Box 1

STYLISED FACTS OF MONEY AND CREDIT OVER THE BUSINESS CYCLE

Over the past three decades, the growth rates of MFI loans to the private sector and the narrow monetary aggregate M1 have displayed relatively robust relationships with the business cycle. In annual growth rate terms, real M1 tends to lead real GDP fluctuations, while MFI loans to non-financial corporations tend to lag the business cycle and MFI loans to households tend to lead slightly, or follow a coincident pattern relative to, developments in real GDP.[1] These relationships to the business cycle tend to be stronger with reference to turning points than to the amplitude of growth. This box revisits the dynamic relationship between these monetary variables and the business cycle in the light of the pick-up in real GDP growth in the second quarter of 2013. It finds that the stylised facts remain valid and explains which forces are currently behind developments in loans and M1. At the same time, some uncertainty characterises these stylised facts, and various factors might lead to deviations from historical regularities.

Stylised facts for real M1 growth

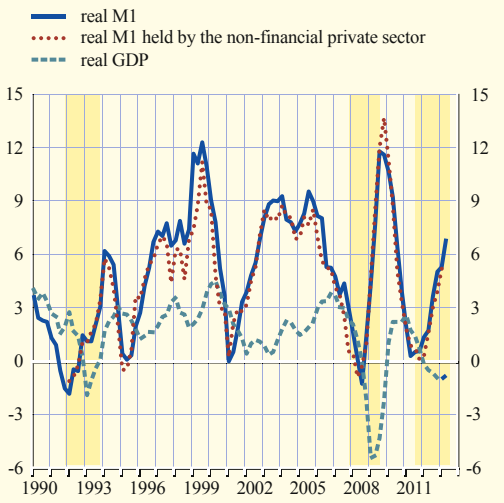
Annual M1 growth deflated by the GDP deflator has exhibited strong fluctuations in recent years (see Chart A). Notably, after the decline from 11.8% in the third quarter of 2009 to 0.3% in

1 See also the box entitled "Loans to the non-financial private sector over the business cycle in the euro area", *Monthly Bulletin*, ECB, October 2009, and the box entitled "The informational content of real M1 growth for real GDP growth in the euro area", *Monthly Bulletin*, ECB, October 2008.

the second quarter of 2011 it started a rebound towards the turn of the year 2011/12, climbing steadily thereafter. It stood at 6.9% in the second quarter of 2013. These developments are broadly in line with the observation that, on average, peaks and troughs in the annual growth rate of real M1 lead corresponding turning points in the annual growth of real GDP by three to four quarters. This relationship is explained mainly by M1 held by the non-financial private sector (see the table). As regards the most recent turning point, using this measure alone corrects for the rise in M1 holdings of large investment funds and other financial intermediaries between autumn 2011 and early 2012 that was driven by liquidity buffer considerations during periods of stress. If such factors are eliminated, the trough in the annual growth rate of real M1 held by the non-financial private sector occurs approximately one year ahead of the turn in the real economy, i.e. in line with historical regularities. In general, this reflects the fact

Chart A Real M1 growth and real GDP growth

(annual percentage changes)



Sources: ECB, Eurostat, ECB estimates and Centre for Economic Policy Research (CEPR).
Notes: The latest observation is for the second quarter of 2013. Shaded areas delimit recessions according to the chronology of the CEPR Business Cycle Dating Committee for the euro area. Real series have been derived by deflating nominal series with the GDP deflator.

Stylised facts of narrow money and loans to the private sector in the euro area, 1990-2013

Variable	Average annual growth rate	Standard deviation relative to real GDP	Correlation with real GDP		Lead/lag (+/-) of turning point relative to real GDP (quarters)
			Maximum correlation (percentages)	Lead/lag (+/-) (quarters)	
Real GDP	1.6	1.9			
Real M1	4.8	1.9	64	+4	+4
Real M1 held by the non-financial private sector [1]	4.6	1.8	68	+4	+4
Real M1 held by households [1]	4.5	1.9	57	+4	+4
Real M1 held by non-financial corporations [1]	5.1	2.2	71	+3	+3
Real M1 held by financial institutions [1]	9.8	5.2	52	+3	+3
Real private sector loans	4.4	1.7	61	-2	-1
Real non-financial corporation loans	4.0	2.3	70	-3	-3
Real non-financial corporation loans with a maturity of up to one year	1.9	3.5	83	-3	-2
Real non-financial corporation loans with a maturity of over one year	4.7	2.2	51	-3	-3
Real household loans	4.6	1.4	62	0	+2
Real house purchase loans	5.4	1.7	74	+1	+2
Real consumer credit loans	2.6	1.9	56	0	+4
Real other household loans	1.3	1.4	38	0	-1
Real financial institution loans	6.0	6.1	29	-8	-5

