A model of the Eurosystem's operational framework and the euro overnight interbank market

Achim Hauck, Ulrike Neyer

Heinrich-Heine-University Duesseldorf, Department of Economics, Universitaetsstrasse 1, 40225 Duesseldorf, Germany
University of Portsmouth, United Kingdom

Abstract

This paper develops a theoretical model which replicates main institutional features of the euro overnight interbank market and the Eurosystem's operational framework which has been in place since September 2008. Main ingredients of the model are frictions in the form of participation costs in the interbank market, a refinancing operation with unlimited liquidity supply and two standing facilities offered by the central bank. The model can explain several stylized facts observed during the financial crisis as the decline in interbank borrowing and the interbank rate, the increased borrowing from the Eurosystem and the strong recourse to its deposit facility. Furthermore, we discuss some policy implications.

Keywords:
Liquidity
Monetary policy implementation
Interbank market
Financial crisis

1. Introduction

The worldwide financial crisis, which broke out in August 2007, triggered severe turbulence in the euro area interbank markets. Particularly the collapse of Lehman Brothers in September 2008, the advent of the Greek sovereign debt crisis in December 2009, and the culmination of sovereign debt problems in several euro area countries in summer 2011 had a deep impact on these markets. During these periods, transaction volumes fell dramatically and the interest rate for overnight interbank lending, which is usually slightly above the Eurosystem’s key policy rate, declined significantly below this rate. At the same time, aggregate borrowing of euro area commercial banks from the Eurosystem but also their use of the Eurosystem’s deposit facility rose sharply.

This paper develops a theoretical model of an interbank market which captures the main institutional features of the euro area. The model shows that interbank market participation costs play a crucial role for explaining the stylized facts observed in the euro area. In addition, it allows to discuss some policy implications.
In our model, there is a commercial banking sector consisting of two types of banks. One type faces an uncertain liquidity deficit while the other type faces an uncertain liquidity surplus. At the aggregate level, the banking sector faces a net liquidity deficit which can only be covered by the central bank. The commercial banks can obtain unlimited liquidity from the central bank by borrowing against collateral in a central refinancing operation or a lending facility. Moreover, the banks can place liquidity at the central bank by using a deposit facility. The interest rates on the refinancing operation and the two facilities are set by the central bank. The commercial banks can also lend and borrow liquidity in an interbank market to balance their individual liquidity needs. This market is characterized by frictions. Commercial banks that borrow in the interbank market are confronted with interbank market participation costs which reflect signaling costs, search costs, or reputational costs.

The model shows that the banks’ optimal borrowing in the central bank’s refinancing operation, their activities in the interbank market and their recourse to the central bank’s facilities depend on these participation costs. If participation costs are relatively low, the aggregate liquidity demand in the refinancing operation will correspond to the net liquidity deficit of the banking sector. Then, the commercial banks will use the interbank market to balance their individual liquidity needs. In this case, the facilities offered by the central bank remain unused. However, if borrowers’ interbank market participation costs exceed a critical level, it will become more attractive for deficit banks to cover a higher part of their liquidity needs in the central bank’s refinancing operation instead of using the interbank market. In this situation, the crucial point is that aggregate borrowing from the central bank will exceed the aggregate liquidity needs. There will be excess liquidity in the banking sector. As a consequence, the interbank market rate as well as the transaction volume in the interbank market will decrease and the surplus banks are forced to place liquidity in the central bank’s deposit facility. Thus, the central bank will replace the interbank market by assuming an intermediary function between liquidity surplus and liquidity deficit banks.

Often it is argued that the observed massive recourse to the central bank’s deposit facility during the financial crisis reflects excess liquidity held for precautionary motives (see, for example, Trichet, 2009). Our model shows that precautionary motives are unlikely to be the sole explanation for this observation because hoarding liquidity in the deposit facility as a precaution is rather expensive compared to using the credit facility if necessary. Considering explicitly the institutional background in the euro area, the model provides a further explanation for the large amounts of liquidity placed in the deposit facility. Due to a significant increase in interbank market participation costs during the financial crisis, the central bank has acted as an intermediary between surplus and deficit banks.

The Eurosystem aims at reversing its intermediary function and at reactivating interbank market transactions (Smaghi, 2008). Compared to a centralized interbank market, in which the central bank assumes the role of an intermediary, a decentralized interbank market is viewed to improve the efficiency of the liquidity allocation for three main reasons. First, interbank markets are characterized by informational asymmetries and commercial banks are in a better situation to gather and process information about their peers than the central bank. Therefore, decentralized interbank markets ensure that the allocation process is based on more information. Second, in a centralized interbank market the banks’ incentive to monitor their peers is reduced, which weakens market discipline. Third, as credit transactions with the central bank have to be based on adequate collateral, a decentralized interbank market may contribute to a more efficient liquidity allocation when banks may lack sufficient adequate collateral to cover their liquidity needs by borrowing directly from the central bank.

According to our model, the obvious way to reverse the intermediary function assumed by the ECB is to reduce interbank market participation costs. However, this cannot be accomplished by the Eurosystem. In general, it cannot reduce uncertainties about the soundness of commercial banks. Our model shows that a central bank can reactivate the interbank market by making its transactions with the banking sector less attractive. This could be achieved, for example, by tightening the requirements for collateral or by decreasing the rate on the deposit facility. However, as long as transactions in the interbank market are relatively costly, these measures will increase banks’ liquidity costs. In an economic and financial crisis, this increase usually conflicts with a central bank’s aim to maintain or reestablish financial stability.

The rest of the paper is organized as follows. In Section 2, we give a brief survey on related literature. Section 3 provides the institutional background. Section 4 describes the stylized facts to be explained by our theoretical model which is presented in Section 5. In Section 6, we discuss the results and the policy implications. The last section summarizes the paper.

2. Related literature

Our paper relates to the theoretical literature on the implementation of monetary policy in the euro area. A first strand of this literature concentrates on over- and underbidding incentives of commercial banks in the Eurosystem’s main refinancing operation under different tender procedures (see, for example, Ewerhart, 2002; Nautz and Oechssler, 2003; Ayuso and Repullo, 2003).

---

1 A detailed discussion of the costs and benefits of centralized and decentralized interbank markets can be found in Bräuning and Fecht (2012).
2 For theoretical papers dealing with asymmetric information in the interbank market see, for example, Freixas and Holthausen (2005); Freixas and Jorge (2008); Heider et al. (2009). For empirical evidence of the importance of asymmetric information in the interbank market see Afonso et al. (2011). Bräuning and Fecht (2012) discuss the importance of peer monitoring in interbank markets. In an empirical analysis of the German interbank market, they show that the conditions in that market reflect private information generated by peer monitoring and that this information matters for the liquidity allocation in the banking sector. In this context, relationship lending plays a crucial role in the interbank market. In a similar analysis Coco et al. (2009) emphasize the importance of lending relations for the Portuguese interbank market.
3 In this context, Neyer and Wiemers (2004) show theoretically that if banks differ in their collateral costs, an interbank market will emerge as banks with lower collateral costs will borrow more liquidity from the central bank than necessary to cover their own liquidity needs to lend the excess liquidity via the interbank market to those banks which have to cope with higher collateral costs.
دریافت فوری
متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات