HOW DOES BAIL-IN ALTERS THE MAGNITUDE OF INVESTORS' RISK PERCEPTION?

Master Thesis – HEC Paris
June 2018

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Table of Contents

Section I Executive Summary

The notion of a functioning market economy asserts that when a company turns insolvent, it should exit the market in an orderly manner, and not be allowed to destroy economic value on a continuing basis. This undisputed precondition, however, has since been challenged as evidenced by the financial crisis of 2007-2008, which oversaw the affirmation of the "too big to fail" notion. Acts of sovereign guarantees and its associated bail-out expectations have instead impacted upon the cost of funding and distorted the risk-taking behaviours of financial institutions, as taxpayers unwillingly became the economic scapegoat of these actions.

The aversion of a full-blown meltdown of the entire industry has also reflected the lack of appropriate tools for the effective resolution of banks. Driven by the desire to remedy this unsatisfactory set of circumstances, Europe responded swiftly with the establishment of the Banking Recovery and Resolution Directive (BRRD), which seeks to achieve financial stability through transparency and incentivizing market discipline. The crux of BRRD pertains to Bail-in, a mechanism which seeks to reduce the moral hazard of financial institutions by advocating for skin in the game, as a rational and ethical heuristic for risk-taking.

The efficacy of these reform efforts hinges upon the credibility and flexibility in resolution frameworks. Regimes that are perceived to be overtly constraining may have adverse consequences on financial stability. However, the converse of this argument may potentially increase fiscal risk whilst perpetuating too-big-to-fail premium. Ideally, resolution frameworks should afford the latitude for authorities to provide financial assistance in the event of bank failures only in exceptional cases, where imposing excessive losses on private stakeholders may result in large spillovers.

In the context of this thesis, we are keen to determine the implications of Bail-in events by quantifying the magnitude of change in investors' risk perception. By extension, we seek to affirm the credibility of resolution events by addressing whether these Bail-in initiatives helped convince investors that bail-outs would be less probable in the future or whether the event has already been priced in. Referencing from various Bail-in initiatives across Europe, we seek to establish a commonality across the credibility of resolution regimes by verifying empirically how strongly investors react to resolution events.

To effectively quantify the impact of Bail-in in altering investor's risk perception, our event study methodology consists of an event study analysis on the historical samples of stock return and CDS spreads series of Greek and Spanish banks, followed by a quantitative analysis on the defined event windows. The market model engenders the crux of our analysis, as we examined the abnormal stock returns and abnormal CDS spreads prior and post Bail-in announcement/approval, whilst considering the magnitude and statistical significance of these observations.

This paper seeks to determine the efficacy of Bail-in in influencing investor's perspective, with a distinct focus on resolution cases from Greece, Spain and United Kingdom. As demonstrated quantitatively, credible Bail-in attains the desired outcome of market discipline by affording a negative influence on investor's expectations, considerable in both magnitude and significance. In addition, a consensual Bail-in provides an outlook that is more favourable than the traditional Bail-in process within resolution, ensuring the certainty of ownership rights.

Section II Bank Resolution in the European Union

During the Global Financial Crisis, national authorities faced a steep policy trade-off in mitigating the impact of systemic bank failures by resorting to public bail-outs. This strategy fuelled strong public resentment against the deployment of scarce fiscal resources to rescue financial institutions, especially given the fiscal consolidation efforts that follow suit. In addition, the use of public bail-outs reignited the debate regarding moral hazard pertaining to the behaviour of financial institutions. The perception of a lack of consequences for those attributed towards the banks' losses further augmented this concern and tainted the public's outlook concerning the handling of the Crisis.

Policy debate and academic literature have long established that bail-outs entail a policy trade-off between ex ante and ex post efficiency. On the one hand, expectations of public financial support for distressed financial institutions may undermine market discipline, leading to excessive risk taking. Expectations of a bail-out may also incite a leverage cycle as observed by Geanakoplos (2010), seeding financial vulnerabilities that may precipitate a crisis. On the other hand, the use of public resources to support the financial sector during a crisis may sometimes be necessitated to contain the effects of system-wide financial distress. Hence, policymakers strive towards attaining a delicate balance between these two effects — by determining where to position the system along the trade-off — and how to refine the trade-off itself.

Considering these constraints, recent regulatory reforms have placed significant emphasis on reducing the need for and mitigating the risk of future bail-outs by improving the viability of Bail-ins. A European response to mitigate these ramifications conceived the Single Supervisory Mechanism (SSM) in 2013, and the Single Resolution Mechanism (SRM)[1] in 2014. Notably, the SRM advocates for stronger resolution powers to facilitate orderly bail-ins, whilst affording some flexibility to provide public funding to preserve financial stability and contain the macroeconomic consequences of a systemic crisis. The consensus remains that bail-outs need to be interpreted as the exception rather than the rules.

Resolution regimes that can allocate losses effectively among bank stakeholders address the current regulatory vulnerabilities. First, the effects of skin in the game for stakeholders impose greater discipline on managers, which translates into a reduction of leverage and excessive risk taking. In turn, this reduces the likelihood of bank failures. Second, the acknowledgement of the potential for loss and advocation for adequate loss-absorbing capacity reduce the risk of systemic spillovers. Third, by affording clarity ex ante regarding how losses would accrue to private creditors in resolution, these frameworks may assist in addressing cross-border burden-sharing issues. In particular, they reduce the direct fiscal cost of the crisis and may contribute towards weakening the feedback effects of sovereign-bank nexus as observed by Buch, Koetter, Ohls (2013).

[1]European Banking Union (BU): Single Resolution Mechanism (No 806/2014)

Section III Efficacy of Bank Resolution in Altering Investors' Risk Perception

The efficacy of these reform efforts hinges upon the credibility and flexibility in resolution frameworks. Regimes that are perceived to be overtly constraining may have adverse consequences on financial stability. Notably, if a regime precludes exempting creditors from Bail-in regardless of circumstances, the rigidity might precipitate into negative externalities on society through systemic spillovers. However, the converse of this argument may potentially increase fiscal risk whilst perpetuating too-big-to-fail premium. Ideally, resolution frameworks should afford the latitude for authorities to provide financial assistance in the event of bank failures only in exceptional cases where imposing excessive losses on private stakeholders may result in large spillovers. In addition, attention needs to be asserted regarding good practices in the provision of public funding, as a means of last resort in order to safeguard taxpayers' interests.

In the context of this thesis, we are keen to determine the implications of Bail-in events by quantifying the magnitude of change in investors' risk perception. By extension, we seek to affirm the credibility of resolution events by addressing whether these Bail-in initiatives helped convince investors that bail-outs would be less probable in the future or whether the event has already been priced in. Hence, drawing from Beck, Todorov, and Wagner (2013), a significant change in investors' risk perception signals either that resolution occurred "early", as investors were not aware of the severity of the situation the bank was in, or that investors expected a bail-out and were surprised by the occurrence of a Bail-in. Referencing from various Bail-in initiatives across Europe, we seek to establish a commonality across the credibility of resolution regimes by empirically verifying how strongly investors react to resolution events.

Section IV Event Study Methodology

1. Stock Return & CDS Spread Reaction to Special Events

To effectively quantify the impact of Bail-in in altering investor's risk perception, we must first identify the appropriate financial instruments or metrics which reflect changes in investors' outlook most readily. Hence, we are keen to investigate the reactions of CDS spreads (credit investors' perspective) and stock returns (equity investors' perspective) in response to the announcement and approval of a Bail-in.

A single-name CDS contract is an insurance contract covering the risk that a specified credit default. Following a defined credit event, the protection buyer receives a payment from the protection seller to compensate for credit losses. In exchange for the transfer of credit risk, the protection buyer pays a premium to the protection seller over the life span of the contract. The rationale for using CDS spreads over corporate bond spreads to obtain insights on debtholders' reactions lies in (i) the standardized maturities of CDS contracts which ease comparisons across banks; in contrast, bonds are being issued on a continuous basis with varying maturities and different structures; (ii) the definition of CDS spreads as a pure measure of default risk, since CDS are products for the trading of credit risk correlations (as such, they are not as influenced by other risk factors as bonds are); and (iii) high liquidity attributed to the standardised nature of CDS contracts, coupled by the possibility for market participants to go long credit risk without a cash payment or go short credit risk at a lower cost than with corporate bonds (Benkert 2004, Kasapis 2008)[2].

In addition to these assertions, CDS spreads were demonstrated to lead bond spreads in the price discovery process of credit risk (Blanco, Brennan, Marsh 2005), explained by the fact that CDS are much more liquid contracts to trade credit risk. Moreover, CDS spreads are expected to react not only faster, but also more strongly to new information (Blanco and al. 2005)[3]. A recent study by Coudert (2013) shows that the contribution to price discovery of CDS for financial institutions was more important than the contribution of bonds in this process[4]. Following a Bail-in announcement, we should expect the reduced expectations of a bail-out to be reflected in a rise of CDS spreads.

Unexpected events can alter the stock price pattern of a bank by changing its profit potential and riskiness. Investors are however uncertain regarding the timing and magnitude of said reaction. The equity markets quickly integrate public information pertaining to an impending event and relay it as changes in stock prices before the event actually occurs. Under the Efficient Market Hypothesis (EMH), security prices should disseminate new information readily and react promptly[5]. Following a Bail-in announcement, we should expect the reduced expectations of a bail-out to be translated into a curtail in stock returns.

We commence by performing an event study analysis on the historical samples of stock return and CDS spreads series of Greek and Spanish banks, followed by a quantitative analysis on the defined event windows. For the quantitative analysis, we seek to establish if the observations of the defined event windows are consistent across the Bail-in cases of interest.

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[2] Kasapis, A., *Mastering Credit Derivatives. A step-by-step guide to credit derivatives and structured credit,* Pearson Education, 2008; Benkert, C., "Explaining Credit Default Swap Premia", *Journal of Futures*, 2004, p.76: "*Dealing with CDS quotes is comparable to having a sample of corporate bonds that trade at par on each and every day*"

[3] Blanco, R., Brennan, S., Marsh, I. W., « An Empricical Analysis of the Dynamic Relation between Investment-Grade Bonds and Credit Default Swaps », *Journal of Finance*, 60/5: 2255-2281, 2005

[4] Coudert, V., Gex, M., « The Interactions between the Credit Default Swap and the Bond Markets in Financial Turmoil », *Review of International Economics*, vol 21, July 2013 : « *We run panel vector error correction model estimations, showing that the CDS market has a lead over the bond market for financial institutions.* ».

[5] Fama, E. F. and *al.*, « The Adjustment of Stock Prices to New Information », *International Economic Review*, Vol. 10, February 1969

2. Special Event Identification & Bank Selection

To provide some insights regarding the financial markets' reactions to new information, we split the timelines into event windows, whose boundaries are identified by the "Announcement" and "Approval" dates. "Announcement" dates correspond to Bail-in measure announcements by the European Commission, the national authorities, or the National Stability Fund. "Approval" dates correspond to the official dates of approval by the European Commission or the National Stability Fund. The validity and credibility of those dates have been confirmed by the European Commission's public decision on the State Aid published on its official website[6].

We expect the effects to differ depending on whether the bank is deemed systematically important ("Too Big To Fail") and whether it originates from a European crisis country (GIIPS). The impact of a Bail-in on CDS spreads and stock returns is likely to be stronger on a systemically important bank than a smaller one and on a bank from a GIIPS country since the country of origin is already considered as more vulnerable and with less fiscal capacity to bail-out or offer state aid to the failing banks[7]. In addition, we also included an analysis of a consensual Bail-in regime for the Co-operative Bank of United Kingdom, drawing empirical evidences from a technical study conducted by Vallée et al. (2016).

