Money and credit overhang in the euro area

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ABSTRACT

In this paper, we employ panel co-integration techniques to identify and estimate homogeneous long-run equilibrium relations for money and credit for 10 euro area countries. Over the period 1999–2013, we do find evidence of such long-run relations when accounting for a structural break in 2008. While money and credit follow similar long run trends, the short and medium term relation between money and credit overhang is weak, throwing doubt on the hypothesis that money creating potential drives credit booms. Especially in current account deficit countries, we observe a sizable build-up of credit overhang prior to 2008. Positive (negative) credit overhang is strongly related to net foreign borrowing (lending).

1. Introduction

From the mid-1980s to 2007 – the so-called Great Moderation – interest in the dynamics of money and credit aggregates steadily declined, both in policy debates and in academic research. The empirical break-down of money demand equations in many countries caused central banks to switch to inflation targeting strategies, with the interest rate as prime policy instrument. Even the European Central Bank (ECB) in 2003 modified its earlier two-pillar strategy and downplayed the relevance of the development of its key monetary aggregate M3 when it consistently outgrew its reference growth rate of 4.5 percent.

The 2008 Global Financial Crisis has revived interest in the role of money and bank credit as determinants of macroeconomic development and in the relation between money and credit.[2] This is particularly relevant for the euro area for a number of reasons. First, the euro area traditionally depends to a much larger extent than Anglo-Saxon countries on bank-based credit. Second, the completion of the internal market and the introduction of the euro as a common currency have enormously increased the level of financial integration and have facilitated large capital flows between countries, which have larger and more persistent current account imbalances. In recent years, we have seen that this also leads to increased fragility of the financial system. Capital flight within the euro area has caused destabilizing effects in financial markets and on government finances. In addition, the interconnectedness of large banks operating throughout the euro

area has caused contagion effects and has shown the need for supranational macro-prudential regulation, resolution frameworks and rescue mechanisms. An improved understanding of money and credit dynamics can contribute to further insights into adequate monetary and financial policy.

In this paper we focus on the question to what extent and in which countries there has been excessive money and credit growth in the period prior to 2008. To determine the degree of excess money and credit, we estimate equilibrium relations for money and credit for the whole period 1999–2013 as well as two sub periods and test whether these are stable. We choose for a panel setup of 10 euro area countries to be able to exploit the heterogeneity in country-specific economic developments and to reduce omitted variable bias. Given the current debate on the potential role of cross-country imbalances in causing excess credit, we explicitly incorporate net foreign bank credit in our analysis. Based on our estimations, we compute money and credit overhang for each country and show the degree to which they are related to each other and to net foreign credit.

Overall, we find evidence of common long-run relations for money and credit respectively across euro area countries, whereby we need to account for a break around the 2008 crisis. Money and credit are seen to follow similar trends as they are roughly driven by the same variables. We show that especially the weaker, current account deficit countries in our sample – Ireland, Spain and Portugal – exhibit a substantial build-up over credit overhang prior to the crisis. The Northern countries on the other hand see declining and negative

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[1] Funded by China Scholarship Council(CSC).
[2] We refer to Schularick and Taylor (2012) for an overview of the different perspectives on money and credit over the past century.

overhang in this period. Net foreign credit is shown to be strongly related to the size of the overhang: including it into the analysis considerably reduces the estimated overhang for most countries. The short and intermediate relation between money and credit overhang is limited. This throws doubt on the hypothesis that it is the virtually unlimited money-creating potential of commercial banks that lies behind the emergence of credit booms. Countries can have a substantial credit build-up without strong money overhang and vice versa.

The paper is set up as follows. In Section 2, we will give a review on the literature about money and credit in the euro area. In Section 3, we formulate some hypotheses, introduce the empirical model we want to use for the analysis and briefly discuss the appropriate econometric methodology. Section 4 contains an overview of the sources of our data and their stylized characteristics. Section 5 presents and discusses the empirical results. Section 6 concludes.

2. Literature review

To provide a background for our analysis, we briefly survey the literature on money and credit, where we confine ourselves to literature related to the euro area. In Section 2.1 we discuss euro area money demand and potential monetary overhang. We pay attention both to research on the aggregate euro area money demand relation as to research that takes a disaggregate perspective, using individual country data.[3] In Section 2.2 we turn to a similar discussion of bank credit to the private sector in the euro area. We include the literature that analyzes the relation between domestic credit and external imbalances in this section.

2.1. Money demand in the euro area

The money demand function provides a theoretical framework for the relation between monetary aggregates, real activity and financial markets. The stability of money demand plays a dominant role in discussions on the appropriate form of monetary policy. There is a substantial empirical literature on euro area money demand. However, almost all research focuses on euro area wide aggregates and does not pay attention to the information in country-specific developments.