Sources: ECB, Eurostat, ECB estimates and ECB calculations.
1) Data are for the period from the first quarter of 1992 to the second quarter of 2013.
Notes: All series other than those covered by footnote 1 are for the period between the first quarter of 1990 and the second quarter of 2013. Real series have been derived by deflating nominal series with the GDP deflator. The last column shows the average lead (+) or lag (-) of the peaks and troughs of the monetary and loan series relative to real GDP, identified via the Bry-Boschan algorithm applied to the annual growth rates.

that changes in money can lead to changes in private sector portfolios and in yields on financial and real assets, which in turn affect real spending decisions owing to the imperfect substitutability of different assets.

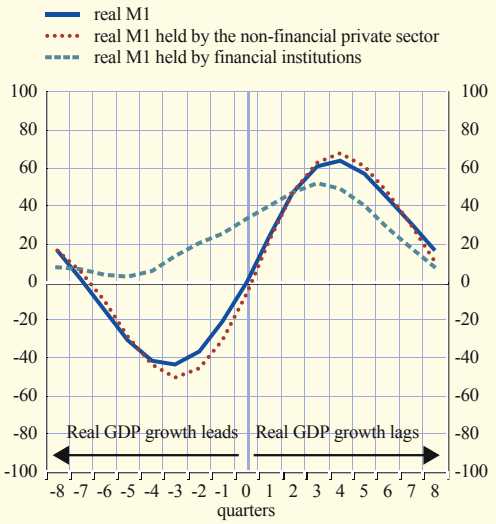
The close link between the turning points in real M1 growth and real GDP growth is also reflected in the dynamic correlation between the two variables (see Chart B). In addition, Chart B confirms that the leading indicator property of M1 is mainly due to the non-financial private sector, with both households and non-financial corporations contributing (see also the table).

Stylised facts for real private sector loans

Marked cyclical fluctuations also characterise the annual growth rate of real loans to the private sector, although with differences across the main components. Indeed, the annual growth rate of real household loans, which tends to move broadly in line with the business cycle, stabilised in the second quarter of 2013, after falling between the first quarter of 2011 and the first quarter of 2013 (see Chart C). The strong relationship between household loan growth and the business cycle is largely due to loans for house purchase, which are the main component of household loans. Loans for house purchase exhibit a strong correlation with real GDP growth and lead the cycle slightly, by one quarter on average (see Chart D). By contrast, the annual growth rate of loans to non-financial corporations deflated by the GDP deflator, which tends to lag the business cycle by about one year, declined continuously between the last quarter of 2011 and the second quarter of 2013. The strong relationship between real GDP and real loans to non-financial corporations is due mainly to the short-term loan component, i.e. loans with a maturity of up to one year, although the longer-term component is also correlated with the cycle and displays a similar lag (see also the table).

Chart B Correlation between real growth in M1 and sectoral components, and real GDP growth for different leads/lags

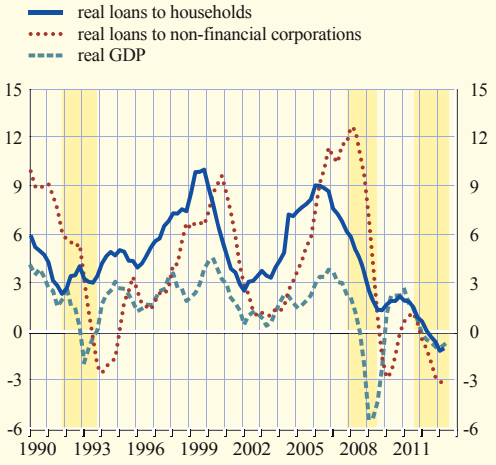
(correlation between annual percentage changes; percentages)



Sources: ECB, Eurostat, ECB estimates and ECB calculations.
Notes: Data are for the period between the first quarter of 1990 (except for the sectoral M1 components, which start in the first quarter of 1992) and the second quarter of 2013. Real series have been derived by deflating nominal series with the GDP deflator.

