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Bidding behavior in the SNB's repo auctions☆

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A B S T R A C T

The Swiss National Bank (SNB) provides reserves to market participants via fixed rate tender auctions. We analyze the banks' bidding behavior and identify the determinants for the decision to participate as well as on the amount to tender. We find that a bank's bids from the previous day, the amount of maturing repo operations with the SNB as well as the maturing volume on the interbank repo market have for most banks a significant effect. The autonomous factors (government balances at the SNB and currency in circulation) are of only minor importance. A further determinant is the attractiveness of the SNB's auction rate compared to the prevailing interbank market repo rate. Further, the question is addressed whether the bidding behavior changed in the financial market crisis of 2007/2008. There is little evidence of a systematic change in bidding behavior in the crisis. This results from the fact that the SNB has addressed the volatile demand for reserves in the crisis with overnight fine-tuning operations.

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1. Introduction

The SNB's main instrument to manage its reference rate, the 3-month Libor, are daily repo transactions.[1] Through repo operations the SNB provides reserves to the banking system (sight

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[1] For a detailed description of the SNB's monetary policy framework see SNB (1999).

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deposits at the SNB). To guarantee an equal treatment of all counterparties, the SNB conducts its daily 1-week repo transactions in the form of an auction. It thereby uses a fixed rate tender. The SNB announces the conditions of the repo transaction (repo rate and term). The counterparties submit their bids. Each counterparty submits the amount for which it is willing to accept reserves at the given repo rate. If the total amount of all bids exceeds the SNB's planned allotment, it allocates the reserves proportionally to the counterparty's bid (see SNB, 2008). Since banks usually anticipate the proportional cut of their bid, they incorporate this expectation when assessing the amount to tender.

The aim of this paper is to shed light on banks' decision to participate in the 1-week repo auction and on the determinants of the bid amount. Based on individual bidding data from 29 banks that participated regularly in the SNB's auctions we estimate two bid functions per bank. The first bid function models a bank's decision to take part in the auction and the second estimates the bank's bid amount. These functions help to better understand demand in the SNB's liquidity providing operations. This is of special interest as the SNB grants access to a wide range of counterparties, comprising banks domiciled in Switzerland but also banks domiciled abroad.

The sample ranges from January 2004 to September 2008. Hence, it covers the first part of the money market turmoil that started in August 2007. The period since October 2008 is not included, since the SNB has employed a wider range of instruments in that time. Other central banks provided Swiss francs to their counterparties too. We cannot observe if banks participating in the SNB's auction also participated in another central bank's operations. Due to uncertainties about the severity of the crisis, banks became suddenly very risk averse. Accordingly, they were reluctant to lend funds on an unsecured basis and for terms longer than a few days (see Guggenheim et al., 2011). As in other major currencies, the risk premium rose sharply in the Swiss franc money market reflecting the higher perception of credit and liquidity risk (see CGFS, 2008). This rendered it more difficult for banks with a refinancing need to raise the necessary funds. We therefore also examine if the banks' bidding behavior changed in the crisis.

We find that the factors affecting reserves (e.g. yesterday's bids and a bank's maturing repo operations with the SNB) exhibit a strong influence on the decision to participate in the auction and on the bid amount. In contrast to the existing empirical literature we also take a bank's activity on the interbank money market into account. Based on unique data from the interbank repo market we can assess if banks try to roll over a part of the maturing interbank repos with refinancing from the SNB. We find strong evidence and take this as sign that banks consider SNB and interbank repo transactions to be close substitutes. From the set of interest rate factors the relative attractiveness of the SNB's rate to the interbank repo rate is the most relevant factor. Similar evidence was found by Breitung and Nautz (2001), Nautz and Oechssler (2006) and Linzert et al. (2006) suggesting that banks are more likely to participate or bid higher volumes in the Eurosystem's auction when central bank reserves are cheaper than in the interbank market. The variable capturing the attractiveness of FX-swaps is only of minor relevance. This finding suggests that banks do not primarily use the SNB's auction to fund Euros, by obtaining the Swiss francs via repo transactions and subsequently swapping these Swiss francs into Euros via an FX-swap. The fulfillment of minimum reserve requirements is irrelevant for the bidding behavior of a large part of the banks under consideration. This was also found by Linzert et al. (2006).

We also show that the banks' bidding behavior did not systematically and materially change in the recent money market turmoil. The reason for the unchanged behavior lies primarily in the fact that the SNB conducted fine-tuning operations to accommodate the volatile demand for reserves. The fine-tuning operations are usually conducted in the overnight tenor, meaning they have an immediate effect on a bank's reserves and hence on overnight rates. Eisenschmidt et al. (2009) analyze banks' bidding behavior in the ECB's main refinancing operations during the financial turmoil in money and financial markets. They find that the increased bid rates during the turmoil can be explained, among other factors, by the increased attractiveness of the ECB's tender operations due to its collateral framework and banks' bidding more aggressively to avoid being rationed at the marginal rate in times of increased liquidity uncertainty. Cassola et al. (2009) also come to the conclusion that banks' bidding behavior changed during the crisis. In their analysis they differ between a fundamental and a strategic effect. Under the fundamental effect banks adjust their behavior due to dwindling funding

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