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A SIFI Badge for Banks in Europe: Reduction in Bail-Out Expectations or Monumental Heritage Protection?

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A SIFI Badge for Banks in Europe: Reduction in Bail-Out Expectations or Monumental Heritage Protection?

Abstract

We analyze the reaction of European bank CDS spreads in response to the SIFI-regulation. Our results suggest that new regulation prepared by the FSB did not succeed in lowering bail-out expectations for the targeted banks. The findings show an overall decrease in CDS spreads and hence indicating both: an unintended rise in bail-out expectations and distortionary funding cost advantages for banks equipped with a SIFI-badge. The strongest drop in CDS spreads occurred when the SIFI list was published for the first time, revealing that the effect is particularly pronounced upon the initial designation. We furthermore show that the inadvertent rise in bail-out expectations is driven by the countries bail-out capacity, measured as total country bank assets over GDP. As a result, the SIFI badge creates a particular large value for SIFIs hosted in countries with small banking sectors that are credibly expected to be bailed-out by the government.

Keywords: Systemically Important Financial Institutions, SIFI, G-SIB, TBTF, Bail-Out Expectations, Bank Sector Size

JEL-Classification: G01, G14, G21, G28.

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1 Introduction

Financial institutions are considered as systemically important if their collapse threatens the stability of the entire financial system. Governments naturally have an augmented willingness to rescue these institutes (bail-out) in order to prevent or to even eliminate the impact of a bank failure on the entire financial system and the real economy. The consequential bail-out expectations formed by financial markets have been investigated and even quantified in empirical studies.¹ As a result, systemically important banks benefit from a so-called "too-big-to-fail subsidy" in relation to their funding costs, shown by a decrease in Credit-Default-Swap spreads (CDS spreads). The drawbacks of those bail-out expectations are diverse. Banks that are expected to be saved benefit from funding cost advantages and distort competition on financial markets. But more importantly, the anticipation of a public bail-out in case of a bankruptcy might encourage them to bear unsolicited risks whose costly consequences have to be typically borne by the taxpayer.²

After the near-break down of substantial parts of the financial system and exceptional governmental support amid the subprime-crisis, national and supranational regulators set their objectives to tighten the rules for the financial sector. One of their key targets was to reduce the implicit bail-out guarantees and hence, to find an exit to the dilemma in which the taxpayer could be held hostage by the financial system. Even though the hangover of the subprime crisis was still nagging and the European sovereign debt crisis started to unfold, a number of national reform streams became

¹See for example Ueda and Weder di Mauro (2013), International Monetary Fund (2014) or Ueda and Weder di Mauro (2010).

²Apart from the direct effect of being rescued there is also a dynamic self-enforcing effect. Due to the increased bail-out expectation banks could attract larger businesses activities in which counterparty risk plays a role, such as derivatives. This would fuel the tendency to grow at the expense of competition and in turn deteriorate the existing problem. See for example Unal and Penas (2004) and Ongena and Penas (2009).

effective and yet succeeded to reduce banks' bail out expectations in Europe.³ At the same time, the leaders of the G20 community agreed on the need for a special treatment of Systemically Important Financial Institutions (SIFIs), driven by the conviction that particular institutes impose an extraordinary menace to the financial system. As a result of long lasting negotiations, the Financial Stability Board (FSB) assigned a SIFI badge to a selection of the largest globally operating banks; subject to an enhanced oversight, obliged to comply with tight resolution plans, and to hold capital buffers above the Basel III standards.⁴ While the G20 community clearly targeted a reduction in bail-out expectations of those super-important institutes, the possible outcome might be yet contentious. On the one hand, all elements of the SIFI regulation are expected to decrease the implicit bail-out guarantees, since these reforms seek to reduce the need for governmental support measures in times of a future crisis. On the other hand, the SIFI-badge might create an inadvertent additional value for those banks. Given that particularly huge banks enjoyed comparatively large implicit bail-out guarantees during the crisis, the designation on such a list might turn the implicit guarantees into quasi explicit ones (Jenkins, 2011). As a consequence, SIFI banks might end up being equipped with even more security to be saved than before wherewith the whole reform stream could turn out to be counter-productive.

In this paper we are therefore addressing the following question: Does the SIFI-regulation succeed in lowering bail-out expectations for European banks? To be more accurate, does the reform package of an enhanced oversight, tighter wind-down

³The United Kingdom implemented elements of a separate banking system and introduced tougher resolution mechanisms. Switzerland relied on enlarged capital buffers while German regulators advocated a pure restructuring regime. See an assessment of the change in bail-out expectations in response to major national reforms in Schäfer, Schnabel, and Weder di Mauro (2015).

⁴The Financial Stability board uses the following two expressions for the targeted banks: SIFI stands for systemically important financial institution and G-SIB for global systemically important bank. We will use the term SIFI throughout this paper.

procedures, and capital surcharges decrease the expectation be be saved, or is there rather an additional value for banks in Europe arising from the SIFI badge? This question is of particular relevance for the European banking sector since, contrary to the United States, there has never been an explicit designation of systemically important institutes before.⁵ In order to answer this question we assess the reaction of European bank CDS spreads in response to the SIFI regulation. According to the recent literature in this field, we use banks' CDS spreads as a yardstick to measure bail-out expectations and we thus expect CDS spreads to rise when bail-out expectations decrease. Our analysis consists of two methodological parts. We firstly employ an event-study analysis in order to identify the abnormal CDS spread changes of SIFIs in response to relevant regulatory events. The second methodological part analyzes the drivers of the CDS spread movements. Given that the SIFI reform includes enlarged capital buffers, one might raise the question whether a drop in CDS spreads is indeed attributed to a change in bail-out expectations or rather stemming from the fact that the new capital cushions make the SIFI banks just safer. We thus regress the change in CDS spreads on banks' initial capital resources and the countries bail-out capacity, measured by the total country bank assets over GDP. Since a governments bail-out capacity depends on the total amount of country bank assets over GDP we would expect differing results for SIFIs located in banking sectors with different sizes. The analysis comprises a broad European bank sample and a number of relevant events over the reform period.

Our results suggest that the SIFI regulation did not succeed in lowering bail-out expectations for the targeted banks in Europe. The overall impact of the SIFI regulation leads to a decrease in CDS spreads and points in turn to both: an unintended rise in

⁵In response to the Continental Illinois liquidity crisis, the Comptroller of the Currency decided to provide total deposit insurance to eleven banks designated as too big to fail (Bongini, Nieri, and Pelagatti, 2015). As this time the Wallstreet Journal published the targeted banks on its frontpage. See also O'Hara and Shaw (1990).

bail-out expectations and to distortionary funding cost advantages for banks equipped with a SIFI-badge. The strongest effects appear when the SIFI list was published for the first time, showing that the effect is particularly pronounced upon the initial designation. When we assess the subsequent adjustment of the SIFI list, i.e. joiners versus leavers, we again find strong negative CDS spread reactions for banks that are freshly endowed with the SIFI badge.

Our second methodological part strengthens these results. Analyzing the drivers of the CDS spread changes, we do not find empirical evidence for the rationale that the enlarged future capitalization enhances banks' safety. Contrary to that, we find that our results are driven by the countries' banking sector size. The findings suggest that the expectations to be saved (drop in CDS spreads) decrease when the country hosts a relatively large banking sector in relation to the GDP. In other words, the SIFI badge generates a comparatively large rise in bail-out expectations for institutes whose countries' banking sectors are relatively small and therefore credibly expected to be bailed-out by the government.

The remainder of the paper is structured as follows. The next section summarizes the relevant literature and specifies our contribution to the ongoing debate. Section 3 outlines our event selection and introduces the data sample. The first methodological part of our analysis is presented in section 4. We describe the empirical model for the event study approach and present our baseline results. Section 5 analyzes the drivers of the CDS spread movements. We discuss two competing hypotheses and test them within a number of cross sectional-regressions. Robustness tests are presented in section 6 while section 7 summarizes and concludes.

2 SIFI-Regulation and Expected Market Reactions

One of the most painful experiences amid the subprime crises was the perception of many governments to be powerless with regard to systemically important banks. The phenomenon of being too important or simply too-big to fail (TBTF) arises from the banks' size, complexity, or the systemic interconnectedness. Ever since the disorderly breakdown of the Lehman Brothers bank and the near-collapse of the wholesale money market, policy makers had to acknowledge that there was no other option than granting further bail-out measures. Since this point in time market participants could nearly be sure that SIFIs are going to be rescued rather than wound down in a chaotic manner. Hence, the bankruptcy of a single institution ironically increased the expectation to be bailed-out, rather than being subject to a tighter market discipline.⁶ As a result, being systemically important and therefore non-expandable provided SIFIs with lower risk premiums that have been subject of empirical research. Ueda and Weder di Mauro (2013) analyse the credit ratings of a global bank sample and detect a *too-big-to-fail-subsidy* of 60 basis points prior to 2007 and 80 basis points after 2009. Barth and Schnabel (2014) show a substantial decrease in CDS spreads and an increase in support ratings in response to the bail-out measures granted during the market turmoil in 2008.⁷

The SIFI reform designed by the FSB takes on the challenge to address the TBTF issue. Its regulatory scope consists of a three pillar reform package: (i) enhanced supervision, (ii) additional prudential regulation, and (iii) more powerful resolution regimes. With regard to enhanced supervision the FSB proposed more supervisory powers, an enlarged

⁶See also German Council of Economic Experts (2014).

