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Credit cycle coherence in the eurozone: Was there a euro effect? ☆

Anna Samarina ^{a,b,*}, Lu Zhang ^c, Dirk Bezemer ^b^a De Nederlandsche Bank, Westeinde 1, 1017 ZN Amsterdam, The Netherlands^b University of Groningen, Nettelbosje 2, 9700 AV Groningen, The Netherlands^c Utrecht University, Kriekenpitplein 21-22, 3584 EC Utrecht, The Netherlands

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ABSTRACT

This paper examines effects of the euro introduction on credit cycle coherence in the eurozone through six channels. We construct and describe credit cycles for total bank credit, household mortgages and non-financial business loans for 16 EMU economies over 1990–2015. Credit cycle coherence is measured by synchronicity of cycle movements and similarity of their amplitudes. We find that the effect of euro introduction runs through elimination of currency risk and higher capital flows, which decrease coherence of total credit and mortgage credit cycles, but increase coherence of business credit cycles. Falling interest rates contribute to the convergence of total and mortgage credit cycles. Financial deregulation and legal harmonization are associated with lower coherence of all credit cycles, while trade openness has the opposite impact. The findings impinge on monetary policy effectiveness in the eurozone, with implications for macroprudential policy.

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1. Introduction

The 2007 crisis and its aftermath sparked a revival of interest in credit cycles. Credit is 'back from the wilderness' (Borio and Lowe, 2004) and the credit (or financial) cycle was rediscovered (Borio, 2014). It is now broadly recognized that credit cycles may account for differences in growth and stability, and in policy impacts across countries, just as business cycle coherence matters to differences in policy effectiveness. Cycle coherence is especially relevant in the EMU with its common monetary policy, and many authors studied drivers of the eurozone business cycle coherence. In this paper we ask the same question for credit cycles. Did the euro introduction promote credit cycle convergence across the EMU? What are the channels through which a euro effect is transmitted? No one analyzed these questions to date, as far as we are aware.

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* Corresponding author at: De Nederlandsche Bank, Westeinde 1, 1017 ZN Amsterdam, The Netherlands.

E-mail addresses: a.samarina@dnb.nl (A. Samarina), LZhang1@uu.nl (L. Zhang), d.j.bezemer@rug.nl (D. Bezemer).

We recognize that credit is not homogeneous. There are large differences within and across countries in the growth of household mortgage credit and business credit and in their macroeconomic effects. In a balanced panel of 14 countries from 1990 to 2012 [Bezemer et al. \(2016\)](#) find an increase in mortgage loans as a percentage of total bank loans from 20% to 50% (see also [Jorda et al., 2016](#)). This change in credit allocation has implications for growth and stability. It may also impinge on monetary policy effectiveness, which depends on credit market conditions ([Bernanke and Gertler, 1995](#))—a concern that is especially relevant in the context of the single monetary policy.

In our empirical work we therefore define credit cycles for 16 EMU economies over 1990–2015 based on band-pass filters ([Drehmann et al., 2012](#)), for total bank credit but also for household mortgages and non-financial business loans separately. These are the two most important credit categories, jointly accounting for over 77% of the total stock of bank credit in our sample in 2015.

Following the methodology of [Mink et al. \(2012\)](#), for each credit aggregate we construct two measures for credit cycle coherence: in terms of synchronicity (do credit cycles move in the same direction?) and similarity (do credit cycles have similar amplitudes?). We then ask if the euro introduction increased credit cycle coherence, and analyze the question using ordered probit and tobit models. We account for several channels of the euro introduction effect. We find that the effect of euro introduction runs through elimination of currency risk and higher capital flows, which decrease coherence of total credit and mortgage credit cycles, but increase coherence of business credit cycles. Falling interest rates contribute to the convergence of total and mortgage credit cycles. Financial deregulation and legal harmonization are associated with lower coherence of all credit cycles, while trade openness has the opposite impact. We undertake extensive robustness analyses, studying the pre-crisis period as distinct from the 1990–2015 sample; 8 non-EMU economies as distinct from 16 EMU countries; and cycles based on real credit as distinct from credit/GDP ratios. The findings underline the importance of differentiating between credit types in understanding credit cycles, and differentiating between the channels of euro introduction effect.

