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Central bank standing facilities, counterparty risk, and OTC-interbank lending

Uwe Vollmer, Harald Wiese*

University of Leipzig, Economics Department, Institute for Theoretical Economics, Grimmaische Straße 12, D-04109 Leipzig, Germany

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ABSTRACT

The paper asks how changes in monetary policy interest rates influence the functioning of uncollateralized interbank markets if banks are subject to counterparty risk. We concentrate on the central bank's marginal lending and deposit facilities. Since interbank trades are usually over-the-counter transactions, we use a bilateral bargaining model and apply the Nash bargaining solution. We determine the threat points and the bargaining frontier of debtor banks and creditor banks in the interbank markets. We show that a decrease in the central bank's marginal lending rate always reduces the probability for reaching a bargaining solution. In contrast, the chances that the banks agree on an interbank loan can both decrease or increase following a reduction in the deposit rate.

1. Introduction

The recent financial crisis has shown the importance of interbank markets for the distribution of liquidity across banks and for lending to non-banks. After the failure of Lehman Brothers, interest spreads between unsecured and secured interbank loans became large and volatile (Afonso, Kovner, & Schoar, 2011; Cassola, Holthausen, & Lo Duca, 2010; European Central Bank, 2011). Central banks reacted with a combination of reductions in key policy interest rates, quantitative easing, and adjustments in their liquidity operating frameworks. Since quantitative easing drove market interest rates

* Corresponding author. Tel.: +49 341 9733771.
E-mail addresses: vollmer@wifa.uni-leipzig.de (U. Vollmer), wiese@wifa.uni-leipzig.de (H. Wiese).

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significantly below target rates, some central banks, such as the US Fed and the Bank of Japan, started to pay interest on bank reserves in order to maintain the market rate close to the target rate and to promote efficiency and stability in the banking sector. Despite these policy reactions, however, the interbank markets' ability to reallocate liquidity within the banking sector remained impaired and interest rate spreads persisted (Angelini, Nobili, & Picillo, 2011; Taylor & Williams, 2009).

Against this background, the purpose of the paper is to assess the impact of monetary policy decisions on the functioning of interbank markets. We concentrate on the markets for uncollateralized interbank loans because the overnight interest rate forms the main operating target (or the reference rate) for many central banks (Bank for International Settlements, 2008; Borio & Nelson, 2008). With respect to monetary policy instruments we consider changes in interest rates on the central banks' standing facilities which are now applied by all major central banks. These facilities normally cover a marginal lending facility, which allows commercial banks to obtain overnight liquidity against collateral from the central bank, and a deposit facility which entitles banks to make overnight deposits with the central bank.[1] Often, interest rates on the marginal lending facility and on the deposit facility form a corridor for the overnight interbank interest rates, with the interest rate of the marginal lending facility usually being the ceiling and the interest rate on the deposit facility forming the floor.[2]

Since overnight interbank transactions are generally conducted on over-the-counter (OTC) markets (Afonso, Kovner, & Schoar, 2013), we study a bargaining problem of two banks agreeing on an interbank loan. We employ the Nash (1950) bargaining solution and analyze how the central bank's monetary policy instruments influence the chances and the conditions of interbank loans. Moreover, we ask how do changes of the interest rates on the marginal lending facility and/or the deposit facility on interbank loans affect the conclusion of the interbank loan contract. In order to analyze possible effects of the introduction of interest on reserve balances for interbank lending, we finally differentiate between two operational frameworks for monetary policy, one without and the other with positive interest rates on reserves.[3] We show that a decrease of the central bank's marginal lending rate makes interbank loans less likely, while an increase of the central bank's deposit rate entails two effects which work in different directions. Finally, a downward-shift in the corridor formed by the policy rates may damage the chances for the conclusion of an interbank contract.

Our paper contributes in several aspects to the literature on the functioning of interbank markets and on the effectiveness of different monetary policy instruments. Some papers detect situations under which interbank markets fail due to increases in counterparty or liquidity risks (Freixas & Holthausen, 2005; Heider, Hoerova, & Holthausen, 2015). These papers assume informational asymmetries between interbank market participants and model interbank market trades as the outcome of multilateral tender procedure with a large number of market participants. This contrasts with the fact that interbank loans are typically over-the-counter trades between single banks with two distinct features: search for counterparties and bilateral negotiations. We disregard search behavior, but consider counterparty risk and model interbank lending as the result of a bargaining process between a bank with a liquidity surplus and a bank with a liquidity deficit. While other papers apply a bilateral bargaining procedure to interbank trades, too (Acharya & Bisin, 2014; Castiglionesi & Wagner, 2013; Kahn & Santos, 2010; Mallick, 2004; Vollmer & Wiese, 2014), they do not analyze the impact of monetary policy decisions on the outcome of the bargaining process as is done in this paper. Conversely, some papers analyze policy rate changes within a search theoretic framework (Afonso & Lagos, 2015a, 2015b), but abstract from any counterparty risk which is considered in this paper.

We also add to the literature on the effectiveness of different monetary policy instruments as means of controlling interbank rates. Previous work shows that the central bank's deposit and marginal

[1] The terms "marginal lending facility" and "deposit facility" are used by the ECB. They are called "discount window" and "unborrowed reserves" by the US Fed, "complementary lending facility" and "complementary deposit facility" by the Bank of Japan, and "operational standing lending facility" and "operational standing deposit facility" by the Bank of England. See also Bowman, Gagnon, and Leahy (2010).

[2] Note that, unlike interbank loans, borrowings from the central bank are usually collateralized. In case of the US Fed, however, the range of assets accepted at the discount window is very large, so that collateral is usually not a limiting factor (Afonso et al., 2011).

[3] Some central banks, such as the ECB, have recently started to charge negative interest rates on reserve balances. We briefly discuss this case in the concluding section.