

Is euro area money demand for M3 still stable?



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ABSTRACT

The aim of the paper is to reassess the issue of money demand stability by estimating a portfolio demand approach for broad money M3 in the euro area covering the sample 1999 to 2013. The question is relevant, since in view of the massive shocks observed since the start of the financial crisis in 2007 relationships may have changed. Overall, the paper finds that the main components of euro area M3 are largely stable and can be explained by fundamental factors such as a transaction variable and opportunity costs. Nevertheless, the analysis detects some instabilities originating from the demand for currency in circulation linked to the euro cash changeover and for marketable instruments in an environment of very low interest rates.

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1. Introduction

Owing to financial innovation, greater financial integration and the introduction of banknotes, the monetary policy transmission mechanism in the euro area has likely changed throughout monetary union (Angeloni, Kashyap, & Mojon, 2012). In fact, financial innovation has influenced the transmission mechanism and may have distorted the information content of monetary aggregates. In addition, large shocks in the aftermath of the financial crisis and the long period of exceptionally low interest rates have had an impact on the demand for financial instruments and therefore on the substitution relationships among the components of M3.

In the presence of institutional changes, financial innovation and a severe financial crisis, the analysis of the behaviour of the individual components of M3 can contribute to a better understanding of the driving forces of their dynamics. Previous studies have estimated the demand for M3 examining whether broad money demand is stable (e.g., Carstensen, 2004; Dreger & Wolters,

2006, 2010; Beyer, 2009). To the author's knowledge no recent study has examined the stability of euro area M3 with emphasis on the substitution relationships of its components. In this context, a previous study (Calza, Jung, & Stracca, 2000) using data on M3 for the period prior to the start of monetary union in Europe found that the main components of M3 may be subject to temporary disturbances, which in the past did not affect the overall stability of euro area M3. In view of the massive shocks observed since the start of the financial crisis in 2007 and the extraordinary responses of central banks, it is of broader interest to analyse whether these findings still hold.

The aim of the paper is to reassess the issue of money demand stability by estimating a portfolio demand approach for broad money M3 in the euro area. It does so by covering the sample 1999 to 2013 that is extending the sample used by Calza et al. (2000) by another 13 years and using genuine monetary union data. The approach applies cointegration analysis to the demand functions for the components of M3. Like most workhorse models, it provides a structural explanation of the demand for the components of M3 using drivers such as a transaction variable and opportunity costs. For example, the approach captures to what extent velocity shocks have impacted on the demand for the components. Relative to conventional money demand models, the present approach allows examining whether, owing to shocks during monetary union, substitution relationships within M3 have changed and whether this had an impact on the stability properties of M3.

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The paper is organised as follows. Section 2 provides a brief review of the literature. Section 3 explains the data used for this study. Section 4 presents the econometric approach and the results from the empirical analysis. Section 5 concludes.

2. Brief review of the literature

Since the European Central Bank (ECB) has emphasised the importance of analysing monetary developments, the empirical properties of money demand in the euro area are of key importance to policy-makers and to market observers. The literature has shown that a monetary policy assessment aimed at price stability can benefit from the valuable information contained in monetary aggregates (e.g., Papademos & Stark, 2010; Masuch, Nicoletti-Altamari, Rostagno, & Pill, 2003). In addition to the leading indicator properties of monetary aggregates, money demand models are of key importance to policy-makers. Such models provide a framework in which monetary developments can be explained by developments in other macro variables, such as economic activity, prices and interest rates.

Despite intensive research, there is no consensus concerning the stability (or instability) of money demand functions in general. Assessments on the stability of money demand functions have differed across time and country (Kahn & Benolkin, 2007; Calza & Sousa, 2003). In the euro area this relationship has been subject to intensive research. Prior to the financial crisis, several studies examining the empirical properties of euro area money found (long-run) money demand stability for the broad aggregate M3 (e.g., Fagan & Henry, 1998; Calza, Gerdesmeier, & Levy, 2001; Bruggemann, Donati, & Warne, 2003; Brand & Cassola, 2004).

Around the start of the financial crisis some signs of instability emerged in the conventional money demand functions. But, it could be shown that money demand stability remained favourable in money demand functions incorporating household wealth, thereby capturing the development of real money balances (Beyer, 2009). Approaches explaining cross border international portfolio allocations have been also in favour of money demand stability for euro area M3 (De Santis, Favero, & Roffia, 2013). In addition, approaches based on panel cointegration provide evidence in favour of a stable long-run money demand function for M3, suggesting that findings of instability in conventional functions could be attributable to an omitted variable (Nautz & Rondorf, 2011; Jung, 2015). A further point is that as a result of a wide range of distortions in the transmission mechanism in the aftermath of the financial crisis and the adoption of non-standard measures, this relationship may have been affected. But, a recent study (Dreger & Wolters, 2014) finds that the ECB's extraordinary measures did not introduce instability in the broad money demand relationships in the euro area.

