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Macroprudential policy and bank risk ☆

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ABSTRACT

This paper investigates the effects of macroprudential policies on bank risk through a large panel of banks operating in 61 advanced and emerging market economies. There are three main findings. First, there is evidence suggesting that macroprudential tools have a significant impact on bank risk. Second, the responses to changes in macroprudential tools differ among banks, depending on their specific balance sheet characteristics. In particular, banks that are small, weakly capitalised and with a higher share of wholesale funding react more strongly to changes in macroprudential tools. Third, controlling for bank-specific characteristics, macroprudential policies are more effective in a tightening than in an easing episode.

1. Introduction

Prior to the global financial crisis (GFC) financial stability was mainly considered from a microprudential perspective. The aim of supervisory policy was to reduce the risk that individual institutions would fail, without any explicit regard for their impact on the financial system as a whole or on the overall economy. Lehman Brothers' default reminded us that financial stability has a macroprudential or systemic dimension that cannot be ignored. Treating the financial system as merely the sum of its parts leads one to overlook the system's historical tendency to swing from boom to bust. Nowadays, financial stability is considered from a macroprudential perspective.

However, the implementation of a new macroprudential framework for financial stability raises a number of challenges. A first challenge is the evaluation of the effectiveness of macroprudential policies, especially when more than one tool is activated. Moreover, effectiveness should be analysed with respect to the specific goal that macroprudential policies are designed to achieve; that is, to increase the resilience of the financial system, or, more ambitiously, to tame financial booms and busts. At the moment, the evidence is mixed and most research focuses on analysing the impact of macroprudential tools on bank lending (as an intermediate target), not directly on bank risk (the limitation of which is the ultimate goal). Our paper aims to fill this gap by analysing the effectiveness of macroprudential tools on bank risk and by comparing the results with those obtained so far on credit growth.

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For instance, recent evidence suggests that debt-to-income ratios and, probably to a lesser extent, loan-to-value ratios are comparatively more effective than capital requirements as tools for containing credit growth (Claessens et al., 2013). Indeed, the recent activation of the Basel III countercyclical capital buffer to risk-weighted domestic residential mortgages in Switzerland, though having had some effect on mortgage pricing, seems to have had little impact on credit extension (Basten and Koch, 2015). But the main goal of the Basel III buffers is to increase the resilience of the banking system, not to smooth the credit cycle. Restraining the boom is perhaps no more than a welcome, potential side effect (Drehmann and Gambacorta, 2012).

A second challenge pertains to the varied nature of macroprudential objectives and instruments. In this area, there is no one-size-fits-all approach. Which tools to use, how to calibrate them and when to deploy them will all depend on how the authorities view the vulnerabilities involved and how confident they are in their analysis. The legal and institutional setup will also be relevant. A given instrument's effects depend on a variety of factors, which have to be assessed against the chosen objective. Some instruments may work better to achieve the narrow aim of increasing financial system resilience rather than the broader aim of constraining the cycle. For instance, countercyclical capital buffers aim to build cushions against banks' total credit exposures, whereas loan-to-value ratio caps only affect new borrowers (and usually only those that are highly leveraged). This argues in favour of capital buffers if the objective is to improve overall resilience. However, loan-to-value ratios may be more effective if the aim is to curb specific types of credit extension.

Third, most macroprudential policies aim at containing systemic risk, a type of risk that is by nature endogenous. By using macroprudential tools, policymakers aim at limiting bank risk-taking and the probability of the occurrence of a financial crisis. This means that – ideally – we should also be interested in how these policies influence a bank's contribution to system-wide risk. Measurement of systemic risk is, however, still rudimentary, although some concepts have been developed (measures such as CoVaR, stress testing and Shapley values). A first step could be to evaluate how macroprudential tools impact specific measures of bank risk, such as the expected default frequency (EDF) or the Z-score. The calculation of the EDF indicator requires bank issuance of equity on the stock market, while the Z-score is an indicator of the probability of default which relies on balance sheet variables.

This paper complements other studies on the effectiveness of macroprudential policies.[1] Different from the existing literature that focuses on the effects of macroprudential tools on credit growth (see, for example, Cerutti et al., 2017), our main contribution is to analyse the effectiveness of such policies on bank risk in a comprehensive way, exploiting the cross-sectional dimension among countries.

Interestingly, the more advanced economies tended to ignore the macroprudential dimension in the run-up to the crisis. Emerging market economies (EMEs) were generally better aware of the need to think about the financial system as a whole, and more willing to intervene in response to evidence of a build-up of imbalances and risks (Fig. 1). All this means that it is necessary to pool information for a large number of banks operating in both advanced countries and EMEs, and to control for different institutional setups and time-specific factors affecting the risk-taking channel. In other words, pooling information regarding countries with different experiences in the use of macroprudential tools greatly reduces concerns about possible omitted variables (Demirgüç-Kunt et al., 2013).

Using information for 3177 banks operating in both advanced economies and EMEs over the period 1990–2012, we find that macroprudential tools – both those focusing on dampening the cycle (ie loan to value ratios, reserve and currency requirements) and those specifically designed to enhance banks' resilience (ie capital requirements) – have a significant impact on bank risk. We also find that the responses to changes in macroprudential tools differ among banks, depending on their specific balance sheet characteristics. In particular, banks that are small, weakly capitalised and with a higher share of wholesale funding react more strongly to changes in macroprudential tools. Finally, macroprudential policies are more effective in a tightening than an easing cycle.

The remainder of this paper is organised as follows. The next section discusses how macroprudential policies can impact bank risk. Section 3 describes the identification strategy and data used in our analysis, while Section 4 and 5 present the main results and robustness checks. The last section summarises our main conclusions.

2. Macroprudential policy and bank risk

Following a widely accepted definition, "macroprudential policies are designed to identify and mitigate risks to systemic stability, in turn reducing the cost to the economy from a disruption in financial services that underpin the workings of financial markets – such as the provision of credit, but also of insurance and payment and settlement services" (FSB/IMF/BIS, 2009). However, providing a framework for the relationship between macroprudential policies and systemic risk is not straightforward. The need for macroprudential policies arises from two dimensions of systemic risk: the time and cross-sectional dimensions.

The time dimension represents the need to constrain financial booms (Borio, 2014). Such financial booms can originate from both the supply and demand sides of agents, and financial intermediary behaviour. For example, the amplification mechanism known as "financial accelerator" is mainly related to the demand side (Claessens et al., 2013). But other

[1] For an overview of the existing empirical evidence on the effectiveness of macroprudential policies see, amongst others, Claessens (2015) and Cerutti et al. (2017).