

LOANS TO THE NON-FINANCIAL PRIVATE SECTOR OVER THE BUSINESS CYCLE IN THE EURO AREA

The annual growth in bank loans to the non-financial private sector has continued to decelerate in recent months. This development somewhat masks different tendencies across sectors. In the case of non-financial corporations, loan growth has remained on a downward path, while in the case of households, the earlier downward movement in loan growth has been levelling off in the most recent months. Differences in the timing of the turning-points of sectoral loan developments over the business cycle would correspond to historical regularities.¹ Available information suggests that the euro area economy is stabilising and expected to recover at a gradual pace. It may therefore be particularly interesting at the current juncture to review the empirical evidence on the evolution of loans in the past. Against this background, this box presents some stylised facts about the business cycle behaviour of sectoral loan growth and the uncertainties surrounding these facts.

The stylised facts of loan growth over the business cycle

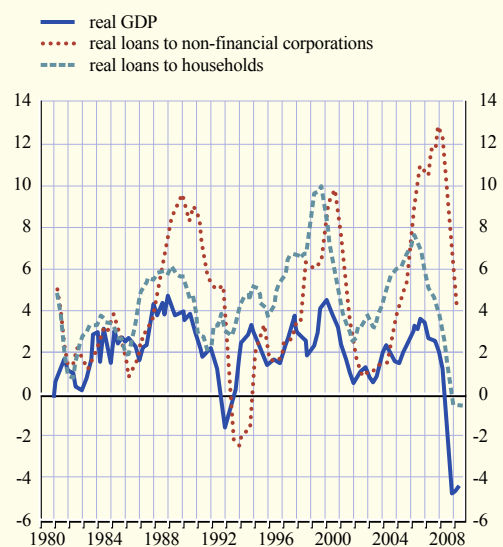
Since the early 1980s, the evolution in the growth of real loans to non-financial corporations and households seems to have been closely aligned with that in growth of real GDP (see Chart A). At the same time, there are clear differences in both the respective phases and the amplitudes of these different series.

As is shown in the table, correlation analysis suggests that in the case of households, the strongest link between real GDP growth and loan growth – a correlation coefficient of 67% – is established with an average lead of one quarter for loan growth. In the case of non-financial corporations, the strongest link – a correlation coefficient of 70% – prevails when loan growth lags the cycle by, on average, three quarters. These phase shifts also broadly hold when looking more narrowly at the turning-points. For household loans, for example, the lead is one quarter for the overall correlation and two for the turning-points. The lead in the case of loans to households mainly comes from the sub-component loans for housing purchase, while consumer credit and other lending to households seem to lag the cycle slightly.

The regularities reflect the different demand and supply factors which drive developments in loans to households and non-financial corporations. For instance, the slightly leading

Chart A Growth in real loans to the non-financial private sector and in real GDP

(annual percentage changes)



Sources: ECB and Eurostat.

Notes: All variables are deflated by the GDP deflator. Quarterly data. The last observation is for the second quarter of 2009.

¹ See also the box 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.

Stylised facts of loans to the non-financial private sector in the euro area

Variable	Average annual growth rate	Correlation with real GDP		Lead/lag (+/-) of turning-point relative to real GDP (quarters)
		Maximum correlation (%)	Lead/lag (+/-) (quarters)	
Real GDP	2.0			
Real loans to households	4.5	67	1	2
Real loans to non-financial corporations	4.5	70	-3	-3

Sources: ECB and Eurostat.

Note: Results are derived for the period from the second quarter of 1980 to the second quarter of 2009 and are based on annual growth rates.

behaviour of household loans may be explained by the fact that the decline in both house prices and interest rates during slowdowns typically encourages some households to resume their demand for housing loans when expectations for a recovery strengthen. By contrast, the lagging pattern of loans to non-financial corporations may reflect the possibility that firms first use their internal funds – as cash flows improve during the recovery – and only later turn to external financing. Finally, some supply-side factors may also be relevant, such as the possible preference of banks to increase their lending first to households during a recovery rather than to firms, as household loans, notably those for house purchase, are better collateralised.

