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# Cross-border banking, bank market structures and market power: Theory and cross-country evidence

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ABSTRACT

Patterns in cross-border banking have changed since the global financial crisis. This may affect domestic bank market structures and macroeconomic stability in the longer term. In this study, I theoretically and empirically analyze how different modes of cross-border banking impact bank concentration and market power. I use a two-country general equilibrium model with heterogeneous banks developed by DeBlas and Russ (2010a) to grasp the effect of cross-border lending and foreign direct investment in the banking sector on bank market structures. The model suggests that both cross-border lending and bank FDI mitigate concentration. Empirical evidence from a panel dataset of 18 OECD countries supports the theoretical predictions: higher volumes of bank FDI and of cross-border lending coincide with lower Herfindahl-indexes in bank credit markets.



## 1. Motivation

The aim of this paper is to clarify, both theoretically and empirically, the role that different forms of cross-border banking play for concentration and market power in the banking sector. The analysis is motivated by the observation that, since the global financial crisis, patterns in international banking have changed. Banks' foreign direct investment activities have resumed after a temporary decline in many OECD countries and the average share of foreign-owned banks has been stable (Fig. 1). However, cross-border lending dropped significantly and has remained at a comparatively low level. The reduction in cross-border lending reflects, most importantly, banks' need to deleverage as a result of changes in risk perceptions. In addition, policy interventions which have aimed at stabilizing domestic banking systems have contributed to credit market segmentation.[2]

Measures taken to stabilize financial institutions and changes in the structure of international banking in general may affect domestic banking market structures in the longer term. On the one hand, the upward trend in bank FDI and large mergers and acquisitions led to concerns about increasing concentration in the banking industry – even before the crisis. On the other hand, if credit markets get more segmented, contestability in domestic banking systems and hence competitive pressures may decrease (Claessens, 2006). This potentially affects bank concentration and market power. Moreover, if competitive pressures are lower, bank efficiency can be subdued, with adverse effects on lending rates and consequently on firms' external financing conditions.

To date there is little evidence on the implications of cross-border banking for bank market structures. This paper, in a first step, uses a two-country general equilibrium model developed by De Blas and Russ (2010a) which features a large number of

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[2] Recent studies present evidence for an increased homeward bias in banks' international portfolios since the crisis. This tendency is found to be partly due to policy initiatives like nationalizations, guarantees or regulatory rules that provide incentives for banks to concentrate more on their home economies (see for example Merler and Pisani-Ferry, 2012; Pockrandt and Radde, 2012 or Rose and Wieladek, 2011).

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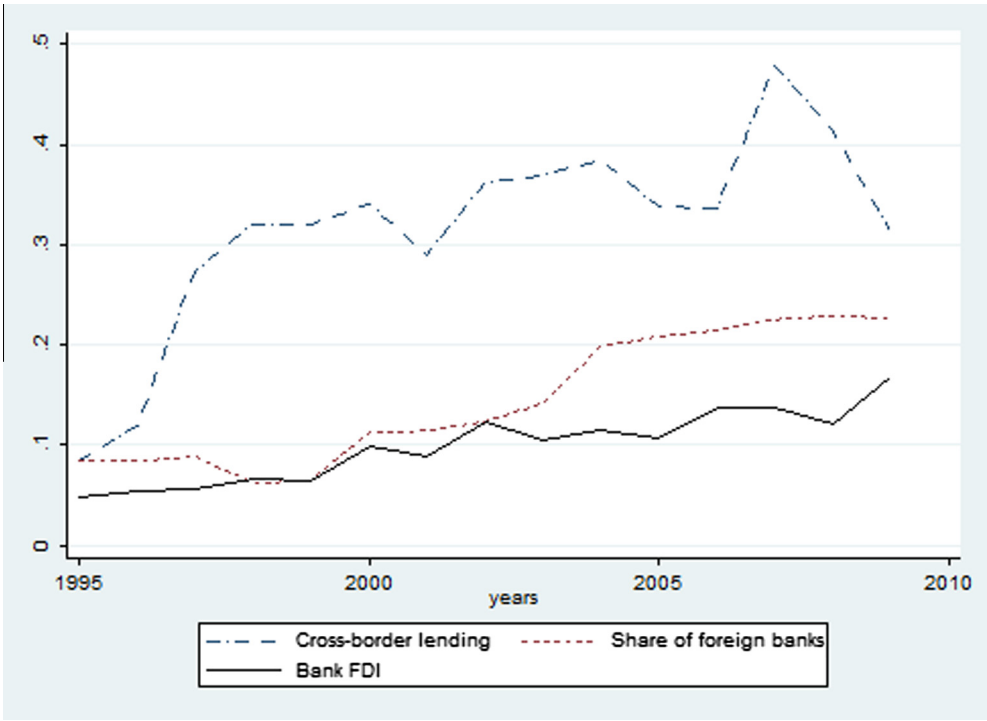


