Waves of international banking integration: A tale of regional differences

Vincent Bouvatier [a,*] , Anne-Laure Delatte [a,b,c]

[a] EconomiX - CNRS, Université de Paris Ouest- Nanterre La Défense, 200 Avenue de la R épublique, 92001 Nanterre, France
[b] OFCE, France
[c] CEPR, London

A R T I C L E   I N F O

A B S T R A C T

We propose an original measure of international banking integration based on gravity equations and a spline function on a panel of 14 countries and their 186 partners between 1999 and 2012. Contrary to the conventional wisdom, we uncover that: (1) the international banking integration outside the euro area has been tenaciously increasing since \1999 and has even strengthened after the crisis. (2) In contrast, the international banking integration of the euro area has been cyclical since 1999 with a peak in 2006 and a complete reversal since then. (3) This decline is not a correction of previous overshooting but a marked disintegration. (4) Outside the euro area, the level of income does not affect the shape of banking integration.

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1. Introduction

A massive reversal of international capital flows has taken place during the Great Recession: in 2013, cross-border capital flows were 40% of their 2007 level.[1] While the reversal reached an unprecedented magnitude in all broad categories of flows (Forbes and Warnock, 2012), the sharpest decline in activity was in international bank loans extended cross-border or by local affiliates (Milesi-Ferretti and Tille, 2011). The retrenchment after 2008 was highly heterogeneous across countries with emerging countries less severely hit than developed countries (Milesi-Ferretti and Tille, 2011). While financial integration is often considered as a tenacious long-run trend, this massive retrenchment raises the possibility that it may not be a monotonic process. Yet, the recent financial reversal is barely put in perspective with the ebbs and flows of international capital. With the benefits of hindsight, can we identify cyclical patterns in financial integration over a long span? How do different areas compare? The major aim of our analysis is to estimate the trends in international banking integration. We construct a measure of banking integration to quantitatively document the different patterns across different geographical areas including the stage of their banking integration and the magnitude of recovery when it happened. We find that banking integration of the euro area has been cyclical since 1999 while it has not reversed outside the euro area. The uncovered dynamics echo the waves in international capital flows described in Forbes and Warnock (2012). Beyond the specific crisis events under scrutiny, our findings hopefully contribute to a better understanding of the financial cycle.

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* Corresponding author.
E-mail addresses: vbouvatier@u-paris10.fr (V. Bouvatier), annelaure.delatte@sciencespo.fr (A.-L. Delatte).
[1] See McKinsey Global Institute, "Financial globalization: Retreat or reset?", March 2013.

Our measure of banking integration draws on recent contributions in three different aspects. First, the debate about global imbalances has made it clear that *gross* positions are important to grasp the degree of financial integration (Milesi-Ferretti et al., 2010; Shin, 2012). This is because *net* positions can hide massive *gross* positions.[2] In this work, we focus on the asset side of banks to document the adjustment of their foreign claims across time. Second, understanding the overall structure of foreign claims positions requires estimates of bilateral positions. In fact, the gravity literature applied to financial transactions emphasizes the influence of bilateral differences of information and bilateral institutional linkages on the allocation decision of investors (Portes et al., 2001; Portes and Rey, 2005; Martin and Rey, 2004; Okawa and Van Wincoop, 2012). Third, in order to compute a measure of banking integration, we draw inspiration from an indirectly related literature on trade openness based on the idea of a benchmark level calculated from a gravity model (see Wang and Winters, 1992; Hamilton and Winters, 1992; Nilsson, 2000 for trade in goods and Park, 2002; Guillin, 2013a for trade in services). More precisely, in the trade literature, the approach consists in estimating gravity models where bilateral transactions are determined by standard gravity factors (economic size and frictions). Then what is left over in the regression, i.e. what is not related to standard gravity factors, is kept to compute an openness measure. The larger the positive leftovers, the more open the countries; in turn the negative and large leftovers are associated with closed countries. Here, similarly, we estimate gravity equations for banking claims including size and frictions factors. We identify what is not explained by standard gravity factors or white noise to obtain a quantitative measure that informs us on the current state of banking (dis)integration in different geographical areas.

