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## Supervisory powers and bank risk taking

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#### ABSTRACT

We examine the effect of different types of bank supervisory powers in place *before* the crisis on bank risk-taking *during* the crisis. We employ data of more than 8000 banks from high-income OECD countries for the 2007–2011 period and impaired loans to gross loans ratio as proxy for bank risk-taking. Our Hausman–Taylor estimates indicate that the powers of bank supervisors to shake up the organizational structure of banks are more effective than powers to issue monetary penalties. Our results also suggest that supervisory powers do not affect risk-taking behavior of systemically important banks.

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#### 1. Introduction

The recent global financial crisis highlighted the importance of sound bank regulation and supervision for maintaining financial stability. Several authors argue that lax regulation led banks to take excessive risks that caused large losses during the crisis. For instance, according to Stiglitz (2010, p. 12), "it was deficiencies in regulation and regulatory enforcement that failed to prevent the banks from imposing costs on the rest of society." However, as will be explained in more detail in Section 2, the empirical evidence on the impact of bank regulation on bank risk-taking is mixed at best.

The impact of regulation and supervision on banking risk is not only determined by the rules in place, but also by the powers of the supervisory authorities. An important question that has hardly been researched is which powers should be assigned to supervisory agencies. Only a few papers have touched upon this question and most work on this topic is theoretical. For instance, Prescott (1997, 1999) and Kupiec and O'Brien (1995) argue that supervisors' powers to impose fines and penalties on banks may reduce moral hazard problems in banking.

We examine the impact of different types of bank supervisory powers in place *before* the crisis on bank risk-taking *during* the crisis, proxied by the impaired loans to gross loans ratio, for more than 8000 banks in high-income OECD countries for the period 2007–2011. In 2007 the crisis started with New Century Financial Corporation filing for Chapter 11 bankruptcy and Bear Stearns liquidating some of its hedge funds. As our sample includes many European banks and the euro crisis affected these banks seriously (cf. Fiordelisi et al., 2014), we consider all years since 2007 until the end of our sample as crisis period<sup>1</sup>.

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<sup>&</sup>lt;sup>1</sup> Although the crisis was already showing signs of reversal in 2009 with extensive US and European bailouts packages, Shehzad and de Haan (2013) show that in 2010/2011 investors' confidence in banking firms was still very low in high-income OECD countries.

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Our data on supervisory powers are from the survey by Barth et al. (2008) which refers to the situation at the end of 2005. Time-varying regulation data is not available to the best of the authors' knowledge. However, as pointed out by Barth et al. (2004) and Beck et al. (2006), the change in bank regulation and supervision variables is usually very small. Additionally, using data that refer to 2005 also helps us to avoid any endogeneity which may arise because of changes in regulatory policies during the crisis.

While a number of indicators can be used as a proxy for bank risk-taking, such as distance to default, *Z*-score, and earnings volatility, we follow Boyd et al. (2010) and focus on the impaired loans to gross loans ratio. We see three advantages of using this ratio as a proxy for bank risk-taking. First, it is widely used by international organizations, such as the IMF, the World Bank and the BIS, to gauge the health of banking institutions. Second, using alternative measures, such as distance-to-default, would restrict the sample to listed banks only. Third, it is a direct indicator of the quality of credit extended by a bank. If a bank does not extend high-quality loans, its impaired loans to gross loans ratio will increase which will also affect its capital adequacy.

A related study is by is Beck et al. (2006) who examine the effect of supervisory powers on corruption in bank lending. Using data of 2500 firms from 37 countries, they find that assigning more powers to supervisory agencies does not help improve the integrity of lending. Although we follow Beck et al. (2006) in constructing our indicators of supervisory powers, our paper differs significantly from theirs as we focus on supervisory agencies and banks instead of supervisory agencies and firms to whom bank lending is made. Another related paper is Beltratti and Stulz (2012). One of their explanatory variables for bank performance is an index of the power of the supervisory agency including elements, such as the rights of the supervisor to meet with and demand information from auditors, to force a bank to change the internal organizational structure, to supersede the rights of shareholders, and to intervene in a bank. Our paper differs, as we do not lump several supervisory powers together and use a much larger sample of banks over a longer time span.

We find that giving more powers to supervisory bodies to hire and fire bank managers and to change banks' organizational setup reduce bank riskiness. In contrast, powers to levy monetary penalties and fines are, if anything, counter-productive.

The paper is structured as follows: Section 2 gives a brief overview of related literature, Section 3 discusses the model and data used and Section 4 presents the empirical results. Section 5 offers a sensitivity analysis, while Section 6 offers the conclusions.

#### 2. Literature review, contribution and hypothesis

Moral hazard problems in banks provides the rationale for assigning regulatory powers to bank supervisors (Dewatripont and Tirole, 1994). Several studies examine the effectiveness of bank regulation and supervision (Barth et al., 2004; Caprio et al., 2007; Demirgüç-Kunt et al., 2008; González, 2005; Fonseca and González, 2010; Demirgüç-Kunt and Detragiache, 2011; Beltratti and Stulz, 2012; Klomp and de Haan, 2012, 2014). Klomp and de Haan (2012) provide an extensive discussion of this literature.

The empirical evidence on the relationship between (types of) regulation and supervision and financial stability is mixed. Barth et al. (2004) analyze the effect of different dimensions of bank supervision on bank stability. Using an earlier version of the survey dataset that we also use, their findings suggest that policies that induce accurate information disclosure and (incentives for) private sector corporate control of banks work best to promote stability at the country level. Demirgüç-Kunt et al. (2008), who focus on bank-level indicators for 203 banks from 39 countries, report a positive correlation between bank soundness (proxied by the *Z*-score) and the overall index of Basel Core Principles (BCP) compliance<sup>2</sup>.

However, using several indicators of regulation, Beltratti and Stulz (2012) find no convincing evidence that tighter regulation in general was associated with better bank performance in their sample of 164 large banks (assets in excess of 50 billion \$ in 2006) from 32 countries during the crisis or with less risky banks before the crisis. Similar findings are reported by Demirgüç-Kunt and Detragiache (2011). Employing data of 3000 banks from 86 countries, they do not find support for the hypothesis that better regulation and supervision result in sounder banks. González (2005) even reports a negative relation between regulatory restrictions and stability of the banking system.

However, there is also some evidence suggesting that better regulation reduces bank riskiness. Using data of almost 200 banks from OECD countries for the period of 2002 to 2008, Klomp and de Haan (2012) show that while bank regulation has little impact on risk taking by low-risk banks, it significantly alters the behavior of high-risk banks. Similar results are reported by Klomp and de Haan (2014) for a sample of emerging and developing countries.

Previous studies do not provide an in depth analysis of the question of which powers should be assigned to supervisory agencies in order to reduce bank riskiness, although some studies consider some measure for supervisory powers. For instance, Beltratti and Stulz (2012) include as one of their explanatory variables an index of the power of the supervisory agency. They find that this variable is generally not significant in models for bank stock returns and bank riskiness. Likewise, one of the seven dimensions of bank regulation and supervision examined by Klomp and de Haan (2012, 2014) is supervisory control. They find that it is not related to banking risk.

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<sup>&</sup>lt;sup>2</sup> Also some older papers have used information on BCP compliance (which is not publicly available) to study bank performance. See Klomp and de Haan (2012) for a discussion of these studies.

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