HOSTED BY
ELSEVIER
CrossMark
Available online at www.sciencedirect.com
ScienceDirect
Review of Development Finance 5 (2015) 82–90
Review of DEVELOPMENT FINANCE
www.elsevier.com/locate/rdf

Bank regulation and financial fragility in developing countries: Does bank structure matter?☆

Jeroen Klomp[a,*], Jakob de Haan[b,c,d]

[a] *Wageningen University, The Netherlands*
[b] *University of Groningen, The Netherlands*
[c] *De Nederlandsche Bank, The Netherlands*
[d] *CESifo, Munich, Germany*

Abstract

Using data for 1238 banks located in 94 developing and emerging countries, we explore whether the impact of bank regulation and supervision on banking risk (measured by the banks' Z-scores) depends on bank structure. Our findings suggest that stricter regulation and supervision increases the banks' Z-scores. Notably capital requirements and supervisory control diminish banking risk. However, the effectiveness of other dimensions of regulation and supervision depends on the organizational structure of banks. Notably activity restrictions reduce risk of large and foreign owned banks, while liquidity restrictions have most effect on the Z-scores of unlisted and commercial banks.

JEL classification: E44; G2; O16

Keywords: Financial risk; Bank regulation and supervision; Bank structure; Developing countries

1. Introduction

Although it is widely believed that stricter bank regulation and supervision will enhance the resilience of the financial sector, empirical evidence on the relationship between regulation and supervision and financial stability is mixed. For instance, Demirgüç-Kunt and Detragiache (2011) fail to find a significant relationship between countries' compliance with the Core Principles for Effective Bank Supervision as issued by the Basel Committee on Banking Supervision (BCPs[1]) and banking risk as measured by the Z-score. In contrast, using measures of bank regulation and supervision drawn from a World Bank survey, Klomp and de Haan (2012) report that regulation and supervision do not have much effect on low-risk banks, but have a highly significant effect on high-risk banks.

Most studies on the impact of bank regulation and supervision on banks' behavior focus on industrialized countries (cf. Delis and Staikouras, 2011; Klomp and de Haan, 2012) or use a sample of advanced and emerging countries (cf. González, 2005; Barth et al., 2013). However, in recent years some studies have been published that examine the impact of bank regulation and supervision on banking risk in non-industrialized countries (cf. Ben Naceur and Omran, 2011; Klomp and de Haan, 2014).

One important issue that has received scant attention in the literature on the impact of bank regulation and supervision on banking risk is whether the impact of regulation and supervision on financial stability varies among different types of banks.[2]

☆ The views expressed are those of the authors and they do not necessarily reflect the position of De Nederlandsche Bank.

* Corresponding author at: Wageningen University, Development Economics Group, P.O. Box 8130, 6700 EW Wageningen, The Netherlands.
E-mail address: jeroen.klomp@wur.nl (J. Klomp).

[1] Also several other studies have used compliance with the BCPs to proxy bank regulation and supervision (Sundararajan et al., 2001; Das et al., 2005; Podpiera, 2006 and Demirgüç-Kunt et al., 2008). However, compliance with the BCPs is mostly classified information. Several studies (including Pasiouras et al., 2006; Fonseca and González, 2010; Agoraki et al., 2011) therefore employ the World Bank survey on supervision to construct measures of bank regulation and supervision (cf. Barth et al., 2008).

[2] Exceptions are the studies by Laeven and Levine (2009) and Klomp and de Haan (2012). For their sample of 250 privately owned banks across 48 countries Laeven and Valencia (2008) report that the relation between risk and regulation

Peer review under responsibility of Africagrowth Institute.
http://dx.doi.org/10.1016/j.rdf.2015.11.001

More specifically: does bank structure (i.e. bank ownership, size, activities, and funding) affect the impact of regulation and supervision on banking risk? In this paper we expand the analyses of Klomp and de Haan (2012, 2014) and examine to what extent bank structure matters for the impact of bank regulation and supervision on banking risk using a sample of 1238 banks located in 94 developing and emerging countries. As pointed out by Claessens and Yurtoglu (2013), these countries are very different in terms of financial and institutional development from advanced countries.