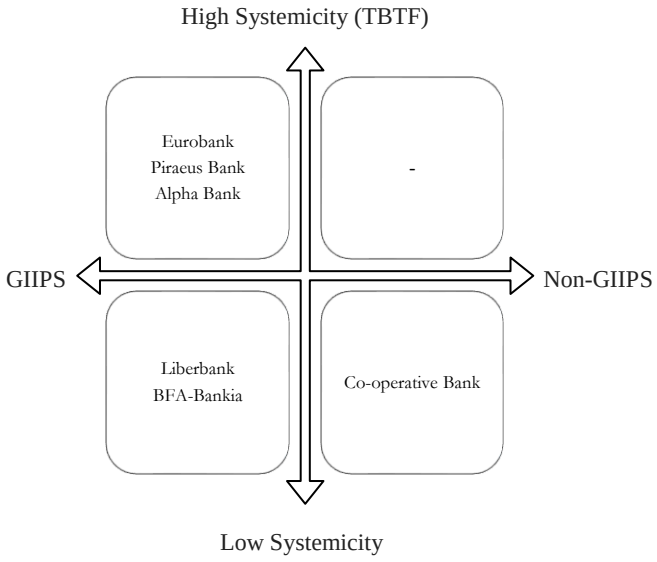

Figure 1: Identification Matrix[8]

3. Hypotheses

Hypothesis [1] – Effect of Bail-in Announcement & Approval

Under the presumption of credibility, Bail-in announcements should translate into an increased likelihood of loss, compared to a situation where the failing bank could be bailed out. The write-downs or conversions to equity are expected to be performed until the failing institution is recapitalized. Therefore, a Bail-in announcement and approval should trigger a decline in stock returns and a corresponding rise in CDS spreads of failing institutions' issued bonds[9].

[6] http://ec.europa.eu/competition/state_aid/register/
[7] « *A notable result is that the bail-in had a much stronger impact on CDS spreads for banks located in GIIPS than in non-GIIPS*. », German Council Of Economic Experts, « Getting to Bail-in : Effects of CReditor Participation in European Bank Restructuring », Working Paper 08/2014, November 2014
[8] The list of Other Systemically Important Institutions (O-SIIs) is released every year by the ECB and follows the criteria of EBA guidelines. Although not as systemically important as G-SIBs, their systemic importance creates risks to financial stability and may bring negative externalities contributing to market distorsions : http://www.eba.europa.eu/risk-analysis-and-data/other-systemically-important-institutions-o-siis-/2017
[9] « The price relationship between CDS spreads and equity prices has to be opposite », Yoon Sook Kim, *Equity Prices, Credit Default Swaps, and Bond Spreads in Emerging Markets*, IMF, 2004, p.9

CDS spreads and stock returns are expected to be negatively correlated, with the linkage assumed to be stronger under situations of financial distress as demonstrated by the Merton model (1974)[10]. This model validates that the default probability is a non-linear function of the equity price, the asset price volatility and the gearing ratio. The decline in stock prices results in an increase in leverage, which leads to a higher default risk and CDS spreads. Therefore, the CDS and stock prices should be negatively correlated, especially when default risk, and similarly Bail-in risk, surges (Fund and *al*, 2008)[11].

Hypothesis [2] – Magnitude of the Effect

The magnitude of implementing a pecking-order burden sharing in favour of cost socialisation is reliant upon the pre-defined waterfall of eligible financial instruments. The impact of a Bail-in announcement and approval should have a substantial implication on the more Junior debtholders and Equity investors, in contrast to the Senior debtholders (especially retail investors and depositors).

The latter will unequivocally possess a lower perceived probability of loss following a Bail-in announcement, since their financial instruments would unlikely be at stake, being ranked the highest in the pecking-order hierarchy[12]. Following this perceived change in the probability of loss, Subordinated debt, Junior bond and Equity investors should necessitate a higher return in exchange for taking on more risk than Senior debtholders.

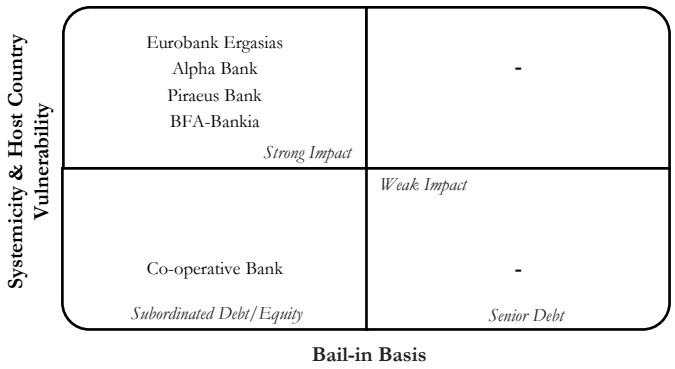

Figure 2: Magnitude of Bail-in Impact Assessment Matrix

4. Data Collection

Daily equity prices and CDS daily mid-spreads for Senior and Subordinated debt were obtained from Capital IQ. We focused on CDS daily mid-spreads for Subordinated debt with maturities of five and ten years. A five-year CDS contract is likely to be the most liquid tenor available, and hence, the most traded instrument to hedge against credit risk exposure (Gregory, 2012)[13]. We extracted both the senior and subordinated CDS spreads whenever available. The subordinated CDS spreads are postulated to be more volatile and sensitive to the evolution of the banks' risk profiles and ability to repay their creditors, as Subordinated debtholders are more exposed to the impact of a Bail-in than Senior debtholders.

For the smaller banks in our event study, there is little to no data regarding CDS spreads available on Capital IQ or Thomson Reuters Datastream. We chose not to include them in our analysis as the frequency of trading relative to the event window is of paramount importance (Campbell, MacKinlay, 2012)[14].

[10] Merton, R., On the Pricing of Corporate Debt: The Risk Structure of Interest Rates. *Journal of Finance* 29, 1974, pp. 449–470
[11] Fung, Hung-Gay, G. E. Sierra, J. Yau, and G. Zhang, « Are the U.S. Stock Market and Credit Default Swap Market Related ? Evidence from the CDX Indices », *Journal of Alternative Investments*, 11, 2008 43-61
[12] In all the cases we selected, senior debt was not defined as eligible financial instruments for the bail-ins
[13] Gregory, J., *Counterparty Credit Risk and Credit Value Adjustement. A Continuing Challenge for Global Financial Markets*, Wiley Finance, 2012
[14] Campbell, J.Y., Lo, A. W., MacKinlay, A. C, *The Econometrics of Financial Markets*, Princeton University Press, 2012

We regressed the banks' stock prices against the indices of the corresponding stock exchanges (Athens Stock Market and IBEX Stock Market) and the CDS spreads against the benchmark European iTraxx index that we obtained from IHS Markit ("Markit iTraxx Europe"[15]). We deem the iTraxx index to be a good benchmark indicator since it affords investors the flexibility to express their bullish or bearish sentiments on credit as an asset class and assists portfolio managers to actively manage their credit exposures.

5. Empirical Model

Methodology

We examined the stock returns and CDS spreads before and after the announcement and approval of Bail-in measures for each bank. We carried out our event studies following three distinct steps:

(i) **Identification of Event Window defined by the Announcement & Approval dates**: We included 10 trading days before and after each window dates to capture potential delayed reactions, although this may introduce residual noise to the data.

(ii) **Estimation of Abnormal Stock Returns & Abnormal CDS Spread fluctuations**: The event study methodology requires the segmentation of the total returns and fluctuations attributed towards the occurrence of an event of interest from the overall movement of the market itself. We determined the abnormal or excess stock returns and abnormal CDS spread movements by subtracting changes attributable to overall movements of the equity and CDS markets.

Our event study methodology is akin to the approach outlined by Brown and Warner (1980, 1985)[16]. We applied a statistical model using MATLAB to determine the "normal" returns and fluctuations in the absence of the event. The abnormal returns, whose pattern demonstrates the potential impact of the event, is determined as the difference between the estimated normal returns and its corresponding actual returns.

After plotting the abnormal returns, we verified that the estimated pattern was statistically significant by performing a T-Test to avoid Type I error, the rejection of a true null hypothesis (also known as a "false positive" finding). In the analyses, a value of *0.05* is determined as the cut-off for significance.

If the p-value is *less* than *0.05*, we reject the hypothesis that there is no difference between the means and conclude that a significant difference does exist. If the p-value is *larger* than *0.05*, we cannot conclude that a significant difference exists.

The p-values for our Ordinary Least Squares (OLS) coefficients are as depicted below. Only *2* p-values out of *28* proved to be larger than the stipulated threshold of *5%*. These observations are related to the intercept coefficients, which are in this case negligible[17].

[15] The Markit iTraxx Europe is considered as the best benchmark for CDS spread estimation in European financial markets. (M. Schmidt, *Pricing and Liquidity of Complex and Structured Derivatives: Deviation of a Risk Benchmark Based on Credit and Option Market Data*, Business & Economics, October 2016)
[16] Brown, S. J., Warner, J. B., « Measuring security price performance », *Journal of Financial Economics,* 8, 205-258, 1980
Brown, S. J., Warner, J. B., « Using daily stock returns : The case of event studies », *Journal of Financial Economics,* 14, 3-31, 1985
[17] Refer to Section XI: Appendix

	5Y Subordinated CDS Significance Test	
	Intercept	**X Variable 1**
Alpha Bank	5.3343E-144	2.48967E-83
Eurobank	2.17006E-18	0.000156381

	5Y Senior CDS Significance Test	
	Intercept	**X Variable 1**
Alpha Bank	1.67506E-53	7.37303E-29
Eurobank	0.004399035	1.42228E-05
Piraeus Bank	1.34751E-05	3.24592E-05

	10Y Subordinated CDS Significance Test	
	Intercept	**X Variable 1**
Alpha Bank	3.4111E-136	1.5334E-113
Eurobank	3.08434E-14	1.12734E-06

	10Y Senior CDS Significance Test	
	Intercept	**X Variable 1**
Alpha Bank	5.13295E-94	9.11243E-68
Eurobank	2.12469E-06	5.39888E-06
Piraeus Bank	5.10819E-10	0.000483371

	Stock Return Significance Test	
	Intercept	**X Variable 1**
Alpha Bank	0.421458594	0.002097468
Eurobank	0.074281805	2.944E-210
Piraeus Bank	0.015872688	1.6773E-220
BFA-Bankia	0.037672256	4.45406E-40

Table 1: Significance Test – P-Values of Coefficients

(iii) **Interpretation of Abnormal Stock Returns & Abnormal CDS Spread fluctuation data and alignment with expected results**

Statistical Model: Univariate Regression

We used a simple linear model with market indices being the independent and explanatory variables, or regressors, and the dependent variable being the banks' stock returns and CDS spreads. The market model forms the basis of our analysis:

$$y_t = \alpha_t + \beta_i * x_{i,t} + \varepsilon_t$$

where,

y_t is the bank's stock return or CDS spread at date t, *i.e.* the dependent variable

$x_{i,t}$ is the index i's return at date t, *i.e.* the independent variable, regressor or predictor

β_i is the coefficient to be estimated with the statistical estimator

α_t is the constant to be estimated with the statistical estimator

ε_t is the unobservable random shock at date t, *i.e.* the coefficient of the event dummy variable or effective abnormal return on day t

To minimize the model's errors, we chose the coefficients so as to minimize the sum of squared errors defined as follows:

$$\text{SSE} = \sum_{t=1}^{T}(y_t = \alpha_t + \beta_i * x_{i,t} + \varepsilon_t)^2$$

We estimate the relation coefficient β_i by deriving the SSE with respect to β_i and setting to *0* to yield the ordinary least squares estimator of β_i[18]:

$$\beta_i = (\sum_{t=1}^{T}(x_{i,t}{}^2))^{-1} \sum_{t=1}^{T}(x_{i,t} * y_t)$$

The abnormal return or CDS spread at day t is hence defined as below:

$$\varepsilon_t = y_t - \beta_i * x_{i,t} - \alpha_t$$

6. Potential Econometric Shortcomings

Our event studies focus on financial legislative events, the exact date on which to focus on can be very difficult to define with absolute certainty. Most often than not, prospective Bail-in legislations have most likely been actively discussed and debated before being officially published. Hence, the ramifications of a Bail-in legislation would likely be recognized by investors and debtholders prior to the measure's actual announcement and implementation.