The next section discusses motivations for the present paper, exploring the linkages between credit cycles, credit composition, and monetary union. In Section 3 we construct credit cycles and coherence measures, and in Section 4 we explore data trends. Section 5 presents the empirical analysis of the channels through which EMU membership might have affected credit cycle coherence. Section 6 concludes with a summary and reflection on the findings and their policy relevance.

2. Credit cycles, credit composition and common currency areas

A key motivation for our paper is that common-currency benefits are larger if member states show larger similarity in their macroeconomic shocks and in their (business) cycles, as the theory of optimum currency areas (OCA) indicates ([Mundell, 1961](#); [Frankel and Rose, 1998](#)). This has sparked an extensive literature on business cycle convergence within the European Economic and Monetary Union (EMU). Some studies find evidence for increased correlation of business cycles within the EMU, particularly after euro adoption ([Crespo-Cuaresma and Fernández-Amador, 2013](#); [Enders et al., 2013](#); [Gächter and Riedl, 2014](#)), others report weak output coherence with no effects of the euro changeover ([Giannone et al., 2008](#); [Canova et al., 2012](#); [Mink et al., 2012](#)). In addition, business cycles have de-synchronized since the onset of the global financial crisis ([Gächter et al., 2012](#)). Did the euro increase or decrease coherence of cycles within the EMU?¹ In the present paper we ask the same question for credit cycles in the euro area.

The question is innovative; we are not aware of previous studies of the euro's effect on credit cycle coherence. Research interest in EMU financial or credit cycles is still scant ([Aikman et al., 2015](#)), a deficit which may have theoretical reasons. A currency union implies financial integration (e.g., [Ingram, 1969](#); [Mundell, 1973](#); [Rose and Engel, 2002](#)), but OCA theory is silent on financial optimality conditions.² This literature motivates the study of financial and credit market conditions in the eurozone.

And yet there is a natural motivation to focus on credit conditions in OCA. Its theoretical emphasis on shocks puts credit markets center stage in understanding the optimality of monetary union. Credit may amplify or even originate shocks, as in [Kiyotaki and Moore \(1997\)](#), [Brunnermeier and Sannikov \(2014\)](#), [Boissay et al. \(2016\)](#), or in Minsky's 'Financial Instability Hypothesis' ([Minsky, 1978](#)). Monetary policy shocks may affect bank capital and lending (e.g., [Kishan and Opiela, 2000](#); [Stein and Kashyap, 2000](#); [Mishkin, 2001](#); [Ashcraft, 2006](#)). All this suggests that in addition to well-known factors such as capital flows ([Lane, 2006](#)), international portfolio diversification ([McKinnon, 2002](#)) and integration of financial markets ([Baele et al., 2004](#); [Kim et al., 2005](#)), the coherence of credit cycles in the EMU is important to stability threats and monetary policy effects in the common currency area.

Mortgages, which connect credit markets and real estate asset markets, take on particular relevance in this context – especially given their abundant growth in recent years. Asset market shocks may have real effects through the bank lending channel, by changing banks' balance sheet strength and risk perception, as well as borrowers' net worth and willingness to borrow ([Black et al., 2010](#); [Davis and Zhu, 2009](#); [Disyatat, 2011](#); [Jiménez et al., 2012](#)). The literature finds that household

¹ See e.g., [De Haan et al. \(2008\)](#) for a survey of studies on business cycle convergence in EMU.

² This neglect in OCA theory of credit was criticized by [Goodhart \(1998\)](#), who argues that it leads to the neglect of the sustainability of debt structures and of political underpinnings of a viable currency union. Others argue that OCA theory should include optimality conditions on capital flows and integrated credit markets, in analogy to optimality conditions on labor mobility ([Priewe, 2007](#)). [Praet \(2014\)](#) points to the possibility that financial factors may contribute to capital misallocation.

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