

**SECTORAL MONEY HOLDINGS AND THE INFORMATION CONTENT OF MONEY WITH RESPECT TO INFLATION**

The link between longer-term or underlying developments in money and inflation is a robust empirical finding, which forms the cornerstone of the ECB's monetary analysis.<sup>1</sup> As discussed in the article entitled "Sectoral money holding: determinants and recent developments" in the August 2006 issue of the Monthly Bulletin, developments in sectoral money holdings can provide a major insight into whether current developments in M3 growth reflect the underlying rate of monetary expansion. Against this background, this box provides some preliminary findings on the information content of sectoral money holdings – in particular those of households – for euro area inflation. Data on sectoral money holdings are only available for the period from 1991 to mid-2006. Moreover, the sample is strongly affected by significant portfolio shifts into money between 2001 and mid-2003, a period of heightened geopolitical, financial and economic uncertainty. The results presented in this box are thus of a tentative nature and need to be interpreted with caution.

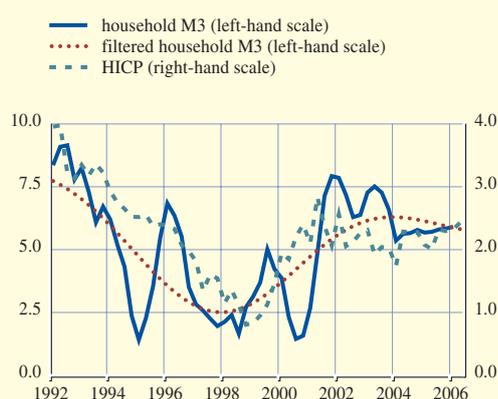
In assessing whether households' money holdings may exhibit better leading indicator properties with respect to euro area inflation than aggregate M3, two considerations need to be borne in mind. On the one hand, given the close connection between households' money holdings and their decisions on consumption spending, one might assume that households' money balances and consumer price inflation are more closely related than is the case for aggregate M3. On the other hand, by aggregating money holdings across different sectors to construct M3, idiosyncratic elements could be averaged out and substitution effects (e.g. between households' direct holdings of bank deposits and their indirect holdings through investment funds and other non-monetary financial intermediaries) might be internalised, such that the information content of money comes to the fore.

Chart A illustrates the link between the annual growth rate of households' M3 holdings and HICP inflation in the euro area. On the basis of the actual annual growth rates, the relationship between households' money holdings and inflation is not close. However, such measures of monetary dynamics are contaminated by "noise" in the quarter-by-quarter evolution of the monetary data. In order to evaluate the relationship between households' money holdings and inflation in a more meaningful way, the signal contained in the underlying dynamics of households' money holdings needs to be identified. For this purpose, a simple – albeit rather

<sup>1</sup> See Box 2 entitled "The use of simple structural filters to extract monetary signals concerning risks to price stability" in the article entitled "Monetary analysis in real time" in the October 2004 issue of the Monthly Bulletin.

Chart A Household M3 and inflation

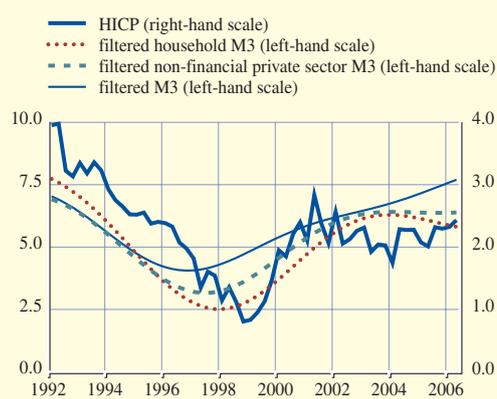
(annual percentage changes)



Sources: Eurostat and ECB estimates.  
Note: The filtered household M3 series represent the low-frequency component derived using a Christiano-Fitzgerald asymmetric bandpass filter, with cycles longer than seven years considered as trend developments.