Binder (1998) is particularly sceptical about event studies of regulation, which are anticipated and whose prolonged legislation period makes it difficult to designate the event dates. To circumvent this pitfall and avoid biases, a careful selection of the dates and a microeconomic analysis of the regulation impact on the bank are needed. Despite these concerns, event studies of regulatory actions remain important tools in understanding the effects of regulations on the market[19]. Blume (1971) and Gonedes (1973) pointed the statistical shortcomings of abnormal return estimators. They noted that the estimators (i) are prone to cross-sectional correlation in event time; (ii) possess different variances across firms; (iii) are not independent across time for a given firm; and (iv) have greater variance during event time than in surrounding periods[20].

To prevent a selection bias, we focused on event windows framing the possible event dates, i.e. our event window is included within a larger estimation window. Autocorrelation issues are mitigated by using a long overall period of study as compared to the length of the event window(s).

A second potential shortcoming arises from the possibility of data contamination by other events. If a confounding event occurred within an estimation window, this introduces distortion to the return estimation. Several unexpected events[21] can take place at the same date, which makes it difficult to determine if the abnormal returns and changes were attributable to our event of interest or another confounding event[22]. Many academic papers suggest that the conditions underlying event study hypothesis testing are violating in practice, in addition to the fact that events of interest often occur at dates that coincide in time: (i) returns are non-normally distributed; (ii) market model parameters can undergo changes around the time of events; and (iii) time-varying condition heteroscedasticity is observed in data.

[18] Greene, W.H., *Econometric Analysis*, Pearson Education, 1990

[19] Binder, J. J, « Measuring the effects of regulation with stock price data », RAND *Journal of Economics* 16, 167-183, 1985
Binder, J. J., « The event study methodology since 1969 », *Review of Quantitative Finance and Accounting* 11, 111-137, 1998

[20] Blume, M. E., « On the assessment of risk », *Journal of Finance* 26, 1-10, 1971
Gonedes, N. J., « Evidence on the information content of accounting numbers : accounting-based and market-based estimates of systematic risk », *Journal of Financial and Quantitative* Analysis 8, 407-443, 1973

[21] For instance, a bail-in announcement or approval can take place at the same time than the announcement of unexpected earnings, of a merger, a takeover or stock splits, and of credit events resulting from a counterparty's default.

[22] Campbell, J.Y., Lo, A. W., MacKinlay, A. C., *The Econometrics of Financial Markets*, Princeton University Press, 2012

Section V Case Studies – Greece

1. Summary

The Greek sovereign crisis[23], spanning from 2009 to 2015, had considerable implications towards the capital and liquidity outlook for Greek banks. During the crisis, the International Monetary Fund (IMF), European Central Bank[24] (ECB) and Members States of the Euro Area, have advocated the enforcement of stricter fiscal and structural measures in hope of instilling market discipline. Despite the good intentions, these measures have deeply impaired upon the loan portfolios and capital bases of Greek banks.

In addition, the restructuring of Greek sovereign debt and successive downgrades of Greece's sovereign credit rating, along with extensive deposit outflows, further exacerbated the situation as Greek banks came under increasing liquidity pressure. Since the onset of the sovereign crisis, Greek banks have experienced six stress test exercises in total whilst confronting one of the largest restructuring and consolidation proceedings in Europe: 14 resolutions and 40% downsizing in the number of Greek banks and foreign branches.

2. Background

Contrary to common beliefs, the ramifications of the international financial turmoil of 2007– 2008 did not pose a significant impact on Greek banks due to their limited exposure to US subprime debt or other structured products. From the onset, along with other banks around the world, Greek banks merely encountered liquidity pressures. However, these pressures soon constituted to significant weaknesses from an operational perspective, as Greece was identified as the worst performer among Euro Area Member States in terms of Public Debt, Fiscal and Current Account Deficits in late 2009.

Doubts and concerns over the sustainability of sovereign debt spiralled out of control, leading to successive and sharp increases in Greek government bond yields. The situation hit a rock bottom as Greece was eventually excluded from international capital markets, following consecutive downgrades from the credit rating agencies. Developments in the Greek debt rating ensued as bank liquidity pressures exacerbated with the impairment of wholesale funding access and mass deposit withdrawals from 2010 to 2015, resulting in Greek banks losing approximately 45 % of their deposit base.

To resolve the imminent crisis of the banking sector, Bank of Greece[25] orchestrated a strategic viability assessment in March 2012, using a set of quantitative and qualitative criteria including: shareholders' soundness and willingness to inject new capital; quality of management and risk management systems; capital, liquidity and profitability metrics; the Bank of Greece's assigned ratings to bank risks; and a sustainable business model as envisaged in the Memorandum of March 2012.

The assessment seeks to determine which banks are more probable to repay the funds should they be granted, within the stipulated time frame. The banks that were deemed eligible would be entitled to apply for state funds if they were unable to raise sufficient private capital to cover their shortfall, whilst non-viable banks would instead be resolved. To address the banks' capital shortfall, state aid was granted through the usage of public funds, injected via the Hellenic Financial Stability Fund[26] (HFSF) established in 2010.

[23] The Chronicle of the Great Crisis, The Bank of Greece 2008–2013, Bank of Greece, Centre for Culture, Research and Documentation, 2014
[24] Report on Financial Structures, European Central Bank, October 2015
[25] Overview of the Greek Financial System, Bank of Greece, July 2016
[26] Hellenic Financial Stability Fund, Annual Financial Reports 2012–2015

3. **Approach of Resolution:** Resolution via Public Recapitalization, Bail-in and State Aid issues (2009-2015)

Credit Institution	Date of Resolution	Resolution Tool	Acquirer	Resolution Cost	Funded by HFSF	Funded by HDIGF
Proton Bank	09.10.11	Bridge Bank	–	1,122	260	862
T-Bank	17.12.11	Sale of Business	Hellenic Post Bank	677	227	450
Cooper. Lesvou-Limnou	23.03.12	Sale of Business	National Bank of Greece	56	56	
Achaiki Cooperative	23.03.12	Sale of Business	National Bank of Greece	209	209	
Cooper. of Lamia	23.03.12	Sale of Business	National Bank of Greece	55	55	
ATE-Bank	27.07.12	Sale of Business	**Piraeus Bank**	7,471	7,471	
Hellenic Post Bank	18.01.13	Bridge Bank	–	3,733	3,733	
First Business Bank	10.05.13	Sale of Business	National Bank of Greece	457	457	
Probank	26.07.13	Sale of Business	National Bank of Greece	563	563	
Cooper. of West. Macedonia	08.12.13	Sale of Business	**Alpha Bank**	95	95	
Cooperative of Evia	08.12.13	Sale of Business	**Alpha Bank**	105	105	
Cooperative of Dodecanisou	08.12.13	Sale of Business	**Alpha Bank**	259	259	
Panellinia Bank	17.04.15	Sale of Business	**Piraeus Bank**	297		297
Cooperative of Peloponnese	18.12.15	Sale of Business	National Bank of Greece	93		93
Total Resolution Cost				**15,191**	**13,489**	**1,702**

Table 2: Resolution Cost for Greek Credit Institutions (in million Euros)[27]

To contravene the implications of an economic crisis, compounded by a crippled banking sector, Greece was among the first few European Union countries to pass a law on bank resolution. This legislation, conferred in October 2011, granted resolution powers to the Bank of Greece. Through the following years, the Bank of Greece, acting as the national resolution authority, administrated resolution measures to 14 credit institutions in total. Notably, all 14 institutions placed under resolution has had their shareholders entirely written off. For two cases, Subordinated debt was also obliterated.

As evidenced by the proceedings undertaken for the resolutions, the crux of the resolution strategy remains to protect uncovered deposits, in order to instil depositors' confidence whilst avoid further deposit outflows.

The resolutions of the first 13 credit resolution institutions were administrated under the national legal framework[28] [Law 3601/2007 and Law 4261/2014], while the latest resolution (Peloponnese Cooperative Bank) was invoked under the provisions of the Bank Recovery and Resolution Directive[29] (BRRD), as transposed into national law (Law 4335/2015) in July 2015.

Prior to 2015, resolutions were administrated via two resolution tools:

a) **Sale of Business** [12 Cases]
b) **Bridge Banks** [2 Cases]: The bridge banks were under the management and control of Hellenic Financial Stability Fund (HFSF), acting as the sole shareholder of the banks in resolution; in contrast to the BRRD framework, which foresees that bridge banks are managed by the corresponding resolution authority.

Hence, from a technicality standpoint, full Bail-in was not implemented for the institutions that were resolved prior to the introduction of the BRRD framework. More specifically, in some resolution cases, full depositors' protection would not have been enforced under the BRRD scenario, with the minimum 8% Bail-in provision resulting in the Bail-in of uncovered deposits.

[27] Bank of Greece, Annual Reports 2009–2015
[28] Report on the Recapitalization and Restructuring of the Greek Banking Sector, Bank of Greece, December 2012
[29] European Banking Supervision: The first eighteen months, Dirk Schoenmaker, Nicolas Veron, Bruegel Blueprint Series, Volume XXV, 2016

4. Commonalities of Milestones

From the onset, we identified several measures or schemes, initiated by either the European Commission or Greek Authorities, that were afforded to our financial institutions of interest. The commonalities of events undertaken by Alpha Bank, Eurobank Ergasias, and Piraeus Bank, serve as the foundation of our event study, whilst affording consistency and fairness regarding event identification and the evaluation of how Bail-in alters the magnitude of investor's risk perception across varying financial institutions.

Year	Event	Event Description
2010	Submission & Approval of Restructuring Plan to the European Commission	**Alpha Bank:** The European Commission registered a Restructuring Plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then SA.32786 (2011/PN). **Eurobank Ergasias:** The European Commission registered a Restructuring Plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32789 (2011/PN). **Piraeus Bank:** The European Commission registered a Restructuring Plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32787 (2011/PN).
2012	Commitment of the Hellenic Financial Stability Fund (HFSF)	**Alpha Bank, Eurobank Ergasias, & Piraeus Bank:** The Hellenic Financial Stability Fund (HFSF) committed to participate in the planned share capital increase of Alpha Bank, Eurobank Ergasias, and Piraeus Bank.
2012	First Bridge Recapitalisation	**Alpha Bank, Eurobank Ergasias, & Piraeus Bank:** As part of the First Bridge Recapitalisation, the HFSF granted a recapitalisation of EUR 1 900 million, EUR 3 970 million, and EUR 4 700 million to Alpha Bank, Eurobank Ergasias, and Piraeus Bank respectively.
2012	Second Bridge Recapitalisation	**Alpha Bank:** The HFSF granted another bridge recapitalisation of EUR 1 042 million to the Bank (Second Bridge Recapitalisation), and also committed to participate in the planned share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 1 629 million. **Eurobank Ergasias:** The HFSF granted another bridge recapitalisation of EUR 1 341 million to the Bank - second bridge recapitalisation, and also committed to participate in the planned share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 528 million. **Piraeus Bank:** The HFSF granted another bridge recapitalisation of EUR 1 553 million to the Bank (Second Bridge Recapitalisation) and committed to participate in the planned share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 1 082 million.
2013	Spring 2013 Recapitalisation	**Alpha Bank:** The HFSF converted the two bridge recapitalisations into equity and further injected EUR 1 079 million of capital into the Bank (Spring 2013 Recapitalisation). **Eurobank Ergasias:** The HFSF participated in the Bank's share capital increase, agreed upon previously in December 2012. The HFSF also converted the two bridge recapitalisations into equity and further injected EUR 528 million of capital into the Bank (Spring 2013 Recapitalisation). **Piraeus Bank:** The HFSF partially converted the two bridge recapitalisations into equity for a total of EUR 5 891 million and further injected EUR 1 094 million of capital into the Bank (Spring 2013 Recapitalisation). In addition, private investors injected EUR 1 444 million. The total recapitalisation constitutes EUR 8 429 million.

