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# Market Reactions to the Assessment of Other Systemically Important Institutions

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## Abstract

*This paper analyze how financial market reacted to the disclosure of Other Systemically Important Institutions list (O-SIIs) by the European Banking Authority using an event study of bank stock prices and CDS spreads. Overall, the immediate reaction of the market on stock returns is negative, i.e. a stigma effect. However, in the days surrounding the event, the investors change their perception, resulting in an increase in shareholders' wealth and thus in a safe effect, that holds for both euro zone and non-euro zone banks. Results for the CDS spreads confirm the results obtained using stock returns, we found an increase in CDS spreads and thus a higher cost for the banks. However, considering a longer period the CDS spreads decrease. Further evidence suggests that the cumulative abnormal returns are not only driven by the event per se, being also related to other relevant factors like distance to default, turnover by volume, and, credit risk ratio. As for the national events, the distance to default and the share of deposits in total liabilities influence the abnormal performance of the banks.*

**Key words:** Other Systemically Important Institutions, bank stock prices, CDS spreads, event study, abnormal returns.

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## Abstract

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## 1. Introduction

After the global financial crisis (GFC) of 2007-2008, the banking system was again in the attention of regulators, as it has been the underlying cause that triggered the systemic failure through the so-called subprime mortgages.[1] The financial authorities focused on identifying why the previous regulations have failed, and why the crisis consequences were so pernicious that was needed to spend trillions of dollars using taxpayers' money to bail-out the distressed financial institutions labeled as too-big-to-fail (TBTF). The G20 (2008) group highlights that the most recent financial crisis is the result of excessive risk taking, poor risk management practices and/or inconsistent macroeconomic policies pointing out the need to move from individual bank supervision (micro-prudential approach) to a common set of regulations (macro-prudential approach). These practices should consider banks from a network perspective, and, particularly, the financial institutions that are systemically important. They are included in this category due to their size, complexity, and systemic interconnectedness (FSB, 2011). In the case of a default, these banks are more likely to affect the financial system (or even to drive it to the collapse) and the real economy as a whole, generating negative and expensive externalities. Hence, alongside the TBTF concept, other concepts have emerged in the aftermath of the crisis: too-systemic-to-fail (TSTF), too-interconnected-to-fail (TITF), too-complex-to-fail (TCTF) or too-many-to-fail (TMTF).

Policymakers and supervisory bodies (see for instance BCBS, 2010; EC, 2013; OCC, 2013) have agreed that new regulatory measures are required in order to assure a more resilient banking system capable to absorb losses (without using public money), to reduce systemic risk, and, ultimately, to enhance financial stability. These regulations include capital surcharges, liquidity requirements and resolution regimes, among others. For example, at the G20 Summit on November 4th 2011, the Financial Stability Board (FSB) in consultation with Basel Committee on Banking Supervision (BCBS) published a list of 29 global systemically important banks (G-SIBs) that are a particular category of systemically important financial institutions (SIFIs)[2]. All these

[1]Laeven and Valencia (2008) undertake a well-documented analysis in which they assess banking crises from 1970 to 2007. The authors found that during this period 42 banking crises affected 37 economies, reflecting, *inter alia*, deficient regulations and poor supervision frameworks.

[2]Besides financial intermediaries (banks), SIFIs include insurance companies (non-bank financial intermediaries), and other financial institutions. According to Zhou et al. (2012) systemically important financial institutions may jeopardize financial stability through counterparty, liquidity, and contagion risk.

banks were required to increase their capital with a range that varies from 1% to 3.5% of their risk-weighted assets in order to improve the loss absorption capacity (FSB, 2011). Moreover, the G-SIBs are the subject of a tighter and more effective supervision, given their systemically importance. The list is updated and published every year in November by the FSB. In addition to this list, the BCBS (2012) developed a framework for assessing the domestic systemically important banks (D-SIBs, i.e. banks that can pose negative spillover effects at the national level).

In addition, the European Banking Authority (EBA) established, after consulting with the European Systemic Risk Board (ESRB), its own guidelines for identifying other systemically important institutions (O-SIIs) with significant contribution to systemic risk at the national level within the European Union. The identification process follows the principles of Basel Committee to deal with D-SIBs and is supervised by both national and supranational authorities (EBA, 2014). Therefore, the O-SIIs are the financial institutions that are systemically important at the national level, but are not included in the G-SIBs list. The criteria to select these institutions are based on their size (total assets), interconnectedness (intra-financial system assets and liabilities, etc.), relevance for the economy (the amount of payments carried-out at the national level, among others), and complexity (cross-border assets and liabilities, etc.) (EBA, 2014).[3] In a first step, the national authorities identify the O-SIIs and submit the lists to the EBA which subsequently makes these lists public. The first official list was disclosed by the EBA on 25th April 2016 and is updated on a yearly basis. It is worth mentioning that the compliance with these rules is not mandatory and the state members may opt out to make such an assessment.

Considering the incipient stage of the OSII-s list publication and its importance for policy makers, the aim of this paper is to examine how market participants reacted to the designation of the O-SIIs. Our main research questions can be stated as follows: *How did the publication of the O-SIIs list influence the banks' stock returns and CDS spreads?* We consider this topic to be of great interest as through the evolution of banks' share prices or CDS spreads following the event (designation) it can be established whether the new regulatory framework had *a stigma effect* (the financial institutions are perceived riskier), *an opacity effect* (the event do not bring any new information on the market) or *a safe effect* (due to the fact that the institutions must maintain a capital buffer and are subject to a tighter supervision), and thus destroying or creating the wealth

[3] The identified O-SIIs must maintain a Common Equity Tier 1 (CET1) capital buffer of up to 2% of the total risk exposure they hold.

for the shareholders. We hence approach the ongoing strand of literature concerning bank stigma and opacity (e.g., Morgan et al., 2014; Gorton and Ordoñez, 2016).

The authorities can be reserved in disclosing information on financial institutions considered TBTF as it may imply higher costs due to the concern that customers may be reluctant to demand loans from these banks (as they are perceived more likely to fail) or creditors may charge higher rates or supply less credit (Berger at al., 2016). On the other hand, revealing the list of institutions will reduce the information asymmetry (as investors can value them more accurate), but they have to comply with the specific regulatory measures and bear additional costs (for instance, additional buffer capital for the O-SIIs). Moreover, these systemically important institutions are usually the subject of government interventions (bailouts) that can be associated with more risk-taking and moral hazard (Acharya and Yorulmazer, 2007; Farhi and Tirole, 2012). One can anticipate that identifying these institutions is benefic as there is always a lender of last resort to save them. From these perspectives, it is very important to know how markets react to the designations and regulatory changes and whether the banks will outperform or underperform following the announcement of the O-SIIs lists.

To answer the research questions we assess in a first stage the reaction of banks' stock prices and CDS spreads to the O-SIIs list announcement, employing an event study methodology. First, we use as event date the official day when the EBA published the O-SIIs list (25$^{th}$ April 2016). This event will be henceforth labeled as the official event. Additionally, we examine whether there was a reaction during the dates when the national regulatory authorities submitted the O-SIIs list to the EBA (that will be henceforth labeled as the national events or unofficial events). Finally, for a comparison with other designation events, we investigate the financial markets reaction to the stress tests conducted by the EBA, publication of the G-SIBs list by BCBS, and the inclusion of financial institutions in the Single Supervisory Mechanism (SSM) by ECB. In a second stage, we assess the main drivers of banks' cumulative abnormal returns, considering the distance to default, the turnover by volume, the credit risk ratio, and, the share of deposits in total liabilities, among other bank and macro controls.

The empirical findings show that overall the immediate reaction of the market on stock returns is negative, i.e., a stigma effect. However, in the days surrounding the event, the investors change their perception, resulting in an increase in shareholders' wealth and thus in a safe effect, that holds for both euro zone and non-euro zone banks. Results for the CDS spreads confirms the

results obtained using stock returns, we found an increase in CDS spreads and thus a higher cost for the banks. However, considering a longer period the CDS spreads decrease. Further evidence suggests that the cumulative abnormal returns are not only driven by the event per se, being also related to other relevant factors like distance to default, turnover by volume, and, credit risk ratio. As for the national events, the distance to default and the share of deposits in total liabilities influence the abnormal performance of the banks.

Our work contributes to the existing literature twofold. First, we develop on the debating framework concerning the appropriateness and the necessity of disclosing financial institutions that are systemically important. To our knowledge, no other studies have assessed the reaction of banks' stock prices and CDS spreads to the O-SIIs list publication. Thus, we aim to enrich the literature on other systemically important institutions. Second, we attempt to contribute to the literature on O-SIIs determinants by identifying the main drivers of cumulative abnormal returns. In our analysis, we focus on a large spectrum of bank-specific characteristics like banks' distance to default, turnover, credit risk, funding structure, as well as country-specific factors.

The rest of this paper unfolds as follows: in Section 2 we present the relevant literature related to our topic, in Section 3 are described the sample, event dates and the methodology we employ, in Section 4 we discuss the empirical findings and in Section 5 we conclude.

## 2. Literature review

As the global financial crisis has emerged, public authorities (both national and supranational) took action making use of different intervention measures and instruments in order to alleviate the consequences and negative externalities (see Goodhart, 2008; Praet and Nguyen, 2008; Panetta et al., 2009). Among the intervention schemes, the most frequently used were deposit guarantees, capital injections, and bad banks establishment (Dietrich and Hauck, 2012). The immediate objective of all these measures was to maintain financial stability that was put at risk especially by the TBTF institutions and to restore the confidence in financial markets. However the efficiency of these intervention policies that used public money is highly debated by academics. An extensive literature examine the impact of regulations and interventions on systemic risk (López-Espinosa et al., 2012; Londono and Tian, 2014; Berger at al., 2016; Nistor Mutu and Ongena, 2017), bank stability (Demirgüç-Kunt and Detragiache, 2011; Klomp and de Haan, 2012; Bucher et al., 2015; Klomp and de Haan, 2015; Fratzscher et al., 2016; ), bank risk-

taking (Agoraki et al., 2011; Dietrich and Hauck, 2012; Anginer et al., 2014a) or liquidity risk (Brunetti at al., 2011; Aït-Sahalia et al., 2012). At a first glance, these interventions can have positive effects on banks because they provide liquidity and increase confidence from market participants and costumers. However, the findings are inconclusive, either advocating or refuting the overall efficiency of the measures implemented and rescue packages that were provided to the banks. These aspects are of a primordial importance due to the fact that taxpayers' money is usually used for saving the banks and thus judicious actions are expected to be taken from the governments to reduce the risk posed by the TBTF institutions.

Given the systemically importance of the banks, a strand of literature has emerged, especially in the last decade, trying to quantify the systemic risk and to identify the institutions with a great contribution or exposure to systemic risk (for some surveys and comparisons of the measures of systemic risk, see for instance Bisias et al., 2012; Bongini and Nieri, 2014; Silva et al., 2017; Zhang et al., 2015).

To address the systemically important financial institutions issue, a series of regulatory measures have been proposed. The majority of academics have agreed that imposing capital and/or liquidity surcharges based on institution's contribution to systemic risk in order to absorb future losses may be an appropriate tool to reduce negative externalities (e.g., Chan-Lau, 2010; Ötker-Robe and Pazarbasioglu, 2010; Ötker-Robe et al., 2011; Elliott and Litan, 2011; Adrian and Brunnermeier, 2016; Acharya et al., 2017;). Besides capital surcharges, Elliott and Litan (2011) suggest to limit SIFIs' exposure to individual counterparties, to request additional information to be disclosed and to limit or eliminate certain types of proprietary trading and investment activity. Zhou et al. (2012) considers that the shareholders and creditors should bear the losses (bail-in) and this action should be enforced together with other resolution tools. Ötker-Robe et al. (2011) propose an intensive supervision based on SIFIs' risk and resolution regimes at the national and global level. However, Iwanicz-Drozdowska and Schab (2014) found that there are considerable differences among G-SIBS identified by the FSB and BCBS and a uniform approach based on capital surcharges is not appropriate. Also, Elliott and Litan (2011), as well as Shull (2012), pointed-out that charging additional capital for SIFIs may not result in less risk-taking.

To assess the impact of regulatory changes on financial institutions using the event study methodology, several studies have been conducted over time, including those of Schwert (1981)

and MacKinlay (1997). The most recent papers focus on regulation of systemically important financial institutions across different regions, such as Europe (Petrella and Resti, 2013; Schäfer et al., 2016; Sahin and de Haan, 2016), the USA (Brewer and Klingenhagen, 2010; Morgan et al., 2014; Abreu and Gulamhussen, 2013; Schäfer et al., 2016) or Japan (Pop and Pop, 2009). Additionally, there are studies that examine market reaction of SIFIs designation (Bongini et al., 2015; Moenninghoff et al., 2015).

Petrella and Resti (2013) study 97 European banks that participated in the 2011 test stress exercise. Their findings suggest no relevant impact on the market concluding that the banks are opaque. Schäfer et al. (2016) assess the reaction of the stock returns and CDS spreads of banks from Europe and the USA to regulatory reforms, after the crisis (i.e., Dodd-Frank Act in the USA, Vickers Report in the UK, Restructuring Law in Germany, and TBTF Regulation in Switzerland). With a sample of the 10 biggest banks in terms of market capitalization from the UK, the US, Germany, and Switzerland, the authors argue that the regulatory announcements led to a decrease in banks' stock prices and an increase in CDS spreads. Sahin and de Haan (2016) found limited market effects in terms of stock returns and CDS spreads to the ECB's Comprehensive Assessment for 14 banks from the euro area.

For the USA market, Brewer and Klingenhagen (2010) show that the largest too-big-to-fail banks experienced positive abnormal returns following the TARP program comparing with their smaller peers, whilst Abreu and Gulamhussen (2013) found no evidence of abnormal performance for the too-big-to-fail institutions following the FSB designation list. However, Morgan et al. (2014)'s analysis for the 19 largest US banks holding companies reveal the importance of stress test suggesting that stress tests can reduce banks' opacity. For Japan, Pop and Pop (2009) discuss how the decision of national authorities to bail-out Resona Holdings impacted the market. Using a sample of 97 Japanese listed banks, the conclusion is that large banks experienced positive and statistically significant abnormal returns, whilst for the small banks the abnormal returns were statistically indistinguishable from zero. The designation of the G-SIBs led to positive abnormal returns. The findings of Moenninghoff et al. (2015) empirically show that the government ownership influences the abnormal performance of banks. Furthermore, the analysis of Bongini et al. (2015) conducted for 70 of the world's largest banks, including 29 SIFIs, highlights the importance of banks' capital adequacy ratios. They provide

evidence that banks with high capital adequacy ratios have positive abnormal performance whilst their peers (i.e., banks with low capital adequacy ratios) have negative abnormal performance.

## 3. Data and Methodology

### 3.1 Sample

Our sample consists of a number of banks included in various lists on systemically important institutions published by financial authorities. First of all, we consider other systemically important institutions (O-SIIs) list published by the European Banking Authority (2016). Second, we focus our attention towards the banks that had been included on the list for the stress test exercises conducted by the Committee of European Banking Supervisors and the authority that has taken over its responsibilities and tasks, EBA (from 2011 on). Third, we analyze the effect of being included in the Single Supervisory Mechanism list of ECB (2013). Finally, an event study is carried out for the globally systemically important institutions as defined by Financial Stability Board. By conducting such an analysis, our main purpose is to see which of these events were the most significant (in terms of abnormal returns) and which are the main factors influencing them, besides the event *per se.*

For all of these lists, we select the banks with available data on stock prices and CDS spreads on Thomson Reuters Datastream database. To have a more representative sample, we also pick the stocks that are not traded anymore (appear as "dead" on Datastream) but have prices and CDS spreads for the event day, event window and estimation window. A detailed list of all these banks is showcased in Appendix.

**INSERT TABLE 1**

Starting from the O-SIIs list published by the EBA (2016) that consists of 173 financial institutions we include in our initial 64 European banks with data available for conducting the event study analysis on stock returns from 24 countries (15 euro area and 9 non-euro area countries). The number of banks per country ranges from one to eight, countries with the largest number of banks are Poland (8 banks), Spain (6 banks), the UK (5 banks), Sweden (4 banks), and Greece (4 banks). For the national events, we do not include the banks from Poland and Bulgaria, as they do not appear on the official list disclosed by the EBA. Table 1 presents the

sample of the O-SIIs included in our analysis and information regarding their size as of 31 December 2015 (previous to the publication of the list). The sample's total assets weights 0.07% in the total assets of the EU credit institutions and 0.10% in the total assets of the credit institutions within the euro area at the end of 2015[4]. The largest banks are those from the UK, representing 26.33% of our sample's size while the weight of the total assets of the euro area O-SIIs in the sample is 62.26%.

**INSERT TABLE 2**

The list of the O-SIIs used for the event study on CDS spreads is shown in Table 2. As it includes only banks with data on CDS spreads available in Datastream the composition differs from the previous sample and it includes 40 banks from 14 countries. The number of banks per country ranges from 1 to 6, Germany, the UK, Spain, and Sweden being the countries represented by the largest number of banks.

## 3.2 Event dates

For an in-depth analysis and in order to capture all the relevant abnormal returns, we take into consideration several event dates for each list of banks. Hence, for the O-SIIs the official date when EBA published the list is used along with the very first time (not considering the subsequent days) when the national banks of each country where the banks' headquarters are located sent the notification with the O-SIIs to the European Systemic Risk Board. In this way we can assess whether there is a difference in terms of effects between these two event dates and how the market reacted to these two announcements that can be considered domestic and international, respectively.

For the banks that were subject to stress testing, we take as the event date the first time when that particular bank was on the list published by EBA, starting from 2010 when for the first time the sample of banks was made public. The same procedure is applied for the banks included in the Single Supervisory Mechanism. As for the G-SIBs, the relevant dates are the official date

[4] According to ECB (2016), the total assets of credit institutions in 2015 headquartered in the EU amounted €33,798 billion whilst the total assets of credit institutions within the euro area amounted €24,067 billion.

when the FSB published the official list and the first date when the *Financial Times* publication leaked the supposed list.[5]

## 3.3 Methodology

### 3.3.1 Abnormal return computation

In our analysis, in order to determine the impact of the designations to certain categories by specific regulatory bodies (i.e. O-SIIs, G-SIBs, EBA stress test and SSM), we closely follow the standard event study techniques used in the literature, such as Schwert (1981), MacKinlay (1997) and Lamdin (2001). Schwert (1981) and Lamdin (2001) implement and assess the usefulness of event studies in the case of regulatory changes, while MacKinlay (1997) discusses the structure and the framework of event studies in general. It is worth mentioning that the pioneers in this field are Fama et al. (1969).

The abnormal return (AR) is calculated on a trade-to-trade basis and for modeling the normal return (actual return) a factor model is applied (more specifically, the market model) using the following *OLS* regression:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (1)$$

where $R_{it}$ is the log return of bank *i* at time *t*, $\alpha_i$ is the constant term, $\beta_i$ is the slope, $R_{mt}$ is the market portfolio log return at time *t* and $\varepsilon_{it}$ is the disturbance term which is assumed to be independent and identically distributed (*iid*) with a mean of zero and a constant variance. $\varepsilon_{it}$ also measures the abnormal performance of each bank at time *t* (as in Brown and Warner, 1985). A positive value of $\varepsilon_{it}$ imply that the actual return is greater than the predicted one (i.e., the market value of banks increases following the event; market participants consider the event to be beneficial), while a negative value of $\varepsilon_{it}$ denotes a smaller normal return comparing to the expected one (i.e., the market value of banks decreases following the event as market participants consider the event harmful).

As a market portfolio, the *MSCI World index* is used to account for the official date when EBA has made the designation list public (as in Moenninghoff et al., 2015) and the broad local market indices (the blue-chip ones) to account for the official date when the national central

[5] We do not emphasize on the second date of publication of *Financial Times* (one year later) because it contains the same banks (24) as the first time.

banks have sent the list of banks to the European regulatory authorities (as in Campbell et al., 2010; Bongini et al., 2015). To test the robustness of the results, we re-estimate the model using a regional (European) index, i.e., *STOXX 600 Banks* that can control for industry-wide effects and outline the differences between the banks. Also, the model is re-estimated using the national indices (so we can control for country-wide effects) for the official date. For the national designation dates, *MSCI World (global)* and *STOXX 600 Banks (regional)* indices are as proxies for market portfolios. For the other announcements (G-SIBs designations, EBA stress test list and SSM list), the MSCI World index is the main proxy for the market index in the two-factor model, whereas the regional and market indices are employed for robustness checks.

The event study is performed over an estimation window of 250 trading days prior to each event window, as in MacKinlay (1997). To eliminate the noise that can affect the normal performance of security returns an event window of 11 days ([-5; 5]) is considered. The abnormal performance will be studied over five intervals: [0; 0], [-1; 1], [0; 1], [-1; 5], and [-5; 5]. In order to check the robustness of our results, we run all the estimation using an alternative estimation window of 150 trading days.

The same model and techniques are being employed for the event study on CDS spreads reaction but instead of stock prices we use mid-rate CDS spreads. The main market index to compute the abnormal performance and betas for all the events is *Datastream Europe Banks 5 years CDS index*, while for robustness checks we use the *iTraxx Europe 5 years CDS Total Return Index* (collected from Deutsche Bank).

Next, following Brown and Warner (1985) we compute the average abnormal return (AAR) across all banks from our sample:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (2)$$

where N is the number of banks in our samples.

Further, to assess the stock reaction over a longer period of time we sum all the abnormal returns obtained using Eq. (1) over any interval in the event window ($[t_1; t_2]$) around the event date to obtain cumulative abnormal return (CAR) as in Morgan et al. (2014):

$$CAR\ [t_1;\ t_2] = \sum_{t=t_1}^{t_2} AR_{it} \quad (3)$$

Using the same approach as in Eq. (2) we aggregate the average abnormal returns over the interval $[t_1; t_2]$ to get the cumulative average abnormal return (CAAR) as specified by MacKinlay (1997):

$$CAAR\ [t_1;\ t_2] = \sum_{t=t_1}^{t_2} AAR_t \qquad (4)$$

In the global systemically important institutions sample are included several banks with headquarters outside the Europe (the United States and Asia). If an event is taking place in Europe the news will reach Asian markets only in the following day because the stock market would be already closed. Thus, we adjust this issue by setting the non-weekend events to the following day and the weekend events to the next Monday.

### 3.3.2 Significance tests

For more conclusive results, we test the significance of cumulative average abnormal returns using both parametric and non-parametric tests. As parametric tests, we employ *the classic t-test*, Patell's (1976) *standardized residual test* and the test developed by Boehmer et al. (1991). As non-parametric tests, we apply *the generalized sign test* (Cowan, 1992) and the Corrado and Zivney *rank test* (Corrado and Zivney, 1992).

The parametric tests are based on the assumption that the stock returns are normally distributed. However, this is not the case as in the last years the empirical observations have shown that the daily returns display fat tails due to time-varying volatility, skewness resulting from mean non-stationarity, non-linearity dependence, and volatility as pointed out by Pagan (1996). The widely used *t-test* has a strong predictive power (Brown and Warner, 1985) but is based upon the underlying assumption that the residuals are not correlated across securities (are cross-sectional independent). From this standpoint it is not well specified.

To overcome this drawback several tests have been developed in the last years. Boehmer et al. (1991) proposed *a test of standardized residuals* corrected for event-induced changes in volatility. Albeit it is quite a powerful test, for lowered tail alternative hypotheses it might reject them too often (Serra, 2002). *The generalized sign test* has the great advantage of being robust for skewed returns. Moreover, Corrado and Zivney (1992) introduced the Corrado and Zivney rank test corrected for event-induced volatility of rankings, also being well specified to skewed returns. Finally, *the test of standardized residuals* proposed by Patell (1976) takes into account

the heteroskedasticity of event-window abnormal returns. All the tests have the null hypothesis that the cumulative average abnormal returns are equal to zero whilst the alternative hypothesis specifies that the cumulative average abnormal returns are different from zero.

### 3.4 Identifying the determinants of cumulative abnormal returns

Even though the abnormal returns are mainly influenced by the event *per se*, it is of interest to study other relevant factors that may have a significant influence over the abnormal performance of the financial institutions. For this purpose, we run a cross-sectional regression model for the O-SIIs sample using the *OLS method* similar with MacKinlay (1997) using the cumulative abnormal return (CAR) as dependent variable. The model takes the following form:

$$CAR_{ij}\,[t1;\,t2] = \alpha + \beta_1 \times DTD_{ij} + \beta_2 \times Bank\ Characteristics_{ij} + \beta_3 \times Country\ Controls_j + \varepsilon_{ij} \quad (5)$$

where $CAR_{ij}\ [t1;\ t2]$ represents the cumulative abnormal return of bank i from country j during the event window, α is the constant term, $DTD_{ij}$ represents bank i's from country j *Distance to default* measured in standard deviations, $Bank\ Characteristics_{ij}$ is a vector of bank-level specific variables, $Country\ Controls_j$ is a vector of country level indicators, and $\varepsilon_{ij}$ is the error term. A detailed description of the variables is given in Table 3.

**INSERT TABLE 3**

In this section we examine whether differences in terms of risk and business model across banks influenced market reactions to the assessment of O-SII. In order to measure the risk of banks we are using banks' distance to default ($DTD_{ij}$) of Duan and Wang (2016). The risk measure is a metric based on options valuation and it is expressed in standard deviations of banks' distance to default. The institutions' equity is approached as a call option on the underlying asset. The higher the distance to default, the safer is the institution.

In order to reflect the business model of banks, following bank characteristics are included in our analysis: size, leverage, credit risk ratio, Tier 1 ratio, turnover by volume, and funding structure. A greater size is usually associated with higher profitability and hence with a greater (positive) abnormal performance. But big institutions in terms of size may also be

perceived as being riskier, having a greater contribution to systemic risk (Anginer et al., 2014b; Laeven et al., 2016). Leverage, defined as the percentage of the total debt in common equity could also affect the abnormal returns. As institutions with higher leverage may be perceived riskier we could expect lower abnormal returns or negative abnormal returns. As a proxy for credit risk ratio we use provisions for loan losses over total loans. A bank with a high credit risk ratio is expected to be riskier due to the fact that it could have a great amount of uncollectable or trouble loans, affecting negatively the abnormal performance. The Tier1 ratio computed as Tier 1 capital over risk-weighted assets measures the financial strength of the banks, a higher ratio being associated with a higher capacity to absorb future losses. The turnover by volume is the number of shares traded in a year. A profitable institution in normal times usually experiences an increased number of traded shares, denoting the positive expectancies of the investors regarding future profits. Therefore, following the designation list, the O-SIIs with higher trading volume eventually gain greater (positive) abnormal returns. The funding structure is represented by the percentage of the total deposits in total liabilities, a great ratio being seen either as a sound financial strategy of the bank due to its ability to take deposits or as a risky practice due to possible liquidity constraints.

Besides the bank characteristics, variables reflecting the regulatory changes and other designation lists can affect banks' cumulative abnormal returns. First, we consider the designation list of ECB regarding the Single Supervisory Mechanism (SSM) that comprises significant and less significant financial institutions from Europe. A dummy variable takes the value 1 for banks included on this list and the value 0 otherwise. The aim of this framework is to maintain financial stability in the European banking markets. The euro area countries are by default part of this mechanism, but other EU countries could voluntary join the SSM. Being on this list could result in positive abnormal returns following the designation of the O-SIIs, but at the same time the market could anticipate this move and consequently have no reaction. Second, our analysis accounts for the stress testing exercise of EBA used to assess the soundness of the financial institutions in the EU. A dummy variable takes the value 1 for banks included in this stress testing exercise and the value 0 otherwise. As in the case of the SSM list, there could be either a positive abnormal performance or no market reaction. Third, we include a dummy variable that takes the value 1 for bailed-out banks. Institutions that are in trouble and need a rescue package, like state guarantees, liquidity injections, or recapitalizations are perceived to be

more riskier than the others and consequently the investors may act adversely on their designation as systemically important for the national economies. Forth, an institution from a country that experienced a banking crisis during the 2008-2012 period may be also associated with (negative) abnormal returns. Finally, we account for the bank ownership structure, including in our analysis the shares owned by central or local governments in O-SIIs' capital. When the state holds shares in a bank, that institution is perceived to be safer because the probability of bail-out is higher, thus it may be associated with greater positive ARs.[6]

To control for the macroeconomic environment across countries, we use the real GDP growth. In addition, we account for the importance of the O-SIIs within the national economies, proxied by the ratio of banks' size to the GDP of their home country.

For both the official and the unofficial (national) events, the variables concerning banks' characteristics have an annual frequency, for the end of the previous year when the event took place, excepting the distance to default, which is computed on a monthly basis. We consider the values of the distance to default as of 31 December for the previous year when the event took place. Furthermore, we will test for the impact distance to default of the banks one month before the event as we anticipate more significant results.

We will start the empirical analysis by considering the distance to default as a single determinant of CAR and further we add other control variables, namely bank characteristic variables, regulatory variables, and the country-characteristic variables. The standard errors are clustered at the country level.

## 4. Empirical results

### 4.1 Descriptive statistics

Table 4 presents the descriptive statistics for both effective returns and cumulative abnormal returns for [0; 0] and [-5; 5] windows, including both stock returns and CDS spreads. In Panel A the data refers to the official event, corresponding to the date when EBA published the O-SIIs list. The CARs in the event day (CAR [0; 0]) is larger for the non-euro zone countries than for the euro zone ones and there is a significant difference (at 5%) of the means for these two sub-

[6] We have initially included in the model a dummy variable for the euro zone countries but due to the fact that it is highly correlated with the Dummy SSM, we have excluded it. This also applies for the market capitalization (its logarithm value) which is highly correlated with the size variable.

samples. This result also holds in the case of effective returns. However, for the [-5; 5] window the difference in means for both CARs and effective returns is not statistically significant.

Panel B exhibits the descriptive statistics for the national event dates, corresponding to the date when the national regulatory authorities submitted the list of domestic systemically institutions to the EBA. Data show no statistical difference in means neither for the [0; 0] window nor for the [-5; 5] window in terms of both CARs and returns. In Panel C we compare the difference in means in terms of events, i.e., official and national. We can observe that the difference in the CARs mean in the event day is statistically indistinguishable from zero, the market reaction to these events being similar in absolute value. However, this is not the case for the [-5; 5] window as the difference is strongly significant at 1%.

INSERT TABLE 4

Regarding the CDS spreads, the difference in means for both effective and cumulative abnormal returns over the [0; 0] interval are significant at 1% level, both returns and CARs being higher in the official event day. Finally, the findings show no statistical difference in means over the [-5; 5] window.

## 4.2 Cumulative average abnormal return (CAAR)

Tables 5 and 6 show the cumulative average abnormal returns in terms of stock returns, and CDS spreads respectively, together with the statistic tests with their p-values used to test the significance for the full sample, and the two sub-sets of banks (only for the returns) over the official event date and the dates when the national banks submitted the O-SIIs list to the EBA.[7] The CAARs are presented for the five intervals for which we assess the abnormal performance: [0; 0], [0; 1], [-1; 1], [1; 5], and [-5; 5]. The [0; 0] CAAR is in fact the abnormal return in the event day. The tests we employ to analyze the statistical significance of the CAARs are the *t-test (parametric)*, the *generalized sign test*, and the *Corrado and Zivney rank test* (non-parametric). As suggested by Campbell et al. (2010), the non-parametric tests are more powerful than the parametric ones and hence we decided to present the results considering two non-parametric tests

[7] We do not split the sample into euro zone and non-euro zone banks in the case of CDS spreads because it will result in a small number of non-euro zone banks and thus the non-representativeness of the sample might occur.

and one parametric test. For robustness checks, we also use two additional parametric tests described in the methodology section: the *Patell's test* and the *Boehmer's test*. The CAARs are useful in studying the aggregate effect of the abnormal returns over the entire sample or sub-samples respectively, which is of our interest.

