

## **A Market Assessment of the Process Toward Euro-Supervision of Banks**

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### **Abstract**

The Banking Union (BU) aims to break the vicious sovereign-bank cycle emerged through the 2010-2012 Eurozone sovereign crisis. Of its two main components (Single Supervisory Mechanism – SSM and Single Resolution Mechanism) the BU accelerated SSM the most. A flow of news disclosed how the European Central Bank is actually taking SSM responsibility.

Via an event study analysis, we compare share prices for banks included in the SSM with those for a matching sample of listed non-SSM Eurozone banks around the events identified by the relevant news. We find that markets moved from an initial negative sentiment to appreciating the SSM.

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## 1. Introduction

In 2010-2012, the Eurozone lived a second – this time homegrown – wave of the global crisis contradicting the expectations that recovery from the sudden and steep recession of 2009 was in progress. The new crisis wave derailed Eurozone member states' financial and banking markets from integration to re-segmentation, as investors suddenly re-priced as large those sovereign default risks that were previously judged almost nil. Banks intensified their focus on domestic portfolios while stock markets' assessments of banks assigned greater weight to sovereign risks. In turn, asymmetric funding conditions of banks between peripheral and core countries caused pro-segmentation effects. As a result of all that, the rising sovereign default premium translated into higher borrowing costs also for non-financial firms in crisis hit countries.

The segmentation of the Eurozone banking market raised grave problems for the differential effects of the common monetary policy inducing the European Central Bank (ECB) to address that with new instruments. Also, by amplifying market imperfections, the segmentation could have further boosted the importance of the credit channel of monetary policy transmission, thereby additionally increasing the differential impact of the common monetary policy across the Eurozone countries.

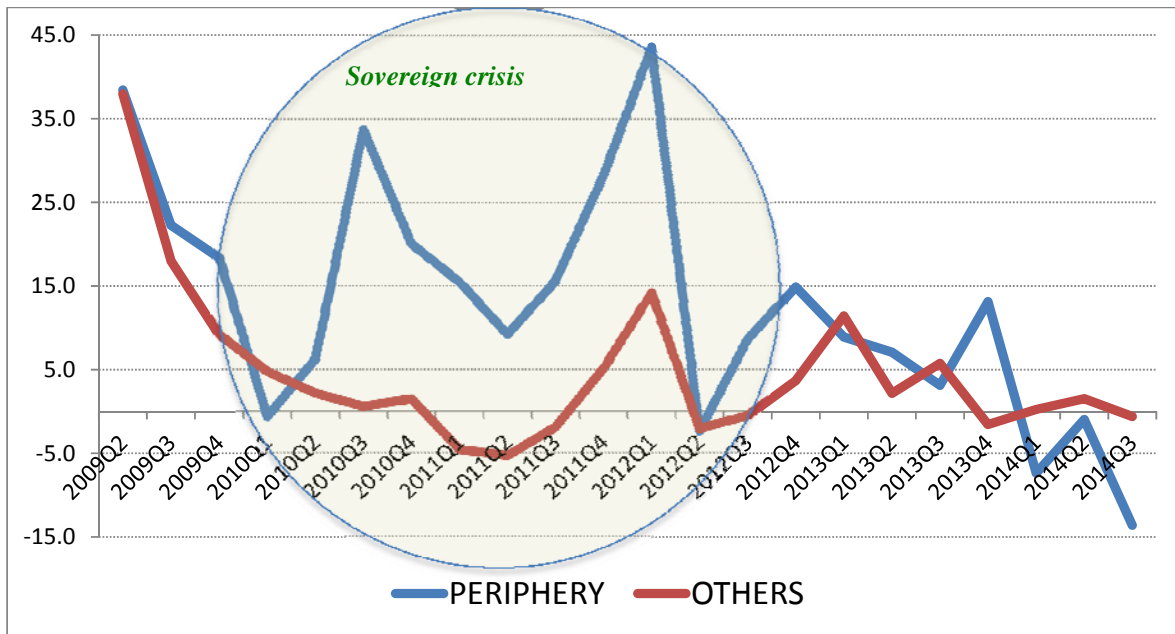
A simple look at the evolution of the credit standards as recounted by the Bank Lending Survey (BLS) tells us that banks' loan supply to the small and medium-sized enterprises (SMES; the most sensitive segment of firms to the evolution in bank lending policies) over 2009Q2–2010Q1 was reaching neutrality from the tightening over 2008Q3-2009Q1 (Figure 1). In this phase, lending standards moved concurrently for the peripheral/crisis countries (Portugal, Spain, Italy and Cyprus)<sup>1</sup> and for the non-crisis countries (France, Germany, Luxembourg, Malta, the Netherlands, Slovakia and Slovenia). Thereafter, from 2010Q2 to 2012Q2 a large credit supply restriction gap opened between the two groups. While the degree of restriction didn't increase or even decreased for the

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<sup>1</sup> We take these four countries as representative of the entire group of five crisis countries often labeled PERIPHERY or GIPSIC (Greece, Ireland, Portugal, Spain, Italy, and Cyprus) following the timing they were hit by the sovereign crisis. Analogously, we take France, Germany, Luxembourg, Malta, the Netherlands, Slovakia and Slovenia as representative of all the other non-crisis Eurozone countries. Alas, in fact, the ECB doesn't publish BLS data for all countries.

non-crisis countries, it started increasing intensely for the countries at the periphery. Finally, since the second quarter of 2012 the degree of restriction seemed to ease and follow a common trend in the two groups. The retrenchment in the loan supply during the crisis is believed to have contributed to depress the real economy of the Eurozone and particularly that of the peripheral countries.

**Figure 1. Degree of restriction in loan supply to SMEs in the Eurozone: Periphery vs. Others**



Source: Our computations on data drawn from the ECB's Bank Lending Survey. A positive (negative) number implies increasing (decreasing) degree of restriction of banks' loan supply to SMEs by the equivalent percentage. PERIPHERY = weighted mean of Italy, Portugal, Spain, Cyprus; OTHERS = weighted mean of France, Germany, Luxembourg, Malta, the Netherlands, Slovakia, Slovenia.

The Banking Union (BU) was launched in 2012 exactly to break the pernicious link between sovereigns and banks. It implies a transfer of responsibility for banking policy from the national to the Eurozone level. The BU features two main components: Single Supervisory Mechanism (SSM), and Single Resolution Mechanism (SRM).<sup>2</sup> Though there was progress also with the SRM, the SSM stepped in much faster and the ECB will be in full charge of it as of November 2014.

The aim of this paper is to assess empirically how markets valued the SSM in its path to implementation. This provides as well a first acid test on whether and to what extent markets were

<sup>2</sup> As we explain below, it was originally envisaged that the BU should feature also a Euro level Deposit Insurance Scheme. However, this was abandoned because of political rift.

pleased about the BU. We investigate four events singled out via in depth scrutiny of ECB's press releases. The first event is the publication, on October 23<sup>rd</sup> 2013, of the list of 124 banks included in the SSM. The other three events refer to ECB announcements about the Asset Quality Review and the Comprehensive Assessment (one each in February, March and July, 2014). From the SSM list we carve out the 34 banks for which share prices were available and build an unbalanced matching sample of 62 non-SSM Eurozone listed banks. Applying the event study methodology, we estimate the abnormal returns in the event windows for SSM vs. non-SSM banks, also accounting for small vs. large banks as well as for GIPSI vs. non-GIPSI banks. We expect that if markets believed the BU is an effective solution to Eurozone banks' problems this should show up as better abnormal returns for the SSM banks vs. the non-SSM banks. Additionally, we anticipate that, *ceteris paribus*, the beneficial SSM effect on abnormal returns should be stronger for smaller-sized banks and for banks from peripheral countries.

In the remainder of the paper, Section 2 draws on the relevant literature providing a reference framework for our study. After synthesizing the timeline of the SSM's decision and implementation, Section 3 describes our data and methodology and then reports and comments our main results. Section 4 reports some robustness checks. Finally, Section 5 sums up the main thrust of the paper and tries to draw the main implications.

## **2. Literature review**

The new 2010-2012 Euro crisis wave interrupted the trend to integration across Eurozone member states' financial and banking markets and, to the contrary, increased segmentation (Cipollini et al., 2013; Rughoo & Sarantis, 2014). In this sense, even before the Eurozone sovereign crisis, Ang & Longstaff (2011) find that U.S. and European systemic sovereign risk was strongly related to financial market variables and that there was much less systemic risk among U.S. sovereigns than among European sovereigns. Thereafter, with the second crisis wave, Battistini et al. (2013)

highlight an increasing home bias in banks' investment portfolio<sup>3</sup> while Bedendo & Colla (2013) show that rising sovereign risk is associated with an increase in the borrowing costs of non-financial firms, particularly for government controlled firms, for those with domestic market focused sales, and for those more reliant on bank financing. In turn, Bessler & Kurmann (2014) prove that stock markets' assessment of bank risk exposures brought about a significant revaluation of real estate and sovereign risks. Some authors have addressed the pro-segmentation effects derived from asymmetric funding conditions of banks between peripheral and core countries. Among them, Arnold & van Ewijk (2014) find that a reduction in depositor confidence was one of the channels through which Euro sovereign tensions increased financial fragmentation in the area and further reduced the banks' ability to support an economic recovery in countries with weak sovereigns, while van Rixtel & Gasperini (2013) show that funding became segmented along national borders and that secured instruments became much more prevalent than previously while rising debt retention by euro area banks accompanied greater dependence on liquidity provided by the ECB.

The situation just described configured a diabolic loop between national banking systems and national sovereigns (Allen et al., 2011; Brunnermeier et al. 2011; Mody & Sandri, 2012). The Banking Union (BU) was devised to break that loop. Originally it was believed that the BU should include European-level regulatory responsibility, deposit insurance, bank resolution policies, and a joint fiscal backstop in the event that fiscal resources were deemed necessary to stabilize the banking system (Lane, 2012). However, political frictions during the BU negotiations have led to put on the side the creation of a single deposit insurance scheme (European Commission, 2014) while leaving the fiscal backstop with the procedures of the intervention by the European Stability Mechanism (ESM), conditional on the Single Supervisory Mechanism (SSM) being operational. More progress was achieved with the Single Resolution Mechanism whose regulation was approved in July 2014. However, the most dynamic BU ingredient was by far the SSM itself. The details of SSM establishment and implementation are the subject of the next section.

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<sup>3</sup> From being a stabilizer across the Eurozone in the 2007-09 crisis wave (Barba Navaretti et al., 2010), multinational European banks' operations seemed to become destabilizing in the sovereign crisis (Popov & van Horen, 2013).

An additional issue is whether the European Commission's expectations that the SSM would improve the situation immediately were well placed. In fact, a part of the literature has highlighted the risks and challenges concerning this attempt, with a "general mood of concerns" about the new architecture of European prudential supervision. One concern could be whether the transition of supervisory responsibility of the medium and large Eurozone banks from their national authorities to the ECB could be rough rather than smooth. For instance, referring to data for the US, Agarwal et al. (2012) document that Federal regulators are significantly less lenient than State regulators. Thus, the shift from national Eurozone supervisors to ECB supervision would likely deliver a sounder banking system. This should immediately enhance bank stability. However, Allen et al. (2012) argue that the ECB might not necessarily be a tougher supervisor than national authorities. It might actually be more lenient, as it is concerned about contagion across the Eurozone and because it has more resources available.

Some other worries pertain to the uneven development of the various components of the Banking Union. On his part, Beck (2012) was suggesting to establish a crisis resolution mechanism (SRM), using the ESM as backstop funding sources, while at the same time establishing the necessary structures for a banking union. Since progress with developing the SRM (and with use of ESM as a backstop) has been slower, the implication could be that SSM by itself is not enough to calm markets. Analogously, Goyal et al. (2013) remark that without common resolution and safety nets and credible backstops, an SSM alone will do little to weaken vicious sovereign-bank links. Concerns about the institutional effectiveness of the Banking Union were also voiced by, among others, Avaro & Sterdyniak (2014), Elliott (2012), Pisani-Ferry et al. (2012), Véron (2012).

In spite of the widespread worries about its functionality, no empirical assessment of the SSM effectiveness in contributing to create a safer and sounder banking sector appears to be available yet. This is the task of our paper.

### **3. Empirical Analysis**

#### **3.1 The main steps toward the Single Supervisory Mechanism**

The timeline for the decision and implementation of the SSM encompasses 22 months. First, the European Commission unveiled its SSM proposal on September 12<sup>th</sup> 2012. Next, the European Parliament and Council agreed on the specifics of ECB oversight of Eurozone banks on March 19<sup>th</sup> 2013. The European Parliament approved the SSM Regulations on September 12<sup>th</sup> 2013. Finally, the Council of the European Union consented on October 15<sup>th</sup> 2013.

The legal basis of the SSM hinges on two regulations. The first is Council Regulation (EU) No. 1024/2013 of October 15<sup>th</sup> 2013 conferring specific tasks on the ECB concerning policies relating to the prudential supervision of credit institutions. The second one is Regulation (EU) No. 1022/2013 of the European Parliament and of the Council of October 22<sup>nd</sup> 2013 amending Regulation (EU) No. 1093/2010 establishing the EBA as regards the conferral of specific tasks on the ECB pursuant to Council Regulation (EU) No 1024/2013.

The regulation establishes that the ECB will begin its supervisory role on November 4<sup>th</sup> 2014. Then, not by chance the ECB published its first press release (“ECB starts comprehensive assessment in advance of supervisory role”) on October 23<sup>rd</sup> 2013 – the date of our first event below – the day after the publication of Regulation No. 1022/2013.

#### **3.2 Description of the dataset**

To take charge of its SSM responsibility, the ECB decided to conduct an assessment including the most significant banks of the Euro area. Preliminarily, on October the 23<sup>rd</sup> 2013, the ECB announced that a comprehensive assessment on the initial list of 124 European banks suitable to go under the SSM would take place to determine their capital needs. That list included 34 listed banks.



To assess how capital markets reacted to this announcement, we created a database collecting the stock performance of all the Eurozone listed banks, either under the SSM or not. Then, because we wanted to perform an analysis about the abnormal returns generated by this first ECB announcement and by other events which we identified as relevant, we dropped from our dataset the banks which did not reach a proper level of liquidity of their stocks (Bekaert et al., 2007). Next, since we were interested to search for the determinants of stock performance, we discarded the banks whose 2012 or 2013 balance sheets were missing. The resulting dataset consists of 96 banks, of which 34 included in the ECB list as candidate to the SSM, whilst 62 could be utilized in our analysis as a control group.

We identified several potentially relevant events in the process toward the SSM. Only four of these turned out suitable to our analysis. Specifically, among all events related to ECB's decisions to implement the SSM we selected those satisfying two criteria. First, relevant events should generate a significant impact on bank stock performance. Second, there should be a press release by the ECB, so to determine the exact moment in which the information became effectively available to investors.<sup>4</sup> By this method, we end up with four events (Table 1).

**Table 1. List of events considered as of a possible interest for the ECB supervisory activity**

Description of the events	Relevant stock reaction	ECB press release	Included in our analysis
<i>ECB Initial Announcement on Comprehensive Assessment</i> (October 23 <sup>rd</sup> 2013)	YES	YES	YES
<i>ECB Confirmation on Stress Test Parameters</i> (February 3 <sup>rd</sup> 2014)	YES	YES	YES
<i>ECB Launch of a Public Consultation for SSM Framework Regulation</i> (February 7 <sup>th</sup> 2014)	NO	YES	NO
<i>ECB Publication of Manual for Asset Quality Review</i> (March 11 <sup>th</sup> 2014)	YES	YES	YES
<i>ECB Publication of SSM Framework Regulation</i> (April 25 <sup>th</sup> 2014)	NO	YES	NO
<i>ECB Publication of a Note on the comprehensive assessment (time to cover capital shortfalls following comprehensive assessment)</i> (April 29 <sup>th</sup> )	NO	YES	NO

<sup>4</sup> See, among others, Carretta et al. (2011) for a discussion on the crucial aspect of properly identifying the events.

2014)

<i>ECB Publication of SSM Quarterly Report (May 6<sup>th</sup> 2014)</i>	NO	NO	NO
<i>ECB Publication of a Note on the comprehensive assessment (disclosure of process and template for comprehensive assessment) (July 17<sup>th</sup> 2014)</i>	YES	YES	YES

In 2013 the ECB started to monitor the more important Eurozone banks to evaluate their eligibility to SSM. In June 2014, three banks in the initial list, published on October 23<sup>rd</sup> 2013, were excluded from SSM. Hence, the sample of SSM banks reduces between our 3<sup>rd</sup> and 4<sup>th</sup> events. Moreover, during the same period two of the banks in our control group were delisted, so our sample of banks during the last event differs slightly from that of the first three events (Table 2).

**Table 2. Listed Banks Included in the SSM vs. Control Group**

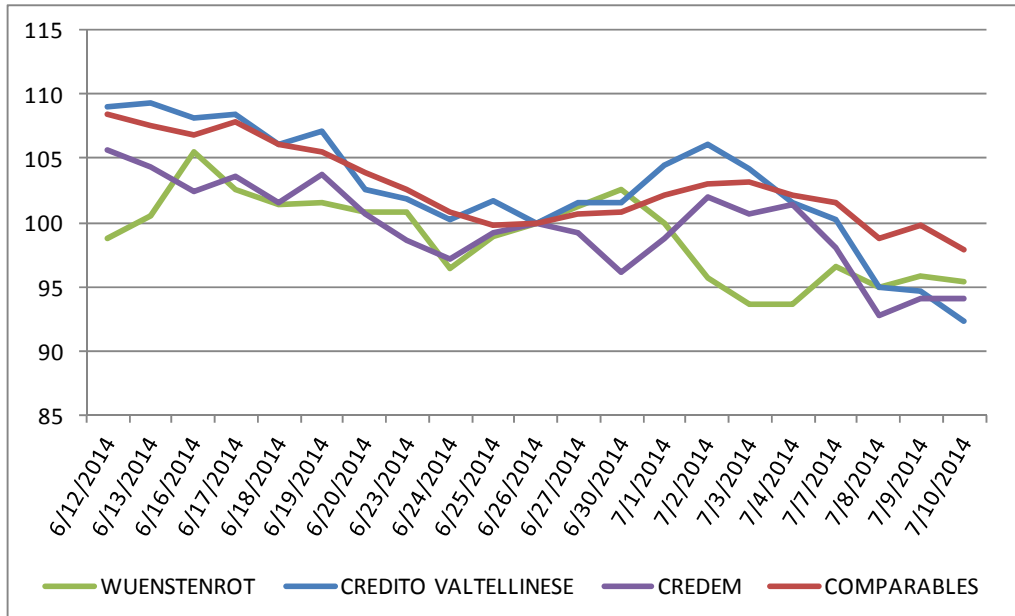
Country	EVENTS 1-3			EVENT 4		
	SSM Banks	Non-SSM Banks	Total	SSM Banks	Non-SSM Banks	Total
Austria	1	3	4	1	3	4
Belgium	1	2	3	1	2	3
Finland	1	2	3	1	2	3
France	3	20	23	3	19	22
Germany	4	11	15	3	12	15
Greece	3	0	3	3	0	3
Ireland	1	0	1	1	0	1
Italy	12	11	23	10	12	22
(the) Netherlands	0	5	5	0	5	5
Portugal	3	0	3	3	0	3
Spain	5	2	7	5	2	7
Sweden	0	6	6	0	6	6
<b>Total</b>	<b>34</b>	<b>62</b>	<b>96</b>	<b>31</b>	<b>63</b>	<b>94</b>

Source: ECB; Datastream Thomson Reuters

The June exclusion of those three banks allows us to gain insight on the value markets assigned by then to a bank being under the SSM. The exclusion became public in an ECB document released on June 26<sup>th</sup> 2014, but there was no ECB press release to communicate that decision to determine the

exact date of the news and, so, we are unable to use this as a true event. Nevertheless, it is instructive to compare the stock performance of these three banks against a benchmark of comparable banks – from the same countries, with similar size and financial characteristics. Each of the three banks seems to underperform the benchmark after the document’s release (Figure 2) suggesting that, as of June 2014, markets believed in SSM effectiveness.

**Figure 2. Performance of Banks excluded from the initial ECB list for SSM**



Source: Datastream Thomson Reuters

### 3.3 Methodology

A true assessment of SSM effectiveness in fostering the stability of Eurozone banks will only be possible after the ECB takes full charge of the SSM banks in November 2014. Yet, something on how the SSM is perceived can be learnt from the judgment capital markets gave through its implementation phase. Our analysis of the four identified events aims to shed light on that.

To detect any abnormal return over each event window, we take the market model relating the return of any given security to the market portfolio return, via the following linear specification:<sup>5</sup>

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \quad [1]$$

where

$$E(\epsilon_{it} = 0) \quad \text{var}(\epsilon_{it}) = \sigma_{\epsilon_i}^2$$

By this manner, we estimated the parameters of the model using an estimation window which goes from  $t - 260$  and  $t - 11$ , where  $t$  is the event day of the first event we considered in our analysis, so to determine the following abnormal returns:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad [2]$$

where  $R_{it}$  and  $R_{mt}$  are the period- $t$  returns, over the event window which goes from  $t - 10$  and  $t + 10$ , respectively of security  $i$  and the market portfolio, for which we used the correspondent Country index.<sup>6 7</sup> By this model, we aim to capture any different reactions for banks in the SSM list vs. the others bound to remain under the National-Supervision, as well as for banks from crisis countries (GIPSI) vs. the others from non-crisis Eurozone countries.

We pay attention to choosing a proper statistical test for the significance of abnormal returns. This is crucial in cases like ours where, being the event day the same across banks, abnormal returns may be artificially boosted by cross-sectional correlation introducing sizeable downward bias in the standard deviation and thereby overstating t-statistics (Bernard 1987; Kothari & Warner 2007).

From this perspective, we first refer to the ordinary cross-sectional method (Charest, 1978), where the assumption that  $AR_{it}$  are independently and identically distributed with mean zero (null hypothesis) and variance  $\sigma_{it}^2$ , induces to the following test-statistics:

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<sup>5</sup> To perform this analysis we identified all the listed banks in the Eurozone. Next, we defined the estimation procedure, by choosing the estimation window and checking for any presence of shocks during the estimation window. In turn, we checked for availability of stock data in the estimation window. In addition, we designed the testing procedure and the way to aggregate individual banks' abnormal returns. We considered also a bank's size and expected SSM inclusion.

<sup>6</sup> We considered ATX (Austria), Belgium20 (Belgium), OMX Helsinki (Finland), CAC40 (France), DAX30 (Germany), Athex Composite (Greece), ISEQ20 (Ireland), FTSE MIB Index (Italy), LUXX (Luxembourg), AEX (Netherlands), PSI20 (Portugal), IBEX35 (Spain), OMX Stockholm30 (Sweden). No listed bank – either under SSM or out – for the following countries: Cyprus, Estonia, Latvia, Malta, Slovenia.

<sup>7</sup> For robustness purposes we tested both a version of one-factor model within the MSCI European Bank Index, as well as a two-factor model with Country Index and Country Sector Index for the countries characterized by a larger number of banks.

$$t_{CS} = \frac{AAR_t \sqrt{n}}{\sqrt{\frac{1}{N-1} \sum_{i=1}^N (AR_{it} - AAR_t)^2}} \quad [4]$$

where  $AAR_t$  is the average abnormal return and  $AR_{it}$  is the abnormal return of each firm.

As  $t_{CS}$  could be affected by cross-sectional correlation and volatility changes, we use also the statistics by Patell (1976) scaling abnormal returns by the inverse of the standard deviation, so that more volatile observations get less weight in the averaging than less volatile ones:

$$t_P = \frac{\bar{A} \sqrt{n}}{\sqrt{(m-p-1)/(m-p-3)}} \quad [5]$$

where  $\bar{A}$  is the average of the scaled abnormal returns  $A_{it} = \frac{AR_{it}}{s_i \sqrt{1+d_t}}$ , being  $s_i$  the regression residual standard deviation,  $d_t$  the correction term for parameters in the estimation period,  $m$  the length of the estimation window,  $p$  the number of explanatory variables in the expected regression.

