Journal of Financial Economics 113 (2014) 368–382

Contents lists available at ScienceDirect

Journal of Financial Economics

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

The international transmission of bank capital requirements: Evidence from the UK☆

Shekhar Aiyar[a], Charles W. Calomiris[b,*], John Hooley[a,1], Yevgeniya Korniyenko[a,1], Tomasz Wieladek[c]

[a] International Monetary Fund, WA DC, USA
[b] Columbia Business School, 3022 Broadway, Manhattan, NY 10027, USA
[c] Bank of England, Threadneedle Street, London EC2R 8AH, UK

ARTICLE INFO

Article history:
Received 3 May 2013
Received in revised form
4 September 2013
Accepted 18 September 2013
Available online 14 May 2014

JEL classification:
G21
G18
E51
E52
E44

Keywords:
Cross-border lending
Loan supply
Capital requirements
International transmission

ABSTRACT

We use data on UK banks' minimum capital requirements to study the impact of changes to bank-specific capital requirements on cross-border bank loan supply from 1999Q1 to 2006Q4. By examining a sample in which each recipient country has multiple relationships with UK-resident banks, we are able to control for demand effects. We find a negative and statistically significant effect of changes to banks' capital requirements on cross-border lending: a 100 basis point increase in the requirement is associated with a reduction in the growth rate of cross-border credit of 5.5 percentage points. We also find that banks tend to favor their most important country relationships, so that the negative cross-border credit supply response in "core" countries is significantly less than in others. Banks tend to cut back cross-border credit to other banks (including foreign affiliates) more than to firms and households, consistent with shorter maturity, wholesale lending which is easier to roll off and may be associated with weaker borrowing relationships.

1. Introduction

It is well documented that globalized banks transmit balance sheet shocks across borders. Cetorelli and Goldberg (2011) show that during the global financial crisis, liquidity shocks to banking systems in advanced countries caused a contraction in lending to emerging markets. Aiyar (2011, 2012) and Hoggarth, Hooley, and Korniyenko (2013) document that foreign banks withdrew funding from UK-resident banks during the crisis, contributing to a contraction in domestic lending. De Haas and Van Horen (2013) show that cross-border retrenchment by banks was particularly severe in countries where the bank was less integrated in the local banking system. And ample

☆ We are grateful to Phil Strahan, Heitor Almeida, Viral Acharya, other NBER conference participants, and an anonymous referee for comments on a prior draft, and to Mark Robson and the other staff of the Bank of England's Monetary and Financial Statistics Division for making the data on UK banks available to us and for helping us to access the data. This paper should not be construed as representing the opinions of the Bank of England, the IMF, or any other organization. All errors and omissions remain our own.

* Corresponding author.
E-mail addresses: saiyar@imf.org (S. Aiyar), cc374@columbia.edu (C.W. Calomiris), jhooley@imf.org (J. Hooley), ykorniyenko@imf.org (Y. Korniyenko), tomasz.wieladek@bankofengland.co.uk (T. Wieladek).
[1] Currently International Monetary Fund but completed this work while at the Bank of England.

