



# From the credit crisis to the sovereign debt crisis: Determinants of share price performance of global banks<sup>☆</sup>



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## ABSTRACT

We compare and contrast the determinants of the share price performance of global banks in the credit crisis and the sovereign debt crisis. Higher loans and funding fragility, as measured by short-term funding, explain performance in the credit crisis, as banks could obtain short-term finance and hence take risks by lending more. In contrast, in the sovereign debt crisis banks with higher capital, tangible equity, deposit, lower agency problem, and smaller boards performed well. The banks that increased regulatory capital as per the policy prescription, relied more on deposit financing, and decreased board size performed well in the sovereign debt crisis. Interestingly, deposit insurance is negatively related to the performance in the sovereign debt crisis, as the governments were closer to default. We find some similarities in the share price performances of banks across these two crises. Beta and idiosyncratic risk explain the share price performances of banks in both the crises. We further examine the effect of regulations on risk, as returns should be compensation for taking risks. We find that banks in countries with higher restrictions and higher tier I capital are less risky, while countries with deposit insurance are more risky.

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## 1. Introduction

In this paper, we analyse the share price performance and riskiness of the 378 largest global banks during the credit crisis of 2007–08 and the sovereign debt crisis of 2010–11. After a credit crisis, the natural expectation is that banks will take measures to safeguard themselves against future financial turmoil; however, banks performed poorly again in the stock market during the sovereign debt crisis.<sup>1</sup> We examine the impact of funding, loans, equity, regulations, and risks on the share price performance of global banks in both periods of stock market turmoil. We compare and contrast the cross-sectional determinants of the share price performance and riskiness of global banks in the credit

crisis versus the sovereign debt crisis. Both of these crises had severe impacts on global banks (Cetorelli & Goldberg, 2012).<sup>2</sup> As a result, in November 2011, the Financial Stability Board announced the systemically important financial institutions that are vital for the global economy to function well. This paper contributes to the literature by testing whether global banks strengthened their balance sheets in the aftermath of the credit crisis in order to defend against financial turmoil. Since there was another global financial crisis in 2010–11, this provides a good testing ground for our conjectures.

Although some prior studies have examined bank performances in the credit crisis (e.g. Beltratti & Stulz, 2012; Demirgüç-Kunt, Detragiache, & Merrouche, 2010; Fahlenbrach, Prilmeier, & Stultz, 2012), we are the first to study bank performances in the sovereign debt crisis. Demirgüç-Kunt et al. (2010) studied banks from a number of countries and used bank-fixed effects to examine the effect of bank capital on the share price performance of banks during the credit crisis. Regulations and country-level variables were not included in their models. Fahlenbrach et al. (2012) analysed US banks to examine their performance in the credit crisis. The findings

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<sup>1</sup> The Financial Crisis Inquiry Commission (FCIC) concluded that this crisis was avoidable—the result of human actions, inactions, and misjudgements. Warnings were ignored. “The greatest tragedy would be to accept the refrain that no one could have seen this coming and thus nothing could have been done. If we accept this notion, it will happen again” (FCIC, 2011, p. 28). Another crisis did occur again after the publication of this report around mid-2011 until the end of the year. Banks are among the most severely affected by the turmoil in the financial markets. However, there is much variation in the cross-section of the share price performances of banks.

<sup>2</sup> The international transmission of crisis is considered in several papers. For instance, Cetorelli and Goldberg (2012) show how banking globalisation and monetary transmission spread the crisis around the globe and global banks were severely affected as a result of the crisis. Jotikasthira et al. (2012) show how asset fire sales and purchases transmitted the crisis.

of their study are limited to the US only. In contrast, we analyse global banks by using bank level, country-level regulations, and governance variables to test our hypothesis. Beltratti and Stulz (2012) analysed the performance of banks in the credit crisis; we analyse the performance of banks in the sovereign debt crisis. We extend previous evidence by performing an out of sample test on the performance of banks in the aftermath of the credit crisis by using data during the sovereign debt crisis.

By comparing the share price performances of banks in the credit crisis and the sovereign debt crisis, we are able to understand the underlying dynamics of how different types of crises affect the share price performance of banks. We expect that some factors are important in the credit crisis, while others are important in the sovereign debt crisis. Particularly, we expect that funding fragility (Adrian & Shin, 2008; Gorton, 2010) and loan (Ivashina & Scharfstein, 2010) are important determinants of share price performance in the credit crisis. In contrast, deposit (Beltratti & Stulz, 2012), core capital (Demirgüç-Kunt et al., 2010), and agency problem (Kashyap, Rajan, & Stein, 2008) should be important in the sovereign debt crisis. However, beta (Acharya, Pedersen, Philippon, & Richardson, 2010) and idiosyncratic risk should have similar effects in both crises.

Most of the results are in line with our expectations. We find that too much reliance on short-term funding led to poor performance during the credit crisis, which is consistent with Gorton (2010). However, funding fragility was not important during the sovereign debt crisis, as the short-term funding market had already dried up as a result of the credit crisis (Adrian & Shin, 2008). At the same time, higher deposits led to better performance in the sovereign debt crisis, as banks could not obtain short-term funding (Beltratti & Stulz, 2012). We find that loans are negatively (significantly) related to performance in the credit crisis; however, the relationship is not economically significant in the sovereign debt crisis as the banks suffered liquidity problems and thus were unable to lend (Lane, 2012). We find that tangible equity and tier I capital were not significant determinants of bank performance during the credit crisis. However, they were significant during the sovereign debt crisis. This is possibly because banks strengthened their equity capital in the aftermath of the credit crisis; as a result, banks with higher tangible equity and tier I capital performed well during the sovereign debt crisis. Our results are consistent with the increase in regulatory capital, which was prescribed in Basel III (BIS, 2011). Agency problems explain returns in the sovereign debt crisis, but not in the credit crisis.