*4.2.1 The official event*

During the official date (25 April 2016) when the European Banking Authority disclosed the O-SIIs list, the financial market reacted negatively, both in terms of stock returns, and CDS spreads. However, across the remaining intervals, the sign of CAARs changes, and we have positive CAARs in terms of returns and positive CAARs in terms of CDS spreads, with the exception of CDS spreads for the [-5; 5] window (i.e., a decrease in CDS spreads with 411.97 basis points). Moreover, all three tests show a statistical significance (probability is less than 10%) for this interval. In the event day, the negative abnormal performance is also significant (two tests out of three), but slightly significant for the [0; 1] and [-1; 1] windows for stock returns (only the *generalized sign test* shows significant coefficients), and [0; 1], [-1; 1] and [-1; 5] for the CDS spreads (also, only the *generalized sign test* highlights significant coefficients). The effect does not differ for the euro zone and non-euro zone banks, having the same trend in both cases.

INSERT TABLE 5

The empirical findings show that making the list public generated a stigma effect in the event day (market participants perceived the designation event as being harmful for the banks), and subsequently shareholders' wealth decreased. However, our results indicate that further it was a safety effect as the CAARs were positive up to five pre- and post-event days resulting in an increase in shareholder's wealth. The immediate outcome of such an event for the banks is the compulsory of holding additional capital buffers of the total risk exposure amount to prevent over-leveraging (more precisely, Common Equity Tier 1 capital) set up by the supervisory authorities. Hence, in the event day, the investors found this regulatory framework and the banks' status as systemically important to be harmful for the banks and they did not anticipate it. Nevertheless, in the following days the perception of the investors has changed, leading to an increase in the abnormal returns. This might be due to the supplementary capital requirements the banks were required to hold, and to a tighter supervisory framework.

INSERT TABLE 6

*4.2.2 The national events*

In Panel B of Tables 5 and 6 are presented the findings for the national event dates when the national regulatory bodies acknowledged the EBA on the O-SIIs identification. In this case, we deal with multiple event dates. The results differ from those when EBA published the list, denoting an opacity effect, i.e., this event has not conveyed any new information to the market. With respect to stock returns, the CAARs are negative for the full sample of banks but statistically insignificant, especially for the [0; 0] and [0; 1] intervals. For the remaining windows, only the *t-test* shows statistical significance. This means that the market did not react to the announcement, and waited for the EBA to make an official announcement. As we have shown in the section 4.3, the market indeed had a reaction on the official designation. As with regard to the sub-samples, the national events had the same influence for the euro zone banks as in the full sample (negative CAARs but statistically insignificant, with small exceptions), and slightly different for the non-euro zone banks, with positive CAARs over [0; 1] and [-1; 5] windows but statistically undistinguishable from zero over all intervals.

As for the CDS spread, the CAARs are positive in the event day – 3.16 basis points (although lacking statistically significance) but negative thereafter (for the other windows), in contrast with the results obtained for the stock returns. Thus, for the subsequent CAAR windows, the cost of the default protection decreases for the banks designated as O-SIIs. This is true especially over the [-1; 5] and [-5; 5] windows (with a decrease in CDS spreads with 289.03 and 306.19 basis points, respectively), the results being strongly significant. It appears that these national regulatory events, overall, did not bring new information to the market participants.

## 4.3 Determinants of cumulative abnormal return

This section presents the empirical output regarding the determinants of CAR. Table 7 considers the official event day, while Table 8 accounts for the unofficial (national) events day. In Table 7 Model (1) we analyze the impact of distance to default without considering the influence of other factors. Further, we add other control variables, namely bank characteristic variables, regulatory variables and the country-characteristic variables (Model 2).

INSERT TABLE 7

Bank's distance to default is highly significant, with the exception of CAR [0; 1] model. Interestingly, the influence of the variable is positive in the event day, that is, CAR [0; 0], and negative for the remaining cases. As we include other variables, it becomes insignificant, excepting for the [-5; 5] CAR window.

In Model 4, as we have included the bank characteristic variables, regulatory variables, and the country-characteristic variables in the model, the [0; 0] CAR is left to be explained by none of the variables. The country-specific variables are statistically indistinguishable from zero, the state ownership dummy, distance to default, and credit risk ratio being the only explanatory variables with a statistical and positive significance. Turnover and credit risk ratio positively influences the CAR [0; 1] and CAR [-1; 1]. Also, the state ownership variable positively explains the [-5; 5] cumulative abnormal. The credit risk ratio appears to have a positive and statistical significant influence in three out of five windows.

INSERT TABLE 8

Unlike the determinants of the cumulative abnormal return for the official event day, those for the national event days are more conclusive with respect to distance to default (Table 8). Model 1 shows that banks' distance to default has a significant positive impact on CARs in the event day and remains significant (with a positive influence) also for other windows as we add control variables. In Model 2 *Distance to default* is a significant explanatory variable for all the CARs. The ratio of total deposits over total liability negatively influences the CAR for the [0; 0], [0; 1], and [-1; 1] windows in Model 2. As we have seen in section 4.2, only the *t-test* (parametric) shows statistical significance for the cumulative average abnormal returns over the [-1; 1], [-1; 5], and [-5; 5] windows for the national event days. As the abnormal performance lacks statistical relevance, it is also left unexplained by specific variables. However results show that although the CAAR [0; 0] is not statistical relevant, the CARs are explained by specific variables.

## 4.4 Robustness checks

To assess the robustness of our findings, we re-run our analysis using different market portfolios and different estimation windows. To this respect, and to conserve space, we showcase only the results concerning other market indices, appending the remaining ones.

INSERT TABLE 9

Table 9 shows that the results are consistent with our baseline analysis, for both official and national events. Thus, when the EBA disclosed the domestic systemically important institutions list, we have negative and significant CAARs (for the full sample) in the event day and positive thereafter. However, this time the CAAR [-5; 5] is not significant. Also, we can observe a positive and significant cumulative average abnormal return for the three event window (two days surrounding the event). Furthermore, we found no relevant differences for the euro zone and non-euro zone banks, having the same trend and sign as in the full sample. This means that the event has conveyed new information to the market only in the event day, and this information has been perceived as being harmful for the banks (a stigma effect); the positive and significant three-day CAAR, however, shows a turnaround, i.e., a safe effect – the investors have taken this event (information) as positive, probably due to new information they have acquired in the following days, regarding the capital requirements these banks must hold.

As for the national event days, there is an opacity effect in the event days, with differences across full sample, euro zone, and non-euro zone banks. However, we observe a stigma effect in the following days for the euro zone countries.

INSERT TABLE 10

In terms of CDS spreads, the findings presented in Table 10 are similar with those in the baseline analysis. There is an increase in CDS spreads for the official event for the [0; 0], [0; 1], [-1; 1], and [-1; 5] windows, and a decrease in CDS spreads for the [-5; 5] window. Moreover, the CAAR in the event day is highly significant (two tests out of three show statistical significance), meaning that the financial market anticipated the event, being a stigma effect. The results are in line with those on returns. For a longer timeframe (five pre-event days, the event day, and five post-event days), however, the CDS cumulative average abnormal returns are negative and significant.

Examining the CDS returns for the official event days, one can observe that we have negative CDS returns, and only across the [-5; 5] window the results are significant (two tests out of three indicate statistical relevance). Likewise in the main analysis, this is the opposite when dealing with returns.

## 4.5 Events comparison

In this section we discuss and compare the impact of specific regulatory changes on financial markets. This approach is very useful as it may help us to reveal whether there are differences in market participants' behavior when relevant events regarding the systemically important financial institutions occur, and whether the information they convey is significant or not. All the results concerning these events (both for returns and CDS spreads) are displayed in the Appendix.

We begin with the global systemically important banks (G-SIBs), as defined by the FSB and the BCBS. Before the publication of the official list, the *Financial Times* twice leaked a list with the supposed G-SIBs. 20 out of 24 banks disclosed by the newspaper proved out to be on the official list (consisting of 29 G-SIBs). Thus, we undertake an analysis of 28 G-SIBs (excluding BPCE, which is non-listed) with the event day being 30 November 2009 (*Financial Times*). Additionally, we investigate the market reaction to the official designation event (4 November 2011).

Hence, the publication of the list by the *Financial Times* did not bring any new information to the market in the event day in terms of returns. However, the [0; 1] and [-5; 5] CAARs were negative and significant. As regarding the official disclosure of the list, the CAARs were negative and highly significant for all the windows which denote a clear stigma effect (the banks' status as systemically important obviously worried the investors). In terms of CDS spreads, we observe an increase for the official event (lacking, however, statistical significance in the event day), and a decrease for the unofficial event.

Regarding the EBA stress test exercises, results show that the markets had a positive reaction towards the banks that were subject to this analysis. Basically, the designation of the banks has conveyed new information for the investors, regardless of the test results. This is also true for the CDS spreads.

Not surprisingly, the euro zone banks included in the Single Supervisory Mechanism registered positive abnormal returns. The common supervisory framework set out by the ECB has induced a safe sentiment for the investors deeming this event as benefic for the banks. The CDS CAARs are decreasing across all windows, with the exception of [-1; 5] window, although lacking statistical significance.

Thus, one can observe the similarities with the O-SIIs official designation event, especially in the case of G-SIBs: a decrease in stock returns in the event day (i.e., a stigma effect), and an increase in the days surrounding the event (i.e., a safe effect). The outcome is the same also for the CDS spreads: initially we have witnessed a rise in the CDS spreads for the banks, following by a decrease in the costs with credit protection. As regarding the other two events, i.e., the EBA stress tests and the inclusion of the euro area banks on the SSM list, the investors' reaction turned out to be positive even in the event day(s). One possible explanation of the immediate market reaction to the G-SIBs and O-SIIs designation could imply institutions' status as systemically important which afterwards induced a safety sentiment as the investors took note of the additional capital requirements that these institutions must hold as a buffer.

The stress tests and the release of the list with banks included in the Single Supervisory Mechanism could determine a safe perception as the banks were subjects to a tighter macro-prudential supervision by the European regulatory authorities.

## 5. Conclusion

The literature concerning the impact of the regulatory changes on systemically important financial institutions is inconclusive. In the present paper we carried-out an analysis regarding the influence of the disclosure of other systemically important institutions list – O-SIIs (as official event), and the identification of these institutions by national regulatory authorities following by the submission of these lists to the European Banking Authority (as national multiple events). These institutions correspond to the domestic systemically important institutions at the European level, and must raise additional capital. We measured how financial market reacted to these regulatory changes through an event study of bank stock prices, and CDS spreads using a sample of these institutions. Our findings bring into focus some interesting features of the introduction of the O-SIIs regulation.

Overall, when the EBA published the O-SIIs list, the immediate reaction of the market on stock returns was negative, i.e., a stigma effect. However, in the days surrounding the event, the investors have changed their perception, resulting in an increase in shareholders' wealth and thus in a safe effect. This effect holds for both euro zone and non-euro zone banks (based on their headquarter location). When it comes to CDS spreads, we found an opposite effect, that is, an increase in CDS spreads and thus a higher cost for the banks (the perceived risk of default rose following the designation of the institutions as systemically relevant). However, on a bigger window (eleven days, i.e., five days before the event, the event day, and five days after the event) the CDS spreads decreased.

As for the national events, the CAARs are negative across all windows, but statistically insignificant, although with some exceptions where only one significance test out of three shows that the CAARs are statistically different from zero. There is rather an opacity effect, that is, the events did not bring new information for the investors, and they waited for an official designation. It is worth mentioning that the negative cumulative average abnormal returns are negative for both euro zone and non-euro zone banks, and the results for the latter group are not significant at all. The CDS spreads, however, decreased following the events, especially on [-1; 5] and [-5; 5] windows.

Comparing with other similar events, the findings support those relating to the G-SIBs designation. However, being included in a broad supervisory framework (Single Supervisory

Mechanism) and being subject of the stress test exercises seem to have a safe effect as the markets expect a tighter supervision, and higher capital surcharges.

Our further evidences suggest that the cumulative abnormal returns are not only driven by the event *per se*, being also related to other relevant factors. Moreover, these factors are not only different for the official and national events, and also for other CAR windows. Hence, the most prominent explanatory factors of the official event CARs are distance to default, turnover by volume, and credit risk ratio (provisions for loan losses/total loans). As for the national events, distance to default and total deposits/total liabilities seem to influence the abnormal performance of the banks. We can note that the distance to default, a proxy for bank risk, is a common explanatory variable.

## References


Abreu, J.F., Gulamhussen, M.A., 2013. The stock market reaction to the public announcement of a supranational list of too-big-to-fail banks during the financial crisis. Journal of International Financial Markets, Institutions and Money 25, 49–72.

Acharya, V., Pedersen, L., Philippon, T., Richardson, M., 2017. Measuring systemic risk. Review of Financial Studies, 30(1), 2-47.

Acharya, V.V., Yorulmazer, T., 2007. Too many to fail – an analysis of time inconsistency in bank closure policies. Journal of Financial Intermediation 16(1), 1–31.

Adrian, T., Brunnermeier, M.K., 2016. CoVaR. The American Economic Review 106, 1705–1741.

Agoraki, M.-E.K., Delis, M.D., Pasiouras, F., 2011. Regulations, competition and bank risk-taking in transition countries. Journal of Financial Stability 7, 38–48.

Aït-Sahalia, Y., Andritzky, J., Jobst, A., Nowak, S., Tamirisa, N., 2012. Market response to policy initiatives during the global financial crisis. Journal of International Economics 87(1), 162–177.

Anginer, D., Demirgüç-Kunt, A., Zhu, M., 2014a. How does deposit insurance affect bank risk? Evidence from the recent crisis. Journal of Banking & Finance 48, 312–321.

Anginer, D., Demirgüç-Kunt, A., Zhu, M., 2014b. How does competition affect bank systemic risk? Journal of Financial Intermediation 23(1), 1-26.

Bair, S.C., 2014. We Must Resolve to End Too-Big-To-Fail, in: Dodd–Frank Wall Street Reform and Consumer Protection Act: Purpose, Critique, Implementation Status and Policy Issues. pp. 113–121.

Basle Committee on Banking Supervision (BCBS), 2012. A framework for dealing with domestic systemically important banks. Bank for International Settlements, http://www.bis.org/publ/bcbs233.pdf

Basel Committee on Banking Supervision (BCBS), 2010. Basel III: A global regulatory framework for more resilient banks and banking systems. Bank for International Settlements, http://www.bis.org/publ/bcbs189.pdf.

Berger, A.N., Roman, R.A., Sedunov, J., 2016. Do Bank Bailouts Reduce or Increase Systemic Risk? The Effects of TARP on Financial System Stability. Federal Reserve Bank of Kansas City, Working Paper no. 16-08

Bisias, D., Flood, M., Lo, A.W., Valavanis, S., 2012. A survey of systemic risk analytics. Annual Review of Financial Economics 4, 255–296.

Boehmer, E., Masumeci, J., Poulsen, A.B., 1991. Event-study methodology under conditions of event-induced variance. Journal of Financial Economics 30, 253–272.

Bongini, P., Nieri, L., 2014. Identifying and regulating systemically important financial institutions. Economic Notes 43, 39–62.

Bongini, P., Nieri, L., Pelagatti, M., 2015. The importance of being systemically important financial institutions. Journal of Banking & Finance 50, 562–574.

