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## Lending-of-last-resort is as lending-of-last-resort does: Central bank liquidity provision and interbank market functioning in the euro area<sup>☆</sup>

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### ABSTRACT

This paper investigates the impact of ample liquidity provision by the European Central Bank on the functioning of the overnight unsecured interbank market from 2008 to 2014. We use novel data on interbank transactions derived from TARGET2, the main euro area payment system. To identify exogenous shocks to central bank liquidity, we exploit the timing of ECB liquidity operations and use a simple structural vector auto-regression framework. We argue that the ECB acted as a de facto lender-of-last-resort to the euro area banking system and identify two main effects of central bank liquidity provision on interbank markets. First, central bank

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liquidity replaces the demand for liquidity in the interbank market, especially during the financial crisis (2008–2010). Second, it increases the supply of liquidity in the interbank market in stressed countries (Greece, Italy and Spain) during the sovereign debt crisis (2011–2013).

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## 1. Introduction

The task of a Lender Of Last Resort (LOLR) is to provide liquidity to the banking system in case of a systemic liquidity crisis. The operational framework of the ECB and the European System of Central Banks does not contain any formal reference to the LOLR function. However, in this paper we argue that by providing unlimited liquidity against good collateral, and arguably at a penalty rate, since October 2008, the ECB acted as a de facto LOLR for the whole banking system of the euro area.

We document how such de facto “lending-of-last-resort” to the banking system impacts the unsecured overnight interbank market, which is the place where banks trade central bank liquidity (reserves). To do so, we exploit a novel and comprehensive data set on overnight unsecured interbank transactions in the euro area from 2008 to 2014. Our main finding is that the impact of the ECB’s liquidity provision on interbank market activity is heterogeneous: It affects the demand and supply in the private market-place differently across space (countries) and time (financial versus sovereign debt crisis). Three sets of results stand out.

First, the increase in central bank liquidity provision replaced the demand for reserves in the overnight unsecured interbank market, especially during the global financial crisis period (2008–2010). The ECB “took over” the liquidity provision role of the interbank market. Given that interbank markets came under severe stress in the aftermath of the Lehman bankruptcy, the ECB indeed acted as a lender-of-last-resort to the euro area banking system.

Second, the provision of central bank liquidity not only “replaced” the interbank market, it also stimulated the supply of liquidity, especially to banks located in stressed countries (Greece, Spain and Italy) during the European sovereign debt crisis (2011–2013). Reinsuring the banking system therefore can have important extra benefits as it can stimulate bank lending (at least in interbank markets).

Third, the impact of central bank liquidity provision was highly uneven across the euro area. This is both a blessing and a curse. The ECB’s liquidity provision was able to counter-act the capital flow reversal which took place during the sovereign debt crisis when interbank markets became fragmented along the national lines. But it shows how the ECB’s actions, which are by design uniform across the euro area, played out differently in different parts of the euro area. For example, the German banking system witnessed a considerable inflow of liquidity, almost completely crowding out demand by German banks. This led to a low volume of trading and, in particular, to low interest rates in the interbank market.

Examining the interplay between central bank liquidity provision and interbank market activity presents a number of empirical challenges. The vast majority of interbank transactions take place in over-the-counter markets. There is no centralized record-keeping of transactions and of the resulting volumes and interest rates. In the euro area, an often-quoted overnight rate, the EONIA, which also acts as the euro area reference rate, is based on daily aggregated lending information reported by a selected group of large banks. In the presence of market malfunctioning, there is no guarantee that the interbank activity of this group of banks is representative for either the entire euro area or individual euro area countries. We deal with this challenge by reconstructing overnight loans from the Eurosystem payment system (TARGET2), employing a [Furfine \(1999, 2001\)](#)-type algorithm. In particular, we are able to identify the countries in which lenders and borrowers are located. We construct our dataset based on the location of borrowers and consider four countries, Germany, Greece, Italy and Spain, as well as the euro area as a whole.

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