Research in International Business and Finance 36 (2016) 472–484

Contents lists available at ScienceDirect

Research in International Business and Finance

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

Financial markets development, business cycles, and bank risk in South America

Chaiporn Vithessonthi[a], Jittima Tongurai[b]

[a] Faculty of Management Science, Khon Kaen University, Muang, Khon Kaen 40002, Thailand
[b] Miyazaki International College, 1405 Kano, Kiyotake, Miyazaki 889-1605, Japan

ARTICLE INFO

Article history:
Received 29 June 2015
Received in revised form 5 October 2015
Accepted 16 October 2015
Available online 19 October 2015

JEL classification:
G15
G21
G32
O16

Keywords:
Capitalization
Banking crisis
Bank risk
Financial markets development
South America

ABSTRACT

In this paper, we examine whether banking crises or business cycles affect the influence of financial markets development on bank risk in a sample of 37 publicly listed commercial banks in seven South American countries over a 22-year period between 1991 and 2012. Banking crises in this region offer a natural setting in which the impact of financial markets development on bank risk is examined. We find that financial markets development improves banks' capitalization ratio and reduces their exposure to non-traditional banking activities, suggesting that financial markets development on average reduces bank risk. In addition, banking crises and business cycles appear to moderate the impact of financial markets development on bank risk. In the aftermath of banking crises, banks appear to concentrate more on their core traditional banking activities.

1. Introduction

Prior empirical studies find evidence suggesting that financial markets development (hereinafter "financial development") has a positive effect on economic activities by increasing the efficiency of financial services, risk management, capital allocation, and resource mobilization (Levine, 1997; Merton, 1995). However, in the short run, financial development can possibly cause financial institutions to take on greater risk, creating a lending spree, a credit boom, and even a financial crisis. That is, financial development can increase the magnitude of risk in the financial system. Taking a policy maker's perspective and market participants' viewpoint, this article focuses on the question of whether and under what conditions financial development increases bank risk. Using an unbalanced panel sample of 37 publicly listed commercial banks in seven South American countries over a 22-year period between 1991 and 2012, we address three fundamental questions: first, is financial development positively associated with bank risk? Second, is the relation between financial development and bank risk conditional on variation in business cycles? Third, do banks alter their behaviors following a banking or financial crisis?

Consistent with the literature, we measure two dimensions of a country's financial development: banking sector development (measured as the ratio of domestic credit provided by banking sector to GDP) and stock market development (measured

E-mail addresses: chaiporn@kku.ac.th (C. Vithessonthi), jtongurai@sky.miyazaki-mic.ac.jp (J. Tongurai).

http://dx.doi.org/10.1016/j.ribaf.2015.10.012
0275-5319/

as the ratio of the market capitalization of stock markets to GDP). Following Diamond and Rajan (2000) and DeYoung and Torna (2013), we measure a bank's risk using three indicators: the capitalization ratio (the ratio of equity to total assets), the revenue diversification ratio (the ratio of the noninterest income to net revenue), and the loan loss reserve ratio (the ratio of loan loss reserves to total assets).

Our empirical results shed new light on the relation between financial development and bank risk. First, it has been documented in the literature (see e.g., Vithessonthi, 2014a) that bank risk increases with financial development in the Southeast Asia region. In this paper financial development has a positive effect on the capitalization ratio and a negative effect on the revenue diversification ratio, thereby suggesting that financial development decreases bank risk in South America. Our findings can be viewed as an indication that the impact of financial development on a bank's risk-taking behavior is context-specific.

Second, we contribute to the banking/financial crisis literature (Chava and Purnanandam, 2011; Cubillas et al., 2012; DeYoung and Torna, 2013; Karas et al., 2013; Song and Lee, 2012) by providing new evidence on the effect of a banking crisis on bank risk. We find that a country-level banking crisis moderates the relationship between financial development and bank risk. Our results suggest that banking crises do not have the direct effect on bank risk but have the indirect effect on bank risk by moderating the effect of financial development on bank risk.

Third, we contribute to the business cycle literature (e.g., Acharya and Naqvi, 2012; Athanasoglou et al., 2008; Claessens et al., 2012) by showing that the stage of business cycles not only has a direct effect on the capitalization ratio, but also moderates the effect of financial development on the capitalization ratio. Our results that variation in business cycles is negatively associated with the capitalization ratio are consistent with the theoretical prediction of Acharya and Naqvi (2012), suggesting that a bank's risk taking varies with the business cycle.

Last but not least, our results also contribute to the financial reforms literature (e.g., Abiad et al., 2010; Espenlaub et al., 2012; Williams and Nguyen, 2005). In particular, we document that financial reforms are not associated with the capitalization ratio or with the loan loss reserve ratio but have a positive effect on the revenue diversification ratio. Banks in the South America region seem to concentrate more on non-interest income and thus increase their exposure to non-core banking activities as financial reforms take place.

The reminder of this paper is organized as follow. Section 2 provides a brief overview of related studies on financial development and bank risk and proposes three hypotheses. Section 3 describes our data and methodology. Section 4 presents empirical results. Section 5 concludes the paper.

2. Literature review and hypotheses

Prior studies (e.g., Guiso et al., 2004; Levine, 1997; Levine and Zervos, 1998; Ndikumana, 2005; Rajan and Zingales, 1998) provide conclusive findings that financial development has a positive effect on real economic activities (e.g., investment, employment, productivity, and economic growth). Despite the beneficial effects of financial development, there is only limited research on its possible detrimental effects on banks and financial systems. Financial development is likely to increase the risk of financial systems if financial institutions take on greater risk and create a lending boom that may lead to a financial crisis.[1] Gimet and Lagoarde-Segot (2012) find that the level of stock market development is positively associated with net credit.

A number of banking and financial crises have occurred in both developed and developing countries in the past decades. The crisis experience may reduce a level of risk that banks subsequently take in the future. A crisis usually leads to a tightening of banking regulations,[2] which will in turn induce banks be more prudent in their lending and risk taking activities. During a financial crisis, the quality of banks' assets is likely to deteriorate, which would increase bank risk exposure. Capital requirements cause banks to maintain a certain level of capital adequacy ratios, generally forcing banks to tighten their credit standards and cut back on their lending. If banks that experience one or more of banking/financial crises learn from their painful experience, they should lower their risk appetite to prevent adverse consequences during bad times (e.g., during a future crisis).

Prior studies suggest that financial reforms might reduce bank risk. For example, Williams and Nguyen (2005) find that the liberalization of a banking sector in Southeast Asian countries improves the efficiency of banks, while Espenlaub et al. (2012) show that moral hazard problems between banks and connected firms appear to be weakened following financial reforms after the Asian financial crisis. On the other hand, some regulatory reforms that have been introduced following a banking crisis as a means to reduce a bank run may have an undesirable effect on bank risk by weakening market discipline mechanisms. For instance, the findings of Demirgüç-Kunt and Detragiache (2002) indicate that the presence of explicit deposit insurance schemes may be detrimental to bank stability, the more so where bank interest rates have been deregulated and where the institutional environment is weak. In addition, Karas et al. (2013) find that there is a fall in the

[1] Bank loan growth leads to higher bank risk, including a worsening of the risk-return structure and decreasing bank solvency (Foos et al., 2010).

[2] One of the main tools to prevent financial crises is the imposition of capital-adequacy requirements. Basel Accord, a risk-based capital requirement, requires banks to hold capital of an amount that is at least 8% of their risk-weighted assets. Acharya and Yorulmazer (2007) find that the strategic choices of banks in response to regulation differ between large and small banks.