Table 3: Commonalities of Milestones for Alpha Bank, Eurobank Ergasias, & Piraeus Bank[30]

[30] Refer to Section XI: Appendix

5. Greece – Case Alpha Bank AE

a. Background

Alpha Bank Group[31] provides universal banking services mainly in Greece and in South-Eastern Europe (Cyprus, Romania, Bulgaria, Serbia, Albania and the Former Yugoslav Republic of Macedonia ("FYROM")) as well as in the United Kingdom. It offers a full range of banking and financial products and services to households and businesses. It is active in retail, corporate and private banking, asset management, treasury and investment banking.

Alpha Bank Group participated in the Private Sector Involvement (PSI) programme, a private sector bond exchange, exchanging new Greek Government Bonds (GGBs), and State-related loans with a face value of EUR 6 042 million. During the buy-back programme of December 2012, Alpha Bank Group sold the new GGBs it had initially received from the PSI at a deep discount to nominal value, which crystallised into significant losses.

b. Approach of Resolution: Resolution via Public Recapitalization, Bail-in and State Aid issues (2009-2015)

From an operational perspective, Alpha Bank's performance was largely impaired by the Greek sovereign crisis and the deep recession in Greece and southern Europe. The ramifications of the sovereign crisis resulted in the Greek government's loss of access to financial markets, which was resolved via a negotiated agreement with its domestic and international creditors.

The agreement resulted in the implementation of a private sector bond exchange, commonly known as the Private Sector Involvement programme. However, since the initiative's inception in February 2012, Greek Government Bonds[32] (GGBs) were acquired back by the State from Greek banks at a price between 30,2% and 40,1% of their nominal value, hence crystalizing a further loss for the Greek banks.

Beside the impact on its capital position due to the debt buy-back initiative, Alpha Bank also observed huge deposit outflows between 2010 and mid-2012, due to imminent expectations that Greece would exit the euro area because of an unsustainable public debt and the economic pressure. The deposit outflows had a detrimental effect on Alpha Bank as its loan-to-deposit ratio reached 152% at 31st December 2011, with 34% of its balance sheet being funded by the Eurosystem at said date.

These exposures revealed vulnerability of Alpha Bank in terms of the credit quality of its portfolio composition, as well as its ability to turn profitable under the impairments of its growing liquidity problems. The Stress Test, conducted by the Bank of Greece in 2013, also puts into perspective the magnitude of the capital shortfall of Alpha Bank – EUR 262 million in order to reach the required solvency level under the baseline scenario.

In contrast to Eurobank Ergasias' capital increase of April 2014, the Hellenic Financial Stability Fund (HFSF) did not commit to inject capital in Alpha Bank in case of insufficient private demand. The institution's capital increase was instead achieved via a non-pre-emptive equity offering to international investors and through a public offering in Greece. Following the capital increase, Alpha Bank proceeded to redeem the preference shares to Greece, for a total amount of EUR 940 million.

[31] European Commission Circular - SA.34823 (2012/C), SA.36004 (2013/NN), SA.37965 (2013/N), SA.37966 (2013/N), SA.37967 (2013/N)
[32] European Commission Circular - SA.34825 (2012/C), SA.34825 (2014/NN), SA.36006 (2013/NN) SA.34488 (2012/C) (ex 2012/NN) SA.31155 (2013/C) (2013/NN) (ex 2010/N)

Measure	Type of Measure	Description	Amount (EUR million)	Approved	%RWA
A	Capital support	Preference shares	940	May 2009	2%
B1	Capital support	First bridge recapitalisation	1 900	May 2012	10.3%
B2	Capital support	Second bridge recapitalisation	1 042	Dec 2012	
B3	Capital support	Commitment letter	1 629	Dec 2012	
B4	Capital support	Spring 2013 recapitalisation	4 021	May 2013	

Table 4: Overview of the Capital Support Measures for Alpha Bank

Measure	Type of Measure	Description	Amount (EUR million)	Approved	%RWA
L1	Guarantee	Liquidity support	14 000	Sep 2011	-
L2	Funding & Guarantee	State-guaranteed Emergency Liquidity Assistance	23 600	Dec 2011	-

Table 5: Overview of the Liquidity Support Measures for Alpha Bank

As stipulated by the 2013 Banking Communication, with further supplements from Article 6(a) of the HFSF law as amended in 2014, prior to benefiting from State aid, it is mandatory for aided banks to conduct burden-sharing exercises on existing shareholders and on holders of hybrid and subordinated debt instruments so as to maximise the loss-absorption capacity of the aided bank whilst minimising the cost for the tax payer.

By extension, as expounded upon Article 107(3)(b) TFEU[33], the magnitude of the aid conferred should comply with the following conditions:

a) ***Appropriateness:*** The conferred aid must be well-targeted in order to effectively address the issue of remedying a serious disturbance in the economy.
b) ***Necessity*****:** The aid measure must, in its amount and form, be necessary to address this issue. Hence, it must be of the minimum amount necessary and most appropriate form to achieve the objective.
c) ***Proportionality:*** The implications of the enforced measure must be properly balanced against the distortions of competition, in order for the distortions to be limited to the minimum necessary to reach the measure's objectives.

As such, Alpha Bank has benefited and continues to benefit from State guarantees under the Greek Banks Support Scheme worth €14 billion, and State-guaranteed Emergency Liquidity Assistance (ELA) worth €23.6 billion. In addition, Alpha Bank has received a capital injection of €940 million under the recapitalisation measure of the Greek Banks Support Scheme, as well as several recapitalisation proceedings from the Hellenic Financial Stability Fund.

[33] European Commission Circular - SA.34823 (2012/C), SA.36004 (2013/NN), SA.37965 (2013/N), SA.37966 (2013/N), SA.37967 (2013/N)

c. Quantitative Analysis – Abnormal Returns Analysis

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**02-Aug-10**	The Greek authorities submitted a Restructuring Plan in respect of the Bank to the Commission.	**02-Aug-10**	The European Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then SA.32786 (2011/PN).

Alpha Bank: Event Window [1]

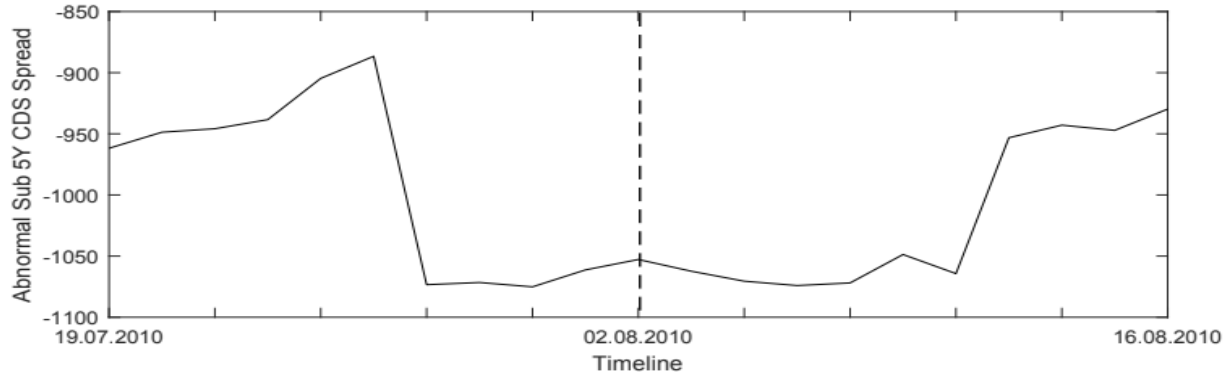

Figure 3: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [1]

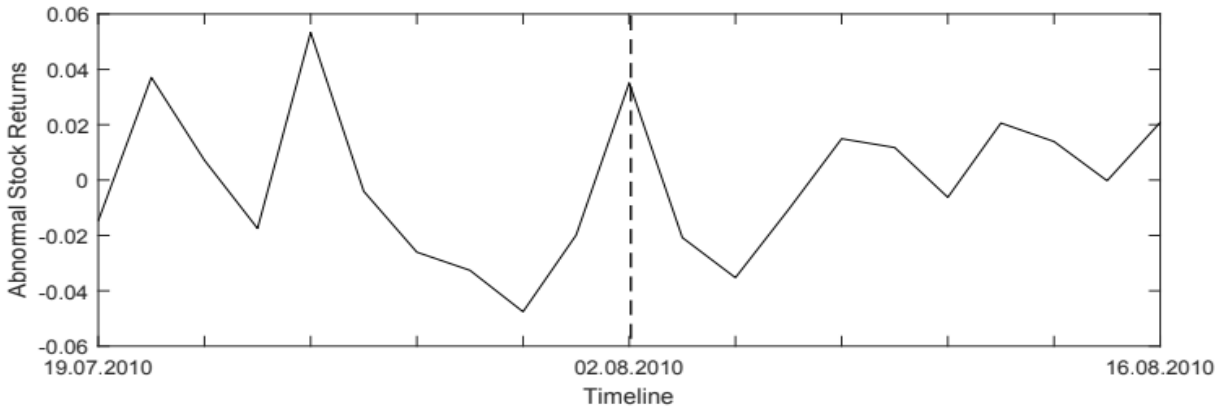

Figure 4: Abnormal Stock Returns for Alpha Bank at Event Window [1]

Figures for Abnormal 5 Year Senior, Abnormal 10 Year Senior, & Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [1] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**20-Apr-12**	The Hellenic Financial Stability Fund ("HFSF") provided the Bank with a letter committing to participate in a planned share capital increase of the Bank.	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 1 900 million to the Bank ("first bridge recapitalisation").

Alpha Bank: Event Window [2]

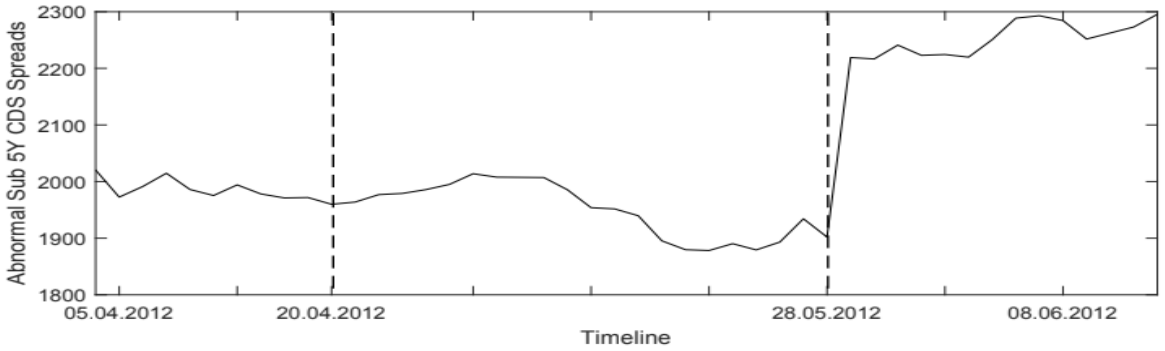

Figure 5: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [2]

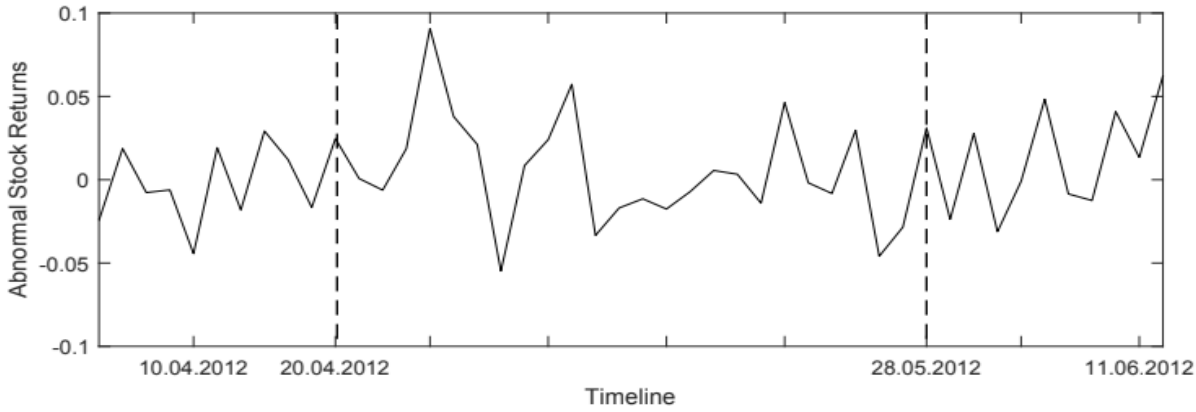

Figure 6: Abnormal Stock Returns for Alpha Bank at Event Window [2]

Figures for Abnormal 5 Year Senior, Abnormal 10 Year Senior, & Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [2] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 042 million to the Bank ("second bridge recapitalisation"). On 20 December 2012, the HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount of up to EUR 1 629 million.	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 042 million to the Bank ("second bridge recapitalisation"). On 20 December 2012, the HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount of up to EUR 1 629 million.