Brewer, E., Klingenhagen, A.M., 2010. Be careful what you wish for: the stock market reactions to bailing out large financial institutions: Evidence from the USA. Journal of Financial Regulation and Compliance 18, 56–69.

Brown, S.J., Warner, J.B., 1985. Using daily stock returns: The case of event studies. Journal of Financial Economics 14, 3–31.

Brunetti, C., di Filippo, M., Harris, J.H., 2011. Effects of Central Bank Intervention on the Interbank Market During the Subprime Crisis. Review of Financial Studies 24, 2053–2083.

Bucher, M., Dietrich, D., Hauck, A., 2015. Implications of Bank Regulation for Credit Intermediation and Bank Stability: A Dynamic Perspective. Mimeo.

Campbell, C.J., Cowan, A.R., Salotti, V., 2010. Multi-country event-study methods. Journal of Banking & Finance 34, 3078–3090.

Chan-Lau, J.A., 2010. Regulatory Capital Charges for Too-Connected-to-Fail Institutions: A Practical Proposal. Financial Markets, Institutions & Instruments 19, 355–379.

Corrado, C.J., Zivney, T.L., 1992. The Specification and Power of the Sign Test in Event Study Hypothesis Tests Using Daily Stock Returns. Journal of Financial and Quantitative Analysis 27, 465.

Cowan, A.R., 1992. Nonparametric event study tests. Review of Quantitative Finance and Accounting 2, 343–358.

Demirgüç-Kunt, A., Detragiache, E., 2011. Basel Core Principles and bank soundness: Does compliance matter? Journal of Financial Stability 7, 179–190.

Dietrich, D., Hauck, A., 2012. Government interventions in banking crises: effects of alternative schemes on bank lending and risk taking. Scottish Journal of Political Economy 59, 133–161.

Duan, J.-C., Wang, T., 2012. Measuring distance-to-default for financial and non-financial firms. Global Credit Review 2, 95–108.

Elliott, D.J., Litan, R.E., 2011. Identifying and Regulating Systemically Important Financial Institutions: The Risks of Under and Over Identification and Regulation. Brookings Working Paper.

European Banking Authority (EBA), 2014. Guidelines On the criteria to determine the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions (O-SIIs), https://www.eba.europa.eu/documents/10180/930752/EBA-GL-2014-10+(Guidelines+on+O-SIIs+Assessment).pdf

European Banking Authority (EBA), 2016. List of Other Systemically Important Institutions (O-SIIs) notified to the EBA, https://www.eba.europa.eu/risk-analysis-and-data/other-systemically-important-institutions-o-siis-/2015

European Commission (EC), 2013. Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012. Official Journal of the European Union.

European Stability Mechanism, 2013. Annual Report. Available online at: http://www.esm.europa.eu/publications/index.htm

Fama, E.F., Fisher, L., Jensen, M.C., Roll, R., 1969. The Adjustment of Stock Prices to New Information. International Economic Review 10(1), 1-21.

Farhi, E., Tirole, J., 2012. Collective moral hazard, maturity mismatch and systemic bailouts. American Economic Review 102(1), 60-93.

Financial Stability Board, 2011. Policy Measures to Address Systemically Important Financial Institutions, Financial Stability Board. Available at: http://www.fsb.org/wp-content/uploads/Policy-Measures-to-Address-Systemically-Important-Financial-Institutions.pdf

Fratzscher, M., König, P.J., Lambert, C., 2016. Credit provision and banking stability after the Great Financial Crisis: The role of bank regulation and the quality of governance. Journal of International Money and Finance 66, 113–135.

Goodhart, C.A.E., 2008. The regulatory response to the financial crisis. Journal of Financial Stability 4, 351–358.

Gorton, G., Ordoñez, G., 2016. Fighting Crises. National Bureau of Economic Research Working Paper No. 22787.

Group of Twenty (G20) (2008) Declaration Summit On Financial Markets And The World Economy https://www.g20.org/Content/DE/StatischeSeiten/Breg/G7G20/Anlagen/G20-erklaerung-washington-2008-en.pdf?__blob=publicationFile&v=3

Iwanicz-Drozdowska, M., Schab, I., 2014. Regulation of G-SIBs. Does one size fit all?. Available at SSRN: https://ssrn.com/abstract=2450529 or http://dx.doi.org/10.2139/ssrn.2450529.

Klomp, J., de Haan, J., 2015. Bank regulation and financial fragility in developing countries: Does bank structure matter? Review of Development Finance 5, 82–90.

Klomp, J., Haan, J. de, 2012. Banking risk and regulation: Does one size fit all? Journal of Banking & Finance 36, 3197–3212.

Laeven, L., Ratnovski, R., Tong, H., 2016. Bank size and systemic risk: Some international evidence. Journal of Banking and Finance 69(1), S25–S34.

Laeven, L., Valencia, F., 2008. Systemic banking crises: a new database. IMF Working Paper WP/08/224

Lamdin, D.J., 2001. Implementing and interpreting event studies of regulatory changes. Journal of Economics and Business 53, 171–183.

Londono, J.M., Tian, M., 2014. Bank Interventions and Options-based Systemic Risk: Evidence from the Global and Euro-area Crisis. Board of Governors of the Federal Reserve System International Finance Discussion Papers Number 1117

Lopez-Espinosa, G., Moreno, A., Rubia Serrno, A., Valderrama, L., 2012. Short-Term Wholesale Funding and Systemic Risk: A Global Covar Approach. IMF Working Papers WP/12/46.

MacKinlay, A.C., 1997. Event Studies in Economics and Finance. Journal of Economic Literature 35, 13–39.

Moenninghoff, S.C., Ongena, S., Wieandt, A., 2015. The perennial challenge to counter Too-Big-to-Fail in banking: Empirical evidence from the new international regulation dealing with Global Systemically Important Banks. Journal of Banking & Finance 61, 221–236.

Nistor Mutu, S., Ongena, S., 2017. The impact of policy interventions on systemic risk across banks. Available at SSRN: https://ssrn.com/abstract=2580791 or http://dx.doi.org/10.2139/ssrn.2580791.

Office of the Comptroller of the Currency (OCC), 2013. Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Minimum Regulatory Capital Ratios, Capital Adequacy, Transition Provisions, and Prompt Corrective Action. https://www.occ.gov/news-issuances/news-releases/2012/nr-ia-2012-88a.pdf

Ötker-Robe, I., Pazarbasioglu, C., 2010. Impact of Regulatory Reforms on Large and Complex Financial Institutions. International Monetary Fund Staff Position Note SPN/10/16

Ötker-Robe, I., Narain, A., Ilyina, A., Surti, J., 2011. The Too-Important-to-Fail Conundrum: Impossible to Ignore and Difficult to Resolve. International Monetary Fund Staff Discussion Note SDN/11/12

Panetta, F., Faeh, T., Grande, G., Ho, C., King, M., Levy, A., Signoretti, F., Taboga, M., Zaghini, A., 2009. An assessment of financial sector rescue programmes, Bank for International Settlements, BIS papers no. 48.

Patell, J.M., 1976. Corporate Forecasts of Earnings Per Share and Stock Price Behavior: Empirical Test. Journal of Accounting Research 14, 246

Morgan, D.P., Peristiani, S., Savino, V., 2014. The information value of the stress test and bank opacity. Journal of Money, Credit and Banking, 46(7), 1479-1500

Petrella, G., Resti, A., 2013. Supervisors as information producers: Do stress tests reduce bank opaqueness? Journal of Banking & Finance 37, 5406–5420.

Pop, A., Pop, D., 2009. Requiem for market discipline and the specter of TBTF in Japanese banking. The Quarterly Review of Economics and Finance 49, 1429–1459.

Praet, P., Nguyen, G., 2008. Overview of recent policy initiatives in response to the crisis. Journal of Financial Stability 4, 368–375.

Sahin, C., de Haan, J., 2016. Market reactions to the ECB's Comprehensive Assessment. Economics Letters 140, 1–5.

Schäfer, A., Schnabel, I., Weder di Mauro, B., 2016. Financial sector reform after the crisis: Has anything happened?. Review of Finance 20(1), 77-125.

Schwert, G.W., 1981. Using Financial Data to Measure Effects of Regulation. Journal of Law and Economics 24, 121–158.

Serra, A.P., 2002. Event study tests: a brief survey. Working Papers Faculdade de Economia do Porto no. 117.

Silva, W., Kimura, H., Sobreiro, V.A., 2017. An analysis of the literature on systemic financial risk: A survey. Journal of Financial Stability 28, 91-114.

Shull, B., 2012. Too Big to Fail: Motives, Countermeasures, and the Dodd-Frank Response. Levy Economics Institute of Bard College Working Paper No. 709.

Zhang, Q., Vallascas, F., Keasey, K., Cai, C.X., 2015. Are Market-Based Measures of Global Systemic Importance of Financial Institutions Useful to Regulators and Supervisors? Journal of Money, Credit and Banking 47, 1403–1442.

Zhou, J., Rutledge, V., Bossu, W., Dobler, M., Jassaud, N., Moore, M., 2012. From Bail-out to Bail-in: Mandatory Debt Restructuring of Systemic Financial Institutions. International Monetary Fund Staff Discussion Note SDN/12/03

## Table 1. O-SIIs list and event dates for the event study on stock returns

| Rank | Bank | Country of origin | Total Assets as of 31 Dec. 2015 (million EUR) | EBA date | National event dates |
|---|---|---|---|---|---|
| 1 | HSBC Holdings Plc | UK | 2263.24 | 25-04-16 | 08-04-16 |
| 2 | BNP Paribas | France | 1987.82 | 25-04-16 | 30-11-15 |
| 3 | Deutsche Bank AG | Germany | 1621.37 | 25-04-16 | 15-07-16 |
| 4 | Barclays Plc | UK | 1548.65 | 25-04-16 | 08-04-16 |
| 5 | Groupe Credit Agricole | France | 1526.75 | 25-04-16 | 30-11-15 |
| 6 | Societe Generale | France | 1328.46 | 25-04-16 | 30-11-15 |
| 7 | Santander | Spain | 1318.22 | 25-04-16 | 13-01-16 |
| 8 | Royal Bank of Scotland Group Plc | UK | 1128.78 | 25-04-16 | 08-04-16 |
| 9 | Lloyds Banking Group Plc | UK | 1114.75 | 25-04-16 | 08-04-16 |
| 10 | Unicredit Group S.p.A. | Italy | 846.06 | 25-04-16 | 14-12-15 |
| 11 | ING Bank N.V. | Netherlands | 840.96 | 25-04-16 | 26-11-15 |
| 12 | BBVA | Spain | 734.20 | 25-04-16 | 13-01-16 |
| 13 | San Paolo | Italy | 665.10 | 25-04-16 | 14-12-15 |
| 14 | Nordea Bank AB | Sweden | 640.80 | 25-04-16 | 14-10-15 |
| 15 | Santander UK Plc | UK | 602.08 | 25-04-16 | 08-04-16 |
| 16 | Commerzbank AG | Germany | 529.81 | 25-04-16 | 15-07-16 |
| 17 | Danske Bank A/S | Denmark | 441.31 | 25-04-16 | 25-06-14 |
| 18 | CaixaBank | Spain | 334.16 | 25-04-16 | 13-01-16 |
| 19 | DNB ASA | Norway | 276.48 | 25-04-16 | 12-05-14 |
| 20 | Svenska Handelsbanken AB | Sweden | 272.25 | 25-04-16 | 14-10-15 |
| 21 | Skandinaviska Enskilda Banken AB | Sweden | 269.42 | 25-04-16 | 14-10-15 |
| 22 | KBC Group NV | Belgium | 250.13 | 25-04-16 | 26-10-15 |
| 23 | Swedbank AB | Sweden | 232.07 | 25-04-16 | 14-10-15 |
| 24 | Sabadell | Spain | 202.05 | 25-04-16 | 13-01-16 |
| 25 | Erste Group Bank | Austria | 199.43 | 25-04-16 | 19-04-16 |
| 26 | Bankia | Spain | 198.89 | 25-04-16 | 13-01-16 |
| 27 | Gruppo Monte dei Paschi di Siena | Italy | 165.70 | 25-04-16 | 14-12-15 |
| 28 | Popular | Spain | 155.21 | 25-04-16 | 13-01-16 |
| 29 | The Governor and Company of the Bank of Ireland | Ireland | 129.51 | 25-04-16 | 09-11-15 |
| 30 | Raiffeisen Bank International | Austria | 114.16 | 25-04-16 | 19-04-16 |
| 31 | National Bank of Greece | Greece | 106.14 | 25-04-16 | 03-12-15 |
| 32 | Allied Irish Banks plc | Ireland | 100.23 | 25-04-16 | 09-11-15 |
| 33 | Piraeus Bank | Greece | 82.45 | 25-04-16 | 03-12-15 |
| 34 | Jyske Bank A/S | Denmark | 72.84 | 25-04-16 | 25-06-14 |
| 35 | Banco Comercial Português | Portugal | 72.32 | 25-04-16 | 29-12-15 |
| 36 | Eurobank | Greece | 68.69 | 25-04-16 | 03-12-15 |
| 37 | Alpha Bank | Greece | 64.90 | 25-04-16 | 03-12-15 |
| 38 | PKO Bank Polski | Poland | 61.65 | - | 21-10-16 |
| 39 | Banco BPI | Portugal | 40.26 | 25-04-16 | 29-12-15 |
| 40 | Bank Polska Kasa Opieki | Poland | 38.90 | - | 21-10-16 |
| 41 | OTP Bank Nyrt | Hungary | 34.34 | 25-04-16 | 29-10-15 |
| 42 | Komerční banka, a.s. | Czech Republic | 32.99 | 25-04-16 | 18-12-15 |
| 43 | Bank Zachodni WBK | Poland | 32.09 | - | 21-10-16 |
| 44 | mBank | Poland | 28.54 | - | 21-10-16 |
| 45 | ING Bank Śląski | Poland | 25.22 | - | 21-10-16 |
| 46 | Bank of Cyprus Plc | Cyprus | 22.81 | 25-04-16 | 31-12-15 |
| 47 | Sydbank A/S | Denmark | 19.12 | 25-04-16 | 25-06-14 |
| 48 | Zagrebačka Banka d.d. | Croatia | 16.70 | 25-04-16 | 26-02-16 |
| 49 | Getin Noble Bank | Poland | 16.32 | - | 21-10-16 |
| 50 | Bank BGZ BNP Paribas | Poland | 15.04 | - | 21-10-16 |
| 51 | Všeobecná úverová banka a.s. | Slavakia | 12.57 | 25-04-16 | 04-06-15 |
| 52 | Bank Handlowy | Poland | 11.44 | - | 21-10-16 |
| 53 | BRD - Groupe Société Générale S.A. | Romania | 11.19 | 25-04-16 | 27-11-15 |
| 54 | Tatra banka a.s. | Slovakia | 11.19 | 25-04-16 | 04-06-15 |
| 55 | Banca Transilvania S.A. | Romania | 10.59 | 25-04-16 | 27-11-15 |
| 56 | Privredna banka Zagreb d.d | Croatia | 10.25 | 25-04-16 | 26-02-16 |
| 57 | Bank of Valletta Group | Malta | 9.82 | 25-04-16 | 30-11-15 |
| 58 | Hellenic Bank Plc | Cyprus | 7.34 | 25-04-16 | 31-12-15 |
| 59 | HSBC Bank Malta plc | Malta | 7.22 | 25-04-16 | 30-11-15 |
| 60 | CB First Investment Bank | Bulgaria | 4.54 | - | 12-12-16 |
| 61 | FHB Jelzálogbank Nyrt | Hungary | 2.36 | 25-04-16 | 29-10-15 |
| 62 | HPB d.d. | Croatia | 2.36 | 25-04-16 | 26-02-16 |
| 63 | CB Central Cooperative Bank | Bulgaria | 2.48 | - | 12-12-16 |
| 64 | AB Šiaulių bankas | Lithuania | 1.69 | 25-04-16 | 25-11-15 |

Note: This table represents the sample of other systemically important institutions ranked by Total assets (Million EUR) as of 31.12.2015, with available data on stock prices from Datastream. Polish and Bulgarian banks are not included on the EBA list, but their national regulatory authorities have notified the ERSB on their O-SIIs and we consider this as the national event day for them.