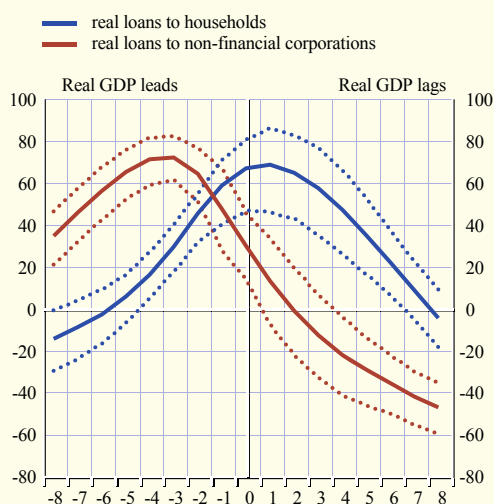
Uncertainty surrounding the stylised facts

When applying the regularities discussed above to the assessment of a specific situation, it is important to know how frequent and marked deviations from the average pattern can be. In other words, it is necessary to assess how much uncertainty characterises these regularities. For this purpose, three measures are presented below: (i) confidence bands around the correlation coefficients; (ii) rolling correlations; and (iii) the pattern of the lead or lag in turning-points over time.

The confidence bands around the dynamic correlations in Chart B confirm that the maximum correlation between real GDP growth and the growth in real loans to households, on the one hand, and non-financial corporations, on the other hand, is significantly positive (i.e. significantly greater than zero from a statistical point of view).² However, the maximum correlation between real GDP growth and growth in real loans to households leading

Chart B Correlations at different lead/lag shifts: growth in real loans to households and non-financial corporations relative to real GDP growth

(percentages)



Sources: ECB and Eurostat.

Notes: Based on annual growth rates from the second quarter of 1981 to the second quarter of 2009. The dotted lines refer to confidence bands, computed as the correlation coefficient plus and minus the standard error (calculated using the optimal bandwidth procedure from Newey and West). See also footnote 2 in the text.

² Confidence bands were computed using the non-parametric method to obtain heteroskedasticity and autocorrelation consistent standard errors as described in W. Newey and K. West, "Automatic lag selection in covariance matrix estimation", *Review of Economic Studies*, Vol. 61, 1994, pp. 631-653.

by one quarter is not statistically different from the coincident correlation, as can be seen by comparing the maximum correlation value with the value of the higher confidence band of the contemporaneous correlation. By contrast, the maximum correlation between real GDP growth and growth in real loans to non-financial corporations lagging by three quarters is statistically different from the coincident correlation.³ Thus, while the growth in real loans to non-financial corporations can safely be characterised as a lagging indicator of real GDP growth from a statistical perspective, this is not the case for the growth in real loans to households as a leading indicator.

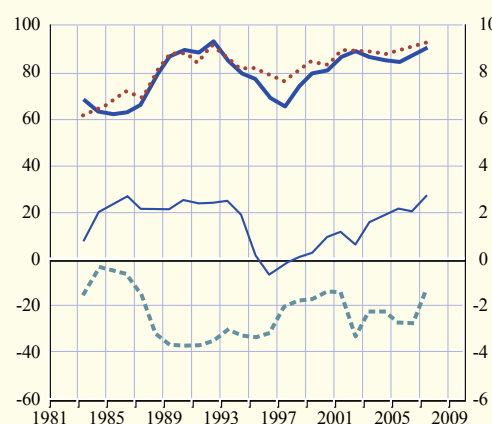
The rolling correlation coefficients in Chart C suggest that there is a fair amount of stability in the relationship between real GDP growth and sectoral loan growth, given that the maximum correlation for the individual time periods has mostly been well above 60% since the early 1980s.⁴ However, the leads and lags of loan growth at which this maximum correlation has been achieved seem to have changed more substantially over time. During the second half of the 1990s, growth in real loans to households appears to have moved more contemporaneously with real GDP growth, while it appears to have led during the rest of the period. By contrast, growth in real loans to non-financial corporations appears to have been consistently lagging. These statistics suggest that the relationship between loan growth and real GDP growth can at times deviate significantly from average developments.