Alpha Bank: Event Window [3]

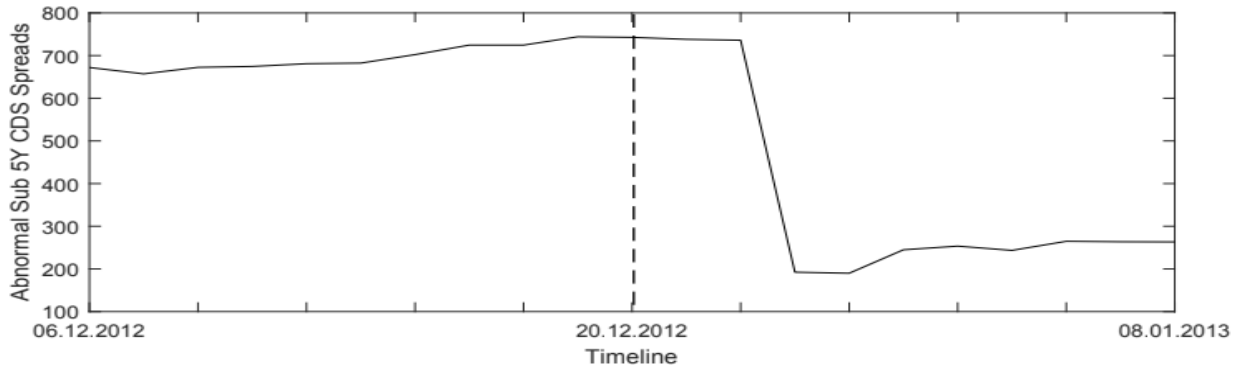

Figure 7: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [3]

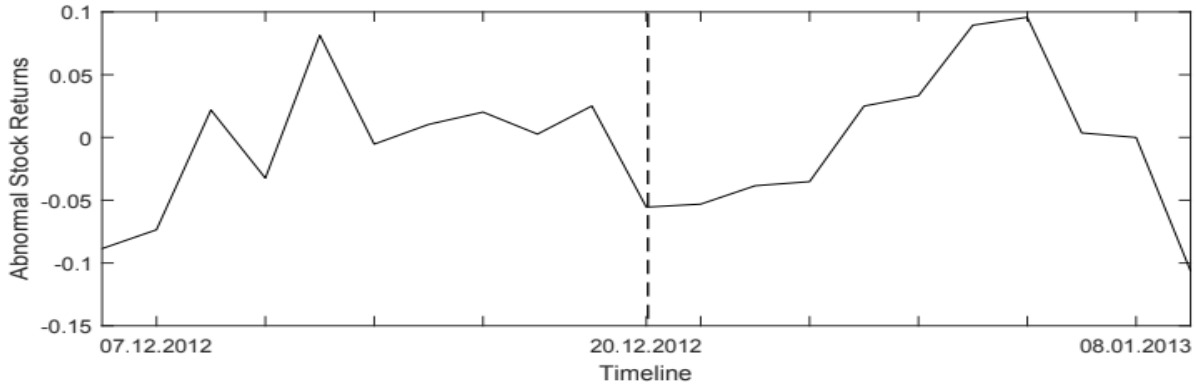

Figure 8: Abnormal Stock Returns for Alpha Bank at Event Window [3]

Figures for Abnormal 5 Year Senior, Abnormal 10 Year Senior, & Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [3] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [4]	**03-Jun-13**	The HFSF converted the first and second bridge recapitalisations into equity and injected a further EUR 1 079 million of capital into the Bank (the "Spring 2013 recapitalisation").	**03-Jun-13**	The HFSF converted the first and second bridge recapitalisations into equity and injected a further EUR 1 079 million of capital into the Bank (the "Spring 2013 recapitalisation").

Alpha Bank: Event Window [4]

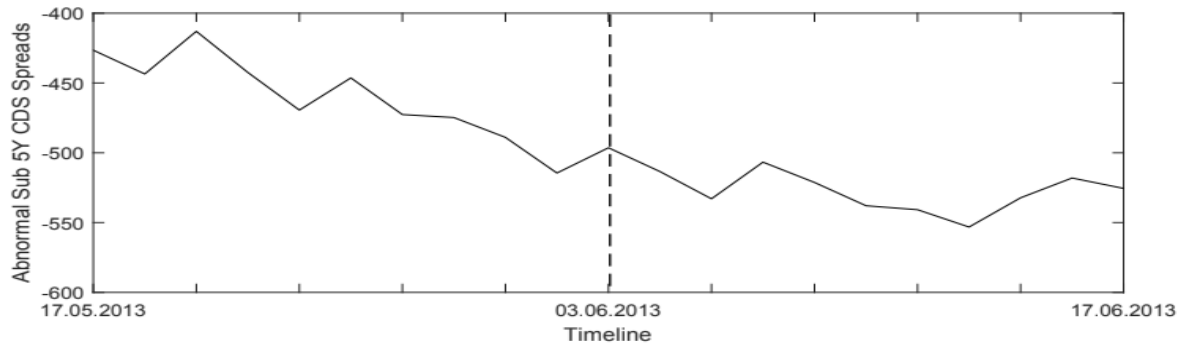

Figure 9: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [4]

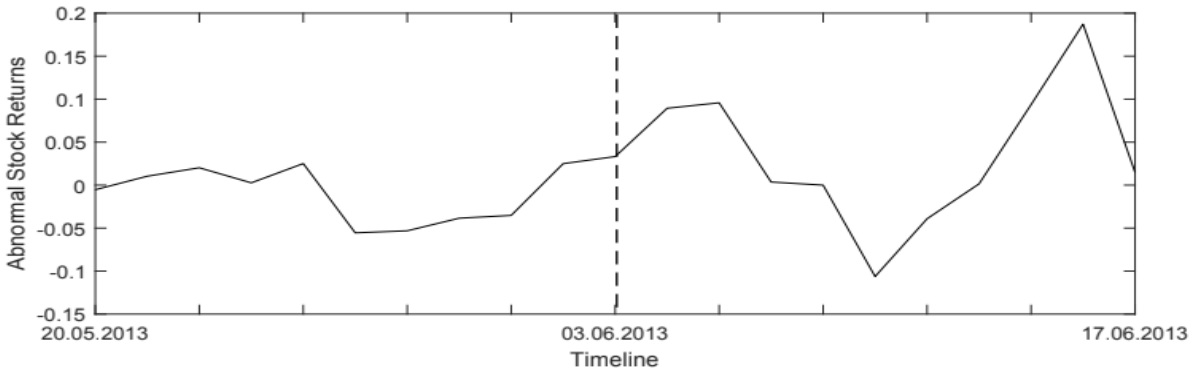

Figure 10: Abnormal Stock Returns for Alpha Bank at Event Window [4]

Figures for Abnormal 5 Year Senior, Abnormal 10 Year Senior, & Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [4] are documented in the Appendix

d. Synthesis of Findings

Bail-In Announcement - European Commission/Hellenic Financial Stability Fund
Bail-In Approval - Hellenic Financial Stability Fund

Event	Type	Date	Details	Abnormal 5Y Senior & Subordinated CDS Spreads	Abnormal 10Y Senior & Subordinated CDS Spreads	Abnormal Stock Returns
[1]	Announcement	02-Aug-10	On 2 August 2010, the Greek authorities submitted a restructuring plan in respect of the Bank to the Commission.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 5Y Senior & Subordinated CDS. The Bail-In Announcement/Approval event resides near the trough of the Event Window. The Abnormal 5Y Senior CDS Spreads of the Event Window ranges from *-500 bps* to *-340 bps*. The magnitude of change in Abnormal CDS Spreads implies that the Bail-In Announcement/Approval is interpreted negatively from the debtholders' risk perception. In addition, in contrast to the Abnormal 5Y Senior CDS Spreads, the Abnormal 5Y Subordinated CDS demonstrated CDS Spreads of a larger magnitude. The Abnormal 5Y Subordinated CDS Spreads ranges between *-1,100 bps* to *-900 bps* for Event Window [1]. This observation is as expected as a higher risk exposure is expected of Subordinated debtholders.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 10Y Senior & Subordinated CDS. The outlook for Abnormal 10Y CDS Spreads bears strong resemblance to its 5Y counterpart, differing only in terms of magnitude of Abnormal CDS Spreads. In general, the 10Y Senior & Subordinated CDS Spreads were observed to be less negative than its 5Y counterpart. The Abnormal 10Y Senior CDS Spreads ranges between *-3,50 bps* to *-200 bps* for Event Window [1]. The Abnormal 10Y Subordinated CDS Spreads ranges between *-900 bps* to *-700 bps* for Event Window [1].	Positive Abnormal Stock Returns have been trending days prior to the actual Bail-In Announcement/Approval, suggesting heightened anticipation of Bail-in. The trend persisted and peaked on 02 Aug 2010, the actual date of Bail-In Announcement/Approval, reaching an Abnormal Stock Return of *+0.04%*. However, the positive outlook tapered off dramatically post Announcement/Approval, hinting strongly that investors' risk perception had increases considerably. Stock Abnormal Returns were highly volatile after the actual date of Approval from the European Commission, fluctuating between positive and negative Abnormal Stock Returns.
[1]	Approval	02-Aug-10	The Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then SA.32786 (2011/PN).			
[2]	Announcement	20-Apr-12	On 20 April 2012, the Hellenic Financial Stability Fund ("HFSF") provided the Bank with a letter committing to participate in a planned share capital increase of the Bank.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement for both 5Y Senior & Subordinated CDS. Positive spreads of a larger magnitude were observed for Senior CDS than Subordinated CDS. Contrary to theoretical expectations, there is no distinct changes to the Abnormal CDS Spreads for both cases. The lack of significant response yielded by HFSF's letter of commitment could be interpreted as a lack of credibility and confidence towards the Fund. Essentially, the letter of commitment has failed to instil confidence in investors.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement for both 10Y Senior & Subordinated CDS. Positive spreads of a larger magnitude were observed for Senior CDS than Subordinated CDS. Contrary to theoretical expectations, there is no distinct changes to the Abnormal CDS Spreads for both cases. The lack of significant response yielded by HFSF's letter of commitment could be interpreted as a lack of credibility and confidence towards the Fund. Essentially, the letter of commitment has failed to instil confidence in investors.	Bail-In Announcement reflects a positive Abnormal Stock Returns of *+0.025%*. However, no concrete conclusion could be derived at, due to the volatility of the Abnormal Stock Returns prior and post Bail-In Announcement. The persistently volatile Abnormal Stock Returns prior and post Bail-In Announcement suggest conflicting investors' risk perception regarding the viability of Alpha Bank.
[2]	Approval	28-May-12	On 28 May 2012, the HFSF granted a bridge recapitalisation of EUR 1 900 million to the Bank ("first bridge recapitalisation").	Contrasting observations regarding Abnormal CDS Spreads for both 5Y Senior & Subordinated CDS were noted. For the 5Y Senior CDS, the Abnormal 5Y Senior CDS Spreads subsided immediately on 28 May-12, the date of Bail-In Approval, and remained subdued at *+1,000 bps* for the rest of the Event Window. On the other hand, the Abnormal 5Y Subordinated CDS Spreads spiked immediately on 28 May-12, the date of Bail-In Approval, and remained heightened at above *+2,200 bps* for the rest of the Event Window. This observation could be attributed to the stipulations of the first bridge recapitalisation, which is likely to only implicate the Subordinated debtholders.	Contrasting observations regarding Abnormal CDS Spreads for both 10Y Senior & Subordinated CDS were noted. For the 10Y Senior CDS, the Abnormal 10Y Senior CDS Spreads subsided immediately on 28 May-12, the date of Bail-In Approval, and remained subdued at *+500 bps* for the rest of the Event Window. On the other hand, the Abnormal 10Y Subordinated CDS Spreads posted similar outlook to that of its 5Y counterpart with a subdued Abnormal CDS Spreads at above *+1,800 bps* for the rest of the Event Window. This observation could be attributed to the stipulations of the first bridge recapitalisation, which is likely to only implicate the Subordinated debtholders.	Bail-In Approval reflects a positive Abnormal Stock Returns of *+0.025%*. However, no concrete conclusion could be derived at, due to the volatility of the Abnormal Stock Returns prior and post Bail-In Approval. The persistently volatile Abnormal Stock Returns prior and post Bail-In Approval suggest conflicting investors' risk perception regarding the viability of Alpha Bank.
[3]	Announcement	20-Dec-12	In December 2012, the HFSF granted a second bridge recapitalisation of EUR 1 042 million to the Bank ("second bridge recapitalisation"). On 20 December 2012, the HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount of up to EUR 1 629 million.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 5Y Senior & Subordinated CDS. However, a steady decline in Abnormal CDS Spreads could be observed for the 5Y Senior CDS Spreads since 07 Dec-12, which was further depressed post Bail-In Announcement/Approval to an Abnormal CDS Spread of approximately *+325 bps*. By extension, a similar outlook with a time delay could be observed for the 5Y Subordinated CDS Spreads. The corresponding delay could be attributed towards to the time taken by Subordinated debtholders to be affirmed of the viability of their financial instruments post recapitalization.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 10Y Senior & Subordinated CDS. For the 10Y Senior CDS, the Abnormal 10Y Senior CDS Spreads reflect that of its 5Y counterpart prior Bail-In Announcement/Approval., with a subdued at Abnormal CDS Spreads of *+200 bps*. However, discrepancies arise post Bail-In Announcement/Approval, as the 10Y Senior CDS demonstrates a steady increase in Abnormal CDS Spread, peaking at *+140 bps* for the rest of the Event Window. On the other hand, the Abnormal 10Y Subordinated CDS Spreads posted similar outlook to that of its 5Y counterpart, with Abnormal CDS Spreads of a lower magnitude. In addition, a similar time delay could be observed for the 10Y Subordinated CDS Spreads. The corresponding delay could be attributed towards to the time taken by Subordinated debtholders to be affirmed of the viability of their financial instruments post recapitalization.	Bail-In Announcement/Approval reflects a negative Abnormal Stock Returns of *-0.05%*. The Bail-In Announcement/Approval coincides with a trough in Abnormal Stock Returns, which turned positive and remained heightened at for the rest of the Event Window. The bridge recapitalisation by HFSF was successful in alleviating the previously negative market sentiment and managed to regain investor's confidence. The positive outlook persists for the weeks that follow. .
[3]	Approval	20-Dec-12	In December 2012, the HFSF granted a second bridge recapitalisation of EUR 1 042 million to the Bank ("second bridge recapitalisation"). On 20 December 2012, the HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount of up to EUR 1 629 million.			

