

Comment on “The Real Effects of Financial (Dis)Integration: A Spatial Equilibrium Analysis of Europe”, by Chakraborty, Hai, Holter, and Stepanchuk

Stefania Garetto*

Boston University and CEPR

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1 Introduction

What are the effects of barriers to financial integration on the real economy? In the aftermath of the 2008 financial crisis and of the 2013 European sovereign debt crisis, this is a question of primary importance to economists and policy-makers.

Previous literature mostly addressed this question following a reduced-form approach, identifying mechanisms of shocks transmission from banks to the real economy by exploiting variation within extremely disaggregated datasets¹. These studies provide great insights into specific episodes of financial distress, but entail large data requirements (bank-level and firm-level balance sheet information, possibly linked). Moreover, from the perspective of normative policy-making, reduced-form studies do not allow the researcher to conduct counterfactual exercises on alternative economic scenarios. Conversely, starting from a model-driven

*E-mail: garetto@bu.edu

¹Khwaja and Mian (2008) study the transmission of bank shocks to firms in Pakistan. The shock transmission channel is analyzed also by Jiménez et al. (2014) and Bottero, Lenzu, and Mezzanotti (2016), who use matched bank-firm data from Spain and Italy, respectively. For the U.S. case, Greenstone, Mas, and Nguyen (2014) use confidential microdata from the Longitudinal Business Database (LBD), while Chodorow-Reich (2014) merges bank information from the Thomson Reuters Dealscan database and the FED Consolidated Financial Statements for Bank Holding Companies with firm-level data from the LBD.

perspective, Chakraborty et al. (2017) present a carefully executed quantitative analysis of the effects of financial segmentation across countries for the real economy.

First, Chakraborty et al. (2017) provide evidence of the decline in cross-border banking in Europe after the financial crisis of 2008. Next, to quantify the effect of financial segmentation, the authors develop a multi-country model where banks' endogenous allocation of funds across countries feeds into firms' access to capital and then output. In the model, financial segmentation is an iceberg-type friction to cross-border lending, whereby funds lent abroad provide lower returns compared to the ones that banks resident in the foreign host country perceive. Finally, financial frictions are calibrated to match cross-border lending flows, and the quantitative model is used to perform a series of counterfactual exercises to assess the role of financial fragmentation for the fall in output post-crisis, and the potential output gains that European countries could obtain from further financial integration. The authors find that increased barriers to financial integration drove a 0.54% drop in real output in Europe since the crisis.

2 What Drives Cross-Border Lending Flows?

Since the question of interest is the quantification of the cross-country gains from financial integration, it is instructive to reflect on the drivers of financial integration. Chakraborty et al. (2017) present a model with many possibly asymmetric countries, differing in their TFP level, production technologies, and factor endowments. Within each country there are three agents: a representative household, a representative firm, a bank. The household deposits its savings in the domestic bank, which lends them to firms located both domestically and abroad. The banks's allocation of funds across countries is driven by a diversification motive: allocating capital in multiple countries diversifies away the risk from country-specific fluctuations in TFP and maximizes risk-adjusted returns to capital. The international allocation of capital then affects firm's output in every country.

Diversification of risk is only one of the possible drivers of cross-border capital flows. A few recent papers in the literature on global banks use deterministic frameworks where banks maximize profits from lending and decide to lend in foreign countries to expand the size of their loans market.² Opposite to the current setting, the market access motive rationalizes

²See Niepmann (2016) and Fillat, Garetto, and Goetz (2016), among others.

cross-border banking flows also across deterministic and symmetric economies. Especially in the context of big banks, access to a large customer basis seems a relevant reason to establish large global banking operations.³

Despite the growth in cross-border lending flows that Chakraborty et al. (2017) document, the banking sector remains far from frictionless. More than in other sectors, differences in regulation across countries may be important determinants of the direction of cross-border flows. This hypothesis is strongly supported by the empirical evidence in Houston, Lin, and Ma (2012), who find that banking capital flows tend to go into markets with fewer regulations.

