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Multinational banking and the international transmission of financial shocks: Evidence from foreign bank subsidiaries

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ABSTRACT

Using bank-level data on 368 foreign subsidiaries of 68 multinational banks in 47 emerging economies during 1994–2008, we present consistent evidence that internal capital markets in multinational banking contribute to the transmission of financial shocks from parent banks to foreign subsidiaries. We find that internal capital markets transmit favorable and adverse shocks by affecting subsidiaries' reliance on their own internal funds for lending. We also find that the transmission of financial shocks varies across types of shocks; is strongest among subsidiaries in Central and Eastern Europe, followed by Asia and Latin America; is global rather than regional; and becomes more conspicuous in recent years. We also explore various conditions under which the international transmission of financial shocks via internal capital markets in multinational banking is stronger, including the subsidiaries' reliance on funds from their parent bank, the subsidiaries' entry mode, and the capital account openness and banking market structure in host countries.

1. Introduction

The impact of foreign banks on host economies has been widely debated as the presence of foreign banks has increased rapidly in developing and emerging economies in recent years. On the one hand, foreign banks that operate in host economies under global networks of multinational banking (subsidiaries or branches) have contributed to enhancing the efficiency, competitiveness, and stability of the banking systems in host economies (McCauley et al., 2010; Jeon et al., 2011). On the other hand, foreign banks have also been observed to act as a destabilizing force, as short-term profit seeking speculators, as home-biased international lenders, or as a source of contagion by transmitting adverse shocks from the home country to various host countries, especially when the banks' home countries experience a banking crisis (Roubini and Mihm, 2010; Popov and Udell, 2012; De Haas and Van Horen, 2012; Giannetti and Laeven, 2012a,b). The recent global financial crisis provides a convincing example that foreign banks are potential vehicles for spreading financial shocks from the home countries in the US and Western Europe to emerging and developing economies. However, the speed and strength of this international transmission of financial shocks through the network of foreign banks have varied from continent to continent, and have also been affected by various banking market conditions and the business strategies adopted by these foreign banks.

Conglomerate banks or multibank holding companies have established and utilized internal capital markets for both shifting risk between the headquarters and its subsidiaries, and reallocating revenues across the latter.[1] Internal capital markets have also provided unique opportunities for multinational banks to use limited resources efficiently by optimally allocating them across the network of global subsidiaries, to thereby overcome financial market frictions and save on the costs of external finance. When multinational banks rely more heavily on internal capital markets, we expect lending decisions by subsidiaries in host countries to be significantly affected by the financial strength of parent banks in home countries.[2]

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[1] Bank-specific information on internal capital market activities between the parent bank and its foreign subsidiaries for a large enough group of countries is difficult to find. For a detailed description on funding and liquidity movements between a Spanish multinational banking giant, Banco Santander SA, and its foreign subsidiaries in the US, UK, and Brazil, and associated banking regulators' concerns, see "For Bank in Spain, Links Aren't Plain," in the October 21, 2011, issue of the *Wall Street Journal*.

[2] Related research has been done on internal capital markets in the network of large firms. If a firm is affiliated to a conglomerate, the holding company could create an internal capital market and move resources to (and across) its affiliates. Hence, the subsidiaries' investment would be less affected by their own internally generated funds, but more by the holding company's resources (see Stein (1997), Lamont (1997) and Desai et al. (2004)). This literature has been applied to the banking industry by Houston et al. (1997), Campello (2002) and Ashcraft (2006, 2008).

In this paper, we study the role that internal capital markets in multinational banking play as a channel of transmission of financial shocks across countries. Using bank-level data for the major multinational parent banks from industrial countries and their foreign subsidiaries operating in emerging and developing countries during the period 1994–2008, we explore the empirical evidence on whether intra-bank internal capital markets contribute, through the supply of loans, to the transmission of financial shocks from parent banks in the home country to their foreign subsidiaries in the host countries. We also investigate various aspects of internal capital markets as a channel of transmission of financial shocks, including: first, whether the role of intra-bank internal capital markets varies in transmitting favorable versus adverse shocks; second, if there are any differences in this transmission channel across regions, namely, Central and Eastern Europe, Asia and Latin America; third, whether this process is global or only regional; and last, whether the strength of transmission has changed over time. We also explore various conditions under which this transmission mechanism working via internal capital markets in multinational banking becomes stronger, including subsidiaries' ability to access alternative funding sources for lending, subsidiaries' entry modes, and capital account openness and the banking market structure in host countries.

There has been ample research on identifying specific channels of transmission of financial shocks across countries through global banking. The extant research has focused mostly on international trade, finance, and macroeconomic linkages as the fundamental determinants of this transmission. However, most of this line of research has used aggregate banking sector data (see, for example, Van Rijckeghem and Weder (2001) and Cetorelli and Goldberg (2010)).