http://dx.doi.org/10.1016/j.jfineco.2014.05.003
0304-405X/

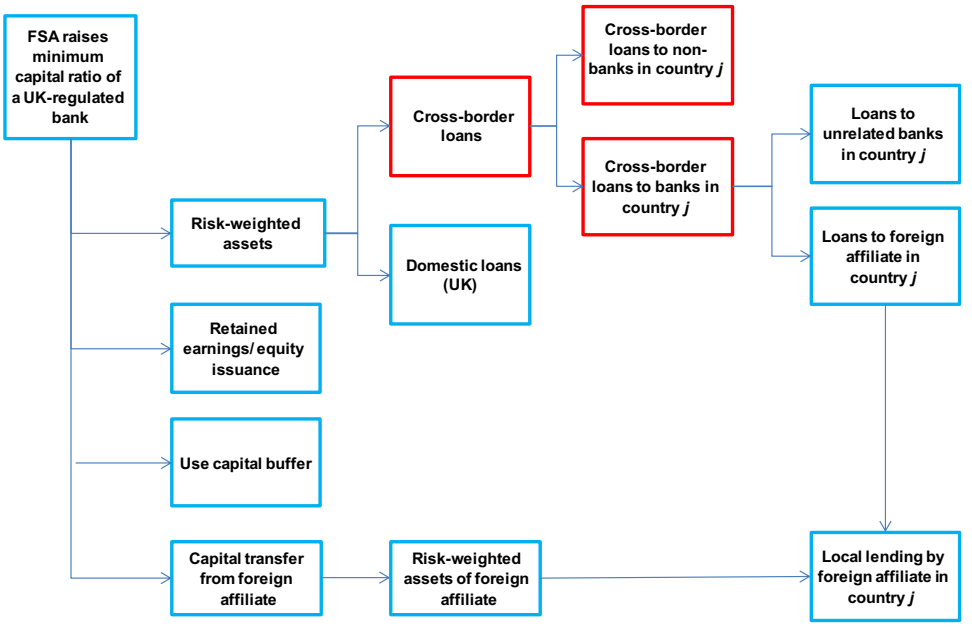

Fig. 1. International transmission of changes in domestic capital requirements.[a] ([a]Note this study focuses on the cross-border lending aspect of the transmission mechanism, highlighted in red.) (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

pre-crisis evidence from diverse episodes and settings is marshaled by contributions such as Peek and Rosengren (1997) and Schnabl (2012).

An important instance of an externally imposed balance sheet adjustment is a regulatory change in minimum capital requirements. A separate literature has found that changes in capital requirements can trigger shifts in domestic credit supply. Several papers use cross-sectional data for this purpose, or examine changes in aggregate bank lending around the time of a regulatory regime change (see Vanhoose (2008), for a review).[2] A more recent literature focuses on a unique data-set from the UK—where the regulator imposed time-varying, bank-specific capital requirements—to better identify the impulse from regulatory changes in minimum capital requirements to bank lending (Aiyar, Calomiris, and Wieladek, 2014a, 2014b; Francis and Osborne, 2012; Bridges, Gregory, Nielsen, Pezzini, Radia, and Spaltro, 2014; Noss and Toffano, 2014). All of these papers share the trait that the credit supply response analyzed is purely domestic.

It is important to emphasize that these effects reported in previous papers are based on observed sample averages during the 1998–2007 period. In theory, higher capital requirements could increase lending at banks with very low or negative net worth; if capital ratio requirements help to prevent or overcome a so-called "debt overhang" problem, which can occur at very low capital ratios, then in principle, higher capital could encourage lending. Furthermore, our results measure short-term loan-supply reactions. It is not surprising that a decline in the loan supply is associated with a transition to higher capital requirements, but in the longer run, improvements in the stability of the banking system that result from higher capital requirements could improve banks' ability to raise funds in the market and thereby mitigate the short-run declines in loan supply that we document here.

But even then, there is little reason to think that the response to such a balance sheet shock would be restricted to the country in which the regulatory change originates. Indeed, the literature on the international transmission of bank liquidity shocks suggests that the response is very likely to be transmitted to other countries into which the subject bank lends. The mechanism may be illustrated by considering a stylized bank balance sheet. When a bank's minimum capital requirement is raised, it can react by either raising new capital (including via retained earnings), running down any 'buffer' of capital it holds in excess of the minimum requirement, or reducing risk-weighted assets (Fig. 1). To the extent that the bank reduces assets, it could either cut back on domestic assets or cross-border assets. A reduction in cross-border assets in turn, could involve cutting back on its claims on foreign-resident banks (including affiliated foreign banks), or its claims on foreign-resident non-banks (i.e., households and firms). A reduction in lending to foreign-resident non-banks directly reduces the credit available to finance real economic activity in the foreign country. A reduction in lending to foreign banks, on the other hand, is in effect a liquidity shock to the foreign country's banking system, and likely to be transmitted to the economy via a reduction in credit supplied by the (liquidity constrained) banking system.

[2] Chiuri et al. (2002) examine changes in bank lending behaviour around the time of a regulatory regime change. Peek and Rosengren (1995a, 1995b) and Gambacorta and Mistrulli (2004) are examples of papers that analyze cross-sectional differences in lending by banks that differ according to their regulatory circumstances, including whether they are the subject of a regulatory action, or whether they have relatively small buffers of capital relative to the minimum requirement.