More generally, empirical evidence in support of the diversification hypothesis is scarce. Using samples of internationally exposed firms across industries, Jacquillat and Solnik (1978), Senchack and Beedles (1980), Rowland and Tesar (2004), and Fillat and Garetto (2015) found limited or no evidence of diversification benefits. Moreover, Niepmann (2015) and Aviat and Coeurdacier (2007) present evidence providing little empirical support for diversification in the banking data. These observations should guide the interpretation of the quantitative results in Chakraborty et al. (2017): the calibrated fall in output that is driven by the reduction in financial integration after the crisis is purely due to lower diversification opportunities. Considering other drivers of cross-border flows could generate very different (and possibly larger) effects of financial disintegration.

3 On the Modeling of Financial Frictions

A large literature in international trade has modeled frictions to cross-border flows in goods and services as bilateral “wedges” that increase the prices of traded goods compared to domestically produced ones (or equivalently, reduce the returns of cross-border transactions compared to internal ones). Bilateral ad valorem trade barriers reproduce features of a transaction that may be specific to the country-pair involved, and have been proven to be a parsimonious but effective way of modeling trade frictions.

Chakraborty et al. (2017) adopt the iceberg formulation but assume that frictions to cross-border flows only depend on the receiving country, not on the source. The return to

³A recent article from the *Boston Globe* reported that in 2013 Banco Santander had 1.7 million US customers and its chairmain was hoping to increase its profits from US operations to \$2 billion in a few years. Market size must matter to determine the allocation of banking flows across countries.

capital invested in country j for a bank in country i is given by: $R_{ij} = R_{jj}e^{-\theta_j}$, where R_{jj} is the domestic return in country j and $e^{-\theta_j}$ is the friction to cross-border investment. This parametric form allows the authors to contain the dimensionality of the problem to the estimation of only N parameters, where N is the number of countries in the dataset. However, this convenience comes at a cost: the model can only match total capital inflows in a country, as the returns to cross-border lending in a country are independent on where the lending flows come from. At the contrary, a bilateral friction, by capturing features of the capital market that are specific of the country-pair involved, would allow the model to match net bilateral capital flows, and give a more complete picture of banking integration in Europe.

A separate observation is also in order regarding the use of iceberg-type frictions in this setting. Financial frictions of the iceberg type imply that – in absence of uncertainty – the model cannot generate two-way bilateral cross-border lending flows.⁴ This implication is highly counterfactual, especially within Europe, where cross-border loans appear to flow in both directions within each country pair. Adding TFP shocks to the model avoids this problem: under conditions of uncertainty, banks may be willing to invest in countries with lower returns as a hedge against country-specific fluctuations. However, given how highly correlated the EU economies are, one may wonder whether the gains from diversification are large enough to induce bilateral lending flows as large as the ones we see in the data. The Bank for International Settlements, in its consolidated statistics by sector, recipient country, and reporting country, clearly shows that bilateral cross-border flows are pervasive, especially among European countries.⁵

⁴To see this, let's consider the following simple example, where – for the sake of the exposition – let i denote Italy and j denote Germany. From the perspective of Italian banks, there are three possible scenarios: if $R_{ii} > R_{ij}$, Italian banks invest only in Italy; if $R_{ii} < R_{ij}$, Italian banks invest only in Germany; and if $R_{ii} = R_{ij}$, Italian banks are indifferent about where to invest. Suppose that capital flows to equilibrate the rates in the two countries, so that in equilibrium we have $R_{ii} = R_{ij}$. However, given that the friction to cross-border flows is of the iceberg type, if Italian banks are indifferent about where to invest ($R_{ii} = R_{ij}$), then German banks will only invest in Germany ($R_{ji} < R_{jj}$). This can be seen from the following set of inequalities: $R_{ji} = R_{ii}e^{-\theta_i} < R_{ii} = R_{ij} = R_{jj}e^{-\theta_j} < R_{jj}$.