[4]	Announcement	03-Jun-13	On 3 June 2013, the HFSF converted the first and second bridge recapitalisations into equity and injected a further EUR 1 079 million of capital into the Bank (the "Spring 2013 recapitalisation").	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 5Y Senior & Subordinated CDS. The Bail-In Announcement/Approval event resides near the trough of the Event Window. The Abnormal 5Y Senior CDS Spreads of the Event Window ranges from *-250 bps* to *0 bps*.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 10Y Senior & Subordinated CDS. The outlook for Abnormal 10Y CDS Spreads bears strong resemblance to its 5Y counterpart, differing only in terms of magnitude of Abnormal CDS Spreads.	Abnormal Stock Returns observed prior and post Bail-In Announcement/Approval do not afford any distinct explanation to the effects of the recapitalisation. Stock Abnormal Returns were highly volatile prior and post Bail-In Announcement/Approval, fluctuating between positive and negative Abnormal Stock Returns.
[4]	Approval	03-Jun-13	On 3 June 2013, the HFSF converted the first and second bridge recapitalisations into equity and injected a further EUR 1 079 million of capital into the Bank (the "Spring 2013 recapitalisation").	In contrast to the Abnormal 5Y Senior CDS Spreads, the Abnormal 5Y Subordinated CDS demonstrated CDS Spreads of a larger magnitude. The Abnormal 5Y Subordinated CDS Spreads ranges between *-550 bps* to *-425 bps* for Event Window [4]. This observation is as expected as a higher risk exposure is expected of Subordinated debtholders.	In general, the 10Y Senior & Subordinated CDS Spreads were observed to be more negative than its 5Y counterpart. The Abnormal 10Y Senior CDS Spreads ranges between *-250 bps* to *-50 bps* for Event Window [4]. The Abnormal 10Y Subordinated CDS Spreads ranges between *-850 bps* to *-600 bps* for Event Window [4].	

Table 6: Synthesis of Findings for Alpha Bank at Event Windows of Interest

Synthesis of Findings

As observed from Event Window [1], the inflection point reflects a negative signal priced very aggressively. This resulted in a steep curtail in abnormal stock returns, demonstrating that the equity investors' risk perception has significantly heightened following the official decision to launch a restructuring plan involving Bail-in tools. The date of announcement/approval coincides with an abnormal stock returns peak of *0.04%*. The Debt Market's reaction is always accompanied by a delay, although the event date is indeed located at the trough of a cycle, reflecting the higher perceived risk exposure by debtholders.

However, counter-intuitive observations are noted for the CDS spreads which demonstrate consistently delayed reactions in contrast to the significant yet rapid reactions of the Equity Market. The change in information should relate not only to a very specific set of equity instruments, but also a very specific set of bonds, issued by Alpha bank. Across all samples, abnormal stock returns appear more sensitive to Bail-in information than abnormal CDS spreads, where the delayed expected reaction is consistent across all types of CDS contracts. Stocks and CDS are traded in structurally different markets[34], which resulted in differences in speed with which the stock and the CDS markets react to changes in credit risk related information. Recent empirical studies have found that the stock market often leads the bond and CDS markets in the context of changing underlying credit conditions, and that the magnitude of that reaction is affected by the credit quality of the company and the bond market liquidity (Norden and Weber, 2009)[35]. More precisely, the stock market tends to lead during times of financial crisis, while the CDS market is gaining speed in terms of incorporation of new information into the pricing of contracts during more tranquil periods[36].

Notably, the letter of commitment from HFSF did not instil any confidence, nor escalate perceived risk exposure in debtholders in Event Window [2]. Also, of interest is the fact that abnormal junior CDS spreads do not move in line with senior CDS spreads, nor do the 5Y CDS contracts with the 10Y CDS contracts. In addition, a large increase in 5Y subordinated CDS spreads, accompanied by a decreasing and flattening outlook for 5Y senior CDS spreads, was observed after the first bridge capitalization approval. In contrast, the 10Y subordinated CDS spreads do not reflect any pricing of the new information received during a similar period. This may be attributed towards the stipulations of the Bail-in which addresses only junior short-term debt instruments. Hence, other debtholders are not threatened by the probable haircut.

For Event Window [3], the announcement of the second bridge recapitalization transpired a prompt reaction, resulting in a large decrease of the senior CDS spreads. This is attributed to the HFSF commitment letter to grant aid in the share capital increase that assured debtholders that their financial instruments would not be impaired nor implicated by the burden sharing exercise. This reaction contrasts with Event Window [2], which may be perceived to be less reliable or credible. Surprisingly, the reaction of the subordinated CDS spread, although still significant in terms of magnitude, is more subdued and accompanied by a 3-day time delay. This could be attributed to the time needed for junior debtholders to be ascertained of the reduction in haircut they expected from the imminent Bail-in implementation, as dictated by the stipulations of the commitment letter. The equity investors reacted positively to the Bail-in announcement backed by HFSF, as evidenced by a progressive upward correction. The value pattern since the event date exhibits a regain of investors' confidence.

Investors' reactions exemplified a contrasting picture compared to the previous event window. We could conclude that the Bail-in had already been considered by the market players, evidenced by the high abnormal positive CDS spreads and the negative abnormal stock returns prior to the recap announcement. The aid granted by the HFSF seems to be effective in attenuating investors' negative sentiment regarding potential haircuts on debt instruments and the announced equity conversion.

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[34] In terms of organization, liquidity, and participants

[35] Norden, L., and Weber, M., "The Co-movement of Credit Default Swap, Bond and Stock Markets: An Empirical Analysis", *European Financial Management*, 15, 2009, p. 529-562

[36] Forte, S., and Lovreta, L., « Time-varying Credit Risk Discovery in the Stock and CDS Markets : Evidence from Quiet and Crisis Times », *European Financial Management*, 21, 2015, pp. 430-461

Empirical observations are mostly aligned with *Hypothesis [1]* when the HFSF does not provide any credible financial support to instil confidence in investors. The fund's financial commitment appears to be the crux behind the counter-intuitive empirical results of an observed increase in share price with corresponding decrease in CDS spreads (reflecting higher confidence in the future performance of the bank and its ability to repay its investors) after the announcement of a recapitalization. These two conjectures are especially true for the most junior instrument holders, which are in the front line for potential haircut. In addition, the observations validate *Hypothesis [2]*, with the differences in magnitude between window events for financial instruments similar in terms of seniority and maturity being explained by the pre-defined waterfall.

Lastly, the inconsistency as observed in some results can be attributed to several key factors. The most probable factor being the staunch support afforded by the HFSF, or other coinciding events which might induce significant distortion. Akin to other cases, the resolution was implemented with a minor Bail-in basis concerning only the most junior debtholders and equity holders in the pecking-order of burden sharing. Credibility appears to have been sufficient for investors to reassess their investment risk almost every time in a significant manner.

- We observed evidence of a different reaction of CDS and stock returns between Bail-in events where the HFSF strongly committed itself to support the Bail-in implementation through financial participation in recapitalization and the Bail-in events where the debtholders and equity investors did not account for any external help in the burden-sharing exercise.

- We find a slightly more prominent increase in CDS spreads from junior debt instruments than senior instruments, and almost consistently a decrease in stock returns following a Bail-in event not strongly backed by the HFSF.

- As expected, the impact always appears more discernible on CDS contract on junior debt than on senior debt, and more noticeable for the 5Y contracts than the 10Y contracts. This is explained by the fact that the Bail-in basis only concerned junior financial debt instruments, whose holders anticipated severe haircuts, and the higher volume of CDS traded on the 5Y contracts.

6. Greece – Case Eurobank Ergasias

a. Background

Eurobank Ergasias[37] provides universal banking services mainly in Greece and in Eastern and South-Eastern Europe (Cyprus, Romania, Bulgaria, Serbia, and Ukraine). It offers a full range of banking and financial products and services to households and businesses. It is active in retail, corporate and private banking, asset management, insurance, treasury, capital markets and other services.

Eurobank Ergasias participated in the Private Sector Involvement (PSI) programme, a private sector bond exchange, exchanging new Greek Government Bonds (GGBs), and State-related loans with a face value of EUR 7 336 million. During the buy-back programme of December 2012, Eurobank Ergasias sold the new GGBs it had initially received from the PSI at a deep discount to nominal value, which crystallised into significant losses.

b. Approach of Resolution: Resolution via Public Recapitalization, Bail-in and State Aid issues (2009-2015)

From an operational perspective, Eurobank Ergasias' performance was largely impaired by the Greek sovereign crisis and the deep recession in Greece and southern Europe. The ramifications of the sovereign crisis resulted in the Greek government's loss of access to financial markets, which was resolved via a negotiated agreement with its domestic and international creditors.

