

THE INFORMATIONAL CONTENT OF REAL M1 GROWTH FOR REAL GDP GROWTH IN THE EURO AREA

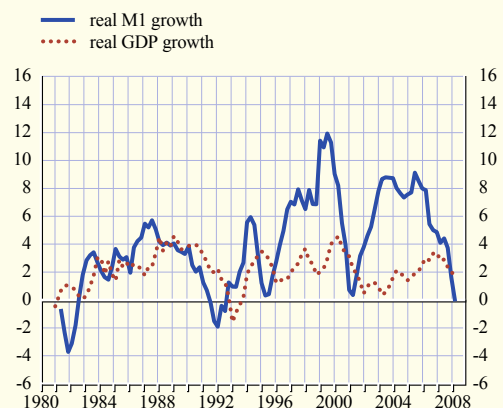
The narrow monetary aggregate M1 comprises currency in circulation and overnight deposits. While financial innovation in recent years has implied an increasing use of M1 assets for portfolio management, these assets nonetheless largely represent money balances held for transaction purposes. Therefore, M1 holdings should, at least in principle, bear a relatively close relationship to actual spending. The deceleration in M1 that started after the key ECB interest rates were raised at the end of 2005 brought the annual growth rate down to the historically low level of 0.2% in August 2008.¹ Depending on the strength of the connection between M1 holdings and spending, this may be seen as signalling a correspondingly strong deceleration in economic activity. Against this background, this box reviews the informational content of real M1 growth (deflated with the GDP deflator) for real GDP growth in the euro area. The analysis suggests that developments in real M1 growth provide reasonably good indications for the general direction of economic activity but less so for the magnitude of real GDP growth.

An analysis of the developments in the annual growth rates of euro area real M1 and real GDP suggests that these two variables exhibit different magnitudes of growth over time (see Chart A). This seems to be the case especially since the early 1990s, with fluctuations in real M1 growth being much larger than those in real GDP growth. A specific level of real M1 growth can thus not simply be mapped into a corresponding level of real GDP growth. At the same time, the chart also suggests that the two series display a considerable degree of co-movement and that real M1 growth often tends to lead developments in real GDP growth. Indeed, a relatively high maximum correlation value – about 53% – between the two series is found for real M1 growth leading real GDP growth by four quarters.² The correlation value reflects the degree of synchronicity between the two series, in other words how often the two series increase or decrease at the same time, irrespective of the relative magnitude of change.

This suggests that the informational content of developments in real M1 for real GDP growth relates mainly to the timing of turning points, i.e. the peaks and troughs in the cyclical pattern. Peaks and troughs can be identified in several different ways, typically leading to very similar results. Chart B, for example,

Chart A Real M1 and real GDP in the euro area

(annual percentage changes)

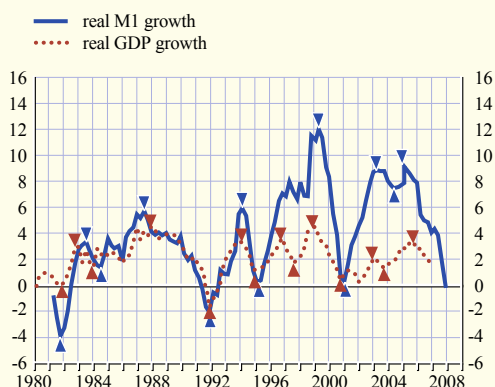


Sources: ECB and Eurostat.
Note: M1 deflated by the GDP deflator.

- 1 The annual growth rate of nominal M1 for August 2008 is at its lowest since the early 1980s. In real terms (deflated by the HICP), annual M1 growth was negative in August, at -3.7%, but this did not represent a historical low.
- 2 The highest correlation value found for real M1 growth leading real GDP growth by four quarters is very close to that found with a lead of three quarters.

Chart B Turning points in real M1 growth and real GDP growth in the euro area

(annual percentage changes)

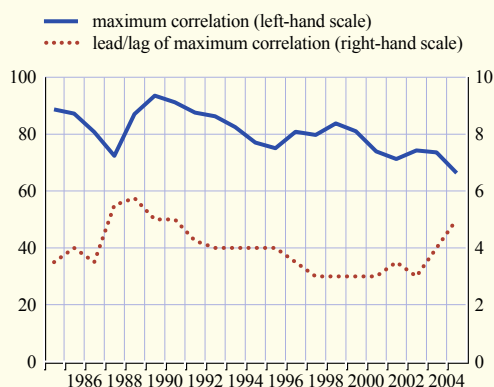


Source: ECB.

Notes: M1 deflated by the GDP deflator. The turning points are based on the Bry-Boschan algorithm. The real GDP series has been shifted back by one year.

Chart C Maximum correlation and corresponding lead/lag shift between real M1 growth and real GDP growth

(percentages; number of quarters)



Source: ECB.

Note: Based on an eight-year window; annual averages of quarterly centered values.

shows the turning points identified by means of an algorithm commonly used in business cycle analysis.³ Overall, taking into account an average lead of about one year, almost all peaks and troughs in the annual growth rate of real M1 tend to coincide with a corresponding turning point in annual real GDP growth. At the same time, the late 1990s are a case of when turning points in real GDP growth were not associated with turning points in the real M1 growth series. In other words, over the sample period from 1980 to 2007, there do not appear to be turning points in real M1 growth that are not followed by turning points in real GDP growth, while peaks and troughs in real M1 growth are not a strictly necessary condition for peaks and troughs to be observed in real GDP growth.

Notwithstanding an overall strong coincidence in the turning points, the phase shift between real M1 growth and real GDP growth is not always precisely four quarters. Chart C shows the number of lead quarters at which a maximum correlation between real M1 growth and real GDP growth is found for rolling periods of eight years (reflecting the average duration of “classical” business cycles).⁴ The lead fluctuates between a minimum of about 3 quarters (during most of the rolling periods centred around the late 1990s and early 2000s) and a maximum of almost 6 quarters (in the period centred around 1988). The chart also shows that the maximum correlation coefficient itself varies over time, ranging between 94% and 66%, and indicates that the link between M1 and GDP growth has become less strong in recent years.

Such changes in the overall relationship between real M1 growth and real GDP growth can be explained by specific factors affecting these two series in different ways. One example of

3 The algorithm used is the Bry-Boschan algorithm (see G. Bry and C. Boschan (1971), “Cyclical analysis of time series: selected procedures and computer programs”, NBER Technical Paper No 20). This algorithm is typically applied to indicators in 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.

4 The “classical” business cycle is represented by fluctuations in the level of economic activity. By contrast, “growth” or “deviation” business cycles refer to the fluctuations of economic activity around trend.

these factors is the prolonged period of a flat-shaped yield curve, which has affected M1 growth more strongly downwards since the end of 2005 than corresponds to an average cyclical pattern. Another example is the strengthening of M1 growth in the period of portfolio shifts between 2001 and 2003, a time when economic activity was relatively subdued.

In summary, developments in real M1 growth appear to have more informational content for future turning points in real GDP growth than for precise magnitudes of real GDP growth. This is confirmed by the fact that, in short-term forecasting models, M1 growth tends to have only a limited role.⁵ However, even in the case of turning points, the relationship is not perfectly stable at a specific lead time. Therefore, particular caution should be exercised in deriving possible implications for future real GDP growth developments on the basis of the average historical relationship of this variable with real M1 growth. The strength of this relationship should always be assessed against the specific factors operating in the period under analysis.

⁵ For more details on such models, see the article entitled “Short-term forecasts of economic activity in the euro area” in the April 2008 issue of the Monthly Bulletin.