⁵See <http://www.bis.org/statistics/consstats.htm> .

4 Measurement of Cross-Border Flows: The Role of Multinational Banks

The correct measurement of financial integration in the data is of primary importance for the quantitative conclusions of the paper by Chakraborty et al. (2017). For completeness, the measurement of financial integration needs to keep into account different forms of international lending. As an example, German banks have at least two possibilities to lend to customers in another country (say France). They can lend across borders to French customers directly, without the need of establishing banking offices in France (cross-border banking) or they can establish banking affiliates in France and serve French customers directly from France, so doing banking FDI. This second possibility is a domestic transaction if we consider the location of the banks and its customers, but a cross-border transaction due to the bank corporate structure as it could be that German savings get invested into loans to French customers.

To quantify the role of banking FDI for the measurement of financial integration, I present here some statistics computed using U.S. data. Domestic loans and loans from banking FDI are computed from the Share Data for U.S. Offices of Foreign Banking Organizations (Selected Assets and Liabilities of Domestic and Foreign Owned U.S. Commercial Banks plus US Branches and Agencies of Foreign Banks). Cross-border loans are from BIS Statistics (cross-border positions reported by banking offices located in BIS reporting areas). All data are in million US\$.

Table 1 reports the amounts associated with different types of loans in the U.S. in the years 2007 and 2009. When we measure financial integration with a location-based measure, including only cross-border loans, the U.S. exhibit a ratio of cross-border to total loans of 33-35%, depending on the year. When banking FDI is included as an ownership-based measure of cross-border financial activity, the ratio goes up to 43-45%. In other words, not taking into account banking FDI results into a quantitatively important understatement of financial integration: the “correct” measure, based on bank ownership, is almost 30% higher than the one based on bank location. Figure 1 illustrates the same concept over a longer sample period.

	2007	2009
Domestic loans	6,074,155	5,901,781
Cross-border loans (CB)	3,858,661	3,447,650
FDI loans	1,054,476	1,019,380
CB/TOT (%)	35.12	33.25
(CB+FDI)/TOT (%)	44.72	43.08
FDI adjustment (%)	27.33	29.57

Table 1: Measurement of Financial Integration, U.S. data.

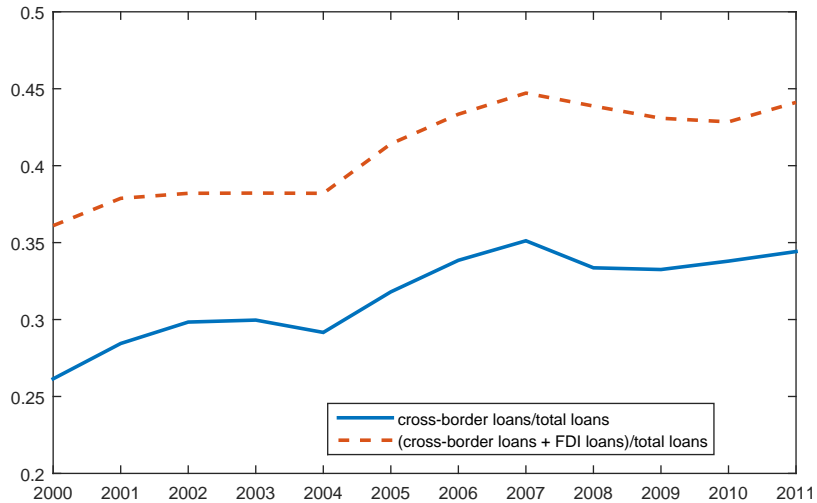


Figure 1: Measurement of Financial Integration, U.S. data, 2000-2011.

5 Conclusions

Chakraborty et al. (2017) have written a very ambitious paper that addresses quantitatively an important and timely question: what are the real effects of financial segmentation? By taking seriously both modeling and measurement, this paper advances our understanding of the complex interplay between financial activities and real output in the global economy.

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