Journal of International Economics 87 (2012) 147–161

Contents lists available at SciVerse ScienceDirect

Journal of International Economics

journal homepage: www.elsevier.com/locate/jie

Cross-border banking, credit access, and the financial crisis

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ARTICLE INFO

Article history:
Received 19 July 2010
Received in revised form 16 January 2012
Accepted 20 January 2012
Available online 31 January 2012

JEL classification:
E44
E51
F34
G21

Keywords:
Financial crisis
Bank lending channel
Business lending

ABSTRACT

We study the sensitivity of credit supply to bank financial conditions in 16 emerging European countries before and during the financial crisis. We use survey data on 10,701 applicant and non-applicant firms that enable us to disentangle effects driven by positive and negative shocks to the banking system from demand shocks that may vary across lenders. We find strong evidence that firms' access to credit was affected by changes in the financial conditions of their banks. During the crisis firms were more credit constrained if they were dealing with banks that experienced a decline in equity and Tier 1 capital, as well as losses on financial assets. We also find that access to credit reflects the balance sheet conditions of foreign parent banks. The effect of positive and negative shocks to a bank is greater for riskier firms and firms with fewer tangible assets.

1. Introduction

The increasing integration of the European banking industry offers the prospect of important gains in terms of efficiency and diversification, but it also creates potential risks. One such risk is that the effects of a shock to the capital of a bank that is active internationally may be propagated across borders. Given the size and penetration of western European banks in central and eastern Europe, the supply of credit to firms and consumers may be sensitive to shocks that these borrowers would otherwise be spatially insulated from. This would suggest that lending by foreign-owned banks would likely increase when the financial condition of the parent improved. However, it also implies that parent bank financial distress, like that associated with the recent financial crisis, would have the opposite effect.[1] The impact of the crisis on borrowers is, of course, a matter of considerable policy attention.[2] This paper confirms that lending in central and eastern Europe is sensitive to bank financial conditions in general, and to negative shocks and to financial conditions at foreign parent banks in particular.

We investigate one key mechanism through which the effect of bank financial conditions may have been transmitted to borrowers, namely through the supply of credit to small and medium enterprises. SMEs dominate the corporate landscape in central and eastern Europe, comprising up to 99% of all firms. Moreover, because of their opacity SMEs may be particularly sensitive to changes in the supply of credit. With immature capital markets and little or no corporate bond finance, banks are by far the main provider of external funds. An important feature of the central and eastern European banking market is its ownership structure. In particular, foreign ownership in the

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[1] See, for example, Brunnermeier (2009), Gorton (2010), and Ivashina and Scharfstein (2010) for a timeline of the 2007–2008 global financial crisis.

[2] Signs of the negative effects of the global financial crisis on business firms in emerging Europe through the channel of bank lending were seen as early as the Fall of 2007. For instance, in October, the EBRD's chief economist Erik Berglof warned that "the crisis in the West will be a serious one which will last for some time and this means it will definitely have an impact on our countries [...] due to the difficulties and higher costs associated with obtaining credit" (Interview with Erik Berglof, Chief economist of the European Bank for Reconstruction and Development, on "Credit Crunch", 2007). The ECB's Bank Lending Survey indicated that euro area banks started tightening lending standards in Q3:2007 (ECB Financial Stability Review, June 2009).

0022-1996/$ – see front matter
doi:10.1016/j.jinteco.2012.01.008

banking sector has grown dramatically in the recent decade—so much so that by 2008 foreign banks controlled around four fifths of the assets in the region's banking industry.[3] Shocks to the balance sheets of large multinational banks – both positive ones during the early 2000s and negative ones during the recent financial crisis – provide a natural experiment to study how such shocks are propagated across borders.[4]

Our key data come from a survey of a large group of SMEs in emerging Europe administered in April 2005 and April 2008. These data allow us to directly observe firms' access to finance. Specifically we observe firms whose loan application was approved or turned down and firms who were discouraged from applying for bank credit by the anticipation of being turned down, by high rates, or by unfavorable collateral requirements. While we do not observe the bank which granted or denied the loan, we observe the extent of the operations of all banks present in the firm's city of incorporation. By using balance sheet data on the parent banks, foreign or domestic, we construct an index of locality-specific financial health (distress) for each locality in 16 countries in the region, which we then map into data on firm credit constraints. We also separate, for each locality, the balance sheet conditions of domestic and of foreign banks. The final data consist of 10,701 firms in 1978 localities served by a total of 155 banks over the 2005–2008 period. The majority of localities, however, are served by just a handful of banks, with the degree of foreign ownership of those varying by both country and locality.

This empirical set-up allows us to study the following important questions:

1) How sensitive is the supply of credit to bank balance sheet conditions?, and, as special cases of 1),
2) What were the consequences to borrowers of bank balance sheet problems in the early stages of the 2007–2008 crisis?, and
3) Did business lending by the subsidiaries of foreign banks reflect their parents' financial condition?