Only more recently, new research has started to use bank-level data. However, in most cases it has been done only as part of a specific country case study. For example, Peek and Rosengren (1997, 2000) examine how the financial crisis in Japan in the early 1990s affected lending by Japanese banks in the United States; and Cetorelli and Goldberg (2011, 2012) provide evidence that global banks in the US activate internal capital markets, which contributes to the international propagation of shocks to lending by affiliated banks abroad. De Haas and Van Lelyveld (2010) examine the determinants of the credit growth of subsidiaries located mainly in developed countries during the period 1991–2004. They suggest the *association* of subsidiaries' lending with the parent bank's characteristics and the parents' support for weak subsidiaries as evidence of the existence of internal capital markets. Using syndicated loan market data, Giannetti and Laeven (2012a,b) provide evidence that during banking crisis periods, syndicated loan lending banks rebalance their loan portfolio away from international markets toward domestic markets (a phenomenon which has been labeled the "flight home effect"), and thereby transmit negative shocks from the home country to the host country.

In this paper we take a broader and bank-specific approach since we use bank-level data for 68 multinational banks from industrial countries and their 368 foreign subsidiaries operating in a total of 47 emerging and developing economies. Moreover, we focus on a related but different aspect, namely, whether foreign subsidiaries' access to their parent bank's internal funds plays any role on the degree of these subsidiaries' dependence on their own internally generated funds for lending.

The contribution we offer is that this measure of foreign subsidiaries' reliance on their own internally generated funds, taking into account the effect of available funds from their parent bank for subsidiaries' lending, provides convincing evidence that intra-bank internal capital markets work to transmit financial shocks, and that it represents more than just a simple association between the balance sheet of the parent bank and those of its subsidiaries. We do this by setting up a dynamic panel model of loan growth where we examine the impact of the parent bank's internally generated funds on their foreign subsidiaries' loan growth. We also investigate various properties of this internal capital market mechanism in multinational banking, and identify conditions under which this international transmission mechanism of financial shocks becomes stronger.

The paper structure is as follows: Section 2 presents the model and describes the data and estimation methodology used in the paper. Section 3 reports and discusses the empirical results. In this section we also discuss various properties of the international transmission mechanism of financial shocks through internal capital markets in multinational banking. Section 4 explores conditions under which internal capital markets play a stronger role in transmitting financial shocks from parent banks to their foreign subsidiaries. Section 5 concludes.

2. The model, data and estimation methodology

2.1. The model

We investigate the role of internal capital markets in multinational banking as a channel of transmission of financial shocks from the home country to the host countries. To this end, we specifically examine whether and how lending by the subsidiaries in host countries is affected by the financial strength of their parent bank in the home country and by internal capital markets actively working between the parent bank and its foreign subsidiaries.

The benchmark model for our analysis can be specified as below:

$$\begin{aligned} gr(loans)_{i,j,m,t} = {} & c + \alpha \cdot gr(loans)_{i,j,m,t-1} + \beta \cdot subfund_{i,j,m,t} \\ & + \delta \cdot subchar_{i,j,m,t} + \phi \cdot hostmacro_{m,t} + \gamma \cdot parfund_{j,t} \\ & + \eta \cdot parchar_{j,t} + \lambda \cdot homemacro_{n,t} + \rho \cdot subfund_{i,j,m,t} \\ & \times parfund_{j,t} + \varepsilon_{i,j,m,t} \end{aligned} \tag{1}$$

where the dependent variable, $gr(loans)_{i,j,m,t}$, represents the growth rate of loans (in real terms) of subsidiary i of the parent bank j in the host country m in year t, and $gr(loans)_{i,j,m,t-1}$ is the 1-year lag of the dependent variable. $subfund_{i,j,m,t}$ is a measure of internally generated funds held by the subsidiary. $subchar_{i,j,m,t}$ is a vector of subsidiary-specific characteristics, including their liquidity, capitalization, size and riskiness. $hostmacro_{m,t}$ is a vector of host country macroeconomic variables, which includes the growth rate of real GDP, the change in the unemployment rate, and a dummy for monetary policy. $parfund_{j,t}$ is a measure of internally generated funds held by the parent bank, and $parchar_{j,t}$ is a vector of financial characteristics of the parent bank, including liquidity and capitalization.[3] Last, the variable $homemacro_{n,t}$ includes a set of macroeconomic variables in the home country.

In the benchmark model we include one interaction term, $subfund_{i,j,m,t} \times parfund_{j,t}$. This term allows us to study the indirect, and buffering, effect played by the parent bank's internally generated funds on the subsidiaries' dependence on their own internally generated funds for lending. We expect the sensitivity of subsidiaries' loan growth to own internally generated funds to be affected by the availability of parent banks funds via internal capital markets in the banking conglomerates, which is reflected in the interaction term between $subfund_{i,j,m,t}$ and $parfund_{j,t}$.[4] We also experimented by

[3] For the characteristics of parent banks, we choose liquidity and capitalization, instead of size and riskiness, because liquid assets and capital are the financial resources that can be used by parent banks to impact their subsidiaries' lending.

[4] The differences in the sensitivity of loan growth to internally generated funds between affiliated banks and unaffiliated banks with multi-bank holding companies in the US have been used in the literature as evidence of the operation of internal capital markets (see, for example, Houston et al. (1997), Houston and James (1998), and Ashcraft (2008)). This is because affiliated banks are part of an internal capital market operating at the holding company level, while unaffiliated banks are not.