From this perspective,  $t_P$  can mitigate the effect of event-induced volatility by standardizing the event window's abnormal return, even if the test too often rejects the true null hypothesis, particularly when samples are characterized by non-normal returns, low prices or little liquidity.

Moreover, because  $t_P$  has been found to be still affected by event-induced volatility changes (Campbell & Wasley, 1993) we use also another standardized test, the one by Boehmer et al., (1991) accounting for potential event induced volatility, besides potential return autocorrelation:

$$t_{BMP} = \frac{ASAR \sqrt{n}}{\sqrt{\frac{1}{N-1} \sum_{i=1}^N (SAR_{it} - ASAR)^2}} \quad [6]$$

where  $ASAR$  is the average standardized abnormal return.

Yet the literature highlights that both the Patell-test and BMP-test can be very biased estimators even in case of little cross-correlation. Since in our analysis a single event affects stock performance of European banks, generally characterized by a similar trend, due to regional and industry reasons, we decided to employ also the so-called adjusted-Patell statistic (adj-Patell) and

the adjusted-BMP statistic, also known as Kolary-Pynnönen statistic, where the cross-correlation among the residuals in the estimation window is used to perform a more robust analysis.

The adjusted-Patell statistic corrects the previous  $t_p$ , by the factor  $\sqrt{1 + (n - 1)\bar{r}}$  as follows:

$$t_{AP} = \frac{\bar{A}\sqrt{n}}{\sqrt{(m-p-1)/(m-p-3)} \sqrt{1+(n-1)\bar{r}}} \quad [7]$$

where  $\bar{r}$  is the cross section correlation of residuals in the estimation window.

Analogously, the Kolari-Pynnönen test-statistics is obtained by the following formula:

$$t_{KP} = \frac{\bar{A}}{s_{\bar{A}}} = \frac{\bar{A}\sqrt{n}}{s_A\sqrt{1+(n-1)\bar{r}}} \quad [8]$$

where  $\bar{A}$  is the average standardized abnormal return and  $\bar{r}$  is the average of the sample correlations of estimation-period residuals. An extensive literature judges this statistic able to account for both cross correlation and event-induced volatility (e.g., Bongini et al., 2014; Farruggio et al., 2013; Kot et al., 2013; Petrella & Resti, 2013).  $t_{KP}$  can be viewed also in terms of its correction to the BMP test-statistic, by the following formula:

$$t_{KP} = t_{adj.BMP} = t_{BMP} \sqrt{\frac{1-\bar{r}}{1+(N-1)\bar{r}}} \quad [9]$$

where again  $\bar{r}$  is the average of the sample correlations of estimation-period residuals.

The Kolari-Pynnönen statistic is the most powerful of the tests we used given its ability to control for the cross-correlation characterizing our sample. Since vis-à-vis less robust methods the KP-test displays the hardest acceptance rate in our univariate analysis, only for it we decided to consider beside the usual level of acceptance of the null hypothesis (1%, 5% and 10%) also the 15% level.

We apply that criterion both to daily abnormal returns and cumulative abnormal returns, applying standard event study techniques, with a two-step analysis. Within the first step – the univariate analysis – we compute the market performance achieved by different sub-samples of banks over the four relevant events via the following approach:

$$CAR_{i[t_1,t_2]} = AR_{it_1} + \dots + AR_{it_2} \quad [10]$$

Then, to gauge the impact of the ECB supervision, we investigate abnormal returns for different sub-groups of banks, using as discriminant a bank's inclusion in the SSM or its being established in a country considered as weak, like the GIPS (Greece, Ireland, Portugal and Spain), GIPSI (GIPS plus Italy) or GIPSIC (GIPSI plus Cyprus). Table 3 shows the sub-groups we considered.

**Table 3. Relevant Sub-Groups of Banks in Our Univariate Analysis**

Group	Description of the Group	Banks EVENTS 1-3	Banks EVENT 4
ECB	Bank in the SSM list	34	31
NO_ECB	Bank <u>not</u> in the SSM list	62	63
ECB_EBA	Bank in the SSM list <u>and</u> in the EBA stress test	24	24
ECB_NO_EBA	Bank in the SSM list <u>not</u> in the EBA stress test	10	7
GIPS	Bank established in a GIPS weak country	36	35
NO GIPS	Bank <u>not</u> established in a GIPS weak country	60	59
GIPSI	Bank established in a GIPSI weak country	37	36
NO_GIPSI	Bank <u>not</u> established in a GIPSI weak country	59	58
SMALL	Bank with below average Total Assets (Total Sample 2012)	68	66
NO_SMALL	Bank with above average Total Assets (Total Sample 2012)	28	28
ECB_GIPS	Bank in the SSM list, established in a GIPS weak country	23	21
ECB_NO_GIPS	Bank in the SSM list, <u>not</u> established in a GIPS weak country	11	10
ECB_GIPSI	Bank in the SSM list, established in a GIPSI weak country	24	22
ECB_NO_GIPSI	Bank in the SSM list, <u>not</u> established in a GIPSI weak country	10	9
ECB_SMALL	Bank in the SSM list, with below average Total Assets	17	14
ECB_NO_SMALL	Bank in the SSM list, with above average Total Assets	17	17
NO_ECB_GIPS	Bank established in a GIPS weak country, <u>not</u> in the SSM list	13	14
NO_ECB_NO_GIPS	Bank <u>not</u> established in a GIPS weak country <u>not</u> in the SSM list	49	49
NO_ECB_SMALL	Bank <u>not</u> in the SSM list, with below average Total Assets	51	52
NO_ECB_NO_SMALL	Bank <u>not</u> in the SSM list, with above average Total Assets	11	11
ECB_NO_EBA_GIPSI	Bank from a GIPSI weak country in the SSM list <u>not</u> in the EBA stress test	8	6
TOTAL	Total sample	96	94

Our second step consists in a multivariate cross-section analysis to study the determinants of a bank's Cumulated Abnormal Returns (CARs), while controlling for the most relevant factors that can influence market reactions, through the following approach:

$$CAR_i = \alpha + \sum_{i=1}^N X_i + \epsilon_i \quad [11]$$

To correctly estimate the stock market performance determinants, our multivariate analysis includes all the banks in our dataset. Controlling for the other fundamental characteristics of each bank – e.g., its size and financial performance – makes our test of the effect of the SSM more cogent.

### **3.4 Explanatory variables in the multivariate analysis**

SSM inclusion was primarily based on a bank's size and degree of interconnectedness whilst the ECB launched a stress test to assess the overall health of SSM banks and to prepare its staff to the new activity of prudential supervision. Since the results of the stress test were not published yet at the time of writing, we couldn't know which variables were actually included in the comprehensive assessment.<sup>8</sup>

Therefore, we decided to focus our multivariate analysis on three fundamental facets we consider meaningful for the comprehensive assessment, banks' size, model of intermediation, performance and management quality. This is analogous to the traditional method to prudential supervision, the so called CAMEL – Capital, Assets, Management, Earnings, and Liquidity – approach. Table 4 details the specific variables included.

To gauge the effect of SSM inclusion on abnormal returns, we include the following two variables: an ECB dummy variable, which is 1 if the bank is in the SSM list, and 0 otherwise; an ECB\_EBA dummy variable, which is 1 for SSM banks that were also included in the list of banks in the 2011 European Banking Authority (EBA) stress test, and 0 otherwise. The idea behind ECB\_EBA is that more detailed information was publicly available for these banks thanks to the 2011 EBA stress test. These dummies are also interacted with other regressors.

Finally, as we want to distinguish between idiosyncratic bank effects and systemic country effects, we introduce the dummy GIPSI, which is 1 if the bank is established in a GIPSI country, and 0 otherwise. Then, to investigate whether differing market reactions across the Eurozone are related

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<sup>8</sup> Also, we couldn't look at the banks' balance sheet data used in the stress test that, after publishing the results, the ECB is going to make available following what the European Banking Authority (EBA) did in its 2011 stress test.



with the institutional differences in terms of stringency of supervision and/or regulation, we include also a cross-country measure of supervisory/regulatory effectiveness (Barth et al., 2004; 2013).

**Table 4. Explanatory variables in the multivariate analysis**

<i>Banks' characteristics</i>	
Total Assets <sub>LN</sub>	The natural logarithm of Total Assets proxying for <i>banks' size</i> , one of criteria for eligibility to SSM
Net Loans/Total Assets	The ratio of Net Loans to Total Assets proxies for the <i>model of intermediation</i> (commercial banks vs others), it affects the level of RWA and regulatory capital, it is relevant for the ECB comprehensive assessment
Total Equity/Total Assets	The ratio of Total Equity to Total Assets proxies for the level of <i>capitalization</i> of the bank. It is included in the CAMEL model, it is relevant for the ECB comprehensive assessment
NPL/Gross Loans	The ratio of No-performing-loans to Gross Loans proxies for a bank's <i>asset quality</i> . It is included in the CAMEL model, it is relevant for the ECB comprehensive assessment
Interest Margin/Total Income	The ratio of Interest Margin to Total Income can be interpreted as proxy for a bank's <i>management</i> . It is included in the CAMEL model, it is relevant for the ECB comprehensive assessment
Net Income/ Total Assets	The ratio of Net Income to Total Assets (ROA) represents a proxy for the <i>profitability</i> of the bank. It is included in the CAMEL model, it is relevant for the ECB comprehensive assessment
Short Term Funding/ Total Assets	The ratio of Short Term Funding to Total Assets represents the <i>liquidity</i> of the bank. It is included in the CAMEL model, it is relevant for the ECB comprehensive assessment
<i>Inclusion in the ECB list for SSM</i>	
ECB <sub>dummy</sub>	The dummy variable ECB takes the value 1 if the bank is included in the SSM list, and 0 otherwise. It represents the main objective of the analysis
ECB_EBA <sub>dummy</sub>	The dummy variable ECB_EBA takes the value 1 for SSM banks included in the 2011 EBA stress test, and 0 otherwise. It identifies banks whose inclusion in the SSM list was expected
<i>Country control variables</i>	
GIPSI <sub>dummy</sub>	The dummy variable GIPSI is 1 if the bank is established in a weak (GIPSI) country, and 0 otherwise. It captures the potential effects of country weakness on bank performance <sup>9</sup>
Regulation	The variable Regulation captures supervisory/regulatory effectiveness (Barth et al. 2013), aiming to control for the effects of institutional differences in terms of stringency of supervision and/or regulation across the various countries

<sup>9</sup> Rossignolo et al. (2013) document that Basel III compounded to some extent the problems for these crisis countries.

### 3.5 Findings from the univariate analysis

Our results suggest a nuanced impact of the SSM. It seems that markets did not receive well the initial step of SSM implementation in October 2013 while they grew to progressively appreciate the following SSM steps during 2014. This is suggested by significant abnormal returns of SSM banks – especially GIPSI banks – that were initially unfavorable but later on turned to being favorable.

Table 5a presents the results obtained by running the event analysis around the *ECB Initial Announcement on Comprehensive Assessment* of October 23<sup>rd</sup> 2013. The case in point is that, contrary to the declared intentions of the Banking Union, SSM banks underperform their control group. From this perspective, even if the ECB group shows significant results only for weaker methods, when considering the ECB\_EBA and ECB\_NO\_SMALL groups it appears that stock market was initially surprised, rather than scared, by the SSM project. That impression seems to be confirmed by the stock performance of banks not included in the SSM list, which in this case generally overperform. In particular, the NO\_ECB group overperforms, even if the results are not very significant, especially within the KP-test, whilst the groups NO\_ECB\_GIPS, NO\_ECB\_NO\_GIPS and NO\_ECB\_NO\_SMALL overperform significantly. Thus, in this case banks that were included in the SSM list, bigger, and established in weaker countries show worse performance. This suggests that in the case of the first ECB announcement the initial market sentiment probably overstated the remaining uncertainties on the SSM project.

Insert Table 5a Here

Table 5b reports the results obtained around *ECB Confirmation on Stress Test Parameters* of February 3<sup>rd</sup> 2014. In this case, the sentiment completely changes, moving to a positive valuation of the SSM effectiveness, especially for weaker European countries. In the event, SSM inclusion associates with overperformance, whilst exclusion with more significant underperformance.