More specifically, we use gravity equations initially developed to analyze the determinants of bilateral trade flows, which have later shown to do a good job fitting bilateral financial flows.[3] Gravity equations are a model of bilateral interactions in which "mass" and "resistance" terms enter multiplicatively. Simply put, bilateral financial flows rise proportionally with the economic size of both countries ("mass") and are negatively correlated with frictions mentioned before, including information asymmetry proxied by physical distance as well as different language, currency and legal system ("resistance"). This approach has two main advantages. First, the model is based on bilateral data at the country level, meaning that we have granular data on source and destination of funds to draw an accurate picture of international banking activities. Second, it controls for frictions as well as time-varying factors that affect banking activity. For example, when an economy is hit by a severe financial crisis and falls in recession, the size of its economy decreases and its international banking activities adjust downward. This size effect should however not be considered as a disintegration of banking sectors. We include trends in the estimated specifications to capture the changes in the banking integration and we allow the trends to be nonlinear to account for reversals across time. A spline function (i.e., a smooth polynomial function that is piece-wise-defined) is used to allow a maximum of flexibility but we show that our findings are robust to alternative non-linear functional forms. We run our estimates on 14 countries (vis-à-vis around 186 partner countries) including 7 euro area members over the period 1999–2012. We estimate the empirical model with fixed effects and Hausman and Taylor (1981) estimators. The latter has two advantages of identifying the effect of time invariant bilateral characteristics and providing more efficient estimates.

Our estimates uncover new stylized facts. We find that the decline in banking activities observed after the crisis was due to temporary frictions in all countries outside the euro area. The international banking integration has never declined and on the contrary has even strengthened with a level of banking activities, in 2012, 37% higher than what the gravity model would predict. In contrast, the economic downturn faced by the euro area since 2008 is not sufficient to account for the massive retrenchment of euro area banks from international activities. Depending on the destination geographic area, we assess that in 2012 the exposure of euro area banks was between 37% and 33% below what gravity factors would predict. Last, international banking activity in the euro area has been cyclical since 1999 with a peak in 2006 and we find a larger amplitude of the cycle in stressed countries than core countries.

This work is related with the recent papers documenting the massive retrenchment of international financial flows during the crisis (Forbes and Warnock, 2012; Milesi-Ferretti and Tille, 2011; Lane and Milesi-Ferretti, 2012). Unlike most of these papers which investigate aggregate flows, our paper relies on bilateral positions. Some recent papers estimate bilateral dynamics too, including (Galstyan and Lane, 2013; Gourinchas et al., 2012) for portfolio data and (De Haas and Van Horen, 2013) for foreign bank loans. All these papers focus on the shifts that took place during the great recession to explain their drivers (geographic distance and other information-sensitive factors) or measure the wealth transfers across regions. And they treat all advanced countries similarly because they cover an estimation period before the euro area financial fragmentation became visible in the data. Relatively to these papers, our longer period of estimation allows us to document the full adjustment of bank activities and emphasize that there was no such thing as banking disintegration outside the euro area in the aftermath of the financial crisis.

Our work also complements papers examining cross-border integration among the euro area countries. On the one hand, during the first decade of the single currency, papers have documented unambiguous positive effects of euro on cross-border financial integration (Kalemli-Ozcan et al., 2010; Lane, 2006; Coeurdacier and Martin, 2009).[4] Here, we show that the level of integration has changed over time and that integration can actually revert. On the other hand, by putting euro area in perspective with the rest of the world, we complement the recent works that have documented the banking

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[2] For example, from the end of the nineties, European banks have been net lenders to the US corporate sector and a net recipient of inter-bank and deposits from the US at the same time. As a consequence, the European external position towards the US was balanced, contrary to emerging surplus countries, implying that the growing role of European banks in inter-mediating US savings has been overlooked by regulators (McGuire and Von Peter, 2009; Baba et al., 2009).

[3] See Head and Mayer (2013) for a literature review of gravity models.

[4] See Papaioannou (2009) for a literature review.