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Cross-border banking flows spillovers in the Eurozone: Evidence from an estimated DSGE model



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ABSTRACT

This paper seeks to evaluate quantitatively how interbank and corporate cross-border flows shape business cycles in a monetary union. Using Bayesian techniques, we estimate a two-country DSGE model that distinguishes between Eurozone core and peripheral countries and accounts for national heterogeneities and a set of real, nominal and financial frictions. We find evidence of the key role of this cross-border channel as an amplifying mechanism in the diffusion of asymmetric shocks. Our model also reveals that under banking globalization, most national variables and the central bank interest rate are less sensitive to financial shocks while investment and current account imbalances are more sensitive to financial shocks. Finally, a counterfactual analysis shows that cross-border lending has affected the transmission of the recent financial crisis between the two groups of countries.

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1. Introduction

By eliminating currency risk, the adoption of the euro in 1999 generated forces for a greater economic and financial integration. The single currency reshaped financial markets and international investment patterns by enhancing cross-border banking activity between the members of the European Monetary Union (EMU). This phenomenon can be measured along various complementary dimensions such as the increase of FDI in bank activities, the diversification of bank assets and liabilities between countries, the access of local banks to international financial sources or through the increase of banks' lending via foreign branches and direct cross-border lending.

This paper focuses more specifically on the consequences of the rise in cross-border loan flows observed since the adoption of the Euro in 1999. Cross-border lending is a distinguishing feature of financial integration in the Eurozone:¹ it has been multiplied by 3 in 9 years, reaching a peak value of 120% of GDP in 2008, before experiencing a 25% decrease after the

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recent financial crisis. Taking a closer look at the data, this cross-border phenomenon is heterogeneous: it affects mainly interbank lending while cross border corporate lending is much small and cross-border lending to households is negligible.²

We develop a two-country DSGE model to document how the transmission of asymmetric shocks in the Eurozone has been affected with a banking system that provides cross-border interbank and corporate lending facilities. This solution is original with respect to the existing literature of monetary policy issues in a monetary union. Indeed, most papers related to this topic can roughly be separated in two strands. On the one hand, one-country models such as Gerali et al. (2010), Darracq-Pariès et al. (2011) and Christiano et al. (2010), assume complete banking integration so that all countries are impacted in the same way by the ECB monetary policy. On the other hand, two-country models such Kollmann et al. (2011) ignore the possibility of cross-border funds. In the meanwhile, the fewer models that adopt a middle of the road solution by assuming an imperfect integration of the loan market (Faia, 2007; Dedola and Lombardo, 2012; Ueda, 2012; Dedola et al., 2013) do not account for the above-mentioned heterogeneity in Eurozone cross-border loan flows.

Our paper brings theoretical and empirical contributions. To keep the model tractable, we analyze cross-border loans through home bias in the borrowing decisions concerning interbank and corporate loans using CES function aggregates.³ Cross-border banking flows are introduced analogously to standard trade channel assuming CES function aggregates. This modeling strategy is flexible as it allows treating in a more compact way two levels of cross-border lending related to interbank loans and corporate loans. The heterogeneity between national financial systems is accounted for through different interest rate set by financial intermediaries. In our setting, bonds are mainly used, as in the intertemporal macroeconomics literature, to allow households to smooth intertemporally consumption and countries to finance current account deficits. Thus, our model does not truly introduce banking but rather reinterpret the financial accelerator from a banking perspective.⁴

To enhance the empirical relevance of the model we introduce a set of nominal, financial and real rigidities. We estimate the model on quarterly data using Bayesian techniques over a sample time period running from 1999Q1 to 2013Q3. The estimation procedure is implemented by splitting the Eurozone in two groups of countries, the core and the periphery. According to our estimates, we find that accounting for cross-border loans strongly improves the fit of the model.

In this setting, we find evidence of the role of cross-border lending channel as an amplifying mechanism for the transmission of asymmetric shocks. First, using Bayesian impulse response functions, we get two main results. In all cases, cross-border lending leads to more diverging investment cycles following either real or financial shocks and, as a consequence, clearly affects the dynamics of the current account with respect to the segmentation of the loan market. Furthermore, by affecting the liquidity of national banking systems, cross-border loans amplify the transmission of a negative financial shock on aggregate activity in the Eurozone. Second, an analysis of the historical variance decomposition shows that for most variables cross-border lending has reduced the impact of national financial shocks on national variables while it has increased the effect of financial shocks on the bilateral current account between core and peripheral countries. Third, we perform a counterfactual exercise to evaluate the effect of cross-border banking in the transmission of the financial crisis between the two groups of countries. We find that peripheral countries have been much more affected by the crisis through a deeper impact on interbank loan shortage and that the degree of cross-border banking affects the time path of the main national macroeconomic indicators.

The rest of the paper is organized as follows: Section 2 presents some stylized facts and a quick summary of the related literature. Section 3 describes the financial component of model. Section 4 presents the real component of the model. Section 5 presents the data and the econometric method. Section 6 uses Bayesian IRFs to evaluate the consequences of cross-border bank lending on the transmission of asymmetric real and financial shocks. Section 7 provides a quantitative evaluation of the consequences of cross-border flows on the volatility of representative aggregates. Section 8 concludes.

2. Stylized facts and related literature

2.1. Cross-border lending in the Eurozone

Cross-border lending is a distinguishing feature of financial integration in the Eurozone. As reported in Fig. 1, between 1999Q1 and 2012Q1, cross-border loans have increased much more between participating counties than between the Eurozone and the European Union, and even much more than with countries outside Europe. The rise in cross-border loans is peaking in 2008, where cross-border loans represented 300% of the value initially observed in 1999. The financial crisis is characterized by a 25% drop in cross-border lending between Euro partners. In 2008, cross-border lending represented around 120% of GDP for Eurozone countries at its peak value.

² As underlined by Fig. 2, European banks mainly finance foreign banks on the interbank market and foreign firms on the corporate credit market while mortgage and deposit markets remain strongly segmented in the Eurosystem.

³ Home bias in the borrowing decisions catches up some extra costs involved by cross-border activities, such as increasing monitoring costs due to the distance and differences in legal systems and payments. These iceberg costs are closely related to home bias as underlined by Obstfeld and Rogoff (2001).

⁴ As a first modeling choice, we do not attempt to model explicitly the balance sheet of the banking system but we try to capture the key elements relevant to our analysis, namely the way the accelerator is affected by cross-border lending. We thus depart from some recent papers where the balance sheet of the banking system lies at the heart of the analysis such as Angeloni and Faia (2013) (that provide an integrated framework to investigate how bank regulation and monetary policy interact when the banking system is fragile and may be subject to runs depending on their degree of leverage) or Gertler and Karadi (2012) (where financial intermediaries face endogenously determined balance sheet constraints to evaluate the effects of unconventional monetary policy decisions to dampen the effect of the financial crisis).

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