Specifically, the ECB, ECB\_EBA, ECB\_GIPS and ECB\_GIPSI groups show positive abnormal returns, even if none passes the KP-test. On the opposite, the NO\_ECB, NO\_ECB\_NO\_GIPS and NO\_ECB\_SMALL groups show significant negative abnormal returns, confirming that exclusion from the SSM should deny the protection of more effective supervision. This is the first confirmation of a positive sentiment from stock market of SSM project. Nevertheless, at this step, there still remains a positive reaction for the big banks excluded from the SSM list, the group NO\_ECB\_NO\_SMALL shows significant positive abnormal returns. However, that effect can be seen in tandem with the general positive performance of NO\_SMALL and negative performance of SMALL banks, rather than signaling a negative sentiment by the market on the SSM project.

Insert Table 5b Here

Table 5c reports the results obtained around *ECB Publishing of Manual for Asset Quality Review* of March 11<sup>th</sup> 2014. In this case, we have a confirmation of the positive stock market outlook on ECB supervision. In particular, the ECB, ECB\_EBA, ECB\_GIPS, ECB\_GIPSI and ECB\_SMALL groups show positive abnormal returns, even if not all of them reach KP-test acceptance. Similarly, also the groups ECB\_NO\_EBA and ECB\_NO\_EBA\_GIPSI overperform, even if insignificantly. Control groups tend to move in the opposite direction. From this perspective, we consider that results like another confirmation of the positive role of the SSM as perceived by the markets.

Insert Table 5c Here

Table 5d reports the results obtained around *ECB Note on Comprehensive Assessment* of July 17<sup>th</sup> 2014. In this case, we observe something very specific, as suggested by the negative and significant abnormal returns for the whole sample. During this event period there was serious concern on bank stock, because of the intensifying Ukraine crisis, after the vote on May 15<sup>th</sup> 2014 for the annexation

of Crimea to Russia, together with the severe crisis hitting the Espirito Santo Financial Group. Thus, this period featured a negative sentiment about European banks, and we can interpret this event like a first test of SSM ability to protect the European banking system. Comparing the abnormal returns of each group vis-à-vis its control sample, no significant result can be identified for the banks in the SSM list. Instead, strong evidence of underperformance arises for the whole control group (NO\_ECB) as well for other control groups. The banks established in stronger countries, especially if excluded from the SSM list, record significant negative abnormal returns, whilst their homologues in weaker countries don't underperform. Again, we could interpret that result like a consequence of this European crisis, rather than a market denial of the SSM project.

Insert Table 5d Here

### **3.6 Findings from the multivariate analysis**

The dependent variable of our multivariate analysis is the cumulative abnormal returns (CARs) in the (-3,+2) window of each event, whilst the regressors include financial variables denoting banks' specific features, and other variables capturing the impact of SSM inclusion and systemic country effects. This multivariate analysis offers a further check of the results from the univariate analysis.

We are most interested in two key explanatory variables capturing, respectively, the impact of SSM inclusion – ECB and ECB\_EBA dummies –, and being established in a weak the country – GIPSI dummy. For comparability, we fit the same specification for all four events.<sup>10</sup> Descriptive summary statistics are reported in Table 6: The data “Year 2012” refer to the multivariate regression on the first event; the data “Year 2013” refer to the multivariate regressions on second, third and fourth events; the data “Robustness Analysis” refer to the robustness regression commented in section 4.

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<sup>10</sup> In truth we were interested also on the variable SPREAD, of particular interest to capture the vicious sovereign-bank cycle lived in 2010-2012 by Eurozone sovereign crisis countries. Unfortunately, we had to drop it because of its high correlation with the GIPSI dummy, which we consider as fundamental for our analysis.

Insert Table 6 Here

The results of the multivariate analysis are broadly in line with those from the univariate analysis, and allow us to speculate on a wider set of issues. Table 7a reports the results of variance-weighted least squares regressions of the CARs around the *ECB Initial Announcement on Comprehensive Assessment* of October 23<sup>rd</sup> 2013. In the event, our univariate analysis found a negative reaction by capital markets to the ECB announcement, so that the “surprise” of being included in the SSM – among other features, particularly bank size – associated with negative abnormal returns. The multivariate analysis confirms that size links with negative CARs, especially for SSM banks (the interaction variable *Total Assets<sub>LN</sub>\*ECB dummy* is always negative and significant) and the SSM banks also included in the 2011 EBA stress test (the interaction variable *Total Assets<sub>LN</sub>\*ECB\_EBA dummy* is always negative and significant). The result just commented shows how, differently from the univariate analysis, here we can distinguish between a generic SSM and/or SSM\_EBA effect and the specific effect of these dummies when compounded by bank size. In fact, in this event we discover that inclusion in both the SSM and EBA lists associates with overperformance (the *ECB\_EBA dummy* variable is always positive and significant), while SSM inclusion per se is insignificant (the *ECB dummy* variable is positive but not always significant). Moreover, the difference between *ECB* and *ECB\_EBA* can be interpreted as if SSM inclusion because of some banks was unexpected.

In addition, we show that more capitalized banks suffered the ECB announcement of a new assessment (the *Total Equity/Total Assets* variable is always negative and significant), with the effect being larger for more capitalized banks established in weaker countries vis-à-vis their homologues in stronger countries (the interaction variable *Total Equity/Total Assets \*GIPSI dummy* is always negative and significant). In turn, performance seems to significantly rise for more profitable banks (the *Net Income/Total Assets* variable is always positive and significant), more capable to raise capital via earnings retention. Finally, the result that higher levels of NPLs also

associate with overperformance (the *NoPerformingLoans/Gross Loans* variable is always positive and significant) may be interpreted as a pro-stability effect of SSM inclusion.

Insert Table 7a Here

Table 7b refers the event *ECB Confirmation on Stress Test Parameters* of February 3<sup>rd</sup> 2014. The multivariate analysis confirms the favorable view by capital markets on the SSM. In particular, bank size associates to better stock performance (the *Total Assets<sub>LN</sub>* variable is always positive and significant), while banks' illiquidity links with underperformance (the *Short Term Funding/Total Assets* variable is always negative and significant). Most importantly, we detect a positive effect for banks established in weaker countries (the GIPSI variable is positive and significant when using the control variable ECB) suggesting SSM effectiveness to break the vicious sovereign-bank cycle.

Insert Table 7b Here

Table 7c focuses around the event *ECB Publishing of Manual for Asset Quality Review* of March 11<sup>th</sup> 2014. We find further confirmation on the positive judgment of SSM by capital markets. Being established in weaker countries associates with share overperformance (the GIPSI variable is positive and significant when using the control variable ECB\_EBA, rather than ECB). However, we obtain also two counterintuitive results. First, better capitalized banks from weak countries show underperformance (the interaction variable *Total Equity/Total Assets \*GIPSI dummy* is always negative and significant). Second, profitability seems to depress performance (the *Net Income/Total Assets* variable is always negative and significant).

Insert Table 7c Here

Table 7d addresses the event around the *ECB Note on Comprehensive Assessment* of July 17<sup>th</sup> 2014. As commented on the univariate analysis, this last event seems to be confounded by more concerns about bank stocks stemming from the Ukraine-Russia crisis and from the emerging distress at the Espirito Santo Financial Group. Possibly this explains why, in this case, we find no positive effect for banks established in weaker countries, whilst the effect still remains positive for banks with higher level of profit and problematic loans.

Insert Table 7d Here

#### **4. Robustness checks**

Any favorable capital market sentiment for the SSM could depend on two very different motivations. At one extreme, along a “good” view, markets trust that supervision/regulation works better when the ECB is in charge. At the other extreme, however, we cannot rule out opportunistic valuations. According to this “nasty” view, markets just expect that external ECB support for ailing banks may become easier under the SSM. To check whether the “nasty” view can be ruled out, we run a robustness analysis including the variable recently proposed by Demirgüç-Kunt & Huizinga (2013), the ratio of total liabilities of each bank to GDP.

Including this variable in our previous model controls for any opportunistic sentiment in “too-big-to-fail” situations possibly causing overperformance. Moreover, because the overall assessment of a bank’s creditworthiness could depend on its business model, we drop the banks which during 2012-2013 had a Net loans/Total Assets ratio equal to zero. The robustness check was performed on the second event.<sup>11</sup>

Table 7e refers to that robustness analysis on the CARs around the *ECB Confirmation on Stress Test Parameters* of February 3<sup>rd</sup> 2014. The results confirm almost entirely those of the previous section, especially with reference to the positive sentiment towards the SSM. In particular, bank

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<sup>11</sup> The robustness tests on the other events are available upon request from the authors.

size continues to exhibit a positive influence on share price (the *Total Assets<sub>LN</sub>* variable is always positive and significant), whilst the illiquidity of banks still afflicts stock performance (the *Short Term Funding/Total Assets* variable is always negative and significant). Above all, there is a positive valuation for banks established in weaker countries (the GIPSI variable is positive and significant when using the control variable ECB). No significant role can be seen for the variable Total Liabilities/GDP, whilst in this case higher level of profitability and problematic loans seem to determine a significant underperformance (both the variables Net Income/Total Assets and NPL/Gross Loans show always a negative and significant coefficient).

Insert Table 7e Here

## 5. Conclusions

The 2010-2012 Eurozone crisis ignited a vicious cycle between sovereign debts and banks. The Banking Union (BU) was launched with the aim to break that vicious cycle. It was originally deemed that the BU would feature a coherent (harmonious) trio of institutional innovations: Single Supervisory Mechanism (SSM) entrusting banks to the European Central Bank (ECB); Single Resolution Mechanism (SRM) to ensure equal treatment of banking crises across the Eurozone and to reduce the burden on taxpayers, and Euro level Deposit Insurance Scheme (DIS). By European standards the BU was approved rather quickly in 2012-2013. However, the institutional trio made progress at different speeds. On one hand, the SSM accelerated the most to be fully operational as of November 4<sup>th</sup> 2014. On the other hand, the SRM was established but will take twelve years to reach full functioning and the DIS was set aside because of political rift.

As the trio (SSM-SRM-DIS) was almost debased to just a solo (SSM plus an infant SRM with no DIS) one wonders whether the good intentions of the BU carried through. The best way to assess



this is by trying to evaluate how markets reacted to the implementation steps of the SSM the only truly accomplished of the three institutions. That was the task of this paper.

We achieved that by inspecting the flow of news disclosed by the ECB on how it is actually taking responsibility of the SSM. Thereby, we identified four events between October 2013 and July 2014 when the ECB released SSM relevant news. Next, via an event study analysis and using stringent statistical criteria, we compared the share prices around the event dates for the listed banks included in the SSM with those for a matching sample of listed non-SSM Eurozone banks. Any finding of positive (negative) abnormal returns would suggest markets' approval (dissatisfaction) for the SSM and, through it, for the way the BU was being achieved. We found that the SSM had a nuanced impact. It seems that markets did not receive well the initial step of SSM implementation in October 2013 while they grew to progressively appreciate the following SSM steps during 2014.

Further research could address why markets moved from an initial negative sentiment to appreciating the SSM. In particular, it would be interesting to tell apart whether the initial market dissatisfaction stemmed from uncertainties about the SSM itself or from remaining doubts on the other components of the BU. Support for the latter would be a call on European political leaders to speed up the full implementation of the trio to avoid leaving the BU incoherent (in a cacophony).