## Table 2. O-SIIs list and event dates for the event study on CDS spreads

| Nr.crt. | Bank | Country of origin | EBA date | National event dates |
|---|---|---|---|---|
| 1 | Erste Group Bank | Austria | YES | YES |
| 2 | Raiffeisen Zentralbank | Austria | YES | YES |
| 3 | BAWAG P.S.K. | Austria | YES | YES |
| 4 | KBC Group NV | Belgium | YES | YES |
| 5 | Danske Bank A/S | Denmark | YES | YES |
| 6 | BNP Paribas | France | YES | YES |
| 7 | Groupe Credit Agricole | France | YES | YES |
| 8 | Societe Generale | France | YES | YES |
| 9 | Commerzbank AG | Germany | YES | YES |
| 10 | Deutsche Bank AG | Germany | YES | YES |
| 11 | Bayerische Landesbank | Germany | YES | YES |
| 12 | Landesbank Baden-Württemberg | Germany | YES | YES |
| 13 | Landesbank Hessen-Thüringen Girozentrale | Germany | YES | YES |
| 14 | Norddeutsche Landesbank Girozentrale | Germany | YES | YES |
| 15 | Alpha Bank | Greece | YES | YES |
| 16 | Eurobank | Greece | YES | YES |
| 17 | National Bank of Greece | Greece | YES | YES |
| 18 | The Governor and Company of the Bank of Ireland | Ireland | YES | YES |
| 19 | Allied Irish Banks plc | Ireland | YES | YES |
| 20 | Gruppo Monte dei Paschi di Siena | Italy | YES | YES |
| 21 | San Paolo | Italy | YES | YES |
| 22 | Unicredit Group S.p.A. | Italy | YES | YES |
| 23 | ING Bank N.V. | Netherlands | YES | YES |
| 24 | Coöperatieve Centrale Raiffeisen-Boerenleenbank | Netherlands | NO | YES |
| 25 | SNS Bank N.V. | Netherlands | YES | YES |
| 26 | DNB ASA | Norway | YES | YES |
| 27 | Banco Comercial Português | Portugal | YES | YES |
| 28 | Sabadell | Spain | YES | YES |
| 29 | Popular | Spain | YES | YES |
| 30 | Santander | Spain | YES | YES |
| 31 | BBVA | Spain | YES | YES |
| 32 | Nordea Bank AB | Sweden | YES | YES |
| 33 | Skandinaviska Enskilda Banken AB | Sweden | YES | YES |
| 34 | Svenska Handelsbanken AB | Sweden | YES | YES |
| 35 | Swedbank AB | Sweden | YES | YES |
| 36 | Barclays Plc | UK | YES | YES |
| 37 | HSBC Holdings Plc | UK | YES | YES |
| 38 | Lloyds Banking Group Plc | UK | YES | YES |
| 39 | Royal Bank of Scotland Group Plc | UK | YES | YES |
| 40 | Standard Chartered Plc | UK | YES | YES |

Note: This table represents the sample of other systemically important institutions with available data on CDS spread from Datastream. For Coöperatieve Centrale Raiffeisen-Boerenleenbank there is not sufficient data to compute the abnormal returns for the official event date.

**Table 3. Description of variables**

| Variable name | Description | Source |
|---|---|---|
| DTD | Distance to Default risk measure of Duan and Wang (2016). The individual risk measure is expressed in standard deviations of banks' distance to default. Higher values are associated with reduced banks' individual risk. | Credit Research Initiative of Risk Management Institute |
| Size | ln(Total Assets) | Worldscope |
| Tier 1 ratio | Tier 1capital/Risk-weighted assets | Worldscope; Orbis Banks |
| Turnover | ln(1+Turnover by volume) | Datastream |
| Credit risk ratio | Provisions for loan losses/Total loans | Worldscope |
| Leverage | Total debt/Common equity | Worldscope |
| Funding structure | Total deposits/Total liabilities | Worldscope |
| Size to GDP ratio | Bank's total assets/Country GDP | Worldscope; World Bank |
| Real GDP growth | $(GDP_t - GDP_{t-1})/GDP_{t-1}$ | Eurostat |
| Dummy SSM | Dummy variable that takes the value 1 if the bank is included in the SSM list of ECB and 0 otherwise | European Central Bank |
| Dummy EBA | Dummy variable that takes the value 1 if the bank was included in the list for stress tests of EBA and 0 otherwise | European Banking Authority |
| Dummy state ownership | Dummy variable that takes the value 1 if the state has a stake in that bank and 0 otherwise | Orbis Banks; banks' annual reports |
| Dummy intervention | Dummy variable that takes the value 1 if the bank was the subject to policy interventions (state guarantees / recapitalizations / liquidity injections) during 2008-2014 and 0 otherwise | Nistor Mutu and Ongena (2017); banks' annual reports; European Comission |
| Dummy crisis | Dummy variables that take the value 1 if the bank's home country experienced a bank crisis during 2008-2012 and 0 otherwise | World Bank |

## Table 4. Descriptive statistics

***Panel A: Official event***

| | Obs. | Mean | Std. Dev. | Min | Max | Non-euro zone (mean) | Euro zone (mean) | Difference in means |
|---|---|---|---|---|---|---|---|---|
| Return [0; 0] (%) | 54 | -1.78 | 1.93 | -8.10 | 1.92 | -0.99 | -2.28 | 1.29** |
| CAR [0; 0] (%) | 54 | -1.20 | 1.73 | -7.66 | 2.44 | -0.69 | -1.59 | 0.90** |
| Return [-5; 5] (%) | 594 | 0.02 | 2.51 | -11.33 | 11.78 | 0.03 | 0.02 | 0.01 |
| CAR [-5; 5] (%) | 54 | 3.56 | 7.46 | -7.31 | 37.24 | 2.04 | 4.53 | -2.49 |
| CDS returns [0; 0] (b. p.) | 39 | 143.18 | 183.92 | -103.56 | 667.64 | - | - | - |
| CAR CDS [0; 0] (b. p.) | 39 | 129.81 | 180.65 | -108.63 | 661.57 | - | - | - |
| CDS returns [-5; 5] (b. p.) | 429 | -26.63 | 220.56 | -1466.83 | 1530.23 | - | - | - |
| CAR CDS [-5; 5] (b. p.) | 39 | -411.98 | 529.02 | -1928.31 | 669.16 | - | - | - |

***Panel B: National events***

| | Obs. | Mean | Std. Dev. | Min | Max | Non-euro zone (mean) | Euro zone (mean) | Difference in means |
|---|---|---|---|---|---|---|---|---|
| Return [0; 0] (%) | 64 | -0.86 | 4.89 | -35.31 | 6.90 | -0.36 | -1.33 | 0.97 |
| CAR [0; 0] (%) | 64 | -0.46 | 4.24 | -31.50 | 6.40 | -0.10 | -0.79 | 0.69 |
| Return [-5; 5] (%) | 704 | -0.67 | 4.43 | -36.29 | 10.94 | 0.26 | 0.54 | -0.28 |
| CAR [-5; 5] (%) | 64 | -4.80 | 23.18 | -145.78 | 8.80 | -0.59 | -8.75 | 8.16 |
| CDS returns [0; 0] (b. p.) | 40 | 7.315 | 205.17 | -428.21 | 783.05 | - | - | - |
| CAR CDS [0; 0] (b. p.) | 40 | 3.16 | 215.30 | -379.01 | 890.85 | - | - | - |
| CDS returns [-5; 5] (b. p.) | 440 | -17.87 | 236.08 | -2440.04 | 880.22 | - | - | - |
| CAR CDS [-5; 5] (b. p.) | 40 | -306.19 | 998.70 | -2435.34 | 1676.88 | - | - | - |

***Panel C: Official event and national events differences***

| | Official event (mean) | National events | Difference in means |
|---|---|---|---|
| Return [0; 0] (%) | -1.78 | -0.86 | 0.92 |
| CAR [0; 0] (%) | -1.20 | -0.46 | -0.74 |
| Return [-5; 5] (%) | 0.02 | -0.67 | 0.69*** |
| CAR [-5; 5] (%) | 3.56 | -4.80 | 8.36** |
| CDS return [0; 0] (b. p.) | 143.18 | 7.32 | 135.87*** |
| CAR CDS [0; 0] (b. p.) | 129.81 | 3.16 | 126.65*** |
| CDS return [-5; 5] (b. p.) | -26.63 | -17.87 | -8.76 |
| CAR CDS [-5; 5] (b. p.) | -411.98 | -306.19 | -105.79 |

*, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively

## Table 5. Market reaction to the O-SIIs disclosure list (event study on returns)

| | *Panel A: CAARs EBA date (%)* | | | | | *Panel B: CAARs national banks date (%)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | -1.20 | 0.44 | 1.27 | 0.92 | 3.56 | -0.46 | -0.53 | -1.71 | -3.21 | -4.80 |
| Euro zone | -1.59 | 0.03 | 1.30 | 1.00 | 4.53 | -0.79 | -1.13 | -3.08 | -6.53 | -8.75 |
| Non-euro zone | -0.59 | 1.09 | 1.23 | 0.79 | 2.04 | -0.10 | 0.10 | -0.25 | 0.32 | -0.59 |
| ***Significance tests (full sample)*** | | | | | | | | | | |
| t-test (p-value) | **-2.6619** (0.0083) | 0.6891 (0.4914) | 1.6238 (0.1057) | 0.7658 (0.4445) | **2.3759** (0.0183) | -1.6076 (0.1092) | -1.3235 (0.1869) | **-3.4615** (0.0006) | **-4.2517** (0.0000) | **-5.0622** (0.0000) |
| Generalised sign test (p-value) | **-4.0847** (0.0000) | **1.9030** (0.0570) | **2.7195** (0.0065) | 1.0865 (0.2773) | **2.7195** (0.0065) | 0.1355 (0.8922) | 1.6357 (0.1019) | 0.3855 (0.6999) | 0.1355 (0.8922) | -0.8647 (0.3872) |
| Corrado and Zivney rank test (p-value) | -1.6054 (0.1084) | -0.0707 (0.9436) | 0.1799 (0.8572) | 0.0107 (0.9914) | 0.6531 (0.5137) | 0.3313 (0.7404) | 1.3619 (0.1732) | 0.6417 (0.5211) | 0.4912 (0.6233) | -1.0925 (0.2746) |
| ***Significance tests (Euro zone banks)*** | | | | | | | | | | |
| t-test (p-value) | **-2.2560** (0.0249) | 0.0280 (0.9777) | 1.0639 (0.2884) | 0.5332 (0.5943) | **1.9369** (0.0539) | -1.6101 (0.1086) | -1.6179 (0.1070) | **-3.6157** (0.0004) | **-5.0142** (0.0000) | **-5.3589** (0.0000) |
| Generalised sign test (p-value) | **-3.5584** (0.0004) | 0.6201 (0.5362) | **2.7093** (0.0067) | 0.9683 (0.3329) | **2.7093** (0.0067) | -1.1306 (0.2582) | **1.6550** (0.0979) | 0.2622 (0.7932) | -0.0860 (0.9315) | -0.0860 (0.9315) |
| Corrado and Zivney rank test (p-value) | **-1.7309** (0.0835) | -0.3760 (0.7069) | 0.3014 (0.7631) | 0.1667 (0.8676) | 0.7330 (0.4635) | 0.2322 (0.8164) | 1.4033 (0.1605) | 0.9303 (0.3522) | -0.3718 (0.7100) | -1.4224 (0.1549) |
| ***Significance tests (Non-euro zone banks)*** | | | | | | | | | | |
| t-test (p-value) | -1.5804 (0.1153) | **2.0467** (0.0417) | **1.8836** (0.0608) | 0.7956 (0.4270) | 1.6366 (0.1030) | -0.3718 (0.7103) | 0.2419 (0.8090) | -0.5212 (0.6027) | 0.4308 (0.6670) | -0.6345 (0.5263) |
| Generalised sign test (p-value) | **-2.0908** (0.0365) | **2.2752** (0.0229) | 0.9654 (0.3343) | 0.5288 (0.5969) | 0.9654 (0.3343) | 1.3612 (0.1734) | 0.6427 (0.5204) | 0.2834 (0.7769) | 0.2834 (0.7769) | -1.1537 (0.2486) |
| Corrado and Zivney rank test (p-value) | -1.1463 (0.2517) | 0.4436 (0.6573) | 0.1611 (0.8720) | -0.1254 (0.9002) | 0.4940 (0.6213) | 0.3405 (0.7335) | 0.6745 (0.5000) | 0.0145 (0.9884) | 1.1807 (0.2377) | 0.0618 (0.9507) |

Note: In bold are the tests with a maximum level of significance of 10%. The number of observations for the official event day is as follows: full sample – 54, euro zone banks – 33, non-euro zone banks – 21; the number of observations for the national banks day is as follows: full sample – 64, euro zone banks – 33, non-euro zone banks – 21.

We have reported only three significance tests (one parametric test and two non-parametric tests), the other two parametric tests described in the methodology part (Patell's and Boehmer's tests) are used for robustness checks.

## Table 6. Market reaction to the O-SIIs list disclosure (event study on CDS spreads)

| | *Panel A: CAARs EBA date (b. p.)* | | | | | *Panel B: CAARs national banks date (b. p.)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | 129.81 | 102.44 | 65.67 | 172.81 | -411.97 | 3.16 | -58.93 | -137.04 | -289.03 | -306.19 |
| ***Significance tests*** | | | | | | | | | | |
| t-test (p-value) | **2.0468** (0.0417) | 1.1422 (0.2545) | 0.5978 (0.5505) | 1.0292 (0.3044) | **-1.9545** (0.0518) | 0.0503 (0.9599) | -0.6646 (0.5069) | -1.2594 (0.2091) | **-1.7407** (0.0830) | -1.4732 (0.1420) |
| Generalised sign test (p-value) | **3.4467** (0.0006) | **3.4467** (0.0006) | **2.4647** (0.0137) | **3.1193** (0.0018) | **-2.7725** (0.0056) | -0.0776 (0.9381) | -0.7215 (0.4706) | -1.3655 (0.1721) | **-1.6874** (0.0915) | **-1.6874** (0.0915) |
| Corrado and Zivney rank test (p-value) | 0.7140 (0.4753) | 0.3785 (0.7050) | -0.1521 (0.8791) | -0.6460 (0.5183) | **-2.3384** (0.0194) | -1.1255 (0.2604) | **-2.5610** (0.0104) | **-2.6421** (00082) | **-3.5610** (0.0004) | **-3.2783** (0.0010) |

Note: In bold are the tests with a maximum level of significance of 10%. The number of observations for the official event day is 39 whilst the number of observations for the national banks day is 40.

We have reported only three significance tests (one parametric test and two non-parametric tests), the other two parametric tests described in the methodology part (Patell's and Boehmer's tests) are used for robustness checks.

