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Transmission of liquidity shock to bank credit: Evidence from the deposit insurance reform in Japan

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ABSTRACT

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Finding the causal effects of liquidity shocks on credit supply is complicated by the endogenous relation between loan demand and liquidity position of banks. This paper attempts to overcome this problem by exploiting, as a natural experiment, the exogenous deposit outflow prompted by the removal of a blanket deposit guarantee on time deposits in Japan. We find that during the period of transition from a blanket guarantee to a partial guarantee, weak banks suffered from a large outflow of partially insured time deposits. More importantly, we find that those weak banks were not able to raise a sufficient amount of other types of deposits to make up for the loss of time deposits, which, consequently, forced them to cut back on loan supply. These results are consistent with the theory that the imperfect substitutability of insured deposits and uninsured deposits affects the tightness of banks' financing constraints and ultimately the supply of bank loans. *J. Japanese Int. Economies* **25** (2) (2011) 143–156. Department of Economics, Wesleyan University, Middletown, CT 06459-0007, United States; Thermal Coal Business Unit, Ferrous Raw Materials Division, Mitsubishi Corporation, 6-30-15-310, Shimouma, Setagaya-ku, Tokyo 154-0002, Japan.

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1. Introduction

The question of how exactly liquidity shocks in a banking sector are transmitted to the real economy has long been a subject of active discussion in the field of both finance and macroeconomics. On the one hand, according to the Modigliani–Miller Theorem, even when exposed to periodic negative liquidity shocks, banks should be able to raise sufficient funds from alternative sources swiftly to make up for the temporary funding shortfall and thus be able to finance all profitable lending opportunities (Modigliani and Miller, 1958). On the other hand, in the presence of informational asymmetry on the value of bank assets (i.e., banks know more about the quality of their own assets than outside investors do), banks will face a lemon premium on external funds, which means that negative liquidity shocks would raise overall funding costs, thereby forcing banks to cut back on loan supply to non-financial sectors (Bernanke and Blinder, 1992; Stein, 1998).[1]

The empirical work on the relationship between liquidity and bank lending has explored how bank lending responds to liquidity shocks in aggregate data (Bernanke and Blinder, 1992; Kashyap et al., 1993; Bernanke and Gertler, 1995). More recently, the empiricists have moved away from the use of aggregate data and have begun to use disaggregated bank-level data. The motivation for such a shift in the empirical focus is that the analysis of aggregate data suffers from a serious identification problem (i.e., liquidity shocks are likely to coincide with shifts in a loan demand schedule).

Furthermore, the use of bank-level data reveals the exact mechanism of the bank lending channel: the effects of liquidity shocks on loan supply are much larger for smaller, less liquid, and less well-capitalized banks since the funding opportunities of these banks depend critically on the severity of an adverse selection problem (Kashyap and Stein, 2000; Kishan and Opiela, 2000; Jayaratne and Morgan, 2000).

However, even these recent empirical works potentially suffer from a subtle identification problem – the lending opportunities of banks might not be completely orthogonal to their balance sheet characteristics and/or their deposit flows. For example, a flow of deposits into banks might not be entirely exogenous. Banks with more or better lending opportunities might be willing to pay higher interest rates and attract more deposits so as to finance those lending opportunities. The low level of capitalization or liquidity might not be entirely exogenous either. It is likely to be a symptom of a worsening economic environment that a particular bank is, or has been, facing; i.e., more often than not, banks become poorly capitalized and illiquid as they suffer from a large amount of financial losses on their investments.[2]

This paper examines the transmission of liquidity shocks to loan supply in Japan's banking sector. The main innovation of this paper is more credible econometric identification of liquidity shocks by exploiting the removal of a blanket deposit guarantee in Japan as a natural experiment. When the Japanese government lifted a blanket guarantee and imposed a limit on time deposits, Japan's banking system experienced a clear regime shift. In the old regime, the blanket guarantee reduced depositors' risk of putting their deposits into "lemon" banks, which in theory is likely to have reduced adverse selection problem and thus enhanced banks' ability to raise external funds. In the new regime, the ability of banks, especially weak ones, to raise partially insured time deposits was severely undermined because depositors had stronger incentives to ration funds to risky banks in order to protect themselves from financial losses.[3]

This quasi-experiment is relatively clean because the change in the deposit insurance scheme was not driven by deterioration or improvement in banks' business environment. Rather, the lifting of a blanket guarantee was scheduled ahead of time so that the timing of the shocks was likely to be orthogonal to the demand condition of the banking sector.

[1] This type of information asymmetry is also found to induce banks with high quality assets to hold an excessive amount of risk-free securities so as to avoid having to pay lemon premium for external funds (Lucas and MacDonald, 1992).

[2] It is also possible that the results might suffer from the bias in the opposite direction if weak banks pursue "gambling for resurrection" strategy by aggressively expanding deposits and risky loans (e.g., Brumbaugh and Carron, 1987; Kane, 1989; Barth 1991) although literature on the banking lending channel has not focused on this issue.

[3] The empirical literature on the relationship between deposit insurance design and the intensity of market discipline (e.g., Demirguc-Kunt and Huizinga, 2004) largely confirms that statutory limit on insurance coverage has strong effects on the supply of deposits to weak banks.