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## Annexes

Table 5a – Univariate Analysis on ECB Announcement (October 23<sup>rd</sup> 2013)

Group	ECB						ECB_EBA						ECB_GIPS						ECB_GIPSI						ECB_NO_EBA						ECB_NO_EBA_GIPSI											
Bank	34						24						23						24						10						8											
Results	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP
CAAR 1010	0.0218	0.217	0.043 <sup>b</sup>	0.347	0.631	0.843	0.0028	0.893	0.000 <sup>a</sup>	0.027 <sup>b</sup>	0.145 <sup>d</sup>	0.513	0.0191	0.430	0.312	0.571	0.817	0.906	0.0206	0.396	0.504	0.709	0.877	0.937	0.0674	0.040 <sup>b</sup>	0.000 <sup>a</sup>	0.000 <sup>a</sup>	0.047 <sup>b</sup>	0.149 <sup>d</sup>	0.0576	0.128 <sup>d</sup>	0.000 <sup>a</sup>	0.001 <sup>a</sup>	0.156	0.329						
CAAR 55	-0.0008	0.941	0.035 <sup>b</sup>	0.327	0.505	0.783	-0.0139	0.279	0.000 <sup>a</sup>	0.005 <sup>a</sup>	0.025 <sup>b</sup>	0.302	-0.0062	0.642	0.001 <sup>a</sup>	0.049 <sup>b</sup>	0.179	0.488	-0.0039	0.774	0.002 <sup>a</sup>	0.070 <sup>c</sup>	0.228	0.535	0.0306	0.118 <sup>d</sup>	0.000 <sup>a</sup>	0.002 <sup>a</sup>	0.148 <sup>d</sup>	0.305	0.0184	0.277	0.037 <sup>b</sup>	0.111 <sup>d</sup>	0.324	0.506						
CAAR 33	-0.0099	0.327	0.000 <sup>a</sup>	0.005 <sup>a</sup>	0.026 <sup>b</sup>	0.342	-0.0165	0.185	0.000 <sup>a</sup>	0.000 <sup>a</sup>	0.001 <sup>a</sup>	0.106 <sup>d</sup>	-0.0051	0.686	0.000 <sup>a</sup>	0.008 <sup>a</sup>	0.048 <sup>b</sup>	0.299	-0.0048	0.704	0.000 <sup>a</sup>	0.010 <sup>b</sup>	0.054 <sup>c</sup>	0.312	0.0059	0.743	0.147 <sup>d</sup>	0.281	0.658	0.761	-0.0010	0.946	0.899	0.928	0.951	0.967						
CAAR 32	-0.0046	0.623	0.000 <sup>a</sup>	0.081 <sup>c</sup>	0.117 <sup>d</sup>	0.510	-0.0105	0.371	0.000 <sup>a</sup>	0.006 <sup>a</sup>	0.003 <sup>a</sup>	0.165	-0.0001	0.992	0.012 <sup>b</sup>	0.140 <sup>d</sup>	0.147 <sup>d</sup>	0.452	-0.0001	0.994	0.015 <sup>b</sup>	0.157	0.155	0.462	0.0096	0.548	0.000 <sup>a</sup>	0.047 <sup>b</sup>	0.130 <sup>d</sup>	0.489	0.632	0.0014	0.894	0.790	0.850	0.843	0.896					
CAAR 23	-0.0006	0.958	0.000 <sup>a</sup>	0.075 <sup>c</sup>	0.153 <sup>d</sup>	0.549	-0.0043	0.750	0.000 <sup>a</sup>	0.008 <sup>a</sup>	0.017 <sup>b</sup>	0.268	0.0048	0.721	0.003 <sup>a</sup>	0.077 <sup>c</sup>	0.191	0.500	0.0055	0.686	0.005 <sup>a</sup>	0.100 <sup>c</sup>	0.218	0.526	0.0084	0.633	0.095 <sup>c</sup>	0.210	0.604	0.721	0.0023	0.927	0.961	0.972	0.982	0.988						
CAAR 22	0.0048	0.622	0.191	0.550	0.570	0.814	0.0018	0.889	0.004 <sup>a</sup>	0.132 <sup>d</sup>	0.087 <sup>c</sup>	0.440	0.0098	0.427	0.405	0.642	0.631	0.807	0.0102	0.410	0.487	0.698	0.683	0.835	0.0120	0.436	0.030 <sup>b</sup>	0.094 <sup>c</sup>	0.437	0.590	0.0038	0.695	0.660	0.753	0.748	0.832						
CAAR 11	-0.0059	0.271	0.255	0.604	0.483	0.771	-0.0078	0.115 <sup>d</sup>	0.044 <sup>b</sup>	0.304	0.100 <sup>d</sup>	0.458	-0.0071	0.261	0.255	0.523	0.385	0.656	-0.0075	0.237	0.237	0.507	0.356	0.636	-0.0013	0.924	0.245	0.391	0.600	0.718	-0.0113	0.371	0.556	0.673	0.558	0.697						
CAAR 02	0.0078	0.430	0.934	0.970	0.958	0.983	0.0123	0.364	0.852	0.926	0.886	0.950	0.0105	0.451	0.535	0.729	0.646	0.815	0.0106	0.445	0.603	0.772	0.695	0.842	-0.0031	0.787	0.887	0.918	0.948	0.964	-0.0096	0.282	0.304	0.456	0.370	0.547						

This table reports the abnormal returns generated by the ECB Announcement of October 23<sup>rd</sup> 2013 over a panel of European banks. The table reports the average cumulative abnormal returns (CAAR) estimate over the event window (-10;+10) centered on October 23<sup>rd</sup>, for 22 different groups of banks (daily average abnormal return are available upon request from the Authors). The table also reports the p-value for the following different test-statistics: traditional Cross-Sectional Method, Patell (1976), Brown and Warner (1980), Boehmer, Musumeci, Poulsen (1991), Kolar, Pynnönen (2010). Footnotes <sup>a</sup>, <sup>b</sup>, <sup>c</sup>, and <sup>d</sup> denote significance at the 1%, 5%, 10% and 15% levels.



Table 5c – Univariate Analysis on ECB publication of manual for asset quality review (March 11<sup>th</sup> 2014)

Group	ECB						ECB_EBA						ECB_GIPS						ECB_GIPSI						ECB_NO_EBA						ECB_NO_EBA_GIPSI											
Bank	34						24						23						24						10						8											
Results	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP	AAR CAAR	p-value CS	p-value P	p-value AP	p-value BMP	p-value KP
CAAR	1010	0.0210	0.224 <sup>d</sup>	0.005 <sup>a</sup>	0.184 <sup>b</sup>	0.477 <sup>c</sup>	0.768 <sup>d</sup>	-0.0006	0.972	0.071 <sup>c</sup>	0.360	0.627	0.830	0.0477	0.031 <sup>b</sup>	0.000 <sup>a</sup>	0.000 <sup>a</sup>	0.057 <sup>c</sup>	0.318	0.0390	0.101 <sup>d</sup>	0.000 <sup>a</sup>	0.001 <sup>a</sup>	0.111 <sup>d</sup>	0.408	0.0730	0.057 <sup>c</sup>	0.000 <sup>a</sup>	0.000 <sup>a</sup>	0.071 <sup>c</sup>	0.193	0.1008	0.023 <sup>b</sup>	0.000 <sup>a</sup>	0.000 <sup>a</sup>	0.015 <sup>b</sup>	0.072 <sup>c</sup>	0.231				
CAAR	55	0.0236	0.117 <sup>d</sup>	0.000 <sup>a</sup>	0.041 <sup>b</sup>	0.192	0.586	0.0066	0.691	0.664	0.830	0.896	0.954	0.0373	0.067 <sup>c</sup>	0.000 <sup>a</sup>	0.002 <sup>a</sup>	0.135 <sup>d</sup>	0.438	0.0305	0.156	0.000 <sup>a</sup>	0.009 <sup>a</sup>	0.210	0.519	0.0646	0.042 <sup>b</sup>	0.000 <sup>a</sup>	0.000 <sup>a</sup>	0.045 <sup>b</sup>	0.145 <sup>d</sup>	0.0740	0.064 <sup>c</sup>	0.000 <sup>a</sup>	0.001 <sup>a</sup>	0.087 <sup>c</sup>	0.231					
CAAR	33	0.0200	0.032 <sup>b</sup>	0.000 <sup>a</sup>	0.049 <sup>b</sup>	0.063 <sup>c</sup>	0.433	0.0093	0.325	0.087 <sup>c</sup>	0.387	0.449	0.737	0.0313	0.015 <sup>b</sup>	0.000 <sup>a</sup>	0.004 <sup>a</sup>	0.030 <sup>b</sup>	0.251	0.0292	0.024 <sup>b</sup>	0.000 <sup>a</sup>	0.006 <sup>a</sup>	0.036 <sup>b</sup>	0.275	0.0458	0.036 <sup>b</sup>	0.000 <sup>a</sup>	0.003 <sup>a</sup>	0.031 <sup>b</sup>	0.113 <sup>d</sup>	0.0563	0.036 <sup>b</sup>	0.000 <sup>a</sup>	0.003 <sup>a</sup>	0.033 <sup>b</sup>	0.124 <sup>d</sup>					
CAAR	32	0.0185	0.028 <sup>b</sup>	0.000 <sup>a</sup>	0.022 <sup>b</sup>	0.016 <sup>b</sup>	0.301	0.0100	0.250	0.004 <sup>a</sup>	0.123 <sup>d</sup>	0.140 <sup>d</sup>	0.507	0.0249	0.036 <sup>b</sup>	0.000 <sup>a</sup>	0.006 <sup>a</sup>	0.028 <sup>b</sup>	0.243	0.0229	0.054 <sup>c</sup>	0.000 <sup>a</sup>	0.010 <sup>a</sup>	0.036 <sup>b</sup>	0.268	0.0390	0.046 <sup>b</sup>	0.001 <sup>a</sup>	0.007 <sup>a</sup>	0.037 <sup>b</sup>	0.126 <sup>d</sup>	0.0461	0.058 <sup>c</sup>	0.002 <sup>a</sup>	0.010 <sup>a</sup>	0.057 <sup>c</sup>	0.176					
CAAR	23	0.0224	0.013 <sup>b</sup>	0.000 <sup>a</sup>	0.034 <sup>b</sup>	0.038 <sup>b</sup>	0.379	0.0133	0.152	0.012 <sup>b</sup>	0.193	0.257	0.613	0.0340	0.005 <sup>a</sup>	0.000 <sup>a</sup>	0.002 <sup>a</sup>	0.014 <sup>b</sup>	0.187	0.0324	0.008 <sup>a</sup>	0.000 <sup>a</sup>	0.003 <sup>a</sup>	0.017 <sup>b</sup>	0.202	0.0441	0.035 <sup>b</sup>	0.001 <sup>a</sup>	0.006 <sup>a</sup>	0.040 <sup>b</sup>	0.134 <sup>d</sup>	0.0564	0.025 <sup>b</sup>	0.001 <sup>a</sup>	0.005 <sup>a</sup>	0.025 <sup>b</sup>	0.102 <sup>d</sup>					
CAAR	22	0.0208	0.004 <sup>a</sup>	0.000 <sup>a</sup>	0.015 <sup>b</sup>	0.005 <sup>a</sup>	0.228	0.0140	0.048 <sup>b</sup>	0.000 <sup>a</sup>	0.051 <sup>c</sup>	0.050 <sup>b</sup>	0.370	0.0275	0.006 <sup>a</sup>	0.000 <sup>a</sup>	0.004 <sup>a</sup>	0.008 <sup>a</sup>	0.150	0.0261	0.009 <sup>a</sup>	0.000 <sup>a</sup>	0.006 <sup>a</sup>	0.010 <sup>a</sup>	0.164	0.0372	0.040 <sup>b</sup>	0.003 <sup>a</sup>	0.017 <sup>b</sup>	0.042 <sup>b</sup>	0.138 <sup>d</sup>	0.0462	0.038 <sup>b</sup>	0.003 <sup>a</sup>	0.015 <sup>b</sup>	0.041 <sup>b</sup>	0.142 <sup>d</sup>					
CAAR	11	0.0190	0.001 <sup>a</sup>	0.000 <sup>a</sup>	0.023 <sup>b</sup>	0.001 <sup>a</sup>	0.138 <sup>d</sup>	0.0163	0.017 <sup>b</sup>	0.000 <sup>a</sup>	0.045 <sup>b</sup>	0.010 <sup>b</sup>	0.231	0.0246	0.001 <sup>a</sup>	0.000 <sup>a</sup>	0.006 <sup>a</sup>	0.001 <sup>a</sup>	0.058 <sup>c</sup>	0.0243	0.001 <sup>a</sup>	0.000 <sup>a</sup>	0.007 <sup>a</sup>	0.001 <sup>a</sup>	0.059 <sup>c</sup>	0.0253	0.022 <sup>b</sup>	0.014 <sup>b</sup>	0.054 <sup>c</sup>	0.031 <sup>b</sup>	0.114 <sup>d</sup>	0.0335	0.009 <sup>a</sup>	0.007 <sup>a</sup>	0.031 <sup>b</sup>	0.008 <sup>a</sup>	0.046 <sup>b</sup>					
CAAR	02	0.0160	0.026 <sup>b</sup>	0.001 <sup>a</sup>	0.101 <sup>d</sup>	0.046 <sup>b</sup>	0.397	0.0156	0.057 <sup>c</sup>	0.001 <sup>a</sup>	0.073 <sup>c</sup>	0.056 <sup>c</sup>	0.384	0.0183	0.069 <sup>c</sup>	0.006 <sup>a</sup>	0.103 <sup>d</sup>	0.144 <sup>d</sup>	0.449	0.0194	0.056 <sup>c</sup>	0.004 <sup>a</sup>	0.089 <sup>c</sup>	0.121 <sup>d</sup>	0.421	0.0171	0.272	0.381	0.521	0.572	0.696	0.0203	0.297	0.399	0.543	0.611	0.736					