## Table 7. Determinants of CAR for the official event day

| Variables | (1) CAR [0; 0] | (2) CAR [0; 1] | (3) CAR [-1; 1] | (4) CAR [-1; 5] | (5) CAR [-5; 5] |
|---|---|---|---|---|---|
| | | | **Model 1** | | |
| Distance to default | **0.0032*** ** | -0.0007 | **-0.0068** ** | **-0.0074** ** | **-0.0236** ** |
| | (0.0008) | (0.0015) | (0.0025) | (0.0031) | (0.0086) |
| Constant | **-0.0178*** ** | 0.0058 | **0.0247*** ** | **0.0223** ** | **0.0770*** ** |
| | (0.0029) | (0.0044) | (0.0075) | (0.0100) | (0.0225) |
| Country clusters | YES | YES | YES | YES | YES |
| Observations | 53 | 53 | 53 | 53 | 53 |
| R-squared | 0.092 | 0.002 | 0.126 | 0.077 | 0.266 |
| | | | **Model 2** | | |
| Distance to default | 0.0009 | 0.0008 | -0.0019 | -0.0061 | **-0.0149*** |
| | (0.0022) | (0.0035) | (0.0042) | (0.0058) | (0.0082) |
| Size | -0.0047 | -0.0016 | -0.0029 | -0.0064 | 0.0061 |
| | (0.0029) | (0.0035) | (0.0038) | (0.0057) | (0.0067) |
| Turnover by volume | 0.0029 | **0.0053** ** | **0.00554** ** | 0.0002 | 0.0022 |
| | (0.0027) | (0.0021) | (0.0025) | (0.0053) | (0.0064) |
| TIER1 ratio | -0.0459 | -0.123 | -0.0051 | -0.111 | 0.446 |
| | (0.0505) | (0.162) | (0.196) | (0.284) | (0.431) |
| Total deposits/Total liabilities | -0.0222 | -0.0271 | 0.0041 | 0.0321 | 0.0926 |
| | (0.0198) | (0.0230) | (0.0267) | (0.0524) | (0.0721) |
| Leverage | -0.0017 | 0.0018 | 0.00323 | 0.0005 | 0.0108 |
| | (0.0020) | (0.0031) | (0.0028) | (0.0045) | (0.0068) |
| Credit risk ratio | 0.0377 | **0.271*** | **0.563*** | 0.672 | **2.090** ** |
| | (0.160) | (0.148) | (0.322) | (0.490) | (0.859) |
| Dummy SSM | -0.0033 | -0.0163 | -0.0048 | -0.0194 | -0.0121 |
| | (0.0144) | (0.0121) | (0.0167) | (0.0271) | (0.0304) |
| Dummy EBA | 0.0046 | -0.0104 | -0.0094 | -0.0160 | -0.0103 |
| | (0.0221) | (0.0133) | (0.0158) | (0.0244) | (0.0322) |
| Dummy intervention | 0.0019 | -0.0082 | -0.0068 | 0.0134 | -0.0295 |
| | (0.0045) | (0.0058) | (0.0068) | (0.0129) | (0.0179) |
| Dummy state ownership | 0.0006 | 0.0072 | 0.0109 | 0.0013 | **0.0393*** |
| | (0.0070) | (0.0069) | (0.0065) | (0.0157) | (0.0205) |
| Dummy crisis | -0.0105 | 0.0037 | 0.0137 | 0.0331 | 0.0321 |
| | (0.0149) | (0.0101) | (0.0136) | (0.0225) | (0.0289) |
| Total assets/GDP | 3.163 | -9.197 | -3.623 | 37.89 | 35.22 |
| | (6.207) | (8.256) | (8.295) | (22.78) | (22.33) |
| GDP growth | -0.0296 | -0.0221 | -0.0542 | -0.0405 | 0.0986 |
| | (0.0398) | (0.0339) | (0.0412) | (0.0786) | (0.104) |
| Constant | 0.0465 | -0.0230 | -0.0538 | 0.0929 | **-0.301*** |
| | (0.0381) | (0.0815) | (0.0903) | (0.114) | (0.156) |
| Country clusters | YES | YES | YES | YES | YES |
| Observations | 50 | 50 | 50 | 50 | 50 |
| R-squared | 0.344 | 0.451 | 0.504 | 0.271 | 0.557 |
| Mean of dependent variable (%) | -1.20 | 0.44 | 1.27 | 0.92 | 3.56 |

Note: Robust standard errors in parentheses.

*, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

The coefficients for the Distance to default variable presented in this table correspond to the value of the distance to default one month before the event. We have obtained more significant results than employing the values for 31 December corresponding to the year previous the event.

Due to extreme values, Total assets/GDP, GDP growth, Turnover by volume, TIER1 ratio, and Credit risk ratio variables in Model 2 have been winsorized for a fraction of 5% leading, however, to similar results.

## Table 8. Determinants of CAR for the national event days

| Variables | (1) CAR [0; 0] | (2) CAR [0; 1] | (3) CAR [-1; 1] | (4) CAR [-1; 5] | (5) CAR [-5; 5] |
|---|---|---|---|---|---|
| | | | **Model 1** | | |
| Distance to default | **0.0078*** | 0.0100 | 0.0219 | 0.0457 | 0.0531 |
| | (0.0043) | (0.0076) | (0.0170) | (0.0342) | (0.0410) |
| Constant | -0.0188 | -0.0236 | -0.0572 | -0.117 | -0.146 |
| | (0.0113) | (0.0202) | (0.0438) | (0.0861) | (0.104) |
| Country clusters | YES | YES | YES | YES | YES |
| Observations | 63 | 63 | 63 | 63 | 63 |
| R-squared | 0.088 | 0.050 | 0.189 | 0.147 | 0.138 |
| | | | **Model 2** | | |
| Distance to default | **0.0105**** | 0.0126 | **0.0234*** | **0.0508*** | 0.0563 |
| | (0.0042) | (0.0074) | (0.0125) | (0.0267) | (0.0328) |
| Size | -0.0021 | -0.0004 | -0.0044 | -0.0152 | -0.0121 |
| | (0.0036) | (0.0051) | (0.0065) | (0.0193) | (0.0202) |
| Turnover by volume | 0.0004 | 0.0007 | 0.0023 | 0.0002 | -0.0015 |
| | (0.0009) | (0.0013) | (0.0017) | (0.0041) | (0.0051) |
| TIER1 ratio | -0.0788 | -0.141 | **-0.831*** | -1.126 | -1.376 |
| | (0.177) | (0.265) | (0.439) | (0.863) | (0.956) |
| Total deposits/Total liabilities | **-0.0554*** | **-0.102**** | **-0.176**** | -0.0503 | -0.0910 |
| | (0.0307) | (0.0489) | (0.0745) | (0.139) | (0.152) |
| Leverage | 0.0015 | 0.0020 | -0.0030 | 0.0170 | 0.0153 |
| | (0.0018) | (0.0039) | (0.0062) | (0.0213) | (0.0246) |
| Credit risk ratio | -0.0961 | 0.132 | -0.718 | -4.622 | -4.921 |
| | (0.292) | (0.470) | (0.956) | (4.102) | (4.122) |
| Dummy SSM | 0.0030 | -0.0012 | -0.0035 | -0.0666 | -0.0746 |
| | (0.0071) | (0.0125) | (0.0257) | (0.0465) | (0.0596) |
| Dummy EBA | 0.0120 | 0.0173 | 0.0041 | -0.0200 | 0.0481 |
| | (0.0133) | (0.0206) | (0.0257) | (0.0595) | (0.0683) |
| Dummy intervention | -0.0023 | -0.0028 | 0.0039 | 0.0122 | 0.0082 |
| | (0.0032) | (0.0064) | (0.0126) | (0.0341) | (0.0393) |
| Dummy state ownership | -0.0051 | -0.0193 | -0.0401 | -0.0368 | -0.0765 |
| | (0.0117) | (0.0197) | (0.0336) | (0.0448) | (0.0553) |
| Dummy crisis | -0.0068 | -0.0199 | -0.0124 | 0.0604 | 0.0389 |
| | (0.0142) | (0.0188) | (0.0249) | (0.0578) | (0.0559) |
| Total assets/GDP | -10.03 | -20.69 | -25.12 | -23.36 | -54.89 |
| | (15.06) | (26.67) | (32.39) | (56.03) | (77.48) |
| GDP growth | 0.0488 | 0.262 | 0.0795 | -1.039 | -0.807 |
| | (0.230) | (0.352) | (0.406) | (1.094) | (1.042) |
| Constant | 0.0511 | 0.0542 | **0.253*** | 0.403 | 0.400 |
| | (0.0747) | (0.0973) | (0.125) | (0.258) | (0.257) |
| Country clusters | YES | YES | YES | YES | YES |
| Observations | 57 | 57 | 57 | 57 | 57 |
| R-squared | 0.110 | 0.098 | 0.342 | 0.246 | 0.235 |
| Mean of dependent variable (%) | -0.46 | -1.71 | -0.53 | -3.21 | -4.80 |

Note: Robust standard errors in parentheses.

*, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

The coefficients for the distance to default variable presented in this table correspond to the value of the distance to default one month before the event. We have obtained more significant results than employing the values for 31 December corresponding to the year previous the event.

Due to extreme values, Total assets/GDP, GDP growth, TIER1 ratio, Leverage, and credit risk variables in Model 4 have been winsorized for a fraction of 5% leading, however, to similar results. The most prominent differences are for the CAR [-1; 1] in the Model 2 where Turnover by volume, and the new winsoreized variables, WTIER1 ratio and WLeverage are statistically significant at 10%, 10%, and 5%, respectively.

## Table 9. Market reaction to the O-SIIs disclosure list in terms of returns

| | *CAARs EBA date (%)* | | | | | *CAARs national banks date (%)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | -0.80 | 0.33 | 1.09 | -0.01 | 1.27 | -0.40 | -0.70 | -2.14 | -4.30 | -5.89 |
| Euro zone | -0.99 | -0.04 | 0.85 | -0.31 | 1.20 | -0.44 | -1.61 | -3.97 | -9.21 | -11.37 |
| Non-euro zone | -0.52 | 0.92 | 1.47 | 0.47 | 1.38 | -0.36 | 0.26 | -0.19 | 0.92 | -0.07 |
| ***Significance tests - Full sample*** | | | | | | | | | | |
| t-test (p-value) | **-2.2866** (0.0231) | 0.6707 (0.5030) | **1.7956** (0.0738) | -0.0082 (0.9935) | 1.0858 (0.2786) | -1.0484 (0.2955) | -1.3022 (0.1940) | **-3.2444** (0.0013) | **-4.2599** (0.0000) | **-4.6524** (0.0000) |
| Generalised sign test (p-value) | **-3.4087** (0.0007) | 1.2190 (0.2228) | **3.1245** (0.0018) | 0.1301 (0.8965) | 0.6746 (0.4999) | -0.1932 (0.8468) | 1.5568 (0.1195) | 0.5568 (0.5777) | -0.9433 (0.3456) | -1.4433 (0.1498) |
| Corrado and Zivney rank test (p-value) | **-1.9554** (0.0505) | 0.0213 (0.9830) | 0.6979 (0.4853) | -0.3434 (0.7313) | 0.3368 (0.7363) | 0.0383 (0.9695) | 0.1996 (0.8418) | -0.3059 (0.7596) | -0.0258 (0.9794) | -1.0009 (0.3169) |
| ***Significance tests - Euro zone banks*** | | | | | | | | | | |
| t-test (p-value) | **-1.8092** (0.0716) | -0.0554 (0.9559) | 0.9024 (0.3677) | -0.2171 (0.8283) | 0.6602 (0.5097) | -0.6487 (0.5171) | -1.6886 (0.0926) | **-3.4068** (0.0008) | **-5.1586** (0.0000) | **-5.0760** (0.0000) |
| Generalised sign test (p-value) | **-3.3876** (0.0007) | 0.4425 (0.6581) | **2.5317** (0.0114) | -0.2539 (0.7996) | 0.4425 (0.6581) | 0.6034 (0.5462) | 0.9516 (0.3413) | 0.2552 (0.7985) | **-2.1821** (0.0291) | **-1.8339** (0.0667) |
| Corrado and Zivney rank test (p-value) | **-2.0142** (0.0440) | -0.4155 (0.6778) | 0.5435 (0.5868) | -0.5349 (0.5927) | 0.2245 (0.8223) | 0.3327 (0.7393) | -0.1325 (0.8946) | -0.3639 (0.7160) | -1.2886 (0.1975) | **-1.8761** (0.0606) |
| ***Significance tests - Non-euro zone banks*** | | | | | | | | | | |
| t-test (p-value) | **-1.6830** (0.0936) | **2.1264** (0.0345) | **2.7652** (0.0061) | 0.5810 (0.5618) | 1.3561 (0.1763) | -1.0716 (0.2849) | 0.5515 (0.5818) | -0.3259 (0.7447) | 1.0335 (0.3024) | -0.0586 (0.9533) |
| Generalised sign test (p-value) | -1.2194 (0.2227) | 1.4003 (0.1614) | **1.8369** (0.0662) | 0.5271 (0.5982) | 0.5271 (0.5982) | -0.9002 (0.3680) | 1.2551 (0.2094) | 0.5367 (0.5915) | 0.8959 (0.3703) | -0.1818 (0.8558) |
| Corrado and Zivney rank test (p-value) | -1.3815 (0.1671) | 0.7897 (0.4297) | 0.8864 (0.3754) | 0.0947 (0.9246) | 0.4439 (0.6571) | -0.2745 (0.7837) | 0.4297 (0.6674) | -0.1185 (0.9057) | 1.3079 (0.1909) | 0.4693 (0.6389) |

Note: For the official event day, we employ national broad indices as market portfolios whilst for the national event days the MSCI World Index is used in the robustness checks analysis. The estimation window is 250 days.

In bold are the tests with a maximum level of significance of 10%. The number of observations for the official event day is as follows: full sample – 54, euro zone banks – 33, non-euro zone banks – 21; the number of observations for the national banks day is as follows: full sample – 64, euro zone banks – 33, non-euro zone banks – 21.

We have reported only three significance tests (one parametric test and two non-parametric tests), the other two parametric tests described in the methodology part (Patell's and Boehmer's tests) are used for robustness checks.

## Table 10. Market reaction to the O-SIIs list disclosure in terms of CDS spreads

| | *CAARs EBA date (b. p.)* | | | | | *CAARs national banks date (b. p.)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | 132.31 | 107.58 | 63.32 | 214.73 | -357.96 | -0.19 | -73.34 | -128.28 | -277.08 | -326.45 |
| ***Significance tests*** | | | | | | | | | | |
| t-test (p-value) | **2.0764** (0.0389) | 1.1939 (0.2337) | 0.5733 (0.5733) | 1.2664 (0.2066) | **-1.6801** (0.0942) | -0.0030 (0.9976) | -0.8225 (0.4116) | -1.1736 (0.2417) | -1.6503 (0.1001) | -1.5467 (0.1232) |
| Generalised sign test (p-value) | **2.8710** (0.0041) | **3.1960** (0.0014) | **2.2209** (0.0264) | **3.8461** (0.0001) | **-1.6796** (0.0930) | -0.0846 (0.9326) | -1.3615 (0.1734) | -0.7230 (0.4697) | -1.3615 (0.1734) | **-1.6807** (0.0928) |
| Corrado and Zivney rank test (p-value) | 0.8025 (0.4223) | 0.5307 (0.5956) | -0.0825 (0.9342) | 0.2705 (0.7868) | -1.2866 (0.1982) | -0.7187 (0.4724) | **-2.4614** (0.0138) | **-2.0758** (0.0379) | **-2.9235** (0.0035) | **-2.6363** (0.0084) |

Note: The alternative market index for the robustness assessment we have employed is iTraxx Europe 5 years CDS Total Return Index. The estimation window is 250 days.

In bold are the tests with a maximum level of significance of 10%. The number of observations for the official event day is 39 whilst the number of observations for the national banks day is 40.

We have reported only three significance tests (one parametric test and two non-parametric tests), the other two parametric tests described in the methodology part (Patell's and Boehmer's tests) are used for robustness checks.