Early money demand studies for the euro area as a whole by Coenen and Vega (2001), Calza et al. (2001), Brand and Cassola (2004) employ standard specifications of money demand to provide suggestive evidence of the stability of a long-run euro area money demand function.[4] Later studies typically need to include additional variables such as stock prices, stock price volatility or cross- country capital flows, to retain money demand stability. Examples are Carstensen (2006), Dreger and Wolters (2010) and De Santis et al. (2013).

Only a few studies analyze euro area money demand using the information in country-specific developments of euro area members. Dedola et al. (2001) compare aggregate and national money demand estimations in the pre-euro era. Carstensen et al. (2009) compare money demand dynamics for the euro area (EMU) as a whole with that of its four largest member countries, Germany, France, Italy, and Spain. Nautz and Rondorf (2011), Setzer et al. (2011) and Setzer and Wolff (2013) perform a panel analysis where variables are defined in deviation of the euro area mean.[5] This provides more scope for finding a stable money demand function than for the euro area as a whole

because possible disturbing effects of common omitted variables are eliminated from the analysis. In theory, the approach allows for an analysis of heterogeneous monetary developments in euro area member countries. In practice, none of these three studies pays much attention to the consequences of the estimated money demand function for national monetary developments in comparison to the euro area as a whole.

We now turn to the issue of "excess money" or money overhang. Money overhang can best be defined as the (log) difference between the observed monetary aggregate and some equilibrium money stock. A theoretical motivation of "dis-equilibrium money" can be found in the buffer stock approach (see Laidler, 1984). Empirically, the most common approach is to derive the equilibrium level of the monetary aggregate from a co-integration analysis. Excess money then equals the error correction term, computed using actual values of the variables in the co-integrating relation, such as income and interest. Alternatively, HP filtered values of these variables can be inputted in the error correction term. We refer to Avouyi-Dovi et al. (2012) and Dreger and Wolters (2010, 2014) for examples of this strategy.[6]

A general criticism with respect to any of the above approaches to measure excess money when applied to a single country is that the co-integration analysis aims to find those in-sample coefficients which minimize the size and persistence of the error correction term. In practice, therefore, most money demand studies on the euro area level document limited monetary overhang. Dreger and Wolters (2010, 2014) for example argue that there is no evidence of excess money in the euro area in the early 2000s on the basis of such analysis. But in stark contrast to this finding, De Santis et al. (2013) document excessive euro area money growth after 2001 when using the coefficients from Calza et al. (2001) out of sample. Another signal of the inadequacy of this approach is that in euro area money demand research, the estimated income elasticity is strongly sample-dependent, suggesting it may serve as an absorption buffer for excess money empirically. Note that the panel co-integration analysis that we use is much less subject to this critique.

2.2. Credit in the euro area

The empirical literature on credit and its relation to economic developments in the euro area is much more limited than is the case for money. Calza et al. (2003) and Calza et al. (2006) estimate equations relating private sector credit to economic activity (GDP) and interest rates for the euro area as a whole. Their setup and purpose is similar to the money demand research discussed in the previous section as they try to establish the existence of a long-run equilibrium relation. Both studies report suggestive evidence of the existence of a stable long-run credit demand function.[7] They also compute a credit overhang measure using the error correction term and investigate to what extent it serves as a predictor of future inflation. The idea of credit overhang is strongly related to the theory of credit cycles and the corresponding pro-cyclicality of credit. The concept of credit cycles dates back to Schumpeter and Minsky. Kiyotaki and Moore (1997) provide a theoretical basis for such cycles. We refer to Borio (2014) for an overview.

Related work on credit dynamics in the euro area includes Hristov et al. (2012) and Darracq Paries et al. (2014). Both use a VAR

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[3] Since ECB monetary policy has been approximately formulated as an interest rate policy, money supply (at the aggregate level) has been endogenous and demand-determined. This is a fortiori the case for individual member countries, which are unconstrained in their demand preferences given the common monetary policy.

[4] These studies are typically based on the pre-euro period with samples ending in the late nineties. As a consequence, the euro area data are constructed from national series, using specific assumptions with respect to the conversion of exchange rates.

[5] Note that this is virtually the same as doing a panel analysis with time fixed effects. With time fixed effects the unweighted average across countries is used, whereas individual countries are included with a different weight in the euro area average.

[6] For alternative approaches, we refer to Masuch et al. (2001), De Santis et al. (2013) and Setzer and Wolters (2013). Kool et al. (2013) posit a long run relation for money and credit respectively based on the literature to compute equilibrium paths for these variables.

[7] They assume credit is demand determined, with commercial banks setting a lending rate at which they are able to provide an almost infinitely elastic supply. It is debatable whether this is still warranted, especially after 2008 when banks got constrained by bad loans and stricter regulation, leading to recapitalization requirements and lending constraints.