The agreement resulted in the implementation of a private sector bond exchange, commonly known as the Private Sector Involvement programme. However, since the initiative's inception in February 2012, Greek Government Bonds[38] (GGBs) were acquired back by the State from Greek banks at a price between 30,2% and 40,1% of their nominal value, hence crystalizing a further loss for the Greek banks.

Beside the impact on its capital position due to the debt buy-back initiative, Eurobank Ergasias also observed huge deposit outflows between 2010 and mid-2012, due to imminent expectations that Greece would exit the euro area because of an unsustainable public debt and the economic pressure. The deposit outflows had a detrimental effect on Eurobank Ergasias as its loan-to-deposit ratio reached 148% at 31st December 2011, with 42% of its balance sheet being funded by the Eurosystem at said date.

These exposures revealed vulnerability of the Eurobank Ergasias in terms of the credit quality of its portfolio composition, as well as its ability to turn profitable under the impairments of its growing liquidity problems. The Stress Test, conducted by the Bank of Greece in 2013, also puts into perspective the magnitude of the capital shortfall of Eurobank Ergasias – EUR 2 864 million, under the enhanced mitigating measures in order to reach the required solvency level.

Measure	Type of Measure	Description	Amount (EUR million)	Approved	%RWA
A	Capital support	Preference shares	950	May 2009	2%
B1	Capital support	First bridge recapitalisation	3 970	May 2012	13.8%
B2	Capital support	Second bridge recapitalisation	1 341	Dec 2012	
B3	Capital support	Commitment letter	528	Dec 2012	
B4	Capital support	Spring 2013 recapitalisation	5 839	May 2013	
C	Commitment to provide capital support	2014 recapitalisation commitment	2 864	Apr 2014	7.5%

Table 7: Overview of the Capital Support Measures for Eurobank Ergasias

[37] European Commission Circular - SA.34825 (2012/C), SA.34825 (2014/NN), SA.36006 (2013/NN) SA.34488 (2012/C) (ex 2012/NN) SA.31155 (2013/C) (2013/NN) (ex 2010/N)
[38] European Commission Circular - SA.34825 (2012/C), SA.34825 (2014/NN), SA.36006 (2013/NN) SA.34488 (2012/C) (ex 2012/NN) SA.31155 (2013/C) (2013/NN) (ex 2010/N)

Measure	Type of Measure	Description	Amount (EUR million)	Approved	%RWA
L1	Guarantee	Liquidity support	13 932	Apr 2011	-
L2	Funding & Guarantee	State-guaranteed Emergency Liquidity Assistance	12 000	Dec 2011	-

Table 8: Overview of the Liquidity Support Measures for Eurobank Ergasias

As stipulated by the 2013 Banking Communication, with further supplements from Article 6(a) of the HFSF law as amended in 2014, prior to benefiting from State aid, it is mandatory for aided banks to conduct burden-sharing exercises on existing shareholders and on holders of hybrid and subordinated debt instruments so as to maximise the loss-absorption capacity of the aided bank whilst minimising the cost for the tax payer.

By extension, as expounded upon Article 107(3)(b) TFEU[39], the magnitude of the aid conferred should comply with the following conditions:

a) ***Appropriateness:*** The conferred aid must be well-targeted in order to effectively address the issue of remedying a serious disturbance in the economy.
b) ***Necessity*****:** The aid measure must, in its amount and form, be necessary to address this issue. Hence, it must be of the minimum amount necessary and most appropriate form to achieve the objective.
c) ***Proportionality:*** The implications of the enforced measure must be properly balanced against the distortions of competition, in order for the distortions to be limited to the minimum necessary to reach the measure's objectives.

As such, Eurobank Ergasias has benefited and continues to benefit from State guarantees under the Greek Banks Support Scheme worth €13,9 billion, and State-guaranteed Emergency Liquidity Assistance (ELA) worth €12 billion. In addition, Eurobank Ergasias has received a capital injection of €950 million under the recapitalisation measure of the Greek Banks Support Scheme, as well as several recapitalisation proceedings from the Hellenic Financial Stability Fund. The latest measure as stipulated under the European Commission Circular[40] addresses the follows:

a) **Measure C:** The recapitalisation commitment affords Eurobank Ergasias critical capital injection, which will reassure existing depositors whilst facilitating the raising of capital from private investors. Should there be insufficient subscription from private investors, the HFSF will address the capital shortfall in application of the commitment letter.

In summary, HFSF's commitment to fully underwrite any probable capital shortfall, via the recapitalisation commitment, ensures the certainty of Eurobank Ergasias' capital adequacy and ability to comply with the regulatory capital requirements established by the Bank of Greece.

[39] European Commission Circular - SA.34823 (2012/C), SA.36004 (2013/NN), SA.37965 (2013/N), SA.37966 (2013/N), SA.37967 (2013/N)
[40] European Commission Circular - State aid n° SA.34825 (2012/C), SA.34825 (2014/NN), SA.36006 (2013/NN) SA.34488 (2012/C) (ex 2012/NN) SA.31155 (2013/C) (2013/NN) (ex 2010/N)

c. Quantitative Analysis – Abnormal Returns Analysis

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**02-Aug-10**	The Greek authorities submitted a Restructuring Plan in respect of the Eurobank Group to the Commission.	**02-Aug-10**	The European Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32789 (2011/PN).

Eurobank Ergasias: Event Window [1]

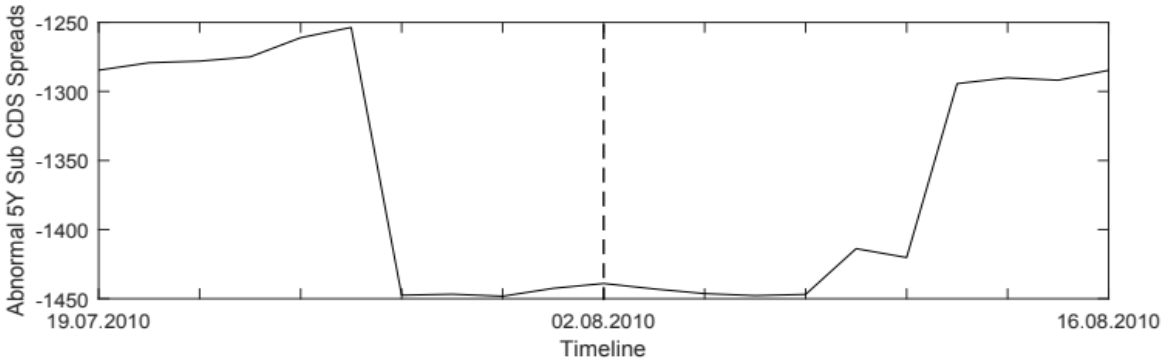

Figure 11: Abnormal 5 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [1]

Figures for Abnormal 5 Year Senior, Abnormal 10 Year Senior, & Abnormal 10 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [1] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**20-Apr-12**	The Hellenic Financial Stability Fund ("HFSF") provided Eurobank with a letter committing to participate in a planned share capital increase of the Bank.	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 3 970 million to the Bank ("first bridge recapitalisation").

Eurobank Ergasias: Event Window [2]

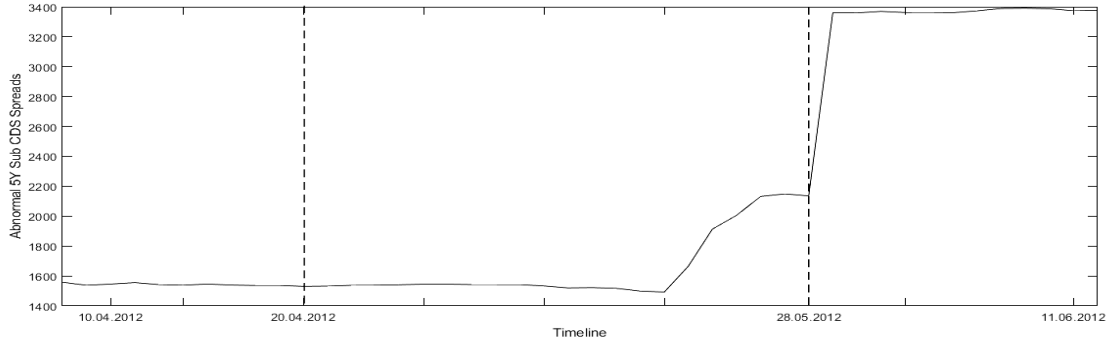

Figure 12: Abnormal 5 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [2]

Figures for Abnormal 5 Year Senior, Abnormal 10 Year Senior, & Abnormal 10 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [2] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 341 million to the Bank ("second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 528 million.	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 341 million to the Bank ("second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 528 million.

Eurobank Ergasias: Event Window [3]

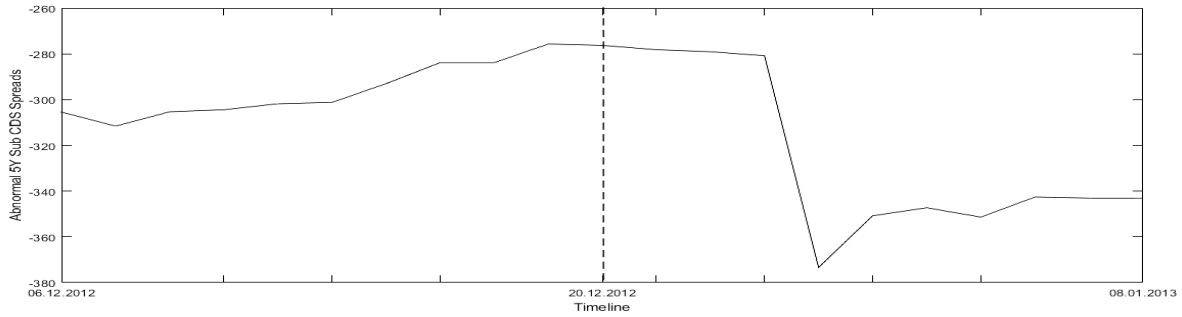

Figure 13: Abnormal 5 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [3]

Figures for Abnormal 5 Year Senior, Abnormal 10 Year Senior, & Abnormal 10 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [3] are documented in the Appendix

d. Synthesis of Findings

Bail-In Announcement - European Commission/Hellenic Financial Stability Fund
Bail-In Approval - Hellenic Financial Stability Fund