Chart C Real household loan growth, real non-financial corporation loan growth and real GDP growth

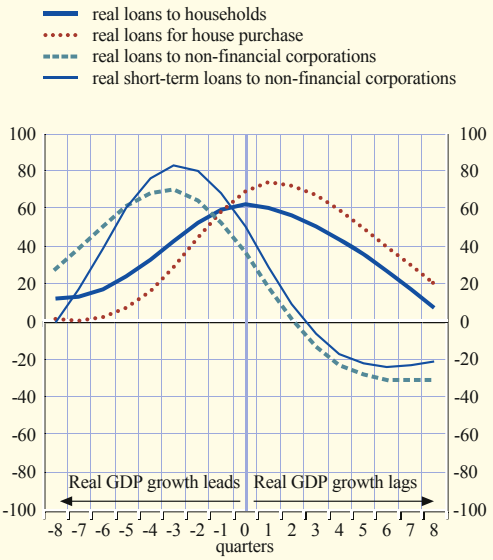
(annual percentage changes)



Sources: ECB, Eurostat and Centre for Economic Policy Research (CEPR).
Notes: The latest observation is for the second quarter of 2013. Shaded areas delimit recessions according to the chronology of the CEPR Business Cycle Dating Committee for the euro area. Real series have been derived by deflating nominal series with the GDP deflator.

Chart D Correlation between real growth in household loans, real growth in non-financial corporation loans, sub-components of the two series, and real GDP growth for different leads/lags

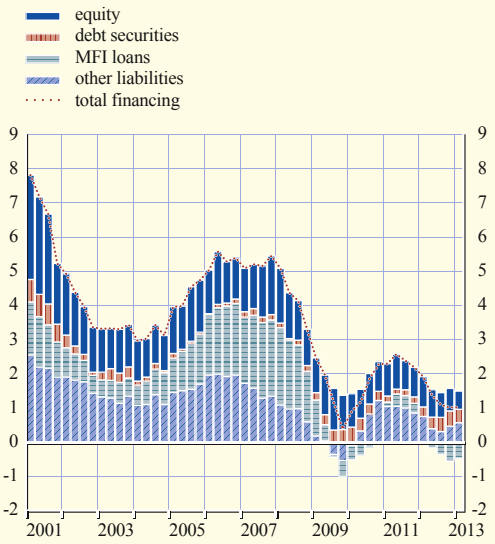
(correlation between annual percentage changes; percentages)



Sources: ECB, Eurostat and ECB calculations.
Notes: Data are for the period between the first quarter of 1990 and the second quarter of 2013. Real series have been derived by deflating nominal series with the GDP deflator.

Chart E Total financing of non-financial corporations and contributions

(annual percentage changes; contributions in percentage points)



Sources: ECB and Eurostat.
Note: Data are taken from the euro area accounts.

The lagging pattern of loans to non-financial corporations over the business cycle may have several explanations. For example, during recoveries firms can first finance investment expenditure using their internal funds – as cash flows improve during a recovery – and only later turn to external financing. In addition, especially larger firms may prefer to finance themselves by issuing corporate bonds when capital market conditions are favourable, rather than through increased bank borrowing, in part to limit their exposure to the banking sector. Such behaviour has recently been observed in some euro area countries, although the quantitative impact of this substitution on aggregate euro area loan demand has been modest (see Chart E). Moreover, on the supply side, during a recovery banks may prefer to increase their lending to households before they increase lending to firms, as household loans, notably those for house purchase, are better collateralised.

If historical regularities hold, and assuming that the annual growth rate of real GDP reached a trough in either the fourth quarter of 2012 or the first quarter of 2013, then the second quarter of 2013 may represent the start of a recovery in household loan growth, while non-financial corporation loan growth may continue to fall in the second half of the year and start to recover only in early 2014.

Conclusion

The cyclical pattern of money and credit indicators provides useful insights for the assessment of the growth outlook for the euro area economy. Indeed, the leading indicator properties of real narrow money growth for turning points in real GDP growth are robust, which also holds true for the most recent recovery. Moreover, when assessing whether the banking sector is supporting the

recovery, rather than delaying it, the lag of growth in loans to non-financial corporations relative to real GDP growth has to be borne in mind. In this respect, it is useful to consider developments in all sources of finance for firms, including internal sources and recourse to the capital market, to assess possible substitution effects.

At the same time, these relationships are not perfectly stable and specific factors can imply deviations from historical regularities. At present, four main special factors may affect these relationships at the euro area level. First, the high indebtedness of various sectors in some countries implies a longer and more extensive deleveraging process than usual. Second, regarding external sources of funding for non-financial corporations, the higher than usual substitution of corporate bond issuance for bank loans may imply a structural shift towards other sources of finance. Third, regarding internal sources of funding, euro area firms have accumulated higher than usual cash holdings, potentially indicating a change in their attitude to financing. Fourth, changes in regulatory requirements for banks may reinforce the move away from bank loans and towards other sources of corporate finance, at least for larger companies. In addition, the still significant level of financial and economic fragmentation in the euro area continues to weigh on loan supply in stressed countries.