⁷For further evidence see also Gandhi and Lustig (2015), Ötcher-Robe, Narain, and Surti (2011), International Monetary Fund (2014) and Schweikhard and Tsesmelidakis (2011).

scope to intervene once a bank runs into trouble and stricter assessment regimes. The additional prudential regulation consists of supplementary capital buffers standing above the requirements of Basel III. Depending on the degree of systemic relevance, capital surcharges range from 1.0 to 3.5 percent and have to be built up in Common Equity Tier 1 over risk-weighted-assets.⁸ Lastly, more powerful resolution regimes encompass the strengthening of national wind-down procedures, resolution planning and cross-border cooperation.⁹

Our purpose is to assess the impact of this comprehensive reform package on SIFI banks CDS spreads. There is a number of empirical studies analysing the impact of financial reforms on market prices. Eyssell and Arshadi (1990) analyze the effects of imposing risk-based capital requirements under Basel I. They find that the announcement of higher capital requirements negatively affects banks' stock values. Spiegel and Yamori (2003) assess the stock price reaction in response to a tightened resolution regime in Japan and find as well that it negatively affects banks' market values. Furthermore, Schäfer, Schnabel, and Weder di Mauro (2015) find evidence for a reduction in TBTF premiums in response to larger capital requirements, tighter wind-down procedures, and an enhanced oversight attached to reform streams on national levels. Their results show an increase in CDS spreads and a drop in stock returns, indicating a reduction in bail-out expectations. With regard to these results we should expect similar findings for the SIFI regulation, since all those reform types are likewise part of the SIFI reform package.

O'Hara and Shaw (1990) analyse the designation of banks being announced as TBTF by the US comptroller of the currency's announcement. They find that the explicit

⁸Note that the maximum of 3.5 percent has not yet applied to any of the SIFIs. At the time of the analysis the highest capital surcharge was given by 2.5 percent.

⁹See Basel Committee on Banking Supervision (2011a) and Financial Stability Board (2011a).

TBTF-designation, similar to the SIFI-badge in this study, leads to an increase in stock returns and hence to an additional market value for the respective institutes. These adverse reactions already suggest that there are presumably two effects attached to the SIFI regulation which are opposed to each other. Two more recent studies specifically deal with the SIFI regulation. Bongini, Nieri, and Pelagatti (2015) assess the reaction of stock returns on three selected events of the SIFI reform stream.¹⁰ They find either insignificant or positive abnormal returns attached to the SIFIs. In a cross sectional regression, however, they find negative stock price movement when banks are weakly capitalized. They conclude that the SIFI reform generally goes into the right direction, even though their baseline results are somewhat ambiguous. Moenninghoff, Ongena, and Wieandt (2015) analyse the stock price reaction in response to a larger set of events amid the SIFI reform stream. Compared to Bongini, Nieri, and Pelagatti (2015) they also assess early G20 summits, reaching back to subprime crisis period in 2008. While the early G20 summits lead to mainly negative stock returns, some of the more recent events exhibit positive stock price movements in favour of the SIFIs. Finally they conclude that the reform leads to largely negative effects for bank stocks, while some designation events generate a partly offsetting positive effect.

Given the ambiguity of those results, this paper contributes as follows to the ongoing discussion. First, we analyse the reaction of banks' risk premiums measured by CDS spreads. The general hypothesis will be formulated as follows:

General Hypothesis:

- *If the SIFI regulation leads to a reduction in bail-out expectations, CDS spreads*

¹⁰An analysis of some of these events has been prepared by Christoph Laut on the basis of his diploma-thesis, albeit without the implementation of cross-sectional regressions.

are expected to rise.

In such a case the reform package would credibly signal that governments are going to lessen the SIFI support in times of a future crisis. It would be, hence, a step into the right direction as policy-makers could gradually acquit themselves from being held hostage by the financial sector. If however the opposite is the case and the SIFI badge enhances the perceived probability of being rescued by the public sector, we would expect a drop in CDS premiums. That would be of course bad news for the regulating authorities as the whole reform project would have turned out to be counter-productive. To our knowledge we are first analysing this issue with regard to the credit markets. Second, compared to the recent two studies our analysis focuses on a different set of events. Based on a newspaper filtering methodology we seek to exploit relevant information for financial markets before they are officially released by the regulating agencies. By this means we show that the additional capital requirements and a leaked SIFI list of the FSB were publicly known before the respective reports were released.¹¹ Furthermore we concentrate our analysis on European banks. Contrary to the United States there has never been an explicit designation of SIFI banks in Europe before. Hence, we assume the initial occurrence of such an event to be of particular relevance. And finally, we relate our baseline results to each countries' banking sector size. Given that a governments bail-out capacity is limited by the total amount of country bank assets over GDP, we would expect differing results with respect to different banking sector sizes.

¹¹The list of SIFIs prepared by the FSB was not intended to be public at this time but found out by the Financial Times.

3 Event Selection and Data

Our purpose is to identify the exact dates when relevant regulatory news reach the markets. For this paper we apply a two stage process. We first investigate the official press releases and publications from the involved parties over the reform process, namely the G20 community, the FSB and the Basel Committee for Banking Supervision (BCBS). In order to specify the exact timing of the relevant regulatory events we then scan all frontpages of the Financial Times - Europe Edition (FT) from January 2009 until December 2011, leading to an amount of approximately 950 front pages. We also check carefully subsequent articles and comments on the following pages in order to minimize the risk of missing relevant information. Our two stage process therefore allows us to capture market-relevant news before they are officially released.¹² This procedure is of essence since we are interested in the exact point in time when the news reach the markets. The following section illustrates the identified events along the SIFI reform process.

3.1 Reform Stream and Event Selection

We now outline the eight identified events along the SIFI reform stream. An overview about all event names, numbers [1] to [8], the respective FT frontpage articles, and publication titles, is given in Table 1. The intention to design a special treatment for SIFIs was addressed for the first time on the G20 Meeting of Finance Ministers and Central Bank Governors on 5 September 2009 in London. The leaders called for

¹² Moreover, we are able to control for disturbing events. An official release of a regulatory report whose main recommendations have been published by the FT before is not likely to make it on page one again. The decision of the ECB to cut the interest rates on the same day for example would rather move the markets and therefore be most likely printed on the front-page.

an enlarged oversight, enhanced capital requirements, and for a legal framework to facilitate a cross boarder resolution process.¹³ Hence, this early preparatory event [1] already revealed the cornerstones of the upcoming regulation. But, opposed to this, neither specific bank names nor a potential number of SIFI candidates were disclosed at this time. This substantially changed when the Financial Times published the leaked SIFI-list of the FSB on its frontpage on 30 November 2009. The initial disclosure of the SIFIs, captured by event [2], is therefore clearly expected to be a key event of our analysis. On 1 November 2010 the FSB outlined a draft on the SIFI supervision. Relevant news at this event [3] contained an enlarged scope of action for national regulators in order to supervise and to intervene more effectively, once a systemic bank runs into trouble.¹⁴ Shortly afterwards the Financial Times republished the leaked SIFI-List, as indicated by event [4]. The list remained entirely unchanged compared to the initial designation but its impact, given the new information of event [3], is worth to be assessed. On event [5] the Financial Times leaked information of the BCBS to introduce a progressive capital surcharge for SIFIs. The additional requirements are supposed to range from 0.5 to 3.5 per cent and had to be provided in core tier 1 capital as of risk-weighted assets.¹⁵ Event [5], however, entailed uncertainty about the mandatory issuance of bail-in-able bonds. The uncertainty vanished when the BCBS [6] confirmed the leaked information about capital regulations that exclude the mandatory issuance bail-in-able bonds.¹⁶ Event [7] combines the release of two official publications. First, a BCBS report revealing an indicator-based approach to assess the

¹³The intention was expressed for the first time during the London Summit of G20 Finance Ministers and Central Bank Governors, which took place three weeks before the general G20 leader summit in Pittsburgh. See the official documents of G20 (2009a), G20 (2009b) and Financial Stability Board (2009).

¹⁴See also Financial Stability Board (2010)

¹⁵The FT published as well that at least 5 European banks are targeted to hold a surcharge of at least 2.5 per cent. See also the later publication of the Financial Stability Board (2011c).

¹⁶An official press release is provided by Basel Committee on Banking Supervision (2011b).

SIFIs. It contained the categories: size, interconnectedness, lack of substitutability, global activity, and complexity. And second, a report issued by the FSB claiming to introduce tougher resolution procedures. According to that, national resolution regimes have to be tightened, cross-border cooperation needs to be enhanced and SIFIs are obliged to prepare resolution plans. It is to note that these two publications are supposed to erase the uncertainty about the previously discussed measures.¹⁷ The last event [8] is given by the release of the official SIFI list by the FSB.¹⁸ Compared to the initial (leaked) list, 9 European banks changed their status. While 6 additional banks received a SIFI badge, 3 banks were not considered as systemically important any more.

