NEW EVIDENCE ON THE INTERNATIONAL BANK LENDING CHANNEL

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I. Introduction

The increasing globalization of financial and banking markets provides important advantages in terms of diversification and efficiency gains. However, the globalization of financial markets also creates possible channels for the transmission of financial shocks across markets. An important question in finance is whether or not financial institutions transmit financial shocks across markets and whether or not such shocks impact real economic activity. On the one hand, efficient market theory suggests that, as long as investment opportunities are constant, shocks to financial institutions in one market have no effect on lending in other markets. On the other hand, if financing frictions prevent financial institutions from accessing alternative financing sources to cover shortfalls as a result of a shock, one market may affect lending in other markets.

In this paper I empirically analyze the transmission of financial shocks across markets by examining the effect of the negative credit supply shock which resulted from the 1998 Russian debt default on bank lending in Peru. I focus on a single country because it allows me to control for country-wide shocks to investment opportunities by using cross-sectional variation in the response of international lenders to credit supply shocks. I focus on Peru because at the time of the Russian default, there were no direct trade or financial links between Russia and Peru, and the main impact of the Russian default on Peru was arguably via international lenders. Moreover, I use a unique dataset that covers all corporate loans in Peru to control directly for changes in firm investment opportunities and to trace out the impact on real economic activity.

The following example illustrates the channel under investigation. Suppose Citibank and UBS are both international lenders that provide financing to banks in Peru. I distinguish between international lenders with equity holdings (owner/lenders) and international lenders without equity holdings (arm's-length lenders). Suppose Citibank has a Peruvian subsidiary (Citi-Peru) and is therefore an owner/lender, while UBS has no equity holdings in Peru and is therefore an arm's-length lender. As a result, there are two types of Peruvian banks: foreign-owned banks (e.g., Citi-Peru) that have international lenders as equity holders and domestically-owned banks (e.g., Banco Wiese) that have no

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international lenders as equity holders. I ask the following question: Do credit supply shocks to arm's-length lenders (e.g., UBS) have the same impact on financing to banks in Peru as credit supply shocks to owner/lenders (e.g., Citibank)?

I first analyze the impact of the credit supply shock on financing to banks in Peru. I find that owner/lenders (e.g., Citibank) increase financing to their subsidiaries in Peru (e.g., Citi-Peru), while arm's-length lenders (e.g., UBS) decrease financing to banks in Peru (e.g., Banco Wiese). As a result, financing to foreign-owned banks (e.g., Citi-Peru) increases, whereas financing to domestically-owned banks (e.g., Banco Wiese) decreases. I interpret these findings as evidence that equity holdings of international lenders mitigate the transmission of credit supply shocks.

I then trace out the impact of the credit supply shock on real firm outcomes. The credit supply shock affects real outcomes under two conditions. The first condition is that banks cannot offset the shock through accessing other sources of financing. The second condition is that firms cannot offset the shock by switching across banks or borrowing from other financial intermediaries. In other words, the transmission of financial shocks to the real economy requires financial frictions at both the bank and the firm level.

To analyze whether firms can offset the shock, I examine how established bank relationships with foreign- and domestically-owned banks affect firm outcomes after the Russian default. For each firm I compute the share of lending with foreign-owned banks prior to the Russian default. I find that a one standard deviation increase in the share of lending with foreign-owned banks increases borrowing by 9.3 percent and raises the likelihood of firm survival by 2.3 percentage points after the Russian default. These results show that firms cannot offset the credit supply shock by switching across banks or borrowing elsewhere.

In short, the findings in this paper suggest that financial institutions transmit financial shocks across markets and that financial shocks affect real economic activity. Specifically, I show that arm's-length lenders (e.g., UBS) are more likely to transmit credit supply shocks than owner/lenders (e.g., Citibank). As a result, firms banking with foreign-owned banks (e.g., Citi-Peru) have better access to bank lending after a credit supply shock than firms banking with domestically-owned banks (e.g., Banco Wiese), which affects real firm outcomes such as firm survival.

This paper relates to a large literature on the transmission of financial shocks across countries. Theoretical work by Shleifer and Vishny (1997) and Calvo (1998) emphasizes the importance of common leveraged creditors and lack of liquidity in the transmission of financial shocks. Empirical work focuses on distinguishing the different channels of transmission such as trade or financial linkages. On trade linkages, Eichengreen, Rose, and Wyplosz (1996), Forbes (2002), and Forbes (2004) find evidence of the transmission of shocks via trade channels. On financial linkages, empirical work examining international investors (Kaminsky, Lyons, and Schmukler, 2004; Kaminsky and Reinhart, 2000; and Van Rijckeghem and Weder, 2000) or country-specific shocks (Peek and Rosengreen, 2000a) finds evidence that foreign investors spread crises across markets. The empirical approach in this paper differs in that I use cross-sectional variation in the way that financial institutions respond to shocks within one country.