Several previous studies suggest that bank structure matters for bank behavior. For instance, the results of Saunders et al. (1990) suggest that stockholder controlled banks in the US have stronger incentives to take higher risk than managerially controlled banks and that these differences in risk become more pronounced in periods of deregulation. In addition, based on a sample of about 1000 banks in 133 non-industrial countries De Nicoló and Loukoianova (2007) conclude that there are large differences in the risk profiles of banks depending on their ownership. Foreign banks take more risk compared to their domestic competitors. The findings for the German banking market of Altunbas et al. (2001) suggest that public and mutual banks have cost and profit advantages over their private sector competitors. Furthermore, for a set of European banks Lepetit et al. (2008) show that banking risk is mostly located in small banks and is caused by commission and fee generating activities. The findings of Demirgüç-Kunt and Huizinga (2010) indicate that an expansion into non-interest income-generating activities increases the rate of return on assets (ROA), while wholesale funding lowers the ROA. If bank structure affects bank behavior, the impact of bank regulation and supervision may differ across banks.

We analyze whether the structure of the supervised bank affects the impact of regulation and supervision on banking risk. Following previous studies (cf. Laeven and Levine, 2009; Demirgüç-Kunt and Detragiache, 2011) we employ the Z-score, which reflects the number of standard deviations that a bank's return on assets has to drop below its expected value before equity is depleted and the bank is insolvent, as a proxy for banking risk. We examine whether ownership (private vs. government ownership; domestic vs. foreign ownership), riskiness and size of the bank matter. Likewise, we analyze whether banking risk of listed and unlisted banks are affected in the same way by bank regulation and supervision.

To explore these issues, we apply a three-stage approach. In the first stage of our analysis, we use the survey data of Barth et al. (2004b, 2008) to compute our proxies for bank regulation and supervision. Following Pasiouras et al. (2006), we construct seven measures: (1) capital regulations; (2) regulations on private monitoring; (3) regulations on activities restrictions; (4) supervisory control; (5) deposit insurer's power; (6) liquidity regulations, and (7) market entry regulations, respectively. In the second stage of our analysis, we use a dynamic panel model to estimate the relationship between banking risk and bank regulation and supervision. To address potential endogeneity problems we estimate our models by system-GMM. Finally, we split our sample in different subsamples according to particular bank structure characteristics, such as ownership, size, and riskiness. This allows us to draw inferences about the importance of these bank characteristics on the effectiveness of supervision and regulation.

Our findings suggest that stricter banking regulation and supervision decreases banking risk. In particular, we find that capital requirements and supervisory control are negatively related to the risk of almost every kind of bank. The effectiveness of other types of regulation and supervision depends on bank structure. For instance, regulations concerning activity restrictions reduce risk at large and foreign owned banks, while liquidity restrictions have most effect on risk of unlisted and commercial banks.

The remainder of the paper is structured as follows. The next section introduces our proxies for bank regulation and supervision and describes the methodology and other data used. Section 3 presents the estimation results for the effect of bank regulation and supervision on banking risk and the role of bank structure therein. The final section concludes.

2. Data and methodology

2.1. Banking risk and regulation[3]

Our largest sample consists of sample of 1238 banks located in 94 developing and emerging countries (see Table A1 in the online Appendix for the number of banks in each country). We measure banking risk by the Z-score. The Z-score indicates the number of standard deviations that a bank's return on assets has to drop below its expected value before equity is depleted and the bank is insolvent (see Roy, 1952; Hannan and Hanweck, 1988; Boyd and Runkle, 1993; De Nicolo, 2000). Thus, a higher Z-score indicates that a bank is less fragile. If profits follow a normal distribution, it can be shown that the Z-score measures the distance-to-default. The data on the Z-score is taken from Bankscope of Bureau van Dijk. As Fig. 1 shows, the average Z-score is quite stable in the period of analysis for emerging markets, while for developing countries it increases over time.

Barth et al. (2004b, 2008) collected detailed and comprehensive information on bank regulation and supervision for more than 107 countries between 1999 and 2008.[4] We use this survey data to compute proxies for bank regulation and supervision. The survey consists of 175 questions on regulation and supervision of commercial banks. Following Pasiouras et al. (2006),

depends on each bank's ownership concentration. For their sample of 200 banks in 21 advanced countries Klomp and de Haan (2012) examine whether the impact of regulation and supervision depends on similar bank structure characteristics as considered here.

[3] This section draws on Klomp and de Haan (2012, 2014).

[4] Due to missing data not all countries could be included. See Table A1 in the online appendix for the list countries. This table also shows the classification of countries based on information provided by the IMF http://www.imf.org/external/pubs/ft/weo/2012/update/02/index.htm.