

Box 2

MONEY GROWTH AND UNCERTAINTY

While there is abundant evidence that money growth has leading indicator properties for inflation in the medium to long term, these properties may be weaker during specific periods. This is particularly the case in periods characterised by significant variation in money demand triggered by increased uncertainty regarding the economic environment, when money balances may be held primarily for precautionary or portfolio-related reasons, rather than for transaction purposes.¹ The heightened tensions observed in sovereign bond markets since August 2011 have

¹ For a detailed discussion, see the article entitled “Money demand and uncertainty”, *Monthly Bulletin*, ECB, October 2005.

increased financial stress in the euro area banking sector and the wider financial system. These elevated stress levels, which are a reflection of various types of uncertainty, have also affected monetary developments in the euro area. This box looks at the nature of the uncertainties underlying financial market stress and considers the potentially ambiguous effects that these can have as regards monetary developments. In addition, an attempt is made to quantify the impact that uncertainty-related financial market stress has had on the narrow monetary aggregate M1 during the financial and sovereign debt crisis.

Uncertainty-related portfolio shifts

Stress in financial markets may be associated with increased uncertainty among lenders and investors regarding the fundamental value of financial and real assets.² As a result, uncertainty is likely to affect portfolio allocation decisions, with two effects partially offsetting each other. First, a heightened degree of uncertainty may trigger shifts towards less risky domestic assets, such as liquid monetary instruments. Second, depending on the nature of uncertainty, holdings of monetary assets may decline, with agents wishing to exchange nominal assets for real assets or domestic assets for non-domestic assets. The relative importance of these two effects and the overall outcome depends, *inter alia*, on the monetary aggregate considered and the correlation between asset returns.³

Generally, for broad money growth to strengthen as a result of portfolio shifts, the money-holding sector needs to sell risky assets to euro area MFIs, the central government of a euro area country or non-euro area residents. The portfolio shifts observed in the period from 2001 to 2003 are one example of such a development. This period was characterised by the repatriation of funds by euro area money holders, who sold the foreign assets they had purchased previously (mainly equity) to non-residents, keeping the receipts in monetary assets.⁴ This tendency to repatriate funds at the global level and this preference for safe and liquid assets could also be observed during the initial phase of the financial crisis in 2007 and 2008.

In the current period, with uncertainty related mainly to sovereign debt problems in some euro area countries, in conjunction with pressures on the banking sector, the potential for a protracted period of portfolio shifts into money may be more limited, as MFIs are attempting to deleverage and non-resident investors may prefer to withdraw from euro area assets, contributing to downward pressure on money growth.

Measures of uncertainty

Economic literature offers numerous definitions of uncertainty, which in turn give rise to a wide range of indicators. Chart A presents a selection of indicators of uncertainty and financial market stress. Importantly, the types of underlying uncertainty captured by the various indicators differ considerably. For example, the measure of uncertainty proposed by Bekaert, Hoerova and

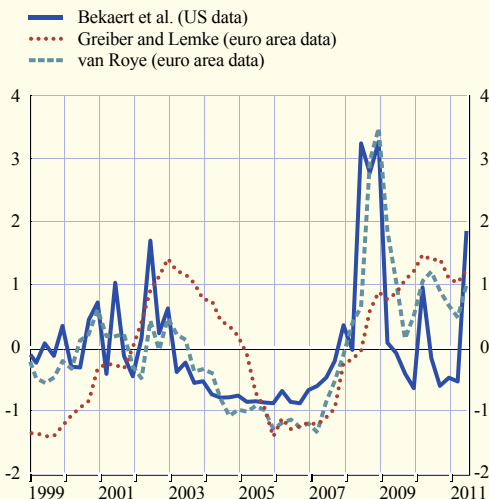
2 See Hakkio, C. and Keeton, W., "Financial Stress: What Is It, How Can It Be Measured, and Why Does It Matter?", *Economic Review*, Second Quarter, Federal Reserve Bank of Kansas City, 2009.

3 See: Atta-Mensah, J., "The Demand for Money in a Stochastic Environment", *Working Papers*, No 2004-7, Bank of Canada, March 2004; and Choi, W. and Oh, S., "A money demand function with output uncertainty, monetary uncertainty, and financial innovations", *Journal of Money, Credit and Banking*, Vol. 35, No 5, 2003.

4 See, for instance, the box entitled "The impact on M3 of portfolio shifts arising from heightened uncertainty" in the article referred to in footnote 1.

Chart A Selected measures of uncertainty

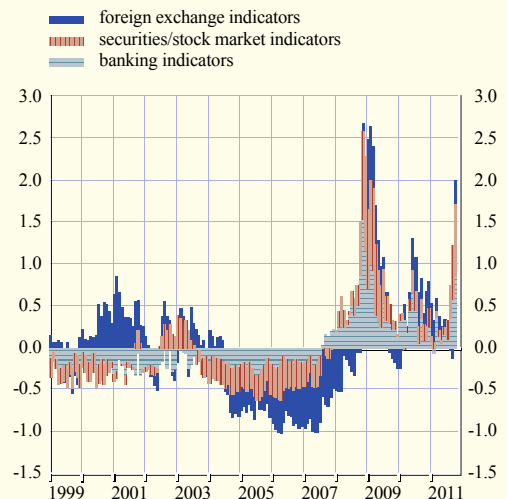
(scaled deviation from mean; quarterly data)



Sources: See the papers referred to in footnotes 5, 6 and 7 respectively.
 Note: All series are mean-adjusted and normalised such that they have equal standard deviation overall.