We find that some aspects of bank performances are similar in both the crises. Banks are generally associated with higher market risks. We find that beta, idiosyncratic risk, and log z are negatively related to stock market performance in both crisis periods. We also show that stock returns and risks are positively correlated in the credit crisis and the sovereign debt crisis. This is consistent with Fahlenbrach et al.'s (2012) evidence that 1997–98 returns are a good predictor of the credit crisis returns for US banks. We extend their evidence by using global banks and showing that the returns and risks in the credit crisis and the sovereign debt crisis are related. Since the nature and origin of the credit crisis and the sovereign debt crisis are different, we find that pre-credit crisis data do not explain returns in the sovereign debt crisis.

We contribute to the literature by examining whether lenient regulations were similarly responsible in the credit crisis and the sovereign debt crisis (as stated by Stiglitz, 2010) by using the 2008 World Bank survey on bank regulation data. We test whether the power of regulators, concentration, deposit insurance, and anti-director Index (ADRI) are related to performance. We find that the banks in countries with lower concentration, better institutions, and higher official scores performed better during both the crises. Deposit insurance is positively related to the returns in the credit crisis, while it is negatively related to the returns in the sovereign debt crisis. This is consistent with the notion that having deposit insurance in place worked fine in the credit crisis, but did not work well in the sovereign debt crisis when the sovereigns were affected.

There are no studies that we know of that test whether board changes after the credit crisis helped banks perform better in the sovereign debt crisis. We test whether board changes made banks perform any better during the sovereign debt crisis.<sup>3</sup> We find some support in favour of board changes. The smaller the board size was, the better the bank performed in the sovereign debt crisis. We find that bank performance was better during the sovereign debt crisis when the bank directors held fewer external board positions. This implies that fewer interconnections among boards are better, so that directors can focus more on a particular board. These findings are consistent with Guner, Malmendier, and Tate's (2008) study of network connections, and Hermalin and Weisbach's (2003) survey evidence on board size in normal market conditions. We extend their evidence for board size and network connections in the situation of crisis.

Since returns should be a compensation for taking risks, we analyse determinants of risks in both the crises. Our main objective here is how regulations might have made the banks less risky. We find evidence that bank restrictions are negatively related to risk in both crises, which implies that the higher the restrictions, the lower the riskiness of the banks. Deposit insurance is positively related to the idiosyncratic risks of the banks, which is consistent with the moral hazard potentials created by deposit insurance (Merton, 1977). The higher the tier I capital, the lower the idiosyncratic risk, which means that better-capitalised banks could absorb more losses in times of crisis, and were perceived as less risky (Demirgüç-Kunt et al., 2010).

The rest of the paper is organised as follows: the next section describes the origin and nature of the credit crisis and the sovereign debt crisis, and their effects on global banks. Section 3 develops a review of the literature and identifies the gaps in the literature. Section 4 discusses the methodology and provides data sources and descriptive statistics. Section 5 provides results on multivariate analyses. In Section 6, we carry out a few robustness checks. Finally, Section 7 discusses the results and provides the conclusion.

## 2. The credit crisis and the sovereign debt crisis: Origin, nature, and effects on global banks

According to Gorton and Metrick (2010), “a proximate cause of the crisis was a shock to house prices, which had a large detrimental effect on subprime mortgages. Asset-backed securities linked to subprime mortgages quickly lost value. This shock spread quickly to other asset classes as entities based on short-term debt were unable to roll the debt, or faced withdrawals. Essentially, there was a bank run on short-term debt” (p. 15). European banks heavily depend on the US money markets as a source of finance and the high exposure of these banks to US asset-backed securities helped spread the crisis on a global scale (Acharya et al., 2011; Shin, 2012). The collapse of Lehman Brothers in September 2008 took the global crisis into a more serious phase. A bank bailout was announced in almost every European country following the Irish bailout on September 30, 2008. The bailout programmes

<sup>3</sup> In the aftermath of the recent financial crisis, we observed board changes. For instance, six large banks have turned over half or more of their outside directors: UBS (75%); RBS (67%); Bank of America (67%); Lloyds (56%); and Citigroup and HSBC (50% each) (Moody's, 2010). The report also claims that the high degree of board turnover has increased financial industry experience in the boards and has brought fresh ideas and perspectives, which increases board independence, among other things. Recently, there has been heightened regulatory focus in the US and the UK on board composition and leadership: Many of the SEC's new proxy disclosure enhancement rules, effective as of Feb. 28, 2010 and applicable to all public companies, focus on director qualifications and board leadership structure. In the UK, many of the final recommendations of the Walker Review (published in November 2009) on corporate governance in the UK banking industry relate to the roles and competence of key individuals in firms' governance structures. For example, the report recommends that the chairperson of a major bank should bring a combination of relevant financial industry experience and a track record of successful leadership capability in a significant board position.

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