Chart B Trend M3 and inflation

(annual percentage changes)



Sources: Eurostat and ECB estimates.  
Note: The filtered M3 series represent the low-frequency component derived using a Christiano-Fitzgerald asymmetric bandpass filter, with cycles longer than seven years considered as trend developments.

mechanical – measure of underlying growth of households' money holdings is constructed with the aid of a statistical filter. In empirical studies, the use of such statistical filtering techniques has proved a useful way to extract the underlying monetary dynamics relevant for price developments.<sup>2</sup> Comparing observed annual HICP inflation with the underlying developments in the growth of households' M3 holdings in this way demonstrates that the two series move together.

This simple analysis can be extended to the other sectoral contributions to M3 growth. Chart B shows similar measures of underlying monetary dynamics (labelled "filtered" money growth) for the household sector, the non-financial private sector (i.e. households plus non-financial corporations) and aggregate M3. All three series suggest a relationship between filtered money growth and inflation. In particular, the turning-point seen in these series in the late 1990s correlates with the rise in euro area inflation in the period from 1999 to 2002.

All three filtered money growth series shown in Chart B broadly demonstrate the same pattern. This reflects the dominant contribution of households' M3 balances to aggregate annual M3 growth. Filtered household money growth has the closest link with inflation. For example, the contemporaneous correlation coefficient of inflation and filtered household M3 is 0.76, compared with a coefficient of 0.61 in the case of filtered money growth for the non-financial private sector and a coefficient of 0.43 in the case of the filtered measure of aggregate M3. This would point to advantages in focusing on developments in households' M3 holdings in constructing a money-based assessment of the outlook for inflation.

2 The filter applied to derive the longer-term movements is the Christiano-Fitzgerald asymmetric bandpass filter, under which cycles longer than seven years are considered to be trend developments. For an application of this type of statistical filtering, see e.g. A. Bruggeman, G. Camba-Mendez, B. Fischer and J. Sousa, "Structural filters for monetary analysis: inflationary developments in the euro area", ECB Working Paper No 470, April 2005, and K. Assenmacher-Wesche and S. Gerlach, "Interpreting Euro Area Inflation at High and Low Frequencies", BIS Working Paper No 195, February 2006.

However, Chart B also shows that the turning-points in the filtered money growth series in the second half of the 1990s are not identical. Specifically, the turning-point in the series for the non-financial private sector leads that of underlying household M3 growth. Similarly, the turning-point in the filtered measure of aggregate M3 growth precedes that of the series of the non-financial private sector. Thus, the broader the sectoral coverage of the money series, the earlier the series predicted the upturn in euro area inflation. This observation would point to advantages in looking at aggregate money when using the monetary data as a leading indicator of inflationary pressures. At a conceptual level, traditional monetarist considerations suggest that the information content of monetary aggregates rests on the fact that they subsume the complex substitution processes that occur between a large variety of assets and have an impact on unobservable liquidity and risk premia.<sup>3</sup> Given the potential for substitution between households' money holdings and deposits of non-monetary financial intermediaries and/or non-financial corporations, aggregate M3 may capture some of these effects at an earlier stage than households' M3 holdings alone.

The analysis presented suggests that the link between longer-term developments in households' M3 holdings and HICP inflation may be stronger than that between longer-term developments in aggregate M3 and inflation. At the same time, however, aggregating the sectoral M3 holdings seems to improve the leading indicator properties of money in comparison with the household M3 series. These two results point to the need for comprehensive monetary analysis embodying both aggregate and sectoral approaches, as is currently conducted at the ECB. For example, this box suggests that the recent strength in the growth rate of non-monetary financial intermediaries' holdings of deposits in the euro area is difficult to interpret in terms of its implications for the outlook for price developments because of the volatility of the series. However, the analysis also suggests that developments in such sectoral deposit holdings should be carefully monitored because of their potentially important information content when assessed in the context of aggregate M3.

<sup>3</sup> See e.g. K. Brunner and A. H. Meltzer, "Liquidity Traps for Money, Bank Credit, and Interest Rates," *Journal of Political Economy* 76, pages 1-37, 1968.