This table reports the abnormal returns generated by the ECB Publication of Manual for asset quality review of March 11<sup>th</sup> 2014 over a panel of European banks. The table reports the average cumulative abnormal returns (CAAR) estimate over the event window (-10;+10) centered on March 11<sup>th</sup>, for 22 different groups of banks (daily average abnormal return are available upon request from the Authors). The table also reports the p-value for the following different test-statistics: traditional Cross-Sectional Method, Patell (1976), Brown an Warner (1980), Boehmer, Musumeci, Poulsen (1991), Kolari, Pynnönen (2010). Footnotes <sup>a</sup>, <sup>b</sup>, <sup>c</sup>, and <sup>d</sup> denote significance at the 1%, 5%, 10% and 15% levels.



Table 6 – Summary statistics on bank and country variables

Variable	Year 2012					Year 2013				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Total Assets <sub>LN</sub>	96	16.996	2.462	9.441	21.428	96	17.012	2.371	10.878	21.300
Net Loans/Total Assets	96	48.838	26.713	0.000	90.967	96	48.620	26.631	0.000	86.400
Interest Margin/Total Income	96	48.819	28.347	-73.261	99.881	96	50.806	26.485	-28.286	140.612
Short Term Funding/Total Assets	96	60.782	25.254	0.008	98.756	96	62.485	24.454	0.010	95.646
Net Income/Total Assets	96	0.164	2.094	-11.905	9.146	96	0.229	2.292	-15.064	10.419
NPL/Gross Loans	96	6.416	10.204	0.000	81.897	96	7.380	11.466	0.000	85.792
Total Equity/Total Assets	96	11.218	14.793	-4.366	76.868	96	11.039	12.303	1.402	72.218
GIPSI <sub>dummy</sub>	96	0.385	0.489	0.000	1.000	96	0.385	0.489	0.000	1.000
ECB <sub>dummy</sub>	96	0.354	0.481	0.000	1.000	96	0.354	0.481	0.000	1.000
ECB_EBA <sub>dummy</sub>	96	0.250	0.435	0.000	1.000	96	0.250	0.435	0.000	1.000
Regulation	96	10.802	1.890	6.000	14.000	96	10.802	1.890	6.000	14.000

Variable	Robustness Analysis				
	Obs	Mean	Std. Dev.	Min	Max
Total Assets <sub>LN</sub>	91	17.130	2.346	10.878	21.300
Net Loans/Total Assets	91	51.291	24.700	1.340	86.400
Interest Margin/Total Income	91	54.099	22.871	2.047	140.612
Short Term Funding/Total Assets	91	65.608	20.990	2.805	95.646
Net Income/Total Assets	91	0.016	1.997	-15.064	4.100
NPL/Gross Loans	91	7.786	11.644	0.000	85.792
Total Equity/Total Assets	91	9.239	8.656	1.402	66.346
GIPSI <sub>dummy</sub>	91	0.407	0.494	0.000	1.000
ECB <sub>dummy</sub>	91	0.374	0.486	0.000	1.000
ECB_EBA <sub>dummy</sub>	91	0.264	0.443	0.000	1.000
Regulation	91	10.813	1.932	6.000	14.000
Total Liabilities/GDP	91	0.159	0.276	0.000	1.659

This table reports descriptive summary statistics for the independent variables included in the multivariate regression for the 1<sup>st</sup> and 2<sup>nd</sup> events. Total Assets<sub>LN</sub> is the natural logarithm of the total assets (in thousands). The financial ratios (Net Loans/Total Assets, Interest Margin/Total Income, Short Term Funding/Total Assets, Net Income/Total Assets, NPL/Gross Loans, Total Equity/Total Assets, Total Liabilities/GDP) are percentages. The dummies are 0-1 integers. The Regulation variable consists of integer numbers.



Table 7a – Multivariate Analysis on ECB Announcement (October 23<sup>rd</sup> 2013)

Variable	( I )	( II )	( III )	( IV )	( V )	( VI )	( VII )	( VIII )
Total Assets <sub>LN</sub>	0.0000 <i>0.993</i>	0.0004 <i>0.902</i>	0.0002 <i>0.964</i>	-0.0002 <i>0.961</i>	-0.0002 <i>0.953</i>	0.0001 <i>0.986</i>	0.0001 <i>0.974</i>	0.0000 <i>0.999</i>
Net Loans/TA	-0.0004 <i>0.106</i>	-0.0004 <i>0.168</i>	-0.0003 <i>0.225</i>	-0.0003 <i>0.240</i>	-0.0004 <i>0.102</i>	-0.0004 <i>0.127</i>	-0.0004 <i>0.125</i>	-0.0004 <i>0.129</i>
Interest Margin/Total Income	0.0004 <i>0.083<sup>c</sup></i>	0.0003 <i>0.253</i>	0.0002 <i>0.419</i>	0.0002 <i>0.494</i>	0.0004 <i>0.127</i>	0.0003 <i>0.232</i>	0.0003 <i>0.227</i>	0.0003 <i>0.244</i>
Short Term Funding/TA	-0.0003 <i>0.358</i>	-0.0002 <i>0.446</i>	-0.0002 <i>0.556</i>	-0.0001 <i>0.655</i>	-0.0002 <i>0.471</i>	-0.0002 <i>0.466</i>	-0.0002 <i>0.471</i>	-0.0002 <i>0.506</i>
Net Income/TA	0.0056 <i>0.028<sup>b</sup></i>	0.0056 <i>0.027<sup>b</sup></i>	0.0061 <i>0.017<sup>b</sup></i>	0.0062 <i>0.016<sup>b</sup></i>	0.0056 <i>0.028<sup>b</sup></i>	0.0056 <i>0.026<sup>b</sup></i>	0.0056 <i>0.028<sup>b</sup></i>	0.0056 <i>0.028<sup>b</sup></i>
NPL/Gross Loans	0.0021 <i>0.004<sup>a</sup></i>	0.0019 <i>0.013<sup>b</sup></i>	0.0028 <i>0.005<sup>a</sup></i>	0.0028 <i>0.005<sup>a</sup></i>	0.0020 <i>0.007<sup>a</sup></i>	0.0019 <i>0.013<sup>b</sup></i>	0.0018 <i>0.028<sup>b</sup></i>	0.0018 <i>0.028<sup>b</sup></i>
Total Equity/TA	-0.0011 <i>0.043<sup>b</sup></i>	-0.0011 <i>0.042<sup>b</sup></i>	-0.0011 <i>0.053<sup>c</sup></i>	-0.0010 <i>0.063<sup>c</sup></i>	-0.0011 <i>0.049<sup>b</sup></i>	-0.0011 <i>0.039<sup>b</sup></i>	-0.0011 <i>0.040<sup>b</sup></i>	-0.0011 <i>0.044<sup>b</sup></i>
Total Equity/TA * GIPSI <sub>dummy</sub>	-0.0020 <i>0.062<sup>c</sup></i>	-0.0017 <i>0.112</i>	-0.0028 <i>0.037<sup>b</sup></i>	-0.0028 <i>0.035<sup>b</sup></i>	-0.0017 <i>0.103</i>	-0.0015 <i>0.151</i>	-0.0015 <i>0.206</i>	-0.0015 <i>0.208</i>
GIPSI <sub>dummy</sub>	0.0149 <i>0.319</i>	0.0145 <i>0.332</i>	0.0221 <i>0.166</i>	0.0255 <i>0.143</i>	0.0087 <i>0.535</i>	0.0070 <i>0.621</i>	0.0066 <i>0.645</i>	0.0082 <i>0.615</i>
ECB <sub>dummy</sub>	0.2672 <i>0.060<sup>c</sup></i>	0.2332 <i>0.110</i>	0.2258 <i>0.122</i>	0.2247 <i>0.124</i>				
Total Asset <sub>LN</sub> * ECB <sub>dummy</sub>	-0.0160 <i>0.034<sup>b</sup></i>	-0.0163 <i>0.032<sup>b</sup></i>	-0.0159 <i>0.036<sup>b</sup></i>	-0.0157 <i>0.039<sup>b</sup></i>				
Int. Margin/Tot. Income * ECB <sub>dummy</sub>		0.0006 <i>0.306</i>	0.0010 <i>0.149</i>	0.0010 <i>0.142</i>				
NPL/Gross Loans * ECB <sub>dummy</sub>			-0.0025 <i>0.175</i>	-0.0028 <i>0.151</i>				
Regulation				-0.0017 <i>0.625</i>				-0.0007 <i>0.836</i>
ECB_EBA <sub>dummy</sub>					0.3240 <i>0.066<sup>c</sup></i>	0.3272 <i>0.064<sup>c</sup></i>	0.3182 <i>0.084<sup>c</sup></i>	0.3128 <i>0.093<sup>c</sup></i>
Total Asset <sub>LN</sub> * ECB_EBA <sub>dummy</sub>					-0.0185 <i>0.043<sup>b</sup></i>	-0.0214 <i>0.024<sup>b</sup></i>	-0.0209 <i>0.036<sup>b</sup></i>	-0.0205 <i>0.043<sup>b</sup></i>
Int. Margin/Tot. Income * ECB_EBA <sub>dummy</sub>						0.0009 <i>0.237</i>	0.0008 <i>0.353</i>	0.0008 <i>0.368</i>
NPL/Gross Loans * ECB_EBA <sub>dummy</sub>							0.0004 <i>0.866</i>	0.0004 <i>0.879</i>
Intercept	0.0253 <i>0.692</i>	0.0197 <i>0.759</i>	0.0192 <i>0.764</i>	0.0392 <i>0.606</i>	0.0264 <i>0.682</i>	0.0259 <i>0.687</i>	0.0250 <i>0.699</i>	0.0328 <i>0.661</i>
Obs	96	96	96	96	96	96	96	96
Chi2	31.778	32.827	34.668	34.907	31.057	32.453	32.481	32.524
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

This table reports the results of the multivariate analysis we performed over the ECB Announcement of October 23<sup>rd</sup> 2013. The table reports the results of weighted least squares (WLS) regressions of cumulative abnormal returns over the (-3,+2) event window. The table reports the value of the coefficients estimates along with the value of their t-statistics. a, b and c denote significance at the 1%, 5% and 10% levels.

