the claims of euro area credit institutions vis-à-vis the Eurosystem, which are also included in this position. The increase accompanied the significant provision of liquidity by the Eurosystem, as some banks hoarded liquidity on their accounts with the Eurosystem.²⁵ This effect is visible in Chart 13, which provides a breakdown of credit institutions' transactions with resident MFIs and non-resident banks. The chart also

illustrates the broad-based reduction across asset classes and residency of claims on other banks.²⁶ This contraction in asset holdings is the most visible sign of a balance sheet downsizing by euro area banks.

Overall, the deceleration observed thus far in loans to households and non-financial corporations has proved to be consistent with historical regularities over the business cycle, reflecting the sharp slowdown in economic activity. At the same time, the factors related to banks' funding and capital positions are forcing them to adjust the size and composition of their balance sheets, which has, however, mainly been visible in asset reductions vis-à-vis other resident and non-resident credit institutions.

6 CONCLUSIONS

The analytical challenges posed by the financial turmoil have emphasised the merit of a monetary analysis that complements model-based information with institutional knowledge. The latter is based on a thorough understanding of the different developments in the MFI balance sheet and is necessary in order to assess properly the dynamics of broad money and credit aggregates and their implications for macroeconomic outcomes in real time. In the context of the financial turmoil, many of the monetary developments that are typically treated as "noise" in the data, because they have no immediate link with risks to price stability, have been found to provide relevant information on the questions relating to the detection of breaks

23 For a detailed analysis, see the box entitled "Recent developments in MFIs' purchases of debt securities issued by the euro area general government sector" in the June 2009 issue of the Monthly Bulletin.

24 For evidence on the maturity structure of the euro area money market, see ECB (2008), "Euro money market survey", September.

25 The operational framework of the Eurosystem ensures that a liquidity injection is reflected in the claims of credit institutions vis-à-vis the Eurosystem; see the box entitled "The impact of the first one-year longer-term refinancing operation" in the August 2009 issue of the Monthly Bulletin.

26 The purchases of MFI debt securities include both government guaranteed and non-guaranteed bonds; for a breakdown, see Charts 10 and 11.

in monetary trends, the changes in financing conditions over the business cycle and the adjustments taking place in the banking sector.

With regard to these questions, the conclusions of monetary analysis during the turmoil have been that, first, while a “break” cannot be excluded altogether, the moderation in the monetary trend has been less pronounced than that of actual M3 growth and points to subdued inflationary pressures, but not to a deflationary outcome; second, loan growth has predominantly been of a genuine nature; and third, banks have adjusted the size and composition of their balance sheets mainly through asset reductions vis-à-vis other resident and non-resident credit institutions. Gaining these additional insights did not require a change in the way monetary analysis was conducted, but simply a fuller exploitation of all the information that is regularly generated.

The necessity of generating a broader set of insights will remain a prevalent feature of monetary analysis, as was the case, for instance, during the period of extraordinary portfolio shifts into M3 between 2001 and 2003 and more recently during the financial turmoil. In this respect, once the financial turmoil has subsided, it will be necessary to assess whether the behaviour of banks, as well as households and firms, has changed as a result of either their recent experience or any potential changes in the regulatory framework or corporate governance. The detailed institutional analysis embodied in the ECB’s monetary analysis will help identify these behavioural changes and their consequences for the relationship between money and credit aggregates on the one hand and consumer prices, asset prices and economic activity on the other.