¹⁷See Basel Committee on Banking Supervision (2011a) and Financial Stability Board (2011a).

¹⁸The final list can be found at the publication of the Financial Stability Board (2011b).

Table 1: Event Overview

No.	Event	Date	FT Frontpage / Publication
[1]	G-20 finance minister conference	5 Sep 09	"Declaration on further steps to strengthen the Financial System", G20 Finance Ministers, 5th Sep 09 "G20 calls for better capital buffers at banks", FT, 6th Sep 09
[2]	First disclosure of the SIFIs	30 Nov 09	"Thirty groups on systemic risk list", FT, 30th Nov 09
[3]	FSB outlines SIFI-blueprint	1 Nov 10	"Banking Blueprint", FT, 2nd Nov 10 "Intensity and Effectiveness of SIFI Supervision", FSB, 2nd Nov 10
[4]	Re-publication of the SIFIs	10 Nov 10	"G20 plans two-tier bank risk rating", FT, 10th November 10
[5]	BCBS proposes capital surcharge	17 June 11	"Biggest banks face new capital clampdown", FT, 17th June 11 "Reducing the moral hazard posed by SIFIs", FSB, 18th June 11
[6]	BCBS agrees capital surcharge	27 June 11	"Measures for global SIFIs agreed by the group of Governors and Heads of Supervision", BCBS, 25th June 11 "Central bankers agree capital surcharge deal", FT, 27th June 11
[7]	BCBS and FSB publications	19 July 11	"SIFIs: Assessment methodology and the additional loss absorbency requirement", BCBS, 19th July 11 "Effective Resolution of SIFIs", FSB, 19th July 11
[8]	FSB discloses final SIFI-list	4 Nov 11	"Policy Measures to Address SIFIs", FSB, 4th Nov 2011

Notes: Events are either taken from a lead article of the Financial Times - Europe Edition, published on page one or from the respective official report or press release. Note that the event date and the date of its publication can be the same day or there can be one day in between. This could be either due to a weekend or due to the fact that the decision about the regulatory issue was reached after markets closed.

3.2 The Data

We analyse the reaction of CDS spreads of SIFIs compared to Non-SIFIs. Our analysis is based on day-to-day differences of 5-year senior CDS spread tranches. We consider all available bank CDS spread series of European countries in which SIFIs have been designated throughout the reform process. We remove banks from the sample whose series were inactive or not continuously traded during the sample period from November 2009 until November 2011. After these adjustments, our baseline sample comprises a total amount of 50 banks from nine European countries. We consider two different SIFI-selections. The first selection is based on the leaked FSB list, which was published by the Financial Times and contains 14 European SIFIs. We label it therefore as the *first* SIFI designation throughout the paper. The second selection is given by the *final* SIFI publication of the FSB on 4 November 2011 and contains 17 European SIFIs. For this reason, all events until the official publication by the FSB list on 4th November 2011 are estimated on the basis of the first SIFI selection. Table 2 displays the summary statistics for our bank CDS spread sample and indicates as well the different SIFI classifications. The robustness section additionally includes banks from countries other than Europe where SIFIs have been designated, namely the United States, China, and Japan, yielding a total number of 66 banks in twelve countries. All time series data for banks is retrieved from Datastream (Thomson Reuters).

Table 2: Summary Statistics - Baseline Regressions

BANK NAME	CO	FIRST	FINAL	OBS	MEAN	STD	MIN	MAX
DEXIA	BE		X	614	0.519	10.022	-75.330	61.535
KBC	BE			614	0.083	6.101	-28.330	54.630
CREDIT SUISSE	CH	X	X	614	0.106	4.821	-38.584	27.216
UBS	CH	X	X	614	0.099	4.969	-24.635	27.491
BAYERISCHE LANDESBANK	DE			614	0.199	4.637	-27.327	29.250
COMMERZBANK	DE		X	614	0.205	7.878	-41.299	100.520
DEUTSCHE BANK	DE	X	X	614	0.143	5.533	-42.691	34.500
HSB NORDBANK	DE			614	-0.008	6.600	-30.000	35.033
IKB	DE			614	-0.363	8.309	-87.500	44.291
LANDESBANK BADEN WUERTTEMBERG	DE			614	0.187	5.204	-26.220	39.720
LANDESBANK HESSEN THUERINGEN	DE			614	0.182	3.576	-18.930	50.000
NORD-LB	DE			614	0.184	3.715	-19.020	33.843
PORTIGON	DE			614	0.363	8.711	-49.666	59.810
UNICREDIT BANK (HVB)	DE			614	0.212	4.762	-20.088	27.841
BANCO BILBAO VIZCAYA ARGENTARIA	ES	X		614	0.339	9.591	-79.967	43.495
BANCO POPULAR ESPANOL	ES			614	0.860	14.349	-160.346	148.122
BANCO SABADELL	ES			614	0.778	11.263	-73.105	66.799
BANCO SANTANDER	ES	X	X	614	0.344	9.697	-80.155	47.716
BANKINTER	ES			614	0.780	15.477	-121.040	73.736
CAIXA D'ESTALVIS I PENSIONS DE BARCELONA	ES			614	0.141	9.302	-61.902	48.560
CAJA DE AHORROS DEL MEDITERRANEO	ES			614	0.455	16.239	-98.965	104.925
BANQUE FEDERATIVE DE CREDIT MUTUEL	FR			614	0.244	4.973	-24.392	99.885
BNP PARIBAS	FR	X	X	614	0.267	6.807	-42.082	45.895
CREDIT AGRICOLE	FR		X	614	0.223	8.360	-66.575	51.569
CREDIT LYONNAIS	FR			614	0.236	8.825	-70.064	54.941
GROUPE BPCE (NATIXIS)	FR		X	614	-0.084	5.121	-45.000	33.602
SOCIETE GENERALE	FR	X	X	614	0.352	9.063	-59.700	70.864
BANCA ITALEASE	IT			614	-0.291	10.739	-125.000	83.890
BANCA MONTE DEI PASCHI DI SIENA	IT			614	0.619	10.839	-66.755	72.756
BANCA NAZIONALE DEL LAVORO	IT			614	0.279	6.925	-43.143	71.857
BANCO POPOLARE	IT			614	0.693	13.746	-103.716	97.968
BANCO POPOLARE DI MILANO	IT			614	0.622	9.240	-42.718	62.520
INTESA SANPAOLO	IT	X		614	0.487	9.189	-49.222	78.220
MEDIOBANCA	IT			614	0.463	6.076	-36.628	51.540
UBI BANCA	IT			614	0.547	10.324	-148.252	69.036
UNICREDIT	IT	X	X	614	0.467	9.298	-68.316	54.351
ING BANK	NL	X	X	614	0.174	4.377	-21.430	16.457
RABOBANK	NL			614	0.022	2.583	-16.346	8.960
SNS BANK	NL			614	0.035	6.072	-36.250	53.339
VAN LANSCHOT	NL			614	-0.119	4.058	-39.011	28.775
NORDEA	SE		X	614	0.059	2.580	-13.810	17.139
SEB	SE			614	-0.039	6.076	-42.055	34.414
SKENS BANKEN	SE			614	0.000	3.482	-22.786	32.064
SVENSKA HANDELSBANKEN	SE			614	0.016	1.909	-7.830	14.669
SWEDBANK	SE			614	-0.216	3.929	-25.000	19.042
BARCLAYS	UK	X	X	614	0.100	6.622	-41.254	44.997
HSBC	UK	X	X	614	0.094	2.834	-19.410	19.402
LLOYDS	UK		X	614	0.201	7.415	-57.600	52.289
ROYAL BANK OF SCOTLAND	UK	X	X	614	0.227	7.744	-68.437	53.597
STANDARD CHARTERED	UK	X		614	0.017	3.734	-17.612	30.150
ROBUSTNESS								
BANK OF CHINA	CN		X	614	0.222	4.653	-29.533	25.742
IND. & COM. BANK OF CHINA	CN			614	0.268	5.114	-33.000	32.318
AZORA	JP			614	-0.580	9.921	-120.000	150.000
BTMBI	JP			614	0.131	4.049	-27.490	22.252
MITSUBISHI UFJ FG	JP	X	X	614	-0.102	3.230	-62.405	13.100
MIZUHO FG	JP	X	X	614	0.146	4.967	-22.500	40.000
SUMITOMO MITSUI FG	JP	X	X	614	-0.016	3.310	-15.000	35.000
AMERICAN EXPRESS	US			614	-0.198	5.001	-19.920	29.809
BANK OF AMERICA	US	X	X	614	0.228	9.869	-56.680	92.775
CAPITAL ONE	US			614	-0.104	5.778	-39.767	35.150
CITIGROUP	US	X	X	614	-0.330	9.427	-59.960	51.826
GOLDMAN SACHS	US	X	X	614	0.265	8.598	-55.597	57.894
JP MORGAN CHASE	US	X	X	614	0.047	4.664	-24.150	26.828
METLIFE	US			614	-0.396	11.086	-59.280	50.521
PNC FINANCIAL	US			614	-0.124	6.818	-98.620	93.700
WELLS FARGO & CO	US		X	614	-0.006	4.845	-27.190	28.774
TOTAL OBSERVATIONS				40,524				

Notes: The table shows the summary statistics of the day-today first differences in CDS spreads. The number of observations "OBS" for each bank in country "CO" is determined by the estimation window of 100 trading days plus the event window of 3 trading days for each event. "STD" stands for the Standard Deviation, "MIN" indicates the lowest and "MAX" the highest observed value within the sample. The column "FIRST" displays whether the respective bank was published on the leaked list of the Financial Times on 30 November 2009. The column "FINAL" indicates whether the respective bank was published on the list of the FSB on 4 November 2012.

Figure 1 contains equally weighted European bank CDS spread indexes of SIFIs versus Non-SIFIs in our sample. A first view on the CDS series suggests that they are fairly moving in tandem with little widening in between. Moreover, it can be seen that there is a surge for both groups during the last quarter of the year 2011 in response to the aggravation of the European sovereign debt crisis. Figure 2 illustrates the average standard deviation of all European bank CDS spreads in the sample. The average is calculated over each banks' rolling standard deviation on the basis of an 100 trading days window. Remarkably, the average of the standard deviation increased from roughly 5.5 percent to approximately 12 percent in the period from September to November 2011. Since this affects the estimation window for the last event, we need to control for this shift in volatility.

Figure 1: CDS Spread Series of SIFIs versus Non-SIFIs

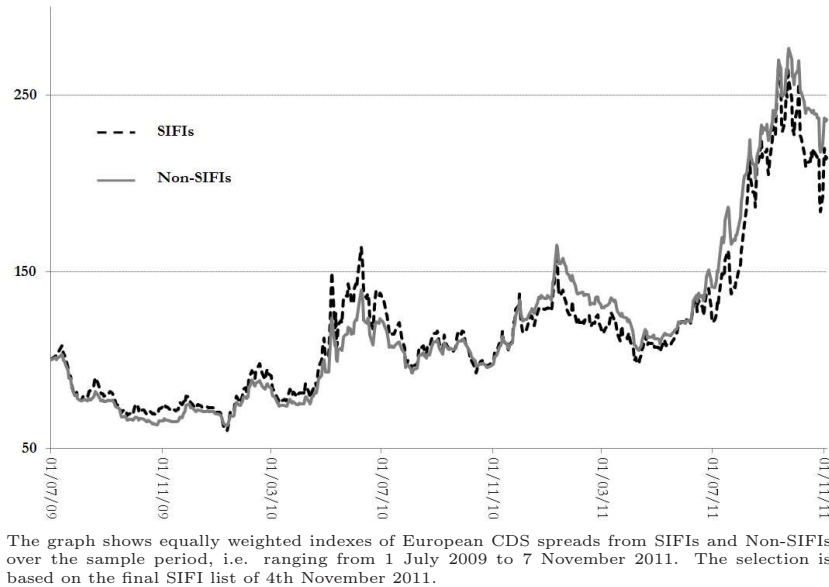
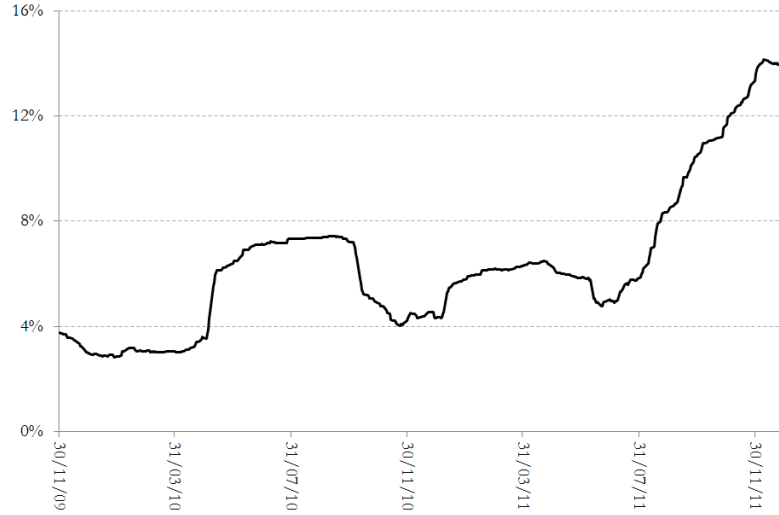


Figure 2: Sample Average of Rolling CDS Spread Standard Deviations



The figure shows the mean across all European banks' rolling CDS spread standard deviations, calculated on the basis of a 100 trading days window.

For our cross sectional regressions we use the total country bank assets scaled by the respective gross domestic product (GDP). We furthermore define for each bank an equity ratio by taking banks' average common equity as a share of average assets. The data for cross sectional regressions is taken as at the end of the year 2009. Summary statistics for the variables of our cross-sectional regressions are displayed in Table 3 below. Total country bank assets over GDP are taken from the Helgi Library while data for bank equity and each banks' total average assets is retrieved from Bankscope (Bureau van Dijk). Average common equity and average bank assets are listed in million US Dollars.

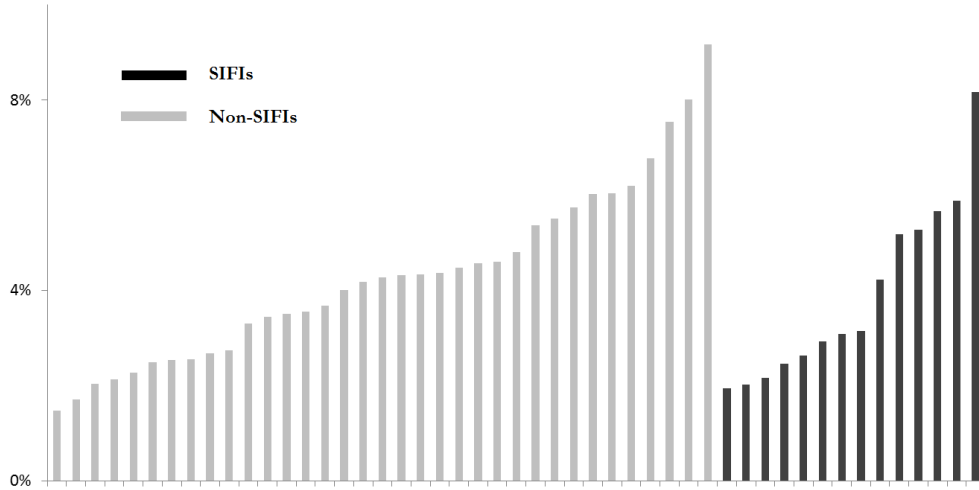
Table 3: Summary Statistics for Cross-Sectional Regressions

VARIABLE	OBS	MEAN	STD	MIN	MAX
Average Common Equity	49	27,258	24,490	1,374	89,894
Average Bank Assets	49	790,502	821,050	29,862	3,276,997
Equity Ratio	49	4.2%	1.8%	1.5%	9.2%
Total Country Bank Assets over GDP	9	327.1%	88.8%	224.2%	489.4%

Notes: Numbers for average common equity and average assets refer to the bank level, are displayed in million USD, and are retrieved from Bankscope (Bureau van Dijk). Total country bank assets over GDP refer to the country level and are taken from the HelgiLibrary. All numbers refer to the end of year 2009.

Figure 3 shows the dispersion of the equity ratios for SIFIs (dark grey) and Non-SIFIs (light grey), respectively. The capitalization across the bank sample varies noticeably for both groups. Looking at this figure, it seems reasonable to assume that the enlarged capital buffers, proposed by the SIFI-regulation, are likely to affect lower capitalized SIFIs more severely than those which are comparatively better capitalized.

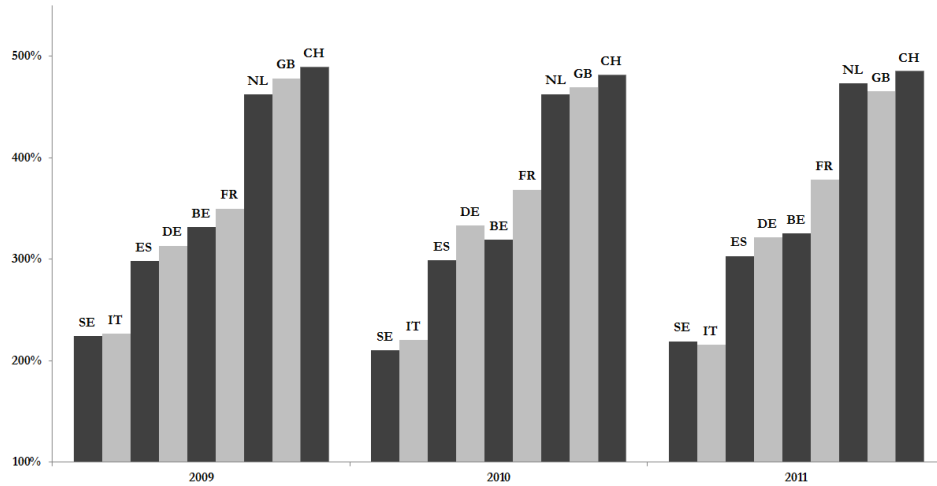
Figure 3: Equity Ratios of SIFIs and Non-SIFIs



The figure shows the equity ratios, taken as at the end of year 2009, for all European banks in the sample. SIFIs are indicated in dark grey whereas Non-SIFIs are indicated in light grey.

Figure 4 contains a bar chart of the different banking sector sizes, measured by the total country bank assets over GDP. While the banking sector size of each country remains passably stable over the three year period, the dispersion across countries for any given year varies substantially. As can be seen from figure 4, Sweden and Italy host comparatively low amounts of bank assets. Their average amount stands below 250 per cent in terms of their GDP. In contrast to those countries, banking assets of Netherlands, United Kingdom, and Switzerland exceed their GDP about more than four times. If either the countries banking sector size (i.e. the government's implicit bail-out capacity) or the banks' equity ratios will play a crucial role in the context of the SIFI regulation will be investigated on the basis of our cross-sectional regressions below.

Figure 4: Total Country Bank Assets over GDP



The figure depicts the total country bank assets as a share of GDP for each country in the sample, ranging from 2009 to 2011. Data is retrieved from Helgri Library.

4 SIFI Regulation and CDS Spread Reactions

4.1 The Event Study Approach

This section introduces the model used for the event study approach. Event studies seek to capture the impact of specific incidents on firms' market prices by detecting the abnormal returns. Abnormal returns are typically determined by the difference in actual returns, i.e. the ones observed on the respective day, and the normal returns which would be expected to occur without having the event. We estimate the normal returns on the basis of the constant return model (see Campbell, Lo, and Mackinlay, 1996) for each bank i at time t , $i = 1, \dots, I, t = 1, \dots, T$:

$$\Delta CDS_{1t} = \mu_1 + \sum_{n=T-1}^{T+1} \tau_{1n} D_{1nt} + \epsilon_{1t} \quad (1)$$

\vdots

$$\Delta CDS_{it} = \mu_i + \sum_{n=T-1}^{T+1} \tau_{in} D_{int} + \epsilon_{it} \quad (2)$$

\vdots

$$\Delta CDS_{It} = \mu_I + \sum_{n=T-1}^{T+1} \tau_{In} D_{Int} + \epsilon_{It}, \quad (3)$$

where ΔCDS_{it} is the first difference of CDS spreads, and μ_i denotes the mean of first differences of bank i within the estimation window. Instead of computing the abnormal returns as a difference of the estimated and the observed returns, we employ

a dummy variable approach as shown by Karafiath (1988). D_{int} indicates a vector of dummy variables for all events, taking the value of 1 in case of an event and zero otherwise. According to this procedure, abnormal returns for each bank are retrieved from the coefficient τ_{in} attached to the dummy. We assess three dummies for each event. A pre-event dummy ($t - 1$) accounting for anticipatory effects, the event day itself ($t = 0$) and a post event dummy ($t + 1$) for the day after. Our estimation window comprises exactly 100 trading days. In the robustness section we will moreover expand the estimation window to 160 trading days. If an event coincides with the estimation window of another event, we "dummy" it out in order to avoid that abnormal returns are mismeasured. An iteration procedure guarantees that our estimation window widens accordingly. We estimate the abnormal returns for each bank in a system of equations employing a *seemingly unrelated regression* framework according to Zellner (1962). This is the preferred method to deal with a clustering of events that we are facing here, i.e. one event affecting a set of banks. It accounts for the cross-correlation between the error terms and thus provides the correct standard errors.¹⁹ On the basis of the obtained estimates we are able to run different tests. Since we are interested in abnormal returns of SIFIs and their counterparts, we compute the average in abnormal returns of both subgroups and evaluate their t-statistics attached to the cumulated coefficients. We furthermore display the difference in abnormal returns of both subgroups and as well as their respective p-values.

We now present the empirical results. Section 4.2 contains the results from the event study analysis based on the event selection listed in Table 1. Section 5 provides a set of cross-sectional regressions in order to identify the drivers for the prior obtained results.

¹⁹See for a discussion Binder (1985) and also Karafiath (1988).

4.2 Baseline Results

Table 4 presents the event study regression results for the SIFI reform stream. Columns one to three indicate the number, the event name, and the event date according to our selection. The fourth column shows the abnormal return for the full European bank sample, while the next two columns contain the abnormal returns for SIFIs and Non-SIFIs, respectively. Finally the last column presents the difference in abnormal returns of the two groups.²⁰ The last two lines show the aggregated change in CDS spreads over all events including and excluding the results for the cumulated effects, respectively.

Looking first at the aggregated change in CDS spreads at the bottom of Table 4 we find an overall decrease in CDS spreads attached to the SIFIs while Non-SIFs face a slight increase. Even more striking is the difference between both groups, standing at almost twelve basis points (thirteen when considering the enlarged event window). Hence, the overall change in CDS spreads is clearly negative and thus suggests that markets attach a higher bail-out expectation to the SIFI segment rather than a reduction. There are two events that merit a discussion. The strongest effect in both economic and statistical significance appears for event [2], namely the first disclosure of the SIFIs. The difference with respect to Non-SIFIs raises to 3.5 basis points and is highly significant, as shown by the p-value in brackets. Our findings thus suggest that the reduction in bail-out expectations turns out to be the largest upon the initial designation. The second event is the simultaneous release of the FSB and the BCBS report, which most likely dispelled some of the existing uncertainty about the future regulation. The difference of SIFIs with respect to their counterparts for event [7] stands -significantly- at roughly three basis points but is not as pronounced as for the initial designatory event.

²⁰The cumulated effect ($t = 0 + 1$) and the anticipatory effect ($t = -1$) are displayed only if they are statistically significant. We do not evaluate the effect of the following day ($t + 1$) on a stand-alone basis.

Table 4: Event Study Results

No.	Event	Date	Full Sample	SIFIs	Non-SIFIs	Difference
[1]	G-20 finance minister conference	5 Sep 09	0.621 (0.822)	-0.324 (0.911)	0.988 (0.723)	-1.312 (0.322)
[2]	First disclosure of the SIFIs	30 Nov 09	1.209 (0.392)	-0.091 (0.951)	1.715 (0.247)	-1.807* (0.070)
	cumulated (t=0+1)		-0.094 (0.963)	-2.656 (0.207)	0.902 (0.669)	-3.558** (0.012)
[3]	FSB outlines SIFI blueprint	1 Nov 10	1.665 (0.526)	1.854 (0.572)	1.592 (0.514)	0.262 (0.854)
[4]	Re-publication of the SIFIs	10 Nov 10	3.028 (0.233)	2.274 (0.460)	3.321 (0.164)	-1.046 (0.405)
[5]	BSBS proposes capital surcharge	17 June 11	-2.613 (0.345)	-3.968 (0.235)	-2.086 (0.437)	-1.882 (0.288)
[6]	BCBS agrees capital surcharge	27 June 11	5.32* (0.066)	3.897 (0.257)	5.874** (0.036)	-1.976 (0.267)
[7]	BCBS and FSB publications	19 July 11	-3.686 (0.285)	-6.083 (0.131)	-2.754 (0.410)	-3.329* (0.078)
[8]	FSB discloses final SIFI-list	4 Nov 11	1.424 (0.816)	0.943 (0.924)	1.672 (0.825)	-0.729 (0.872)
Aggregated change in CDS spreads			6.969	-1.497	10.322	-11.819
- including cumulated values			5.665	-4.061	9.509	-13.570

Notes: The table shows the results from SUR regressions using the daily first differences of bank CDS spreads as dependent variable. Abnormal differences in CDS spreads, displayed in basis points, are estimated on the basis of the constant return model, using an estimation window of 100 trading days. Each system of regressions includes 50 banks from nine European countries. The first number column "Full Sample" refers to the average abnormal differences of all banks at the respective event day. The column "SIFIs" displays the abnormal differences in banks CDS spreads of the banks in the sample, considered as systemically important. For events [1] to [7] the selection is based on the leaked FSB list published by the Financial Times on 30.11.2009 and contains 14 European SIFIs. For event [8] the selection is based on the final SIFI list published by the FSB on 4.11.2011 and contains 17 SIFIs. The column "Non-SIFIs" shows the abnormal CDS spread differences of the remaining banks, whereas "Difference" stands for the difference in abnormal CDS spreads differences of those two subgroups. The p-values in brackets correspond to the tests whether the average abnormal differences and the difference in abnormal differences between the given bank groups are equal to zero. All regressions include pre-event dummies in order to account for anticipation effects. The enlarged event window [0+1] shows the average cumulated abnormal differences of the event date t=0 and the following day t=1. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent. Aggregated change in CDS spreads is calculated as the sum of CDS spreads changes over all events, excluding and including the cumulated event window of event [2].

As the final publication of the SIFI list [8] included a replacement of some of initially designated banks, we have -implicitly- another event to consider. While 6 additional banks received a SIFI badge on 4 November 2011, 3 banks were not considered as systemically important any more. Dexia, Commerzbank, Credit Agricole, Groupe BPCE, Nordea, and Lloyds were joining, while BBVA, Intesa Sanpaolo, and Standard Chartered were leaving the SIFI list.²¹ We thus re-run our differential analysis on the joiners and the leavers. The findings are shown in Table 5. Looking at the results for event [8'] we find a drop in CDS spreads for the difference of joiners and leavers. In other words, we again find an increase in bail-out expectations for those banks that are freshly equipped with a SIFI badge. Surprisingly, the striking economic impact of -7.5 basis points (enlarged event window) does not turn out to be significant. The reason for this can be explained as follows. Since the statistical significance of abnormal returns in event studies is determined by the standard deviation within the estimation window, we have to consider the volatility-boost amid the recent quarter, illustrated in Figure 2. As the standard deviation more than doubled within this three months period, we re-estimate the results on the basis of an alternative estimation window, starting one year prior to the event.²² In doing so, we control for the volatility outliers that are driven by the aggravation of the European sovereign debt crisis. Results are posted under event [8'']. The alternative estimation window yields a slightly smaller coefficient on a high significance level and, hence, provides further evidence that the rise in bail-out expectations (drop in CDS spreads) is particularly strong upon designation.

²¹See also Table 2 for the classification of SIFIs designated firstly and finally.

²²Alternative estimation windows that are deferred to one year prior to the event are frequently used in event study analyses to conduct robustness checks. See for example Moenninghoff, Ongena, and Wieandt (2015).

Table 5: Adjustment of the SIFI List - Joiners versus Leavers

No.	Event	Date	Joiners	Leavers	Difference
[8']	FSB discloses final SIFI-list	4th Nov 2011	3.959 (0.676)	4.253 (0.720)	-0.294 (0.957)
	cumulated (t=0+1)		1.530 (0.910)	8.788 (0.607)	-7.523 (0.349)
Alternative Estimation Window			Joiners	Leavers	Difference
[8'']	FSB discloses final SIFI-list	4th Nov 2011	5.833* (0.057)	5.825 (0.112)	0.008 (0.997)
	cumulated (t=0+1)		5.278 (0.226)	11.932** (0.022)	-6.654** (0.013)

Notes: The table shows the results from SUR regressions using the daily first differences of bank CDS spreads as dependent variable. Abnormal differences in CDS spreads, displayed in basis points, are estimated on the basis of the constant return model, using an estimation window of 100 trading days. Each system of regressions includes 50 banks from nine European countries. The first number column "Joiners" refers to the average abnormal differences of the 6 additional banks designated on 4 November 2011, namely Dexia, Commerzbank, Credit Agricole, Groupe BPCE, Nordea, and Lloyds. The column "Leavers" displays the abnormal differences in banks CDS spreads of the banks in the sample that are not considered as systemically important anymore, i.e. BBVA, Intesa Sanpaolo, and Standard Chartered. The column "Difference" stands for the difference in abnormal CDS spreads differences of those two subgroups. The alternative estimation comprises as well 100 trading days but starts one year before the event. See table 4 for further information.

5 Drivers of CDS Spread Reactions

The event study results attached to the SIFI-regulation lead to a decrease in CDS spreads and thus suggest to increase banks' bail-out expectations rather than the opposite. The effect is particularly pronounced for the key-event of the initial SIFI designation on 30th November 2009. Notably, at this time the cornerstones of the regulatory design -including enlarged capital buffers- were already known by the markets. Therefore one might raise the question whether this result is indeed attributed to an increase in bail-out expectations or rather stemming from the simple fact that

the enlarged equity buffers make the SIFI banks just safer. On that score a better capitalization would signal a higher loss absorbing capacity, which would then be reflected in lower risk premiums.

This issue, however, needs a profound discussion. First, we analyze the regulatory impact upon announcement, i.e. in the short run. From that point of view, a SIFI bank has to raise comparatively costly equity at the expense of debt. That would, *ceteris paribus*, lead to a reduction in future profits which will be reflected in a drop in stock prices and, hence, in a rise of CDS spreads. So show Flannery, Houston, and Partnoy (2010) that stock returns and CDS spread movements empirically exhibit a highly negative correlation.²³ Second, financial markets would need to be undoubtedly convinced that the SIFIs are going to implement the enlarged capital requirements effectively. Blum (2008) as well as Behn, Haselmann, and Vig (2014) show that especially large banks are able to circumvent higher capital requirements when those are defined on the basis of risk-weighted-assets. And lastly, the comprehensive reform package of the SIFI regulation at hand does not consist of capital surcharges only. Apart from bank capital SIFIs are subject to an enlarged oversight and tighter resolution schemes, which are both expected to lead to a drop in bail-out expectations as pointed out before.

Given these arguments, the rationale that the CDS drop upon the initial SIFI designation is attributed to a better capitalization in the future and not to an unintentional increase in bail-out expectations seems to be less likely but -nevertheless-

²³A decrease in expected future profits (drop in stock returns) curtails the banks' distance to default which will feed back into an increase in CDS spreads. Contrary to the short run argument Mehran and Thakor (2011) and Berger and Bouwman (2013) show that better capitalized banks perform better in the long run and in particular in times of crisis. This however does not concern the situation in which banks are instantly required to raise costly capital. See also Admati, DeMarzo, Hellwig, and Pfleiderer (2013) and Admati and Hellwig (2013) for a discussion about the individual and the economic cost of capital.

possible. We will thus try to test those two possible causalities by relating the drop in CDS spreads to the (i) banks' capitalization and to the (ii) countries banking sector size. The underlying logic is the following: if the drop in CDS spreads is due to a better capitalization in the future, then particularly low capitalized SIFIs are expected to face a larger reduction in CDS spreads. This would be due to the fact, that those institutes need to increase their loss absorbing capacity to a larger extend then comparatively better capitalized ones.

If, however, the drop in CDS spreads is driven by a rise in bail-out expectations, we would expect the total amount of country bank assets over GDP to play an important role as a governments (natural) restriction to support the SIFIs. To be more concrete, SIFIs based in countries with comparatively small banking sectors are more plausibly expected to be saved than SIFIs in countries with relatively large baking sectors. We formulate two competing hypotheses accordingly:

Capital-Safety Hypothesis:

- *The drop in CDS spreads attached to the SIFI badge is stronger for low capitalized banks than for other banks (larger impact on loss absorbing capacity).*

Bail-Out-Restriction Hypothesis:

- *The drop in CDS spreads attached to the SIFI badge is stronger for banks located in small banking sectors that are credibly expected to be saved from the government (larger increase in bail-out expectations).*

5.1 Testing Two Competing Hypotheses

In order to test the capital-safety hypothesis we regress the cumulated abnormal change in CDS spreads CAC_{ij} of the initial designation event on a $SIFI_{ij}$ -dummy and the equity ratio $\frac{Equity_{ij}}{Assets_{ij}}$ for each bank i and country j . We also assess the interaction effect of those two variables, displayed in brackets:

$$CAC_{ij} = \alpha + \beta SIFI_{ij} + \gamma \frac{Equity_{ij}}{Assets_{ij}} + \delta \left(SIFI_{ij} \times \frac{Equity_{ij}}{Assets_{ij}} \right) + \phi \frac{CBA_j}{GDP_j} + \epsilon_{ij} \quad (4)$$

In order to assess the interaction effects properly we adjust the equity ratio by its mean, i.e. demean the series. We control for the bank sector size by using the total amount of country bank assets CBA_j as a share of the respective GDP_j . Note that the $\frac{CBA_j}{GDP_j}$ ratio relates the total country bank assets on stake to the governments economical bail-out power. While the numerator contains the possible bail-out-basis, the denominator includes the fiscal scope to do so. Hence, the bigger the country bank assets over GDP ratio, the lower the bail-out capacity. We moreover cluster the standard errors for all cross-sectional regressions on the country level. This enhances the power of the results as country bank assets over GDP apply in each regression to a set of banks.

In order to test the bail-out-restriction hypothesis, we replace in equation (4) the equity ratio by the country bank assets over GDP ratio. In doing so we are able to specifically assess the interaction effect of the SIFI-dummy and the bail-out restriction imposed by the banking sector size. Note that the bank assets over GDP ratio is, likewise to the previous case, adjusted by the mean. The cross sectional regression model then looks as follows:

$$CAC_{ij} = \alpha + \beta SIFI_{ij} + \gamma \frac{CBA_j}{GDP_j} + \delta \left(SIFI_{ij} \times \frac{CBA_j}{GDP_j} \right) + \phi \frac{Equity_{ij}}{Assets_{ij}} + \epsilon_{ij} \quad (5)$$

5.2 Cross-Sectional Results

Our results for the capital-safety hypothesis are given in Table 6. The first model contains the the SIFI-dummy as the only explanatory variable and yields therefore the identical CDS drop of -3.558 basis points as previously obtained by the event-study analysis. The remaining model specifications imply the banks' equity ratio and the interaction effects with respect to the SIFI dummy. Since the bank capitalization increases in the size of the equity ratio, we would expect a positive sign attached to the coefficients. This is, however, not the case here. The coefficients show a change in signs and are in none of the model specifications statistically significant. We hence do not find empirical evidence for the argument that the drop in risk premiums is driven by a better capitalization in the future for the targeted banks. Remarkable, the banking sector size, included in the last model specification, proves out to be significant.