The estimation of real firm outcomes connects to a large literature on the impact of financial shocks to banks on the real economy. Theoretical work by Bernanke and Blinder (1988), Bernanke and Gertler (1989), Holmstrom and Tirole (1997), and Stein (1998) shows that financial shocks affect real firm outcomes only if there are credit market imperfections both at the bank and firm level. The early empirical literature by Bernanke (1983) and Bernanke and Blinder (1992) uses correlations between aggregate changes in liquidity and aggregate changes in output to show that financial shocks affect real outcomes. However, aggregate correlations may be driven by omitted variables that affect both bank credit supply and firm investment opportunities. Recent work by Kayshap, Lamont, and Stein (1994), Kashyap and Stein (2000), and Ashcraft (2006) uses variation across banks and firms or natural experiments (Peek and Rosengren, 2000a; Ashcraft, 2005; Khwaja and Mian, 2007; Paravisini, 2007) to control for omitted variables. This paper is different in that I develop an empirical estimator using loan-level data to determine whether changes in credit supply are correlated with changes in investment opportunities.

The paper also relates to a literature on differences between foreign- and domestically-owned banks in emerging markets. Empirical work using cross-sectional data on lending (Berger, Klapper, and Udell, 2001, and Mian, 2006) finds that foreign-owned banks tend to finance larger firms, whereas domestically-owned banks tend to finance smaller, informationally opaque firms. Regarding financial shocks, Arena, Reinhart, and Vazquez (2007) find little difference in the lending channel of foreign- and domestically-owned banks using panel data on emerging market banks, and Goldberg (2002) finds mixed results on the responsiveness of foreign subsidiaries of American banks to macroeconomic conditions in the United States. However, using bank-level data for Latin American and Asian countries, several authors (Diamond and Rajan, 2001; Peek and Rosengreen, 2000b; Crystal, Dages, and Goldberg, 2001; and Detragiache and Gupta, 2004) find that foreign-owned banks increase lending as compared to domestically-owned banks after financial crises. This paper is different in that I exploit a natural experiment to identify the impact of an exogenous financial shock and use loan-level data to control for differences between foreign- and domestically-owned banks.

II. Non-Parametric Results

This section analyzes the impact of the credit supply shock using aggregate data. The analysis proceeds in two steps. First, I document the impact of the Russian default on international lenders and analyze the differential response by arm's-length lenders and owner/lenders. Second, I estimate the impact on lending by foreign-owned banks and domestically-owned banks.

Figure 1 plots the relative change in share prices of arm's-length lenders (e.g., UBS) and owner/lenders (e.g., Citibank) one year before and after the Russian default. I use data on all owner/lenders and the twenty largest arm's-length lenders for which share prices are available. I interpret the change in the share price as a measure of the magnitude of the credit supply shock to international lenders. The figure shows that share prices of both owner/lenders and arm's-length lenders suffered a decline of 50 percent in the months after the Russian default. Importantly, there is no difference in the impact of the credit supply shock between arm's-length lenders and owner/lenders. I interpret this figure as evidence that the Russian default was a negative credit supply shock to all international lenders.

On the international lender side, I use microdata on bank-to-bank loans to analyze the impact of the credit supply shock on banks in Peru. I aggregate bank financing by owner/lenders to subsidiaries (e.g., Citibank lending to Citi-Peru) and bank financing by arm's-length lenders (e.g., UBS lending to Banco Wiese). Figure 2 plots the natural logarithm of the two time series three months before and one year after the Russian default. I normalize the time series to zero at the time of the Russian default such that the y-axis represents the relative change in financing compared to the date of the Russian default. The figure shows that financing by owner/lenders increased by 30 percent in the months after the Russian default. In comparison, financing by arm's-length lenders decreases by 30 percent within one year after the Russian default. I interpret this figure as evidence of the differential response to the credit supply shock by arm's-length lenders and owner/lenders.

On the borrower side, I aggregate total bank-to-bank loans by foreign- and domestically-owned banks. The total by borrower can be different from the total by lender because foreign-owned bank also take out arm's-length financing. Figure 3 plots the time series of total international bank financing to foreign- and domestically-owned banks. The figure shows that financing to domestically-owned banks declines by 29 percent, while financing to foreign-owned banks only declines by three percent. The differential response by arm's-length lenders and owner/lenders thus translates into lower financing to domestically- versus foreign-owned banks.

I then use microdata on all corporate loans to trace out the effect on bank lending. I aggregate total lending for foreign- and domestically-owned banks. Figure 4 plots the two time series. The figure shows that after the Russian default bank lending by foreign-owned banks declined by seven percent, but bank lending by domestically-owned banks declined by 21 percent. Hence, differential financing by arm's-length lenders and owner/lenders translates into differential lending by foreign- and domestically-owned banks.