**Fig. 1.** International banking. This Figure shows different measures of international banking for 18 OECD countries. Data on cross-border lending is taken from the Balance of Payments Statistics by the IMF. It denotes the sum of banks' loans (assets plus liabilities) relative to a country's GDP. Bank FDI includes outward- and inward FDI of financial intermediaries relative to GDP. The data are publicly available from the OECD. The share of foreign banks measures the number of foreign banks in the total number of banks in a given country. It is computed from data provided by Claessens and van Horen (2014). The lines depict the median values across the 18 OECD countries.

heterogeneous banks and different modes of international banking, namely direct cross-border lending and foreign direct investment (FDI) in the banking sector. While De Blas and Russ (2010a, 2013) theoretically study the implications of financial liberalization on banks' net interest margins, lending rates and welfare, I use the model to study the implications of different modes of cross-border banking for banking sector concentration.

Given that the model includes a large number of banks that differ in size, it is predestined to analyze competitive implications of cross-border banking. Moreover, bank markups are endogenous and the effects of cross-border banking on market structure (concentration) can be disentangled from effects on competitive pressures (net interest margins).

Using loan volumes as a proxy for bank size, I compute the banking sector's Herfindahl-index of concentration as well as the three-bank concentration ratio. Model simulations show that concentration decreases both for increased cross-border lending and for more bank FDI. Concerning market power the model predicts, as shown by De Blas and Russ (2010a, 2013), that banks' markups rise compared to financial autarky if bank FDI is considered in the model. However, markups are unaffected by direct foreign lending. Thus, the model predicts that the link between the evolution of net interest margins and concentration does not have to be positive and depends on the type of cross-border banking.

In a second step, I empirically study how different types of international banking are linked to concentration and market power. To that goal, I use a panel of 18 OECD-countries for the period 1995–2009. Evidence from this data shows that international banking, both in the form of foreign lending and FDI, coincides with lower Herfindahl-indexes and three-bank concentration ratios. Using net interest margins as a proxy for banks' markups, I find that market power is positively related to bank FDI whereas it is unaffected by direct foreign lending. The empirical evidence is thus in line with the theoretical model predictions.

My work is related to different strands of literature. Studies on the link between cross-border banking and competition find that foreign bank entry is an important determinant of bank competition. As discussed by Allen et al. (2011), foreign entry increases competitive pressures due to the larger number of banks in the domestic market. Claessens and Laeven (2004) show that both foreign bank ownership and fewer restrictions on entry or bank activities promote competitiveness. They find that more concentration does not have to coincide with less competition (see also Schaeck et al., 2009), and conclude that the degree of contestability, i.e. the threat of entry by potential competitors, is more important for competitive behavior than market structures like concentration. Thus, they provide empirical support for the theoretical prediction that it is not actual entry that fosters competitiveness, but rather market contestability (Baumol et al., 1982). Empirical evidence by Jeon et al. (2011) for Asia and Latin America points into the same direction. Higher foreign bank participation fosters competition in the host market, and this is the more so the more efficient the entering banks and the less concentrated the host markets are. As summarized by Claessens (2006), competitive pressures that come along with cross-border banking have been found to increase the efficiency of the host country banking sector, to reduce the cost of financial intermediation, and to lower the borrowing costs for firms. I complement this literature by proposing a theoretical explanation of the effects of cross-border banking on concentration and competitive pressures as measured by net interest margins. Moreover, besides foreign banking in the form of foreign ownership, I study the effects of cross-border lending on concentration and market power.

A large number of studies address the question of how competition and concentration in the banking sector affect financial stability.[3] Theoretical and empirical results are mixed. While one set of studies finds evidence that more concentrated and less competitive

[3] See Beck (2008) for an overview.