# Appendix

# Appendix A

## Market reaction to the O-SIIs disclosure list in terms of returns (robustness checks)

| | *CAARs EBA date (%)* | | | | | *CAARs national banks date (%)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | -1.08 | 0.66 | 1.53 | 1.75 | 4.52 | -0.42 | -0.45 | -1.57 | -2.83 | -4.33 |
| Euro zone | -1.44 | 0.28 | 1.61 | 1.98 | 5.65 | -0.72 | -0.97 | -2.85 | -5.89 | -8.06 |
| Non-euro zone | -0.51 | 1.24 | 1.42 | 1.39 | 2.76 | -0.11 | 0.10 | -0.21 | 0.43 | -0.36 |
| ***Significance tests - Full sample*** | | | | | | | | | | |
| t-test (p-value) | **-2.2890** (0.0235) | 0.9823 (0.3276) | **1.8791** (0.0622) | 1.4005 (0.1634) | **2.8922** (0.0044) | -1.3756 (0.1710) | -1.0377 (0.3011) | **-2.9533** (0.0037) | **-3.4806** (0.0007) | **-4.2371** (0.0000) |
| Generalised sign test (p-value) | **-3.6177** (0.0003) | **2.6425** (0.0082) | **2.9147** (0.0036) | **1.8260** (0.0679) | **3.7312** (0.0002) | 0.2417 (0.8090) | **1.7417** (0.0816) | 0.7417 (0.4583) | 0.2417 (0.8090) | -0.5083 (0.6113) |
| Corrado and Zivney rank test (p-value) | -1.4311 (0.1524) | 0.0434 (0.9654) | 0.2972 (0.7663) | 0.3680 (0.7128) | 0.9116 (0.3620) | 0.3123 (0.7549) | 1.4309 (0.1525) | 0.6865 (0.4924) | 0.5647 (0.5723) | -0.9957 (0.3194) |
| ***Significance tests - Euro zone banks*** | | | | | | | | | | |
| t-test (p-value) | **-1.9594** (0.0519) | 0.2685 (0.7886) | 1.2576 (0.2105) | 1.0138 (0.3123) | **2.3101** (0.0223) | -1.3361 (0.1836) | -1.2816 (0.2020) | **-3.0673** (0.0026) | **-4.1514** (0.0001) | **-4.5256** (0.0000) |
| Generalised sign test (p-value) | **-3.5856** (0.0003) | 1.6371 (0.1016) | **3.0299** (0.0024) | **1.9853** (0.0471) | **3.7262** (0.0002) | -0.9269 (0.3540) | **1.8585** (0.0631) | 0.4658 (0.6414) | 0.1176 (0.9064) | 0.1176 (0.9064) |
| Corrado and Zivney rank test (p-value) | -1.6398 (0.1010) | -0.3347 (0.7378) | 0.3268 (0.7438) | 0.4454 (0.6560) | 0.9297 (0.3525) | 0.3034 (0.7616) | 1.4112 (0.1582) | 0.8983 (0.3690) | -0.4719 (0.6370) | **-1.6628** (0.0963) |
| ***Significance tests - Non-euro zone banks*** | | | | | | | | | | |
| t-test (p-value) | -1.3143 (0.1908) | **2.2845** (0.0238) | **2.1335** (0.0345) | 1.3605 (0.1757) | **2.1585** (0.0325) | -0.3826 (0.7025) | 0.2551 (0.7990) | -0.4250 (0.6714) | 0.5582 (0.5776) | -0.3741 (0.7089) |
| Generalised sign test (p-value) | -1.3079 (0.1909) | **2.1875** (0.0287) | 0.8767 (0.3806) | 0.4398 (0.6601) | 1.3136 (0.1890) | 1.3037 (0.1923) | 0.5852 (0.5584) | 0.5852 (0.5584) | 0.2260 (0.8212) | -0.8517 (0.3944) |
| Corrado and Zivney rank test (p-value) | -0.8272 (0.4081) | 0.6560 (0.5118) | 0.4073 (0.6838) | 0.2762 (0.7824) | 0.8051 (0.4207) | 0.2920 (0.7703) | 0.7172 (0.4732) | 0.1429 (0.8863) | 1.4127 (0.1577) | 0.4341 (0.6642) |

Note: In bold are the tests with a maximum level of significance of 10%.

The abnormal returns are computed using the MSCI World Index as market portfolio for the official event, and national blue-chip indices for the national events. The estimation window is 150 days.

The number of observations for the official event day is as follows: full sample – 54, euro zone banks – 33, non-euro zone banks – 21; the number of observations for the national banks day is as follows: full sample – 64, euro zone banks – 33, non-euro zone banks – 21.

# Appendix B

## Market reaction to the O-SIIs disclosure list in terms of returns (robustness checks)

| | *CAARs EBA date (%)* | | | | | *CAARs national banks date (%)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | -0.25 | -0.76 | -0.10 | 0.30 | 0.02 | -0.53 | -0.85 | -2.23 | -4.04 | -5.37 |
| Euro zone | -0.51 | -1.30 | 0.57 | -0.22 | 0.60 | -0.50 | -1.50 | -3.97 | -7.79 | -10.07 |
| Non-euro zone | 0.15 | 0.09 | 0.10 | 0.13 | -0.90 | -0.57 | -0.16 | -0.38 | -0.04 | -0.36 |
| ***Significance tests - Full sample*** | | | | | | | | | | |
| t-test (p-value) | -0.5912 (0.5549) | -1.2690 (0.2056) | -0.1312 (0.8597) | 0.2682 (0.7888) | 0.0140 (0.9889) | -1.4735 (0.1419) | **-1.6690** (0.0964) | **-3.5732** (0.0004) | **-4.2224** (0.0000) | **-4.4853** (0.0000) |
| Generalised sign test (p-value) | -0.3329 (0.7392) | **-2.2381** (0.0252) | -0.3329 (0.7392) | 0.2115 (0.8325) | -1.1494 (0.2504) | -0.6375 (0.5238) | 0.3626 (0.7169) | -1.1376 (0.2553) | -0.3875 (0.6984) | -0.3875 (0.6984) |
| Corrado and Zivney rank test (p-value) | -1.6054 (0.1084) | -0.0707 (0.9436) | 0.1799 (0.8572) | 0.0107 (0.9914) | 0.6531 (0.5137) | -0.5788 (0.5627) | -0.0060 (0.9952) | -0.2886 (0.7729) | 0.3185 (0.7501) | -0.2766 (0.7821) |
| ***Significance tests - Euro zone banks*** | | | | | | | | | | |
| t-test (p-value) | -0.7602 (0.4479) | -1.3807 (0.1686) | 0.6062 (0.5449) | -0.1929 (0.8472) | 0.2715 (0.7862) | -0.7797 (0.4363) | **-1.6681** (0.0966) | **-3.5955** (0.0004) | **-4.6142** (0.0000) | **-4.7675** (0.0000) |
| Generalised sign test (p-value) | -1.5591 (0.1190) | **-2.2554** (0.0241) | 0.5299 (0.5962) | 0.1817 (0.8558) | -0.8628 (0.3883) | -0.1262 (0.8996) | 0.2219 (0.8244) | -1.1707 (0.2417) | -0.8226 (0.4108) | -0.8226 (0.4108) |
| Corrado and Zivney rank test (p-value) | -1.5222 (0.1279) | **-1.7165** (0.0861) | -0.1902 (0.8491) | -0.6783 (0.4976) | -0.2444 (0.8069) | 0.1313 (0.8955) | -0.0967 (0.9230) | -0.4732 (0.6360) | -0.7022 (0.4826) | -1.3708 (0.1704) |
| ***Significance tests - Non-euro zone banks*** | | | | | | | | | | |
| t-test (p-value) | 0.4558 (0.6489) | 0.1847 (0.8536) | 0.1777 (0.8591) | 0.1542 (0.8776) | -0.8126 (0.4172) | **-1.7825** (0.0759) | -0.3463 (0.7294) | -0.6913 (0.4900) | -0.0423 (0.9663) | -0.3399 (0.7342) |
| Generalised sign test (p-value) | 1.4210 (0.1553) | -0.7618 (0.4462) | -0.7618 (0.4462) | -0.3252 (0.7450) | -0.7618 (0.4462) | -0.7858 (0.4320) | 0.2920 (0.7703) | -0.4266 (0.6697) | 0.2920 (0.7703) | 0.2920 (0.7703) |
| Corrado and Zivney rank test (p-value) | 0.8872 (0.3750) | -0.0863 (0.9313) | -0.6296 (0.5289) | -0.3073 (0.7586) | -1.1875 (0.2350) | -0.9362 (0.3492) | 0.0946 (0.9246) | 0.0892 (0.9290) | 1.2318 (0.2180) | 1.0757 (0.2821) |

Note: In bold are the tests with a maximum level of significance of 10%.

The abnormal returns are computed using the STOXX 600 Banks as market portfolio for both events. The estimation window is 250 days.

The number of observations for the official event day is as follows: full sample – 54, euro zone banks – 33, non-euro zone banks – 21; the number of observations for the national banks day is as follows: full sample – 64, euro zone banks – 33, non-euro zone banks – 21.

# Appendix C

## Market reaction to the O-SIIs list disclosure in terms of CDS spreads (robustness checks)

| | *CAARs EBA date (b. p.)* | | | | | *CAARs national banks date (b. p.)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | 131.80 | 108.24 | 76.04 | 197.01 | -367.75 | 1.45 | -40.61 | -118.25 | -269.63 | -288.83 |
| ***Significance tests*** | | | | | | | | | | |
| t-test (p-value) | **2.6644** (0.0086) | 1.5473 (0.1239) | 0.8876 (0.3762) | 1.5048 (0.1345) | **-2.2399** (0.0266) | 0.0211 (0.9832) | -0.4185 (0.6762) | -0.9926 (0.3225) | -1.4833 (0.1401) | -1.2697 (0.2062) |
| Generalised sign test (p-value) | **3.7127** (0.0002) | **3.3907** (0.0007) | **3.0686** (0.0022) | **3.3907** (0.0007) | **-2.7275** (0.0064) | -0.4103 (0.6816) | -0.7322 (0.4641) | -0.7322 (0.4641) | **-2.0196** (0.0434) | -1.3759 (0.1689) |
| Corrado and Zivney rank test (p-value) | 0.8818 (0.3779) | 0.4664 (0.6409) | 0.1433 (0.8861) | -0.0647 (0.9484) | **-1.6546** (0.0980) | -0.9756 (0.3293) | **-2.0564** (0.0397) | **-1.9092** (0.0562) | **-3.3417** (0.0008) | **-2.5184** (0.0118) |

Note: In bold are the tests with a maximum level of significance of 10%.

The abnormal returns are computed using the Datastream Europe Banks 5 years CDS index as market portfolio for both events. The estimation window is 150 days.

The number of observations for the official event day is 39 whilst the number of observations for the national banks day is 40.

# Appendix D

## Market reaction to the G-SIBs list publication by the *Financial Times* in terms of both returns and CDS spreads

| | ***CAARs G-SIBs returns (%)*** | | | | | ***CAARs CDS (b. p.)*** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | -0.70 | -2.26 | 0.68 | -1.85 | -4.84 | -133.14 | -424.91 | -462.84 | -570.84 | -1038.9 |
| ***Significance tests*** | | | | | | | | | | |
| t-test (p-value) | -0.8002 (0.4244) | **-1.8339** (0.0679) | 0.4509 (0.6525) | -0.8066 (0.4206) | **-1.6791** (0.0944) | -1.5827 (0.1148) | **-3.5741** (0.0004) | **-3.1593** (0.0018) | -2.5528 (0.0113) | **-3.6241** (0.0004) |
| Generalised sign test (p-value) | 0.2034 (0.8388) | **-3.9572** (0.0001) | **1.7164** (0.0861) | **-2.8225** (0.0048) | **-3.5790** (0.0003) | **-2.2332** (0.0255) | **-1.8161** (0.0694) | **-2.6503** (0.0080) | **-3.0673** (0.0022) | **-3.4844** (0.0005) |
| Corrado and Zivney rank test (p-value) | -0.4071 (0.6839) | -1.1917 (0.2334) | 0.2253 (0.8217) | -1.4153 (0.1570) | **-2.0419** (0.0412) | -1.3001 (0.1936) | **-2.2767** (0.0228) | **-2.4156** (0.0157) | **-2.3507** (0.0187) | **-3.4066** (0.0007) |

Note: In bold are the tests with a maximum level of significance of 10%.

The abnormal returns are computed using the MSCI World Index as market portfolio for returns and the Datastream Europe Banks 5 years CDS index as market portfolio for CDS spreads. The estimation window is 250 days.

The number of observations for the returns is 28 whilst the number of observations for CDS spreads is 23.

# Appendix E

## Market reaction to the publication of the lists of banks subjects to stress tests conducted by the EBA

| | *CAARs EBA (%)* | | | | | *CAARs CDS EBA (b. p.)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | -0.19 | 0.77 | 2.64 | 2.26 | 6.56 | -48.30 | -147.68 | -188.59 | -26.31 | -89.15 |
| ***Significance tests*** | | | | | | | | | | |
| t-test (p-value) | -0.5819 (0.5612) | **1.6944** (0.0914) | **4.7315** (0.0000) | **2.6693** (0.0081) | **6.1568** (0.0000) | -1.1832 (0.2378) | **-2.5539** (0.0112) | **-2.6623** (0.0083) | -0.2419 (0.8090) | -0.6527 (0.5145) |
| Generalised sign test (p-value) | 0.1751 (0.8610) | **2.0751** (0.0380) | **4.6876** (0.0000) | **4.2126** (0.0000) | **4.6876** (0.0000) | 0.6878 (0.4915) | -1.3331 (0.1825) | **-2.1993** (0.0279) | 0.1104 (0.9121) | -1.3331 (0.1825) |
| Corrado and Zivney rank test (p-value) | 0.0539 (0.9570) | 0.7670 (0.4431) | **1.8129** (0.0698) | 0.9260 (0.3544) | 1.6436 (0.1003) | -0.0213 (0.9830) | -0.5405 (0.5889) | -0.5343 (0.5932) | **1.7550** (0.0793) | **1.7501** (0.0801) |

Note: In bold are the tests with a maximum level of significance of 10%.

The abnormal returns are computed using the MSCI World Index as market portfolio for returns and the Datastream Europe Banks 5 years CDS index as market portfolio for CDS spreads. The estimation window is 250 days.

The number of observations for the returns is 71 whilst the number of observations for CDS spreads is 48.

# Appendix F

## Market reaction to the publication of the lists of banks included in the Single Supervisory Mechanism

| | *CAARs SSM (%)* | | | | | *CAARs CDS SSM (b. p.)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CAAR interval | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] | [0; 0] | [0; 1] | [-1; 1] | [-1; 5] | [-5; 5] |
| Full sample | 1.09 | 2.09 | 2.88 | 2.19 | 0.63 | -52.72 | -132.61 | -103.04 | 17.64 | -23.82 |
| ***Significance tests*** | | | | | | | | | | |
| t-test (p-value) | **3.0835** (0.0023) | **4.1997** (0.0000) | **4.7280** (0.0000) | **2.3652** (0.0188) | 0.5421 (0.5883) | -0.9513 (0.3424) | **-1.6921** (0.0919) | -1.0735 (0.2841) | 0.1192 (0.9052) | -0.1262 (0.8997) |
| Generalised sign test (p-value) | **4.8585** (0.0000) | **4.8585** (0.0000) | **4.0754** (0.0000) | **3.5533** (0.0004) | 1.2038 (0.2287) | -1.1869 (0.2353) | -0.8429 (0.3993) | -0.1549 (0.8769) | -1.1869 (0.2353) | **-2.9070** (0.0036) |
| Corrado and Zivney rank test (p-value) | 1.6383 (0.1014) | **1.8721** (0.0612) | **2.1994** (0.0279) | 0.6915 (0.4893) | -0.3431 (0.7315) | 0.0347 (0.9723) | -0.3006 (0.7637) | -0.2941 (0.7687) | 0.0846 (0.9326) | -0.0119 (0.9905) |

Note: In bold are the tests with a maximum level of significance of 10%.