Table 6: Capital-Safety Hypothesis - Cross-Sectional Regressions

	(1)	(2)	(3)	(4)	(5)
SIFI-Badge	-3.558* (0.063)		-3.434* (0.081)	-3.700** (0.042)	-4.681*** (0.006)
Equity Ratio		-2.733 (0.894)	-13.93 (0.361)	1.093 (0.964)	22.06 (0.520)
(SIFI-Badge) \times (Equity Ratio)				-76.07 (0.157)	-41.34 (0.290)
Country Bank Assets/GDP					1.603** (0.016)
Constant	0.902 (0.163)	-0.270 (0.686)	0.711 (0.302)	0.682 (0.341)	-4.268** (0.037)
Observations	50	49	49	49	49
R-squared	0.132	0.000	0.130	0.151	0.221
Adjusted R-squared	0.114	-0.021	0.092	0.095	0.151

The table shows the results from cross sectional regressions using the cumulated abnormal CDS spread change across banks in response to the first SIFI designation on 30 November 2009 as dependent variable. P-values are displayed in brackets. Explanatory variables are defined as follows: SIFI badge denotes a dummy equal to 1 if the respective bank is considered as systemically important according to the publication of the leaked FSB list by the Financial Times on 30 November 2009; Equity Ratio is defined as average common equity divided by average assets in 2009; Country bank assets / GDP denote the total amount of country bank assets as a share of the gross domestic product in 2009. Series of the Equity Ratio is adjusted for the mean, i.e. "demeaned". Standard errors are clustered on country-level. Stars are to be interpreted as follows: * significant at 10 percent; ** significant at 5 percent, *** significant at 1 percent.

We will now investigate the competing hypothesis under which a bail-out restriction is imposed by the bank sector size. The results of the regressions are displayed in Table 7. Contrary to the previous hypothesis tests, the results exhibit economically and statistically significant coefficients attached to the bail-out restriction. The interaction effects (models 4 and 5) are significantly positive and suggest that the increase in bail-out expectations (drop in CDS spreads) faces a notable dampener in large banking sectors. In other words, the SIFI-badge generates a particular large value for banks located in small banking sectors that are more credibly expected to be saved. Moreover,

these findings support the relation between bail-out expectations and CDS spread movements rather than the argument that banks become safer in response to a better expected capitalization in the future.

Table 7: Bail-Out Restriction Hypothesis - Cross-Sectional Regressions

	(1)	(2)	(3)	(4)	(5)
SIFI-Badge	-3.558* (0.063)		-4.648** (0.011)	-5.309*** (0.000)	-5.185*** (0.000)
Country Bank Assets/GDP		0.333 (0.645)	1.317** (0.027)	0.225 (0.756)	0.741 (0.328)
(SIFI-Badge) \times (Country Bank Assets/GDP)				2.625** (0.042)	2.257* (0.065)
Equity Ratio					14.42 (0.635)
Constant	0.902 (0.163)	-0.0942 (0.886)	1.207 (0.121)	0.954 (0.216)	0.240 (0.883)
Observations	50	50	50	50	49
R-squared	0.132	0.005	0.191	0.248	0.260
Adjusted R-squared	0.114	-0.016	0.157	0.198	0.193

The table shows the results from cross sectional regressions using the cumulated abnormal CDS spread change across banks in response to the first SIFI designation on 30 November 2009 as dependent variable. Series of the Country Bank Assets / GDP is adjusted for the mean, i.e. "demeaned". See Table 6 for further information.

Against this background, we are able to further investigate the relation between the SIFI-badge and the banking sector size of each country. We calculate the overall effect of the SIFI badge by taking the first order derivative of the regression equation (5) with respect to the SIFI dummy and obtain the following:

$$\frac{\partial (CAC_{ij})}{\partial (SIFI_{ij})} = \beta + \delta \left(\frac{CBA_j}{GDP_j} \right) \quad (6)$$

This expression contains the coefficients for the SIFI-badge β and the banking sector size δ , dependent on the actual amount of country bank assets over GDP. A linear combination of the estimates obtained by model (5) allows us to compute the country-specific overall effects.²⁴

Table 8 reports the results for each countries bank sector size.²⁵ The first two columns list the country and the hosted bank assets over GDP, respectively. The third column shows the overall effect of the the SIFI badge, dependent on the respective banking sector size while p-values are given in the last column. In addition to each countries bank assets over GDP, we include as well the sample mean.

Table 8: Banking Sector Specific Effects of the SIFI Badge

Country	Country Bank Assets/GDP	Overall SIFI Effect	P> t
Sweden	224 %	-7.508***	0.000
Italy	226 %	-7.459***	0.000
Spain	298 %	-5.836***	0.000
Germany	313 %	-5.499***	0.000
<i>Sample Mean</i>	<i>327 %</i>	-5.185***	0.000
Belgium	332 %	-5.078***	0.000
France	350 %	-4.676***	0.001
Netherlands	462 %	-2.142	0.324
United Kingdom	478 %	-1.781	0.441
Switzerland	489 %	-1.523	0.539

The table shows the overall effect of the SIFI badge for each baking sector size. Results are obtained by a linear combination of the estimates from model (5) on the basis of estimation equation (5). Sample mean stands for the mean in country bank assets and yields therefore the identical coefficient as the model with demeaned series for country bank assets. Stars are to be interpreted as follows: * significant at 10 percent; ** significant at 5 percent, *** significant at 1 percent.

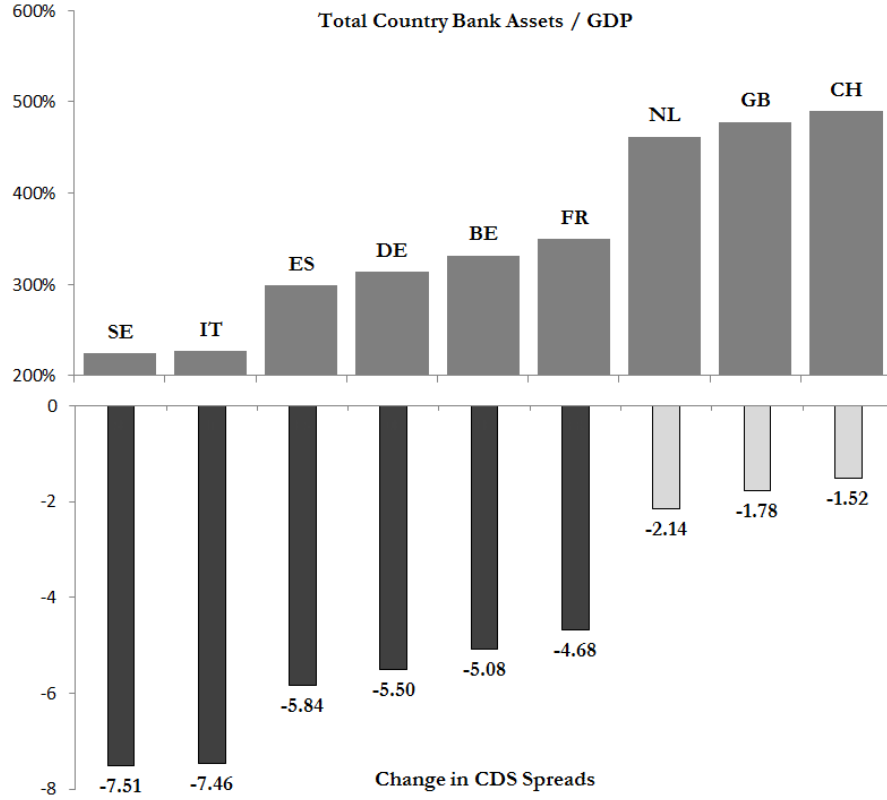
As can be seen, the CDS drop is particularly strong for countries with small banking

²⁴We use the estimates of model (5) as it performs best in explaining the data. In unreported results we used the estimates obtained by model (4) whose differences where negligible small.

²⁵Note that series of total bank assets over GDP are for this purpose, of course, not adjusted for their mean.

sectors, such as Sweden or Italy. The effect for those countries reaches a maximum drop of -7.5 basis points and is highly significant. Countries hosting huge banking sectors instead, namely the Netherlands, Switzerland and the United Kingdom experience a minor decrease in CDS spreads which in turn loses the statistical significance. A graphical illustration of the banking sector size versus the respective drop in CDS spreads is given in figure 5. Significant negative coefficients (e.g. Sweden and Italy) are depicted in dark grey whereas insignificant negative coefficients (e.g. UK and Switzerland) are indicated in light grey. Summing all up, only sufficiently large banking sectors seem to mitigate the increase in bail-out expectations arising from the SIFI designation. For those countries, the dampening effect offsets the additional value from the SIFI-badge.

