



Securities trading by banks and credit supply: Micro-evidence from the crisis[☆]



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ABSTRACT

We analyze securities trading by banks during the crisis and the associated spillovers to the supply of credit. We use a proprietary data set that has the investments of banks at the security level for 2005–2012 in conjunction with the credit register from Germany. We find that—during the crisis—banks with higher trading expertise (trading banks) increase their investments in securities, especially in those that had a larger price drop, with the strongest impact in low-rated and long-term securities. Moreover, trading banks reduce their credit supply, and the credit crunch is binding at the firm level. All of the effects are more pronounced for trading banks with higher capital levels. Finally, banks use central bank liquidity and government subsidies like public recapitalization and implicit guarantees mainly to support trading of securities. Overall, our results suggest an externality arising from fire sales in securities markets on credit supply via the trading behavior of banks.

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“Adverse spillovers from a fire sale of this sort may also take the form of a credit crunch that affects borrowers more generally. Such a credit crunch may arise as other financial intermediaries (e.g., banks) withdraw capital from lending, so as to exploit the now-more-attractive returns to buying up fire-sold assets. Ultimately, it is the risk of this credit contraction, and its implications for economic activity more broadly, that may be the most compelling basis for regulatory intervention.”

Jeremy C. Stein, Governor of the Federal Reserve Board, 2013

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1. Introduction

The financial crisis has triggered a considerable debate both in academic and policy circles about the implications of securities trading by banks.¹ An important argument in this debate is that—during the crisis—banks may allocate funds to buy fire-sold securities to profit from trading opportunities, in turn reducing credit supply (Shleifer and Vishny, 2010; Diamond and Rajan, 2011; Stein, 2013). While engaging in securities trading can be optimal from a bank's perspective, the need for regulatory intervention might arise because of negative externalities to the supply of credit to the real sector. The externality stems from a temporary distortion in securities prices making it attractive for banks to increase investments in securities, thereby reducing credit supply, which affects borrowers unrelated to the original shock. Moreover, banks may support their trading activities using government subsidies like central bank borrowing, implicit guarantees, or direct recapitalization by taxpayers.² In fact, there have been recent policy initiatives on both sides of the Atlantic on limiting securities trading by banks (the Volcker rule in the US, the Liikenen Report in the EU, and the Vickers Report in the UK). In this paper, we analyze securities trading by banks in crisis times and also the associated spillovers to the supply of credit to the real sector using both security and credit registers for banks.

On the theoretical front, there is a growing literature that analyzes the role of securities trading by banks during a crisis and its implications for credit and securities markets. Diamond and Rajan (2011) show that fire sales in securities markets can lead banks that are actively involved in trading to hold on to their existing investments in illiquid securities and buy more of the fire-sold securities, leading to a credit crunch.³ Shleifer and Vishny (2010) show that during a crisis, as a result of fire sales in securities markets, the returns from investing in distressed securities are higher than the returns from lending. In sum, these papers argue that in the presence of funding constraints, banks with trading expertise may reduce credit supply as they withdraw funds from lending to profit from trading opportunities.

The main constraint that has hampered empirical research is the lack of comprehensive micro data at the security level on banks' trading activities. Comparing aggregate data on banks' securities holdings does not present a precise, clear picture of investment behavior as it does not take into account the time-varying, unobservable heterogeneity in security characteristics (e.g., risk, liquidity, outstanding volumes, etc.). Aggregate data may show that two banks have very similar overall levels of security in-

vestments, however, the composition of securities could be very different (e.g., risk, maturity, etc.). For instance, observing an increase in securities holding does not necessarily mean that banks are buying fire-sold securities, as it may be due to an increase in holdings of highly rated, very liquid securities, resulting from a 'flight to safety' during a crisis.

In this paper, we use a unique, proprietary data set from the Bundesbank (the German central bank) that provides information on *security-level* holdings for all banks in Germany, a bank-dominated system, at a quarterly frequency for the period between 2005 and 2012. Each security is also matched with security-level information, notably price, rating, coupons, and maturity. The exhaustive detail on security-level holdings of each bank allows us to examine the characteristics of the securities traded by banks and also the timing of trading. Importantly, not only do we have the security-level holdings of each bank, but also the credit register containing information on the individual loans made by banks. The security and credit registers are matched with comprehensive bank balance sheet information.

The main testable hypothesis, which we examine in the paper is that—during a crisis—banks with higher trading expertise will increase their investments in securities, especially in securities that had a (larger) price drop, to profit from the trading opportunities, thereby withdrawing funds from lending. To examine this channel, we first study the investment behavior of banks that are most active in securities markets. The idea being that, in an environment where fire sales occur, banks that are generally active in the security business are better at identifying trading opportunities, as compared to other banks that do not routinely engage in high levels of securities trading.

To proxy for active presence and expertise in securities markets, we use the notion that banks that generally engage in trading activities and thus have expertise will have a trading desk in place and the necessary infrastructure, such as direct membership to the trading platforms to facilitate trading activities. Using this line of reasoning, we proxy for trading expertise by direct membership of banks to the largest, fixed-income trading platform in Germany (Eurex Exchange). Supporting this classification, we find that the amounts of securities bought and sold (as a fraction of total assets) are consistently larger for banks with trading expertise, across all the periods. We also find this measure to be highly correlated with fraction of trading income to net income (in the pre-crisis period), with a correlation coefficient of 0.6. Thus, the trading expertise dummy is highly correlated with banks that have a higher fraction of income generated from trading activities.

For identification, we analyze the data at the *security-quarter-bank* level and include *security*time* fixed effects (in the benchmark regressions) to account for the unobserved time-varying heterogeneity across securities, e.g., risk, liquidity, outstanding volumes, and level of issuance (the supply of securities). Thus, we examine the changes in level of holdings for the same security in the same quarter by different banks. We also analyze some specifications with bank fixed effects to control exhaustively for time-invariant heterogeneity across banks. Finally, we

¹ Securities trading by banks has assumed significant importance in the modern financial system (Langfield and Pagano, 2015), with commercial banks nowadays holding a large amount of securities in their asset portfolios (e.g., 20% in the US and 19% in Germany).

² We thank an anonymous referee for guiding us to pursue this direction.

³ See also Uhlig (2010) who argues that finite resources of investors with trading expertise and uncertainty aversion are important factors in explaining the fire sale prices observed in the 2008 financial crisis.

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