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What does money and credit tell us about real activity in the United States?[☆]

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ABSTRACT

We analyse the forecasting power of different monetary aggregates and credit variables for US GDP. Special attention is paid to the influence of the recent financial market crisis. For that purpose, in the first step we use a three-variable single-equation framework with real GDP, an interest rate spread and a monetary or credit variable, in forecasting horizons of one to eight quarters. This first stage thus serves to pre-select the variables with the highest forecasting content. In a second step, we use the selected monetary and credit variables within different VAR models, and compare their forecasting properties against a benchmark VAR model with GDP and the term spread (and univariate AR models). Our findings suggest that narrow monetary aggregates, as well as different credit variables, comprise useful predictive information for economic dynamics beyond that contained in the term spread. However, this finding only holds true in a sample that includes the most recent financial crisis. Looking forward, an open question is whether this change in the relationship between money, credit, the term spread and economic activity has been the result of a permanent structural break or whether we might return to the previous relationships.

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1. Introduction

Economists and forecasters alike were widely surprised by the sudden onset and the depth of the Great Recession of 2007–09. While the unprecedented scale of the recession was arguably quite challenging to be foreseen, the commonly held view is that most economic models failed to predict the financial crisis mainly because they were not taking sufficiently into account the interaction between financial variables and real activity. Moreover, against the background of modern monetary policy frameworks that have a substantial emphasis on inflation targeting, the analysis of monetary variables has lost some of its previous relevance (see for example, [Carlstrom & Fuerst, 2004](#)). Against this background, our aim is to revisit and explore the informational content of money and credit, in order to draw conclusions as to whether stronger attention should be set on such variables to improve the forecasting of US activity.

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The analysis of the role of money and credit for output has a long history. Empirical evidence on the money-output nexus for the United States is mixed.¹ On the one hand, Amato and Swanson (2001), Berger and Österholm (2009), Estrella and Mishkin (1997), Feldstein and Stock (1997) and Friedman and Kuttner (1992) tend to cast doubt on the role of money for predicting economic activity. In contrast, Aksoy and Piskorski (2005, 2006), Darrat, Chopin, and Lobo (2005), Favara and Giordani (2009), Hafer, Haslag, and Jones (2007), Nelson (2002), Swanson (1998) and Vilasuso (2000) find that there is information in money for predicting output. The latter authors often exclude certain monetary assets from the official aggregates or re-define money. For example, Darrat et al. (2005) emphasise that the forecasting power of money depends heavily on whether simple sum or Divisia measures of money are used, with positive results for money only holding for Divisia money; Aksoy and Piskorski (2005, 2006) exclude foreign holdings of cash in their analysis. In contrast, the older literature on the US economy usually found that official monetary aggregates play a causal role in output (see, e.g., Sims, 1972, 1980).

A large empirical literature has established statistically significant positive effects of credit growth to the non-financial sectors in the United States on (national and international) output growth (see, e.g. Gambetti & Musso, 2016; Lown & Morgan, 2006; Xu, 2012). Additionally, Schularick and Taylor (2012) demonstrate that credit growth is a powerful predictor of financial crises which, in turn, produce large output costs. Interestingly, and in contrast to the findings for the money-output relationship, the results for the United States with credit variables are not too different from those for the euro area (see, e.g., Gambetti & Musso, 2016). Den Haan, Sumner, and Yamashiro (2007) highlight the importance of distinguishing between different kinds of loans, especially between commercial and industrial loans on the one hand and real estate and consumer loans on the other.

Many authors have shown that interest rate spreads contain useful information for future real developments in the United States (see, e.g. Adrian & Estrella, 2008; Ang, Piazzesi, & Wei, 2006; Estrella & Trubin, 2006; Hamilton & Kim, 2002; Rudebusch & Williams, 2009).² This is especially true for the term spread – the difference between long-term and short-term rates. Many studies attribute the forecasting content of the term spread for activity to the impact that monetary policy has on both short- and long-term interest rates and thereby on output growth. A tightening of monetary policy undertaken to bring down inflation and stabilise the deviation of output growth around potential likely causes short term interest rates to rise by more than long term rates, leading to a flattening of the yield curve or a decline in the term spread. Adrian, Estrella, and Shin (2010) put forward another link between the term spread and economic activity, suggesting that when the term spread narrows, and since banks borrow short but lend long, the marginal loan becomes less profitable for the banks, leading to lower credit supply in the economy and consequently lower economic activity (the so-called risk-taking channel). However, the link between the term spread and activity seems to have become weaker or even disappeared since the mid-2000s (see De Pace & Weber, 2013, and the survey of Wheelock & Wohar, 2009).

In this paper, we use a comprehensive set of monetary and credit variables to investigate whether any of these helps to predict US GDP developments beyond the influence of interest rate spreads. Our results suggest that particularly narrow monetary aggregates as well as different credit variables do a good job in forecasting US GDP growth. In particular, our paper supports the view that for all forecasting horizons considered (up to 2 years), our small-scale VAR models with money or credit variables are able to outperform univariate AR models as well as a benchmark VAR with GDP growth and a term spread in rolling (and recursive) forecasting exercises over a sample that includes the most recent crisis period. In the pre-crisis sample, however, most of our selected VAR models with money or credit seem not to have additional information content for predicting GDP growth beyond the information contained already in the term spread.

Overall, our main findings suggest that money and credit variables together with the term spread should be taken into account when forecasting real activity in the United States. Nevertheless, these findings are mainly the result of the change in the relationship between real money, credit, the term spread and economic activity since the 2007–09 financial crisis. Looking forward, an open question is thus whether the change in this relationship is permanent or whether we might go back to the previous trends.

The remainder of the paper is organised as follows. In the next section, we describe the data used in the paper, whereas in Section 3, we introduce a single-equation approach to help select the money and credit variables to be used in the following forecasting exercises. In Section 4, we first describe the benchmark model, which will be used as a reference when assessing the relative forecast accuracy of different VAR models and, subsequently, the forecast results stemming from these VAR specifications. Section 5 concludes.

2. Data

We use seasonally-adjusted quarterly data for the sample 1985Q1–2014Q4. US activity is measured by chain-linked real GDP (at 2009 prices). As the yield curve, and especially the term spread, has proven to be a good leading indicator in the

¹ The evidence in the euro area seems to suggest that especially narrow monetary aggregates, such as M1, outperform the yield spread in terms of its predictive content for cyclical movements in GDP (see Brand, Reimers, & Seitz, 2004).

² This holds also for many other countries (see, e.g., Ivanova, Lahiri, & Seitz, 2000 and Buchmann, 2011). Nevertheless, Ratcliff (2013) finds that while the term spread is useful in predicting whether there will be a recession or not, it does a poor job in capturing the probability of a recession.

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