Figure 5: Banking Sector Size versus Change in CDS Spreads



The figure depicts the predicted country specific drop in CDS spreads on 30 November 2009 as a function of total bank assets over GDP. Numbers are taken from Table 8. Significant changes in CDS spreads are indicated in dark grey; insignificant changes are depicted in light grey.

6 Robustness

In this section we provide a number of robustness checks. We first re-run the event study regressions of section 4 on the basis of an enlarged estimation window of 160 trading days. When then expand the bank CDS spread sample to other countries where SIFIs

have been designated over the reform period, namely China, Japan, and the United States. Finally we re-estimate the Bail-Out Restriction Hypothesis by replacing the total country bank assets over GDP by the SIFI bank assets over GDP in each country.

We start by discussing the results of the enlarged estimation window of 160 Trading days, displayed in Table 9. A first view on the summation lines shows that the overall results do barely change. The aggregate difference in CDS spreads of SIFIs and Non-SIFIs stands at -10.7 basis points (-12.4 including cumulated values). Hence, the difference of roughly 1 basis point in both case is negligible. With regard to single events, the results for key event [2] remain basically unchanged as well. The drop in CDS spreads stands at 3.6 basis points (enlarged event widow), which is marginally higher than before. Event [7], however, loses the statistical significance compared to the baseline regression in Table 4.

We now analyze the enlarged bank sample that also incorporates banks from the remaining countries in which SIFIs have been designated. These additional banks, as well as their classifications, are provided in the summary statistics (Table 2). Unfortunately, the data availability is limited with respect to these countries. Three U.S. American SIFIs are missing, while the overall amount of Non-SIFIs in order to control for the differences is rather small, compared to the European baseline estimation.²⁶ This should be kept in mind when assessing the results. Table 10 displays the findings. Starting with the aggregation line at the bottom, we find a negative reaction in CDS spreads of about -9.9 basis points and -12.0 basis points when considering the enlarged event window. Compared to our baseline estimation we, hence, find no essential difference in the aggregated values. With regard to individual events,

²⁶Bank of New York Mellon, Morgan Stanley, and State Street were either not available at all or contained too few observations.

our enlarged sample results again confirm that the strongest drop in CDS spreads appeared in response to the initial designation of the SIFIs, i.e. the publication of the leaked FSB list by the Financial Times. And again, event [7] loses the significance compared to the baseline regressions. To sum up, the robustness checks confirm that the key event of the analysis is given by event [2], i.e. the first designation of the SIFIs.

7 Conclusion

In this paper we addressed the following question: Did the SIFI regulation lead to a decrease in bail-out expectations? Employing an event study analysis on a broad sample of European banks and carefully selected number reform events, we found that the overall effect is given by a decrease in CDS spreads, indicating an unintended rise in rescue expectations and distortionary effects at the expense of banking competition. We found that the rise in bail-out expectations is particularly strong upon the initial designation, as could be shown by the publication of the leaked FSB list. We moreover confirmed these results when we analyzed the subsequent adjustment of the SIFI list. Freshly designated SIFIs again experienced a drop in CDS spreads compared to the ones losing their SIFI badge.

In order to identify the drivers of the CDS spread reductions, we sent the banks' capitalization and the governments bail-out boundary into race. We found that the increase in bail-out expectations is particular strong for banks located in small banking sectors which are more credibly expected to be bailed-out by the public sector. Put it differently, the *un-intended* increase in banks' security to be saved vanishes only if the amount of country bank assets over GDP is substantially large, such that a bail-out is considered as less likely by the markets. The argument of an increased banks' safety due to a better loss-absorbing capacity in the future could, however, not be supported by the data and thus fosters our results of an enhanced security to be saved.

What can we learn from those results in terms of possible policy-implications? Given that the overall results are clearly pointing to an increase in banks' rescue expectations, the regulator would have been presumably better off in avoiding an explicit designation of the targeted institutes. This seems, to some extent, not surprising as the early

announcement of TBTF banks by the US comptroller of the currency's announcement already revealed similar consequences (O'Hara and Shaw, 1990). It is to note, however, that we are not able to fully disentangle each effect of the three regulatory elements in isolation. There might be well the existence of decreasing bail-out expectations attached to the tightened resolution regimes and the capital surcharges, which might have been (unfortunately) overshadowed by the effect of the explicit designation. Furthermore we have to take into account that the uncertainty about the SIFI regulation has been only erased for the design of the additional capital surcharges and the question about who is going to carry a SIFI badge. The future impact of the enhanced supervision and tight resolution schemes, however, will depend as well on the national authorities and can therefore not be fully analyzed on the basis of the above methodology. For these reasons we cannot claim that the regulatory reform package turned out to be entirely counter-productive. It rather seems that the overall reform process could have been designed more effectively. An alternative way to prepare a special regulation of SIFIs would be given by a progressive design of all the reform elements without explicitly designating particular institutes. On that score, the enlarged oversight, the tighter resolution schemes, and in particular the capital requirements could have been progressively linked to the SIFI indicators without establishing a two-class banking society. If regulators, however, explicitly nominate particular institutes, they are running the risk to protect monumental SIFI values rather than imposing an effective market discipline, under which an exit needs to be possible.

8 Appendix

Table 9: Event Study Results - Enlarged Estimation Window

No.	Event	Date	Full Sample	SIFIs	Non-SIFIs	Difference
[1]	G-20 finance minister conference	5 Sep 09	1.238 (0.713)	0.231 (0.949)	1.623 (0.630)	-1.398 (0.423)
[2]	First disclosure of the SIFIs	30 Nov 09	1.593 (0.402)	0.238 (0.882)	2.102 (0.286)	-1.819* (0.073)
	cumulated (t= 0+1)		0.673 (0.803)	-1.906 (0.483)	1.676 (0.549)	-3.583** (0.013)
[3]	FSB outlines SIFI blueprint	1 Nov 10	1.511 (0.673)	1.775 (0.692)	1.408 (0.667)	0.336 (0.827)
[4]	Re-publication of the SIFIs	10 Nov 10	3.208 (0.364)	2.553 (0.557)	3.463 (0.289)	-0.909 (0.561)
[5]	BSBS proposes capital surcharge	17 June 11	-3.086 (0.408)	-4.149 (0.281)	-2.673 (0.489)	-1.475 (0.496)
[6]	BCBS agrees capital surcharge	th June 11	4.957 (0.191)	3.828 (0.329)	5.397 (0.167)	-1.568 (0.496)
[7]	BCBS and FSB publications	19 July 11	-3.721 (0.364)	-5.982 (0.164)	-2.842 (0.498)	-3.141 (0.167)
[8]	FSB discloses final SIFI-list	4 Nov 11	1.513 (0.831)	1.056 (0.902)	1.748 (0.791)	-0.692 (0.859)
Aggregate change in CDS spreads			7.213	-0.450	10.226	-10.666
-including cumulated values			6.293	-2.594	9.800	-12.430

Notes: The table shows the results from SUR regressions using the daily first differences of bank CDS spreads as dependent variable. Abnormal differences in CDS spreads, displayed in basis points, are estimated on the basis of the constant return model, using an estimation window of 160 trading days. Each system of regressions includes 50 banks from 9 countries. See table 4 and the robustness section for further information.

Table 10: Event Study Results - Enlarged Global Bank Sample

No.	Event	Date	Full Sample	SIFIs	Non-SIFIs	Difference
[1]	G-20 finance minister conference	5 Sep 09	0.773 (0.789)	0.173 (0.955)	1.054 (0.722]	-0.881 [0.600]
[2]	First disclosure of the SIFIs	30 Nov 09	1.809 (0.276)	0.861 (0.617)	2.251 (0.196)	-1.390 (0.202)
	cumulated (t= 0+1)		-0.258 (0.913)	-2.616 (0.286)	0.843 (0.734)	-3.459** (0.026)
[3]	FSB outlines SIFI blueprint	1 Nov 10	1.584 (0.502)	1.792 (0.525)	1.487 (0.505)	0.305 (0.808)
[4]	Re-publication of the SIFIs	10 Nov 10	2.621 (0.246)	1.891 (0.478)	2.961 (0.168)	-1.070 (0.374)
[5]	BSBS proposes capital surcharge	17 June 11	-2.656 (0.252)	-3.844 (0.146)	-2.128 (0.351)	-1.716 (0.200)
[6]	BCBS agrees capital surcharge	27 June 11	4.403* (0.070)	2.753 (0.313)	5.136 (0.033)	-2.383* (0.077)
[7]	BCBS and FSB publications	19 July 11	-2.658 (0.359)	-3.959 (0.223)	-2.079 (0.465)	-1.880 (0.208)
[8]	FSB discloses final SIFI-list	4 Nov 11	1.510 (0.829)	0.946 (0.910)	1.862 (0.775)	-0.917 (0.816)
Aggregate change			7.386	0.613	10.544	-9.931
- including cumulated values			5.320	-1.215	8.403	-12.000

Notes: The table shows the results from SUR regressions using the daily first differences of bank CDS spreads as dependent variable. Abnormal differences in CDS spreads, displayed in basis points, are estimated on the basis of the constant return model, using an estimation window of 100 trading days. Each system of regressions includes 66 banks from 12 countries. See table 4 and the robustness section for further information.

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