Chart B Breakdown of an indicator of financial market stress for the euro area

(contributions in percentage points; monthly data)



Source: See the paper referred to in footnote 7.

Lo Duca⁵ centres on the US stock market and is thus likely to reflect the impact of uncertainty relating to both broad economic and geopolitical events. Greiber and Lemke⁶ construct a proxy for the impact that uncertainty has on economic agents' liquidity preferences with the aid of: (i) medium-term returns on stocks and bonds; (ii) measures of stock market losses and volatility; and (iii) indicators of consumer and business sentiment. A wide range of financial market indicators serve as input for the indicators of uncertainty proposed by van Roye.⁷ The data used by Bekaert et al. relate to the United States, whereas the data used by Greiber and Lemke and van Roye relate to the euro area.

Chart B breaks van Roye's estimated measure of euro area financial market stress down into its three components, namely: (i) banking indicators; (ii) securities/stock market indicators; and (iii) foreign exchange indicators. This shows that, following calm financial market conditions between 2004 and 2007, all three sources of uncertainty have moved in the same direction since 2008, with banking shocks leading contributions by the other two components. The third quarter of 2011 saw sharp increases in the contributions by banking indicators and securities/stock market indicators, similar to the period following the collapse of Lehman Brothers in autumn 2008. This chart also illustrates the difference between the current financial crisis and the heightened financial, economic and geopolitical uncertainty underlying the portfolio shifts into money from 2001 to 2003. In that episode, the uncertainty was transmitted to the euro area, rather than originating here, so foreign exchange indicators made the largest contribution. Notably, in that period, banking and securities/stock market indicators partly offset the impact

5 See Bekaert, G., Hoerova, M. and Lo Duca, M., "Risk, uncertainty and monetary policy", *NBER Working Paper Series*, No 16397, National Bureau of Economic Research, 2010. This measure also provides an estimate of risk aversion.
 6 See Greiber, C. and Lemke, W., "Money demand and macroeconomic uncertainty", *Discussion Paper Series 1*, No 26, Deutsche Bundesbank, 2005.
 7 See van Roye, B., "Financial stress and economic activity in Germany and the Euro Area", *Kiel Working Papers*, No 1743, Kiel Institute for the World Economy, 2011.

of the increase in foreign exchange-related uncertainty. By contrast, during the current financial crisis – and particularly following the intensification of the sovereign debt crisis in August 2011 – banking and securities/stock market indicators have both been driving van Roye’s measure of uncertainty in the same direction.

Quantifying the impact that uncertainty has on monetary developments

Chart C indicates that uncertainty (as measured by the indicator constructed by Bekaert et al.⁸) had a significant impact on monthly M1 growth in August and September 2011. More specifically, analysis suggests that uncertainty accounted for around three-quarters of the total cumulative flow for those two months. These quantitative results indicate that the direct

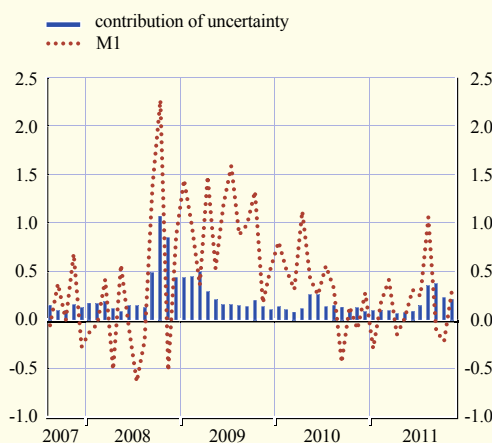
impact of uncertainty in those two months was only half the size of that observed in October and November 2008 (i.e. the two months following the collapse of Lehman Brothers). By contrast with the current period, autumn 2008 saw an acute, albeit short-lived, episode of distrust vis-à-vis the banking system, with nearly half of the uncertainty-related increase in M1 growth being accounted for by greater demand for euro banknotes (a large part of which originated from non-euro area residents). The uncertainty shock in August and September 2011 led mainly to higher levels of overnight deposits, as demand for banknotes did not increase significantly. Some of these funds were then shifted out of M1 in October and November 2011, reflecting persistent uncertainty, which led institutional investors in particular to move some previously parked funds into non-euro area assets. Households also reduced their holdings of overnight deposits in October and November 2011.

Conclusion

The current period is characterised by significantly heightened uncertainty in financial markets. This uncertainty has influenced the portfolio decisions of euro area firms, households and institutional investors, with the result that their holdings of monetary assets included in the narrow monetary aggregate M1 were considerably larger in August and September 2011 than would have been expected on the basis of standard determinants of money demand. However, a decline was observed in overnight deposits (and thus overall M1 holdings) in October and November 2011 in the face of continued uncertainty and persistent market tensions, which prompted some investors to move previously parked funds outside the euro area. A heightened degree of uncertainty can have a notable impact on portfolio choices, also affecting broader monetary aggregates. Consequently, the sources of euro area monetary growth need to be analysed carefully before firm conclusions can be drawn as regards the signal derived from underlying monetary developments in respect of price developments over the medium term.

Chart C Impact of uncertainty on M1 growth

(monthly percentage changes; contribution in percentage points)



Source: ECB estimates.

Note: For details of the methodology applied, see the paper referred to in footnote 8.

⁸ The quantification of the impact of uncertainty is derived from a monthly M1 model based on the analysis in Stracca, L., “The functional form of the demand for euro area M1”, *The Manchester School*, Vol. 71(2), 2003, pp. 172-204.