The abnormal returns are computed using the MSCI World Index as market portfolio for returns and the Datastream Europe Banks 5 years CDS index as market portfolio for CDS spreads. The estimation window is 250 days.

The number of observations for the returns is 59 whilst the number of observations for CDS spreads is 36.

# Appendix G

## The G-SIBs list

| Rank | | Country of origin | Returns | CDS spreads |
|---|---|---|---|---|
| 1 | Dexia | Belgium | YES | NO |
| 2 | Bank of China | China | YES | NO |
| 3 | BNP Paribas | France | YES | YES |
| 4 | Credit Agricole | France | YES | YES |
| 5 | Societe Generale | France | YES | YES |
| 6 | Commerzbank | Germany | YES | YES |
| 7 | Deutsche Bank | Germany | YES | YES |
| 8 | Unicredit Group | Italy | YES | YES |
| 9 | Mitsubishi UFJ FG | Japan | YES | NO |
| 10 | Mizuho FG | Japan | YES | YES |
| 11 | Sumitomo Mitsui FG | Japan | YES | YES |
| 12 | ING Group | Netherlands | YES | YES |
| 13 | Banco Santander | Spain | YES | YES |
| 14 | Nordea Bank | Sweden | YES | YES |
| 15 | Credit Suisse Group | Switzerland | YES | YES |
| 16 | UBS Group | Switzerland | YES | YES |
| 17 | Barclays | UK | YES | YES |
| 18 | HSBC Holding | UK | YES | YES |
| 19 | Lloyds Banking Group | UK | YES | YES |
| 20 | Royal Bank of Scotland Group | UK | YES | YES |
| 21 | Bank of America | USA | YES | YES |
| 22 | Bank of New York Mellon | USA | YES | NO |
| 23 | Citigroup | USA | YES | YES |
| 24 | Goldman Sachs Group | USA | YES | YES |
| 25 | JP Morgan Chase | USA | YES | NO |
| 26 | Morgan Stanley | USA | YES | YES |
| 27 | State Street | USA | YES | NO |
| 28 | Wells Fargo | USA | YES | NO |

Note: These are the G-SIBs for which we have found data on Datastream.

# Appendix H

## The list of banks being subjects to stress tests

| Rank | Bank | Country of origin | Stress test date | Returns | CDS spreads |
|---|---|---|---|---|---|
| 1 | Erste Group Bank | Austria | 07-07-10 | YES | YES |
| 2 | Raiffeisen Bank International | Austria | 21-04-11 | YES | NO |
| 3 | Raiffeisen Zentralbank Österreich AG | Austria | 07-07-10 | NO | YES |
| 4 | KBC Group | Belgium | 07-07-10 | YES | YES |
| 5 | Dexia | Belgium | 07-07-10 | YES | NO |
| 6 | Bank of Cyprus | Cyprus | 07-07-10 | YES | NO |
| 7 | Hellenic Bank | Cyprus | 10-10-14 | YES | NO |
| 8 | Marfin Popular Bank | Cyprus | 07-07-10 | YES | NO |
| 9 | Danske Bank | Denmark | 07-07-10 | YES | YES |
| 10 | Sydbank | Denmark | 07-07-10 | YES | NO |
| 11 | Jyske bank | Denmark | 07-07-10 | YES | NO |
| 12 | BNP Paribas | France | 07-07-10 | YES | YES |
| 13 | Societe Generale | France | 07-07-10 | YES | YES |
| 14 | Credit Agricole | France | 07-07-10 | YES | YES |
| 15 | Deutsche Bank | Germany | 07-07-10 | YES | YES |
| 16 | Commerzbank | Germany | 07-07-10 | YES | YES |
| 17 | Landesbank Berlin | Germany | 07-07-10 | YES | YES |
| 18 | Deutsche Postbank | Germany | 07-07-10 | YES | NO |
| 19 | Aareal Bank | Germany | 10-10-14 | YES | NO |
| 20 | IKB Deutsche Industriebank | Germany | 10-10-14 | YES | NO |
| 21 | Bayerische Landesbk | Germany | 07-07-10 | NO | YES |
| 22 | Landesbank Baden-Württemberg | Germany | 07-07-10 | NO | YES |
| 23 | Landesbank Hessen-Thüringen Girozentrale | Germany | 07-07-10 | NO | YES |
| 24 | Norddeutsche Landesbank Girozentrale | Germany | 07-07-10 | NO | YES |
| 25 | National Bank of Greece | Greece | 07-07-10 | YES | YES |
| 26 | Alpha Bank | Greece | 07-07-10 | YES | YES |
| 27 | Bank of Piraeus | Greece | 07-07-10 | YES | NO |
| 28 | Eurobank Ergasias | Greece | 07-07-10 | YES | YES |
| 29 | Agricultural Bank of Greece | Greece | 07-07-10 | YES | NO |
| 30 | TT Hellenic Postbank | Greece | 07-07-10 | YES | NO |
| 31 | OTP Bank | Hungary | 07-07-10 | YES | NO |
| 32 | FHB Jelzálogbank Nyrt | Hungary | 07-07-10 | YES | NO |
| 33 | The Governor and Company of the Bank of Ireland | Ireland | 07-07-10 | YES | YES |
| 34 | Allied Irish Bank | Ireland | 07-07-10 | YES | YES |
| 35 | Permanent TSB Group Holdings | Ireland | 10-10-14 | YES | NO |
| 36 | Unicredit Group S.p.A. | Italy | 07-07-10 | YES | YES |
| 37 | Gruppo Monte dei Paschi di Siena | Italy | 07-07-10 | YES | YES |
| 38 | Intesa Sanpaolo | Italy | 07-07-10 | YES | YES |
| 39 | Unione di Banche Italiane | Italy | 07-07-10 | YES | YES |
| 40 | Banca Carige | Italy | 10-10-14 | YES | NO |
| 41 | Banca Piccolo Credito Valtellinese SpA | Italy | 10-10-14 | YES | NO |
| 42 | Credito Emiliano | Italy | 10-10-14 | YES | NO |
| 43 | Banca Popolare di Milano | Italy | 10-10-14 | YES | YES |
| 44 | Banca Popolare di Sondrio | Italy | 10-10-14 | YES | NO |
| 45 | Banco popolare - Societa Cooperativa | Italy | 10-10-14 | YES | YES |
| 46 | Mediobanca | Italy | 10-10-14 | YES | NO |
| 47 | Bank of Valletta | Malta | 07-07-10 | YES | NO |
| 48 | ING Group | Netherlands | 07-07-10 | YES | YES |
| 49 | Coöperatieve Centrale Raiffeisen Boerenleenbank | Netherlands | 07-07-10 | NO | YES |
| 50 | SNS Bank | Netherlands | 07-07-10 | NO | YES |
| 51 | DNB ASA | Norway | 21-04-11 | YES | YES |
| 52 | Handlowy | Poland | 10-10-14 | YES | NO |
| 53 | PKO Bank | Poland | 07-07-10 | YES | NO |
| 54 | Getin Noble Bank | Poland | 10-10-14 | YES | NO |
| 55 | Bank BPH | Poland | 10-10-14 | YES | NO |
| 56 | Alior Bank | Poland | 10-10-14 | YES | NO |
| 57 | Banco BPI | Portugal | 07-07-10 | YES | NO |
| 58 | Banco Comercial Português | Portugal | 07-07-10 | YES | YES |
| 59 | Banco Espirito Santo | Portugal | 07-07-10 | YES | YES |
| 60 | Nova Kreditna Banka Maribor | Slovenia | 21-04-11 | YES | NO |
| 61 | Banco Santander | Spain | 07-07-10 | YES | YES |
| 62 | Caixabank | Spain | 07-07-10 | YES | NO |
| 63 | BBVA | Spain | 07-07-10 | YES | YES |
| 64 | Banco Popular Espanol | Spain | 07-07-10 | YES | YES |
| 65 | Banco de Sabadell | Spain | 07-07-10 | YES | YES |
| 66 | Caja de Ahorros del Mediterraneo | Spain | 07-07-10 | YES | YES |
| 67 | Bankinter | Spain | 07-07-10 | YES | YES |
| 68 | Banco Pastor | Spain | 07-07-10 | YES | NO |
| 69 | Banco Guipuzcoano | Spain | 07-07-10 | YES | NO |
| 70 | Liberbank | Spain | 10-10-14 | YES | NO |
| 71 | Caixa Pensiones de Barcelona | Spain | 07-07-10 | NO | YES |
| 72 | Caja de Ahorros de Valencia, Castellón y Alicante, Bancaja | Spain | 07-07-10 | NO | YES |
| 73 | Caja de Ahorros y Monte de Piedad de Madrid | Spain | 07-07-10 | NO | YES |
| 74 | Swedbank | Sweden | 07-07-10 | YES | YES |
| 75 | Svenska Handelsbanken AB | Sweden | 07-07-10 | YES | YES |
| 76 | Nordea Bank | Sweden | 07-07-10 | YES | YES |
| 77 | Skandinaviska Enskilda Banken AB | Sweden | 07-07-10 | YES | YES |
| 78 | HSBC Holdings Plc | UK | 07-07-10 | YES | YES |
| 79 | Barclays Plc | UK | 07-07-10 | YES | YES |
| 80 | Royal Bank of Scotland Group Plc | UK | 07-07-10 | YES | YES |
| 81 | Lloyds Banking Group Plc | UK | 07-07-10 | YES | YES |

Note: These are the banks subjects to stress tests for which we have found data on Datastream.

# Appendix I

## The list of banks included in the Single Supervisory Mechanism

| Rank | Bank | Country of origin | SSM date | Returns | CDS spreads |
|---|---|---|---|---|---|
| 1 | Erste Group Bank | Austria | 04.09.2014 | YES | YES |
| 2 | Raiffeisen Bank International | Austria | 04.09.2014 | YES | NO |
| 3 | Raiffeisen Zentralbank Österreich AG | Austria | 04.09.2014 | NO | YES |
| 4 | Bawag PSK | Austria | 04.09.2014 | NO | YES |
| 5 | KBC Group | Belgium | 04.09.2014 | YES | YES |
| 6 | Dexia | Belgium | 04.09.2014 | YES | NO |
| 7 | Bank of Cyprus | Cyprus | 04.09.2014 | YES | NO |
| 8 | Hellenic Bank | Cyprus | 04.09.2014 | YES | NO |
| 9 | BNP Paribas | France | 04.09.2014 | YES | YES |
| 10 | Societe Generale | France | 04.09.2014 | YES | YES |
| 11 | Credit Agricole | France | 04.09.2014 | YES | YES |
| 12 | Natixis | France | 04.09.2014 | YES | YES |
| 13 | Crédit Agricole Atlantique Vendée | France | 04.09.2014 | YES | NO |
| 14 | Crédit Agricole Normandie Seine | France | 04.09.2014 | YES | NO |
| 15 | Crédit Agricole Loire Haute Loire | France | 04.09.2014 | YES | NO |
| 16 | Crédit Agricole Touraine Poitou | France | 04.09.2014 | YES | NO |
| 17 | CRCAM LANGUED CCI | France | 04.09.2014 | YES | NO |
| 18 | Crédit Agricole Brie Picardie | France | 04.09.2014 | YES | NO |
| 19 | Crédit Agricole du Morbihan | France | 04.09.2014 | YES | NO |
| 20 | CRCAM NORD DE FRANCE CCI | France | 04.09.2014 | YES | NO |
| 21 | Crédit Agricole Toulouse | France | 04.09.2014 | YES | NO |
| 22 | Crédit Industriel et Commercial | France | 04.09.2014 | YES | NO |
| 23 | Crédit Agricole Alpes Provence | France | 04.09.2014 | YES | NO |
| 24 | Crédit Agricole d'Ile de France | France | 04.09.2014 | YES | NO |
| 25 | Crédit Agricole Sud Rhône Alpes | France | 04.09.2014 | YES | NO |
| 26 | Deutsche Bank | Germany | 04.09.2014 | YES | YES |
| 27 | Commerzbank | Germany | 04.09.2014 | YES | YES |
| 28 | Aareal Bank | Germany | 04.09.2014 | YES | NO |
| 29 | DVB Bank | Germany | 04.09.2014 | YES | NO |
| 30 | Permanent TSB | Germany | 04.09.2014 | YES | NO |
| 31 | Bayerische Landesbk | Germany | 04.09.2014 | NO | YES |
| 32 | Landesbank Baden-Württemberg | Germany | 04.09.2014 | NO | YES |
| 33 | Landesbank Hessen-Thüringen Girozentrale | Germany | 04.09.2014 | NO | YES |
| 34 | Norddeutsche Landesbank Girozentrale | Germany | 04.09.2014 | NO | YES |
| 35 | National Bank of Greece | Greece | 04.09.2014 | YES | YES |
| 36 | Alpha Bank | Greece | 04.09.2014 | YES | YES |
| 37 | Bank of Piraeus | Greece | 04.09.2014 | YES | NO |
| 38 | Eurobank Ergasias | Greece | 04.09.2014 | YES | YES |
| 39 | The Governor and Company of the Bank of Ireland | Ireland | 04.09.2014 | YES | YES |
| 40 | Allied Irish Bank | Ireland | 04.09.2014 | YES | YES |
| 41 | Unicredit Group S.p.A. | Italy | 04.09.2014 | YES | YES |
| 42 | Gruppo Monte dei Paschi di Siena | Italy | 04.09.2014 | YES | YES |
| 43 | Intesa Sanpaolo | Italy | 04.09.2014 | YES | YES |
| 44 | Banca Popolare di Sondrio | Italy | 04.09.2014 | YES | NO |
| 45 | Banca Carige | Italy | 04.09.2014 | YES | NO |
| 46 | Banco popolare - Societa Cooperativa | Italy | 04.09.2014 | YES | YES |
| 47 | Banca Popolare di Milano | Italy | 04.09.2014 | YES | YES |
| 48 | Mediobanca | Italy | 04.09.2014 | YES | YES |
| 49 | Unione di Banche Italiane | Italy | 04.09.2014 | YES | YES |
| 50 | Banco di Sardegna | Italy | 04.09.2014 | YES | NO |
| 51 | Bank of Valletta | Malta | 04.09.2014 | YES | NO |
| 52 | HSBC Bank Malta | Malta | 04.09.2014 | YES | NO |
| 53 | ING Group | Netherlands | 04.09.2014 | YES | YES |
| 54 | Coöperatieve Centrale Raiffeisen Boerenleenbank | Netherlands | 04.09.2014 | NO | YES |
| 55 | SNS Bank | Netherlands | 04.09.2014 | NO | YES |
| 56 | The RBS N.V. Holding | Netherlands | 04.09.2014 | NO | YES |
| 57 | Banco BPI | Portugal | 04.09.2014 | YES | NO |
| 58 | Banco Comercial Português | Portugal | 04.09.2014 | YES | YES |
| 59 | Tatra Banka | Slovakia | 04.09.2014 | YES | NO |
| 60 | Vseobecna Uverova Banka | Slovakia | 04.09.2014 | YES | NO |
| 61 | Banco Santander | Spain | 04.09.2014 | YES | YES |
| 62 | Caixabank | Spain | 04.09.2014 | YES | NO |
| 63 | Bankia | Spain | 04.09.2014 | YES | NO |
| 64 | BBVA | Spain | 04.09.2014 | YES | YES |
| 65 | Banco Popular Espanol | Spain | 04.09.2014 | YES | YES |
| 66 | Banco de Sabadell | Spain | 04.09.2014 | YES | YES |
| 67 | Bankinter | Spain | 04.09.2014 | YES | YES |
| 68 | Liberbank | Spain | 04.09.2014 | YES | NO |

Note: These are the bank included in the Single Supervisory Mechanism for which we have found data on Datastream.