This finding is also supported by the fact that the lead/lag relationship in turning-points varies over time (see Chart D). For example, while on average turning-points in the growth of real loans to households tended to lead peaks and troughs in real GDP growth by almost two quarters, this relationship varied between minus one (i.e. a lag of one quarter) to plus five (a lead of five quarters).⁵ Similarly, while turning-points in the growth of real loans to non-financial corporations tended, on average, to lag peaks and troughs in real GDP growth by about three quarters, this relationship varied between minus five and plus three. Moreover, in both cases some turning-points in real GDP growth were not associated with peaks and troughs in loan growth (such as in the late 1990s and mid-2000s). There is no clear evidence

Chart C Rolling correlations: growth in real loans to households and non-financial corporations relative to real GDP growth

(percentages; quarters)

— maximum correlation loans to NFCs (left-hand scale)
 maximum correlation loans to HHs (left-hand scale)
 - - - - - lead (+)/lag (-) of maximum correlation to NFCs (right-hand scale)
 — lead (+)/lag (-) of maximum correlation to HHs (right-hand scale)



Sources: ECB and Eurostat.

Notes: All variables are deflated by the GDP deflator. Based on annual growth rates from the second quarter of 1981 to the second quarter of 2009. Five-year averages were taken to show average developments over time. "NFCs" stands for non-financial corporations; "HHs" stands for households.

3 Note that these conclusions can be derived with reference to confidence bounds relating to both plus and minus the standard error as well as plus and minus twice the standard error.

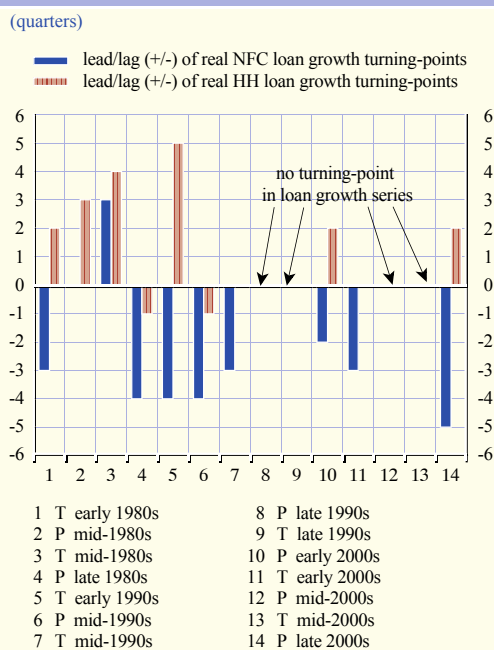
4 The period for the rolling correlations is three years, which is the average peak-to-peak duration of cycles in the annual growth series considered. Five-year averages were taken to show average developments over time.

5 Turning-points were determined using the so-called Bry-Boschan algorithm (see G. Bry and C. Boschan, "Cyclical analysis of time series: selected procedures and computer programs", *NBER Technical Paper Series*, No 20, National Bureau of Economic Research, 1971). This algorithm is typically applied to indicators of levels to detect classical business cycle phases, i.e. expansions and recessions. However, this algorithm also often produces reasonable results for growth rates. Very similar results are obtained by identifying turning-points by means of simple rules of thumb (based on assumptions relating to the duration of expansions and moderations) or more formal modelling approaches such as Markov-switching models.

of a relationship between the deviation from the average lead or lag of turning-points and the severity of economic downturns or the strength of upturns. On the one hand, looking at the early 1990s, which saw the most severe recession from the early 1980s until the most recent one in the euro area, the lead of the turning-point in household loans (five quarters) and the lag in non-financial corporation loans (four quarters) mark the largest deviations for troughs. On the other hand, the periods of strongest expansion, such as those in the late 1980s and early 2000s (when annual real GDP growth was close to 5%), do not seem to have been characterised by exceptional deviations in the lead and lag of the corresponding peaks in loan variables.

Overall, average historical regularities suggest that the annual growth of real loans to households slightly leads real GDP growth, but that growth in loans to non-financial corporations clearly lags growth in real GDP. Thus, the view that the euro area economy is stabilising and the anticipation of a gradual recovery would be consistent with the current levelling-off of household loan growth, but could also be expected to be accompanied by a further moderation in the growth of loans to non-financial corporations until at least early 2010. However, these average regularities are surrounded by uncertainty, which is particularly marked at the current juncture owing to still strained financial markets.

Chart D Relationships between turning points in growth in real loans to households, growth in real loans to non-financial corporations and in real GDP growth



Source: ECB and Eurostat.
Notes: Turning-points based on the Bry-Boschan algorithm. "NFC" stands for non-financial corporations; "HH" stands for households. "P" refers to peak and "T" to trough.