While the intermediate monetary aggregate M2 enjoys particular prominence in the United States and some authors find it to be a better monetary aggregate than M3, empirical research for that aggregate in the euro area is scarce (Reynard, 2007). Some studies have examined the properties of narrow money M1 and found evidence in favour of money demand stability (e.g., Stracca, 2003). Likewise, only few authors have looked into the demand for currency in circulation for which some signs of instability were detected around the cash changeover of the euro, which took place in 2002 (Fischer, Köhler, & Seitz, 2004). Although the ECB is regularly providing an analysis of the components of M3 in its official publications (currency in circulation, overnight deposits, short-term deposits, marketable instruments), research on the main components of M3 in the euro area is scant (Calza et al., 2000; Jung, 2015).

In terms of methodology, linear models embodying error-correction mechanisms have become the standard

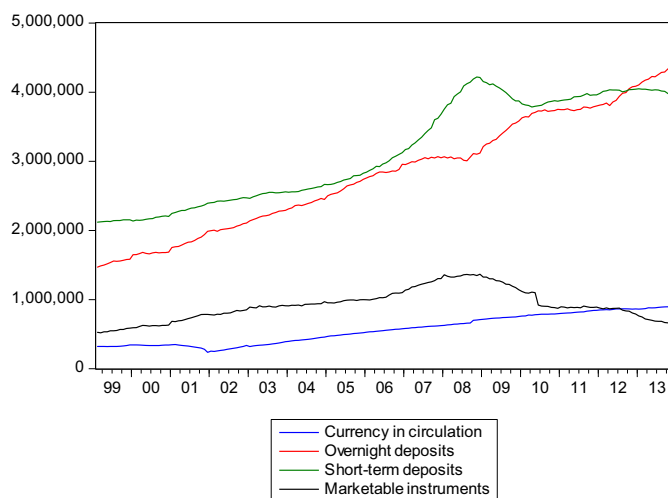


Chart 1. Development of the main components of M3 (EUR billions).

macroeconomic tool in the empirical literature on money demand (Duca & van Hese, 2004; Belke & Czudaj, 2010). In an environment with interest rates close to the zero lower nominal bound, non-linearities in the demand for money may occur. Non-linear specifications are in particular suitable to explain changes in the speed of the error-correction adjustment. Available evidence suggests that non-linearities may in particular be relevant for modelling the narrow monetary aggregate M1 (Calza & Zaghini, 2009), but less so for the broader aggregate M3 (Dreger & Wolters, 2006).

3. Data

This paper uses monthly data for the components of M3 for the euro area, the corresponding interest rates and quarterly data for nominal GDP for the euro area. It covers the period since the start of monetary union (i.e., 1999 to 2013). Measures of end-of-month outstanding amounts denominated in euro (source: ECB) are used for the four main components of M3 for the euro area (changing composition): currency in circulation (CC); overnight deposits (OD); short-term deposits (SD); marketable instruments (MI) (see Chart 1) and for M3. The data is working day and seasonally adjusted. In addition, as proxy for liquidity, we included a series for the euro area monetary base (MB) denominated in euro (changing composition, source: ECB). When estimating the demand functions, we use a series for both OD and SD, which adjusts for a statistical break owing to a reclassification by the ECB. It classified certain deposits redeemable at notice up to 3 months in Spain as overnight deposits as of June 2005 in order to ensure conceptual consistency. Nominal GDP for the euro area (changing composition) denominated in euro is the series reported by Eurostat which is compliant with ESA95 National Accounts. The quarterly GDP series has been converted into monthly frequency using a cubic spline technique. The data has been seasonally adjusted using the Census X-12 procedure.

Chart 2 shows various interest rate measures which can be used as proxies for the own interest rate and the alternative rate of interest for each component of M3. This paper uses interest rates for the euro area, since the focus of the analysis is on the euro area-wide transmission. In the euro area a capital markets union has not yet been accomplished. Unlike for other monetary unions no liquid markets for Eurobonds exist so far in the euro area. From a conceptual perspective, it would be preferable to model the demand for the components of M3 in relation to a risk-free rate on government bonds. In this context, a weighted average for all euro area countries has the disadvantage that during the financial crisis the

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