The analysis of shocks to bank balance sheets raises the classic problem of disentangling demand and supply effects. For example, a firm's demand for credit likely shifts downward due to the deterioration of its own balance sheet at the same time that the supply of credit contracts. This would not be an issue if the shock to bank balance sheets in our analysis included the cross-border transmission of financial conditions into an economic area insulated from that shock through all other channels but the bank lending channel. As the sub-prime mortgage crisis was associated since its very beginning with the expectations of a global recession, the measured effect of bank loan supply shocks will likely be contaminated by demand shifts.

Some studies that identify demand use the decline in loan applications across differentially affected lenders to argue that there haven't been variations in the decrease in demand across lenders. One problem with that identification approach may be limited data availability on loan applications. However, even when one observes the universe of loan applications, applicant firms could be a systematically truncated sub-sample of all firms: some firms do not apply because they do not need credit, while others do not apply because they are discouraged. Not accounting for discouraged firms results in a poor proxy for credit constraints, especially in the region of central and eastern Europe, where recent studies (Brown et al. (2011)) have shown that the share of firms discouraged from applying is up to twice as large as the share of firms that applied and had their loan application rejected. It is possible that financially healthy borrowers (firms that do well during a recession) are selecting themselves out of the application process at banks negatively affected by the crisis, while financially weak firms are discouraged by the general contraction in lending in localities served by healthy banks. Thus, at different types of banks, non-applicant firms may have systematically different reasons for selecting themselves out of the application process, confounding identification and making it difficult to separate the bank lending channel from the balance sheet channel.[5]

We overcome this obstacle by employing observable survey information on firms that choose to select themselves out of the bank credit application process, be it because they were discouraged, or because they do not need credit. Thus, we are able to account not just for the change in firms' demand, but also for the composition of firms that account for the demand shift. While there is already extensive evidence on the real effects of this financial crisis,[6] our paper is the only one that we know of which simultaneously 1) studies the transmission of parent bank financial conditions in foreign markets, 2) accounts for the changes in the level and composition of loan demand, and 3) is able to construct a proxy for credit constraint based on discouragement as well as on actual rejection. As such, our paper adds to a very scarce literature employing data on the selection process involved in the granting of business loans.[7]

This paper confirms the hypothesis that positive and negative shocks to banks' balance sheets were transmitted from banks to firms in central and eastern Europe. Focusing on the negative shocks to bank balance sheets in the relatively early stages of the 2007–2008 crisis, for example, we find a higher probability of firms' being credit constrained in localities served by banks with a low ratio of equity to total assets, a low Tier 1 capital ratio, and high losses on financial assets, including ABSs and MBSs. The result is strongest and most consistent for Tier 1 capital. The key results hold when we assume equal access of each firm to all banks present in the firm's locality, when we weight access by the branch penetration of each bank, or when we weight it by bank assets. Numerically, firms faced a 10% higher probability of being credit constrained if they did business with banks that experienced at least a one-standard deviation deterioration in their financial health between 2005 and 2008 relative to otherwise identical firms (evaluated at their sample means) that did business with banks whose financial health on average declined by less. As a still another special case, we find that the probability of banks' adjusting their loan portfolio in response to shocks to their balance sheets is higher for foreign-owned banks than for domestic banks. This confirms that bank lending is sensitive to the balance sheet conditions of foreign parent banks. Finally, we find that financial conditions are transmitted differently across firms and industries, in that firms that are high-risk and firms with fewer tangible assets are most sensitive to shocks to bank balance sheets.

Our paper relates to a number of studies that have aimed at identifying the transmission of shocks from banks' balance sheets to lending activity in various economic circumstances. The bank lending channel has been studied extensively (e.g., Kashyap and Stein, 2000), and banks have been found to rely heavily on the use of internal capital markets in order to dampen domestic liquidity shocks

[3] For summaries of the literature on the motivations for foreign entry into banking markets and the relative performance/behavior of foreign versus domestic banks (including behavior in credit markets) see Berger et al. (2000), among others.

[4] It is worth noting that the problems afflicting these banks during the crisis were completely unrelated to their operation in central and eastern Europe. They emanated instead from the fallout from the financial crisis that started in the U.S. and spread throughout the global economy.

[5] The balance sheet channel emphasizes that the impact of a macro shock on access to credit runs through the balance sheets of borrowers. The shock affects the net worth, the collateral and general financial condition of borrowers exacerbating the principle–agent problem that inhibits access to credit. This is in contrast to the lending channel that emphasizes that a macro shock is amplified through changes in the financial condition of lenders, e.g., banks.

[6] Ivashina and Scharfstein (2010), Cetorelli and Goldberg (2011a), De Haas and van Horen (2011), Jimenez et al. (forthcoming), Puri et al. (2011), and Santos (2011), among others, all provide evidence on the impact of bank shocks during the 2007–2008 financial crisis.

[7] The very few studies known to us that do so are Chakravarty and Yilmazer (2009), Brown et al. (2011), and Ongena and Popov (2011).