Table 7b - Multivariate Analysis on ECB confirmation of stress test parameters (February 3<sup>rd</sup> 2014)

Variable	( I )	( II )	( III )	( IV )	( V )	( VI )	( VII )	( VIII )
Total Assets <sub>LN</sub>	0.0062 <i>0.026<sup>b</sup></i>	0.0059 <i>0.036<sup>b</sup></i>	0.0058 <i>0.042<sup>b</sup></i>	0.0053 <i>0.070<sup>c</sup></i>	0.0053 <i>0.056<sup>c</sup></i>	0.0054 <i>0.054<sup>c</sup></i>	0.0053 <i>0.060<sup>c</sup></i>	0.0050 <i>0.081<sup>c</sup></i>
Net Loans/TA	0.0003 <i>0.181</i>	0.0002 <i>0.277</i>	0.0003 <i>0.248</i>	0.0002 <i>0.262</i>	0.0002 <i>0.244</i>	0.0003 <i>0.234</i>	0.0003 <i>0.224</i>	0.0003 <i>0.229</i>
Interest Margin/Total Income	-0.0003 <i>0.180</i>	-0.0002 <i>0.443</i>	-0.0002 <i>0.377</i>	-0.0002 <i>0.388</i>	-0.0003 <i>0.241</i>	-0.0003 <i>0.231</i>	-0.0003 <i>0.218</i>	-0.0003 <i>0.228</i>
Short Term Funding/TA	-0.0005 <i>0.028<sup>b</sup></i>	-0.0005 <i>0.029<sup>b</sup></i>	-0.0005 <i>0.037<sup>b</sup></i>	-0.0005 <i>0.051<sup>c</sup></i>	-0.0005 <i>0.028<sup>b</sup></i>	-0.0005 <i>0.027<sup>b</sup></i>	-0.0005 <i>0.025<sup>b</sup></i>	-0.0005 <i>0.030<sup>b</sup></i>
Net Income/TA	-0.0031 <i>0.231</i>	-0.0030 <i>0.248</i>	-0.0027 <i>0.307</i>	-0.0028 <i>0.292</i>	-0.0029 <i>0.268</i>	-0.0029 <i>0.260</i>	-0.0028 <i>0.282</i>	-0.0029 <i>0.271</i>
NPL/Gross Loans	-0.0010 <i>0.148</i>	-0.0009 <i>0.199</i>	-0.0004 <i>0.632</i>	-0.0004 <i>0.669</i>	-0.0011 <i>0.096<sup>c</sup></i>	-0.0012 <i>0.092<sup>c</sup></i>	-0.0010 <i>0.181</i>	-0.0010 <i>0.183</i>
Total Equity/TA	-0.0006 <i>0.247</i>	-0.0006 <i>0.300</i>	-0.0006 <i>0.314</i>	-0.0005 <i>0.366</i>	-0.0006 <i>0.237</i>	-0.0007 <i>0.226</i>	-0.0007 <i>0.217</i>	-0.0007 <i>0.242</i>
Total Equity/TA * GIPSI <sub>dummy</sub>	0.0000 <i>0.979</i>	-0.0002 <i>0.862</i>	-0.0007 <i>0.574</i>	-0.0008 <i>0.527</i>	0.0003 <i>0.774</i>	0.0004 <i>0.746</i>	0.0002 <i>0.840</i>	0.0002 <i>0.871</i>
GIPSI <sub>dummy</sub>	0.0303 <i>0.037<sup>b</sup></i>	0.0305 <i>0.035<sup>b</sup></i>	0.0337 <i>0.024<sup>b</sup></i>	0.0378 <i>0.020<sup>b</sup></i>	0.0215 <i>0.109</i>	0.0212 <i>0.115</i>	0.0216 <i>0.110</i>	0.0242 <i>0.113</i>
ECB <sub>dummy</sub>	0.0285 <i>0.812</i>	0.0581 <i>0.639</i>	0.0656 <i>0.597</i>	0.0683 <i>0.582</i>				
Total Asset <sub>LN</sub> * ECB <sub>dummy</sub>	-0.0021 <i>0.742</i>	-0.0021 <i>0.736</i>	-0.0024 <i>0.706</i>	-0.0024 <i>0.710</i>				
Int. Margin/Tot. Income * ECB <sub>dummy</sub>		-0.0005 <i>0.348</i>	-0.0003 <i>0.512</i>	-0.0003 <i>0.514</i>				
NPL/Gross Loans * ECB <sub>dummy</sub>			-0.0011 <i>0.340</i>	-0.0013 <i>0.277</i>				
Regulation				-0.0017 <i>0.531</i>				-0.0010 <i>0.709</i>
ECB_EBA <sub>dummy</sub>					0.2011 <i>0.171</i>	0.2006 <i>0.172</i>	0.2188 <i>0.156</i>	0.2145 <i>0.165</i>
Total Asset <sub>LN</sub> * ECB_EBA <sub>dummy</sub>					-0.0102 <i>0.185</i>	-0.0106 <i>0.176</i>	-0.0117 <i>0.160</i>	-0.0114 <i>0.173</i>
Int. Margin/Tot. Income * ECB_EBA <sub>dummy</sub>						0.0002 <i>0.787</i>	0.0003 <i>0.665</i>	0.0003 <i>0.674</i>
NPL/Gross Loans * ECB_EBA <sub>dummy</sub>							-0.0006 <i>0.694</i>	-0.0007 <i>0.653</i>
Intercept	-0.0672 <i>0.203</i>	-0.0662 <i>0.210</i>	-0.0660 <i>0.211</i>	-0.0432 <i>0.500</i>	-0.0540 <i>0.305</i>	-0.0534 <i>0.311</i>	-0.0514 <i>0.332</i>	-0.0384 <i>0.545</i>
Obs	96	96	96	96	96	96	96	96
Chi2	30.463	31.344	32.255	32.648	31.646	31.719	31.874	32.014
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

This table reports the results of the multivariate analysis we performed over the ECB confirmation of stress test parameters of February 3<sup>rd</sup> 2014. The table reports the results of weighted least squares (WLS) regressions of cumulative abnormal returns over the (-3,+2) event window. The table reports the value of the coefficients estimates along with the value of their t-statistics. a, b and c denote significance at the 1%, 5% and 10% levels.

Table 7c - Multivariate Analysis on ECB publication of manual for asset quality review (March 11<sup>th</sup> 2014)

Variable	( I )	( II )	( III )	( IV )	( V )	( VI )	( VII )	( VIII )
Total Assets <sub>LN</sub>	0.0002 <i>0.940</i>	0.0000 <i>0.997</i>	-0.0002 <i>0.953</i>	0.0000 <i>0.996</i>	0.0008 <i>0.762</i>	0.0004 <i>0.884</i>	0.0000 <i>0.995</i>	0.0001 <i>0.969</i>
Net Loans/TA	0.0001 <i>0.557</i>	0.0001 <i>0.667</i>	0.0001 <i>0.613</i>	0.0001 <i>0.606</i>	0.0002 <i>0.411</i>	0.0001 <i>0.597</i>	0.0001 <i>0.524</i>	0.0001 <i>0.520</i>
Interest Margin/Total Income	-0.0001 <i>0.763</i>	0.0000 <i>0.988</i>	0.0000 <i>0.906</i>	0.0000 <i>0.900</i>	-0.0001 <i>0.700</i>	0.0001 <i>0.791</i>	0.0000 <i>0.920</i>	0.0000 <i>0.930</i>
Short Term Funding/TA	-0.0001 <i>0.661</i>	-0.0001 <i>0.670</i>	-0.0001 <i>0.743</i>	-0.0001 <i>0.721</i>	-0.0001 <i>0.569</i>	-0.0001 <i>0.770</i>	-0.0001 <i>0.696</i>	-0.0001 <i>0.681</i>
Net Income/TA	-0.0068 <i>0.005<sup>a</sup></i>	-0.0067 <i>0.005<sup>a</sup></i>	-0.0064 <i>0.008<sup>a</sup></i>	-0.0064 <i>0.009<sup>a</sup></i>	-0.0072 <i>0.002<sup>a</sup></i>	-0.0068 <i>0.004<sup>a</sup></i>	-0.0064 <i>0.008<sup>a</sup></i>	-0.0064 <i>0.008<sup>a</sup></i>
NPL/Gross Loans	0.0002 <i>0.797</i>	0.0002 <i>0.726</i>	0.0007 <i>0.372</i>	0.0007 <i>0.383</i>	0.0002 <i>0.708</i>	0.0005 <i>0.468</i>	0.0009 <i>0.184</i>	0.0009 <i>0.185</i>
Total Equity/TA	0.0002 <i>0.721</i>	0.0002 <i>0.667</i>	0.0002 <i>0.644</i>	0.0002 <i>0.670</i>	0.0002 <i>0.714</i>	0.0003 <i>0.501</i>	0.0003 <i>0.569</i>	0.0003 <i>0.591</i>
Total Equity/TA * GIPSI <sub>dummy</sub>	-0.0026 <i>0.017<sup>b</sup></i>	-0.0027 <i>0.014<sup>b</sup></i>	-0.0032 <i>0.008<sup>a</sup></i>	-0.0032 <i>0.009<sup>a</sup></i>	-0.0029 <i>0.006<sup>a</sup></i>	-0.0032 <i>0.003<sup>a</sup></i>	-0.0037 <i>0.001<sup>a</sup></i>	-0.0037 <i>0.001<sup>a</sup></i>
GIPSI <sub>dummy</sub>	0.0218 <i>0.103</i>	0.0220 <i>0.101</i>	0.0251 <i>0.067<sup>c</sup></i>	0.0239 <i>0.111</i>	0.0305 <i>0.014<sup>b</sup></i>	0.0326 <i>0.009<sup>a</sup></i>	0.0339 <i>0.006<sup>a</sup></i>	0.0326 <i>0.021<sup>b</sup></i>
ECB <sub>dummy</sub>	0.1515 <i>0.170</i>	0.1696 <i>0.137</i>	0.1771 <i>0.121</i>	0.1763 <i>0.123</i>				
Total Asset <sub>LN</sub> * ECB <sub>dummy</sub>	-0.0078 <i>0.186</i>	-0.0078 <i>0.184</i>	-0.0081 <i>0.170</i>	-0.0081 <i>0.170</i>				
Int. Margin/Tot. Income * ECB <sub>dummy</sub>		-0.0003 <i>0.533</i>	-0.0002 <i>0.742</i>	-0.0002 <i>0.741</i>				
NPL/Gross Loans * ECB <sub>dummy</sub>			-0.0011 <i>0.300</i>	-0.0011 <i>0.345</i>				
Regulation				0.0005 <i>0.837</i>				0.0005 <i>0.845</i>
ECB_EBA <sub>dummy</sub>					0.0283 <i>0.834</i>	0.0314 <i>0.817</i>	0.0967 <i>0.496</i>	0.0987 <i>0.488</i>
Total Asset <sub>LN</sub> * ECB_EBA <sub>dummy</sub>					-0.0021 <i>0.769</i>	0.0011 <i>0.879</i>	-0.0027 <i>0.728</i>	-0.0028 <i>0.715</i>
Int. Margin/Tot. Income * ECB_EBA <sub>dummy</sub>						-0.0011 <i>0.050<sup>c</sup></i>	-0.0006 <i>0.364</i>	-0.0006 <i>0.367</i>
NPL/Gross Loans * ECB_EBA <sub>dummy</sub>							-0.0020 <i>0.125</i>	-0.0020 <i>0.138</i>
Intercept	0.0060 <i>0.902</i>	0.0066 <i>0.892</i>	0.0068 <i>0.889</i>	-0.0001 <i>0.998</i>	-0.0016 <i>0.973</i>	-0.0056 <i>0.908</i>	0.0017 <i>0.973</i>	-0.0046 <i>0.937</i>
Obs	96	96	96	96	96	96	96	96
Chi2	18.492	18.880	19.953	19.995	17.545	21.376	23.730	23.769
Prob	0.07	0.09	0.09	0.13	0.03	0.04	0.03	0.04

This table reports the results of the multivariate analysis we performed over the ECB publication of manual for asset quality review of March 11<sup>th</sup> 2014. The table reports the results of weighted least squares (WLS) regressions of cumulative abnormal returns over the (-3,+2) event window. The table reports the value of the coefficients estimates along with the value of their t-statistics. a, b and c denote significance at the 1%, 5% and 10% levels.