In short, I find that after the Russian default owner/lenders (e.g., Citibank) increase financing to subsidiaries (e.g., Citi-Peru), while arm's-length lenders (e.g., UBS) decrease financing to all banks (e.g., Banco Wiese). As a result, lending by foreign-owned banks (e.g., Citi-Peru) remains stable, while lending by domestically-owned banks (e.g., Banco Wiese) declines.

III. Conclusion

This paper analyzes whether financial institutions transmit financial shocks across markets and whether such shocks affect real economic activity. I exploit the 1998 Russian default as an exogenous credit supply shock to international lenders and trace out the impact on bank lending in Peru. I find two main results. First, international lenders without equity holdings in banks in Peru are more likely to transmit a credit supply shock than international lenders with equity holdings. Second, as a result, firms banking with foreign-owned banks (e.g., Citi-Peru) have better access to bank lending after a credit supply shock than firms banking with domestically-owned banks (e.g., Banco Wiese). These results suggest that financial institutions transmit financial shocks across markets and that the shocks affect real economic activity.

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FIGURE 1

Share Prices of International Lenders

Figure 1 plots the average relative change in share prices of owner/ lenders and arm's-length lenders. Owner/lenders are international lenders with equity holdings in banks in Peru. Arm's-length lenders are international lenders that do not have equity holdings in banks in Peru. The data includes all owner/lenders and the twenty largest arm's-length lenders for which share price data is available. The graph shows that both type of lenders suffered a sharp decline in the share price after the Russian default. There is no difference in the impact of the Russian default on arm's-length lenders versus owner/lenders.

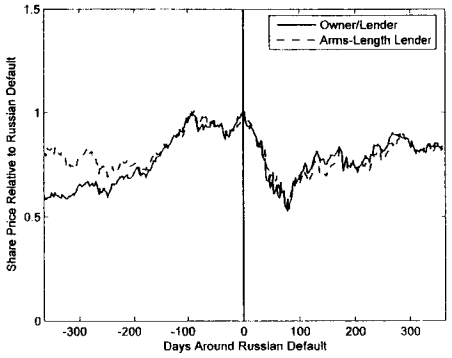

FIGURE 2

Financing by International Lenders

Figure 2 plots total financing by arm's-length lenders (international lenders without equity holdings) and owner/lenders (international lenders without equity holdings) to banks in Peru Financing by owner/lenders is defined as bank-to-bank loans of owner/lender to banks in which the owner/lenders hold equity stakes. Arm's-length financing is defined as bank-to-bank loans by international lenders to banks in which they have no equity stakes. The figure shows that financing owner/lenders increased after the Russian default, whereas lending by arm-length's lenders decreased.

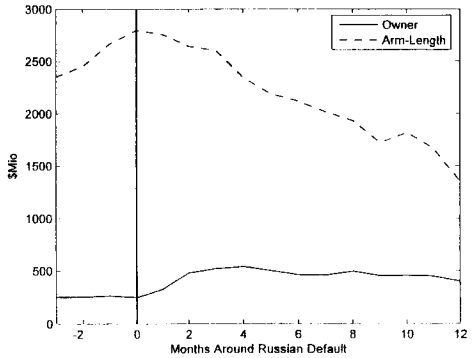

FIGURE 3

Financing by Bank Ownership

Figure 3 plots total financing provided to foreign-owned banks and domestically-owned banks. Foreign-owned banks are banks with an international lender as equity holder, whereas domestically-owned banks have no international lender as equity holder. The figure differs from Figure 2 because foreign-owned banks also take out some arm's-length debt. The figure shows that financing to foreign-owned banks remained stable after the Russian default, while financing to domestically-owned banks decreased.

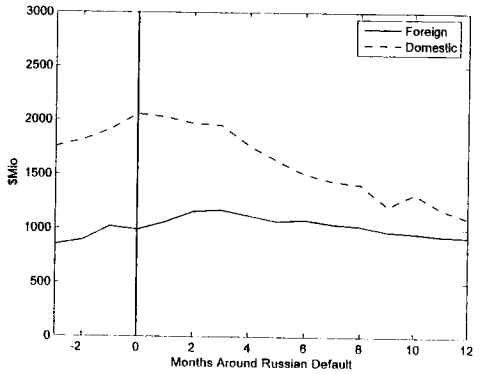

FIGURE 4

Lending by Bank Ownership

Figure 4 plots total lending of foreign-owned banks and domestically-owned banks. Foreign-owned banks are banks with an international lender as equity holder, whereas domestically-owned banks have no international lender as equity holder. The figure shows that lending of foreign-owned banks remained stable after the Russian default, while lending of domestically-owned banks decreased.