Table 7d - Multivariate Analysis on ECB note on the comprehensive assessment (July 17<sup>th</sup> 2014)

Variable	( I )	( II )	( III )	( IV )	( V )	( VI )	( VII )	( VIII )
Total Assets <sub>LN</sub>	0.0026 <i>0.423</i>	0.0017 <i>0.598</i>	0.0017 <i>0.614</i>	0.0020 <i>0.571</i>	0.0013 <i>0.714</i>	0.0010 <i>0.774</i>	0.0012 <i>0.740</i>	0.0014 <i>0.707</i>
Net Loans/TA	0.0000 <i>0.883</i>	-0.0001 <i>0.748</i>	-0.0001 <i>0.758</i>	-0.0001 <i>0.778</i>	0.0000 <i>0.955</i>	0.0000 <i>0.928</i>	0.0000 <i>0.900</i>	0.0000 <i>0.909</i>
Interest Margin/Total Income	0.0001 <i>0.824</i>	0.0002 <i>0.458</i>	0.0002 <i>0.470</i>	0.0002 <i>0.480</i>	0.0000 <i>0.892</i>	0.0001 <i>0.651</i>	0.0001 <i>0.617</i>	0.0001 <i>0.629</i>
Short Term Funding/TA	0.0001 <i>0.631</i>	0.0002 <i>0.605</i>	0.0002 <i>0.600</i>	0.0001 <i>0.642</i>	0.0001 <i>0.622</i>	0.0002 <i>0.530</i>	0.0002 <i>0.510</i>	0.0002 <i>0.532</i>
Net Income/TA	0.0122 <i>0.000<sup>a</sup></i>	0.0123 <i>0.000<sup>a</sup></i>	0.0124 <i>0.000<sup>a</sup></i>	0.0125 <i>0.000<sup>a</sup></i>	0.0124 <i>0.000<sup>a</sup></i>	0.0127 <i>0.000<sup>a</sup></i>	0.0125 <i>0.000<sup>a</sup></i>	0.0126 <i>0.000<sup>a</sup></i>
NPL/Gross Loans	0.0019 <i>0.023<sup>b</sup></i>	0.0022 <i>0.012<sup>b</sup></i>	0.0023 <i>0.028<sup>b</sup></i>	0.0022 <i>0.031<sup>b</sup></i>	0.0020 <i>0.020<sup>b</sup></i>	0.0021 <i>0.013<sup>b</sup></i>	0.0019 <i>0.044<sup>b</sup></i>	0.0019 <i>0.044<sup>b</sup></i>
Total Equity/TA	-0.0004 <i>0.579</i>	-0.0003 <i>0.714</i>	-0.0003 <i>0.714</i>	-0.0003 <i>0.684</i>	-0.0004 <i>0.567</i>	-0.0003 <i>0.687</i>	-0.0003 <i>0.711</i>	-0.0003 <i>0.690</i>
Total Equity/TA * GIPSI <sub>dummy</sub>	-0.0010 <i>0.484</i>	-0.0015 <i>0.313</i>	-0.0016 <i>0.322</i>	-0.0016 <i>0.343</i>	-0.0011 <i>0.442</i>	-0.0013 <i>0.361</i>	-0.0011 <i>0.454</i>	-0.0011 <i>0.471</i>
GIPSI <sub>dummy</sub>	-0.0057 <i>0.748</i>	-0.0021 <i>0.908</i>	-0.0015 <i>0.935</i>	-0.0038 <i>0.847</i>	-0.0043 <i>0.797</i>	-0.0029 <i>0.864</i>	-0.0034 <i>0.840</i>	-0.0055 <i>0.775</i>
ECB <sub>dummy</sub>	-0.0098 <i>0.746</i>	-0.0111 <i>0.715</i>	-0.0110 <i>0.716</i>	-0.0126 <i>0.682</i>				
Total Asset <sub>LN</sub> * ECB <sub>dummy</sub>	0.0004 <i>0.780</i>	0.0035 <i>0.191</i>	0.0035 <i>0.195</i>	0.0034 <i>0.198</i>				
Int. Margin/Tot. Income * ECB <sub>dummy</sub>		-0.0010 <i>0.154</i>	-0.0009 <i>0.218</i>	-0.0009 <i>0.218</i>				
NPL/Gross Loans * ECB <sub>dummy</sub>			-0.0003 <i>0.874</i>	-0.0001 <i>0.935</i>				
Regulation				0.0010 <i>0.767</i>				0.0008 <i>0.817</i>
ECB_EBA <sub>dummy</sub>					-0.1686 <i>0.361</i>	-0.1662 <i>0.368</i>	-0.1928 <i>0.318</i>	-0.1897 <i>0.327</i>
Total Asset <sub>LN</sub> * ECB_EBA <sub>dummy</sub>					0.0089 <i>0.353</i>	0.0111 <i>0.259</i>	0.0127 <i>0.223</i>	0.0124 <i>0.234</i>
Int. Margin/Tot. Income * ECB_EBA <sub>dummy</sub>						-0.0008 <i>0.314</i>	-0.0010 <i>0.270</i>	-0.0010 <i>0.274</i>
NPL/Gross Loans * ECB_EBA <sub>dummy</sub>							0.0008 <i>0.643</i>	0.0009 <i>0.621</i>
Intercept	-0.0728 <i>0.248</i>	-0.0672 <i>0.288</i>	-0.0666 <i>0.293</i>	-0.0801 <i>0.304</i>	-0.0540 <i>0.414</i>	-0.0569 <i>0.390</i>	-0.0599 <i>0.367</i>	-0.0700 <i>0.378</i>
Obs	94	94	94	94	94	94	94	94
Chi2	29.168	31.202	31.227	31.315	29.946	30.958	31.173	31.227
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

This table reports the results of the multivariate analysis we performed over the ECB note on the comprehensive assessment of July 17<sup>th</sup> 2014. The table reports the results of weighted least squares (WLS) regressions of cumulative abnormal returns over the (-3,+2) event window. The table reports the value of the coefficients estimates along with the value of their t-statistics. a, b and c denote significance at the 1%, 5% and 10% levels.

Table 7e - Robustness Test on ECB confirmation of stress test parameters (February 3<sup>rd</sup> 2014)

Variable	( I )	( II )	( III )	( IV )	( V )	( VI )	( VII )	( VIII )
Total Asset <sub>tLN</sub>	0.0071 <i>0.044<sup>b</sup></i>	0.0067 <i>0.060<sup>c</sup></i>	0.0065 <i>0.069<sup>c</sup></i>	0.0059 <i>0.115</i>	0.0062 <i>0.074<sup>c</sup></i>	0.0065 <i>0.067<sup>c</sup></i>	0.0064 <i>0.069<sup>c</sup></i>	0.0061 <i>0.095<sup>c</sup></i>
Net Loans/TA	0.0003 <i>0.155</i>	0.0003 <i>0.231</i>	0.0003 <i>0.213</i>	0.0003 <i>0.225</i>	0.0003 <i>0.244</i>	0.0003 <i>0.221</i>	0.0003 <i>0.216</i>	0.0003 <i>0.220</i>
Int. Margin/Tot. Income	-0.0003 <i>0.206</i>	-0.0002 <i>0.472</i>	-0.0002 <i>0.427</i>	-0.0002 <i>0.455</i>	-0.0003 <i>0.287</i>	-0.0003 <i>0.241</i>	-0.0003 <i>0.230</i>	-0.0003 <i>0.246</i>
Short Term Funding/TA	-0.0005 <i>0.063<sup>c</sup></i>	-0.0005 <i>0.072<sup>c</sup></i>	-0.0005 <i>0.084<sup>c</sup></i>	-0.0004 <i>0.108</i>	-0.0005 <i>0.070<sup>c</sup></i>	-0.0005 <i>0.061<sup>c</sup></i>	-0.0005 <i>0.058<sup>c</sup></i>	-0.0005 <i>0.066<sup>c</sup></i>
Net Income/TA	-0.0067 <i>0.045<sup>b</sup></i>	-0.0065 <i>0.052<sup>c</sup></i>	-0.0061 <i>0.073<sup>c</sup></i>	-0.0061 <i>0.074<sup>c</sup></i>	-0.0060 <i>0.067<sup>c</sup></i>	-0.0062 <i>0.061<sup>c</sup></i>	-0.0060 <i>0.071<sup>c</sup></i>	-0.0061 <i>0.070<sup>c</sup></i>
NPL/Gross Loans	-0.0012 <i>0.086<sup>c</sup></i>	-0.0011 <i>0.113</i>	-0.0008 <i>0.391</i>	-0.0007 <i>0.425</i>	-0.0014 <i>0.058<sup>c</sup></i>	-0.0014 <i>0.050<sup>c</sup></i>	-0.0013 <i>0.112</i>	-0.0013 <i>0.114</i>
Total Equity/TA	-0.0014 <i>0.113</i>	-0.0014 <i>0.126</i>	-0.0013 <i>0.139</i>	-0.0013 <i>0.145</i>	-0.0014 <i>0.115</i>	-0.0015 <i>0.104</i>	-0.0015 <i>0.103</i>	-0.0015 <i>0.104</i>
Total Equity/TA * GIPSI <sub>dummy</sub>	0.0003 <i>0.810</i>	0.0002 <i>0.884</i>	-0.0002 <i>0.872</i>	-0.0003 <i>0.840</i>	0.0008 <i>0.550</i>	0.0008 <i>0.512</i>	0.0007 <i>0.589</i>	0.0007 <i>0.601</i>
GIPSI <sub>dummy</sub>	0.0301 <i>0.050<sup>c</sup></i>	0.0302 <i>0.049<sup>b</sup></i>	0.0326 <i>0.038<sup>b</sup></i>	0.0360 <i>0.033<sup>b</sup></i>	0.0191 <i>0.182</i>	0.0184 <i>0.199</i>	0.0187 <i>0.194</i>	0.0209 <i>0.190</i>
ECB <sub>dummy</sub>	0.0091 <i>0.944</i>	0.0368 <i>0.783</i>	0.0452 <i>0.736</i>	0.0482 <i>0.719</i>				
Total Asset <sub>tLN</sub> * ECB <sub>dummy</sub>	-0.0012 <i>0.862</i>	-0.0013 <i>0.853</i>	-0.0016 <i>0.818</i>	-0.0016 <i>0.823</i>				
Int. Margin/Tot. Income * ECB <sub>dummy</sub>		-0.0004 <i>0.408</i>	-0.0003 <i>0.533</i>	-0.0003 <i>0.524</i>				
NPL/Gross Loans * ECB <sub>dummy</sub>			-0.0009 <i>0.473</i>	-0.0011 <i>0.399</i>				
Regulation				-0.0016 <i>0.583</i>				-0.0009 <i>0.748</i>
ECB_EBA <sub>dummy</sub>					0.1967 <i>0.197</i>	0.1950 <i>0.201</i>	0.2101 <i>0.186</i>	0.2056 <i>0.197</i>
Total Asset <sub>tLN</sub> * ECB_EBA <sub>dummy</sub>					-0.0099 <i>0.218</i>	-0.0107 <i>0.190</i>	-0.0116 <i>0.176</i>	-0.0113 <i>0.192</i>
Int. Margin/Tot. Income * ECB_EBA <sub>dummy</sub>						0.0003 <i>0.614</i>	0.0005 <i>0.542</i>	0.0004 <i>0.556</i>
NPL/Gross Loans * ECB_EBA <sub>dummy</sub>							-0.0005 <i>0.732</i>	-0.0006 <i>0.697</i>
Total Liabilities/GDP	-0.0097 <i>0.659</i>	-0.0086 <i>0.697</i>	-0.0073 <i>0.740</i>	-0.0064 <i>0.770</i>	-0.0147 <i>0.506</i>	-0.0164 <i>0.463</i>	-0.0176 <i>0.437</i>	-0.0173 <i>0.445</i>
Intercept	-0.0739 <i>0.274</i>	-0.0724 <i>0.284</i>	-0.0716 <i>0.290</i>	-0.0484 <i>0.544</i>	-0.0621 <i>0.357</i>	-0.0615 <i>0.362</i>	-0.0602 <i>0.372</i>	-0.0474 <i>0.545</i>
Obs	91	91	91	91	91	91	91	91
Chi2	32.475	33.159	33.674	33.974	33.362	33.617	33.735	33.838
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

This table reports the results of the robust analysis we performed over the ECB confirmation of stress test parameters of February 3<sup>rd</sup> 2014. The table reports the results of weighted least squares (WLS) regressions of cumulative abnormal returns over the (-3,+2) event window. The table reports the value of the coefficients estimates along with the value of their t-statistics. a, b and c denote significance at the 1%, 5% and 10% levels.