Event	Type	Date	Details	Abnormal 5Y Senior & Subordinated CDS Spreads	Abnormal 10Y Senior & Subordinated CDS Spreads	Abnormal Stock Returns
[1]	Announcement	02-Aug-10	On 2 August 2010, the Greek authorities submitted a restructuring plan in respect of the Eurobank Group to the Commission.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 5Y Senior & Subordinated CDS. The Bail-In Announcement/Approval event resides near the trough of the Event Window. The Abnormal 5Y Senior CDS Spreads of the Event Window ranges from *-450 bps* to *-325 bps*. The magnitude of change in Abnormal CDS Spreads implies that the Bail-In Announcement/Approval is interpreted negatively from the debtholders' risk perception. In addition, in contrast to the Abnormal 5Y Senior CDS Spreads, the Abnormal 5Y Subordinated CDS demonstrated CDS Spreads of a larger magnitude. The Abnormal 5Y Subordinated CDS Spreads ranges between *-1,450 bps* to *-1,250 bps* for Event Window [1]. This observation is as expected as a higher risk exposure is expected of Subordinated debtholders.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 10Y Senior & Subordinated CDS. The outlook for Abnormal 10Y CDS Spreads bears strong resemblance to its 5Y counterpart, differing only in terms of magnitude of Abnormal CDS Spreads. In general, the 10Y Senior & Subordinated CDS Spreads were observed to be less negative than its 5Y counterpart. The Abnormal 10Y Senior CDS Spreads ranges between *-400 bps* to *-260 bps* for Event Window [1]. The Abnormal 10Y Subordinated CDS Spreads ranges between *-850 bps* to *-650 bps* for Event Window [1].	-
[1]	Approval	02-Aug-10	The Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32789 (2011/PN).			
[2]	Announcement	20-Apr-12	On 20 April 2012, the Hellenic Financial Stability Fund ("HFSF") provided the Bank with a letter committing to participate in a planned share capital increase of the Bank.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement for both 5Y Senior & Subordinated CDS. Positive spreads of a larger magnitude were observed for Senior CDS than Subordinated CDS. Contrary to theoretical expectations, there is no distinct changes to the Abnormal CDS Spreads for both cases. The lack of significant response yielded by HFSF's letter of commitment could be interpreted as a lack of credibility and confidence towards the Fund. Essentially, the letter of commitment has failed to instil confidence in investors.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement for both 10Y Senior & Subordinated CDS. Positive spreads of a larger magnitude were observed for Senior CDS than Subordinated CDS. Contrary to theoretical expectations, there is no distinct changes to the Abnormal CDS Spreads for both cases. The lack of significant response yielded by HFSF's letter of commitment could be interpreted as a lack of credibility and confidence towards the Fund. Essentially, the letter of commitment has failed to instil confidence in investors.	-
[2]	Approval	28-May-12	On 28 May 2012, the HFSF granted a bridge recapitalisation of EUR 3 970 million to the Bank ("first bridge recapitalisation").	Contrasting observations regarding Abnormal CDS Spreads for both 5Y Senior & Subordinated CDS were noted. For the 5Y Senior CDS, the Abnormal 5Y Senior CDS Spreads subsided dramatically days before 28 May-12, the date of Bail-In Approval, and remained subdued at *+1,000 bps* for the rest of the Event Window. Significant changes to the magnitude of the Abnormal 5Y Senior CDS Spreads occurred prior to the actual date of approval, suggesting a possible news leak regarding details of the recapitalisation. On the other hand, the Abnormal 5Y Subordinated CDS Spreads spiked immediately on 28 May-12, the date of Bail-In Approval, and remained heightened at above *+3,400 bps* for the rest of the Event Window. Although a news leak regarding details of the recapitalisation seem probable, changes to the magnitude of the Abnormal 5Y Subordinated CDS Spreads reacted only on the date of Bail-In Approval. This observation could be attributed to the stipulations of the first bridge recapitalisation, which is likely to only implicate the Subordinated debtholders.	Contrasting observations regarding Abnormal CDS Spreads for both 10Y Senior & Subordinated CDS were noted. For the 10Y Senior CDS, the Abnormal 10Y Senior CDS Spreads subsided dramatically days after 28 May-12, the date of Bail-In Approval, and remained subdued at *+1,000 bps* for the rest of the Event Window. The impact of a possible news leak, which had altered the magnitude of the Abnormal 5Y Senior CDS Spreads, was not observed for its 10Y counterpart. On the other hand, the Abnormal 10Y Subordinated CDS Spreads posted similar outlook to that of its 5Y counterpart with a subdued Abnormal CDS Spreads at above *+2,000 bps* for the rest of the Event Window. This observation could be attributed to the stipulations of the first bridge recapitalisation, which is likely to only implicate the Subordinated debtholders.	-
[3]	Approval	20-Dec-12	In December 2012, the HFSF granted a second bridge recapitalisation of EUR 1 341 million to the Bank ("second bridge recapitalisation"). On 20 December 2012, the HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 528 million.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 5Y Senior CDS. However, a steady decline in Abnormal CDS Spreads could be observed for the 5Y Senior CDS Spreads since 06 Dec-12, which was further depressed post Bail-In Announcement/Approval to an Abnormal CDS Spread of approximately *+140 bps*. On the other hand, negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 5Y Subordinated CDS. In addition, a similar outlook with a time delay could be observed for the 5Y Subordinated CDS Spreads. The 5Y Subordinated CDS Spreads demonstrated a steady decline in Abnormal CDS Spreads several days after 20 Dec-12, date of the Bail-In Announcement/Approval. After which, the Abnormal CDS Spreads rebounded and peaked at *-340 bps* for the rest of the Event Window. The corresponding delay could be attributed towards to the time taken by Subordinated debtholders to be affirmed of the viability of their financial instruments post recapitalization.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for both 10Y Senior & Subordinated CDS. Notably, significant discrepancies arise between the outlook of the 10Y Senior CDS with its 5Y counterpart. The 10Y Senior CDS demonstrated a Subdued Abnormal CDS Spreads of *+100 bps* prior Bail-In Announcement/Approval., coupled by a steady increase in Abnormal CDS Spread several days post Bail-In Announcement/Approval. The Abnormal CDS Spread rebounded and peaked at *+200 bps* for the rest of the Event Window. This anomaly could be explained by another event which occurred within the Event Window, with its ramifications accounted for by the 10Y Senior CDS. On the other hand, negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 5Y Subordinated CDS. In addition, the Abnormal 10Y Subordinated CDS Spreads posted similar outlook to that of its 5Y counterpart, with Abnormal CDS Spreads of a lower magnitude. In addition, a similar time delay could be observed for the 10Y Subordinated CDS Spreads. The corresponding delay could be attributed towards to the time taken by Subordinated debtholders to be affirmed of the viability of their financial instruments post recapitalization.	-

Table 9: Synthesis of Findings for Eurobank Ergasias at Event Windows of Interest

Synthesis of Findings

Eurobank's Bail-in resulted in contrasting CDS spread and stock return adjustments. Event Window [1] reflects a Bail-in announcement, which is located at the trough of a cycle across all types of CDS spreads. The Restructuring Plan, which involves haircuts on subordinated debt as well as conversion of debt instruments into equity, had negative implications on debtholders' risk perception, as demonstrated by the heightened abnormal negative CDS spreads.

The fact that the CDS spreads started declining a few days before the event date and increased a few days after leads to the conjecture that these fluctuations in value corrections were solely due to the dissemination of new information related to the Bail-in. This could be explained by the fact that, with exception of LBO news, stock markets reveal information about negative credit events before the CDS market, arising from some adjustment time needed to reprice the traded CDS contracts of uninformed investors[41]. We observe this lag again in Event Window [2] and Event Window [3] for subordinated CDS contracts, which are most susceptible to the Restructuring Plan.

The Bail-in approval has sometimes resulted in a rise of subordinated CDS spreads that coincide with the flattening of senior CDS spreads since the Senior debtholders were not subjected to the Bail-in measure. The volatility of CDS spreads, coupled with the lagging reactions, cast doubts regarding the exact ramifications of the Bail-in information and how it has altered the debtholders' perceived risk exposure.

Notably, from Event Window [2], the HFSF's letter of commitment to support the recapitalisation did not invoke confidence in debtholders, whom did not reprice the risk exposure implied by a CDS contract on the issued bonds.

Aside from the time lag due to information leaks, empirical results are aligned with *Hypothesis [1]*, as Bail-in announcements that are not substantiated by credible National Fund's commitment exhibit a lower confidence from investors. The empirical observations also attest to *Hypothesis [2]*. Across all the samples, the impact of the Bail-in announcements was consistently stronger for Subordinated than Senior CDS contracts, and for the shorter-term contracts, due to the higher exposure to haircuts and equity conversion in accordance to the pre-defined pecking order in the burden sharing exercise.

[41] G. Zhang, « Informational Efficiency of Credit Default Swap and Stock Markets : The Impact of Adverse Credit Events », *International Review of Accounting, Banking and Finance*, Vol 1, 2009

7. Greece – Piraeus Bank SA

a. Background

Piraeus Bank[42] provides universal banking services mainly Greece and in Central, Eastern and South-Eastern Europe (Romania, Bulgaria, Serbia, Albania, Ukraine and Cyprus) as well as in Egypt. It offers a full range of banking and financial products and services to households and businesses. It is active in retail, corporate and private banking, asset management, treasury and investment banking.

Piraeus Bank participated in the Private Sector Involvement (PSI) programme, a private sector bond exchange, exchanging new Greek Government Bonds (GGBs), and State-related loans with a face value of EUR 7.7 billion. During the buy-back programme of December 2012, Piraeus Bank sold the new GGBs it had initially received from the PSI at a deep discount to nominal value, which crystallised into significant losses.

b. Approach of Resolution: Resolution via Public Recapitalization, Bail-in and State Aid issues (2009-2015)

From an operational perspective, Piraeus Bank's performance was largely impaired by the Greek sovereign crisis and the deep recession in Greece and southern Europe. The ramifications of the sovereign crisis resulted in the Greek government's loss of access to financial markets, which was resolved via a negotiated agreement with its domestic and international creditors.

The agreement resulted in the implementation of a private sector bond exchange, commonly known as the Private Sector Involvement programme. However, since the initiative's inception in February 2012, Greek Government Bonds[43] (GGBs) were acquired back by the State from Greek banks at a price between 30,2% and 40,1% of their nominal value, hence crystalizing a further loss for the Greek banks.

Beside the impact on its capital position due to the debt buy-back initiative, Piraeus Bank also observed huge deposit outflows between 2010 and mid-2012, due to imminent expectations that Greece would exit the euro area because of an unsustainable public debt and the economic pressure. However, pressures on Piraeus Bank's financial position somewhat alleviated after it started to make strategic acquisitions in July 2012.

These exposures revealed vulnerability of the Piraeus Bank in terms of the credit quality of its portfolio composition, as well as its ability to turn profitable under the impairments of its growing liquidity problems. The Stress Test, conducted by the Bank of Greece in 2013, also puts into perspective the magnitude of the capital shortfall of Piraeus Bank – EUR 465 million in order to reach the required solvency level under the baseline scenario.

In contrast to Eurobank Ergasias' capital increase of April 2014, the Hellenic Financial Stability Fund (HFSF) did not commit to inject capital in Piraeus Bank in case of insufficient private demand. The institution's capital increase was instead achieved via a non-pre-emptive equity offering to international investors and through a public offering in Greece. Following the capital increase, Piraeus Bank proceeded to redeem the preference shares to Greece, for a total amount of EUR 750 million.

[42] European Commission Circular - SA.34826 (2012/C), SA.36005 (2013/NN)
[43] European Commission Circular - SA.34825 (2012/C), SA.34825 (2014/NN), SA.36006 (2013/NN) SA.34488 (2012/C) (ex 2012/NN) SA.31155 (2013/C) (2013/NN) (ex 2010/N)

Measure	Type of Measure	Description	Amount (EUR million)	Approved	%RWA
A	Capital support	Preference shares	750	May 2009	2.1%
B1	Capital support	First bridge recapitalisation	4 700	May 2012	13.8%
B2	Capital support	Second bridge recapitalisation	1 553	Dec 2012	4.5%
B3	Capital support	Commitment letter	1 082	Dec 2012	3.2%
B4	Capital support	Spring 2013 recapitalisation	5 891	May 2013	17.3%

Table 10: Overview of the Capital Support Measures for Piraeus Bank

Measure	Type of Measure	Description	Amount (EUR million)	Approved	%RWA
L1	Guarantee	Liquidity support	9 900	Mar 2014	
L2	Funding & Guarantee	State-guaranteed Emergency Liquidity Assistance	31 4000	Dec 2011	-

Table 11: Overview of the Liquidity Support Measures for Piraeus Bank

As stipulated by the 2013 Banking Communication, with further supplements from Article 6(a) of the HFSF law as amended in 2014, prior to benefiting from State aid, it is mandatory for aided banks to conduct burden-sharing exercises on existing shareholders and on holders of hybrid and subordinated debt instruments so as to maximise the loss-absorption capacity of the aided bank whilst minimising the cost for the tax payer.

By extension, as expounded upon Article 107(3)(b) TFEU[44], the magnitude of the aid conferred should comply with the following conditions:

a) ***Appropriateness:*** The conferred aid must be well-targeted in order to effectively address the issue of remedying a serious disturbance in the economy.

b) ***Necessity*****:** The aid measure must, in its amount and form, be necessary to address this issue. Hence, it must be of the minimum amount necessary and most appropriate form to achieve the objective.

c) ***Proportionality:*** The implications of the enforced measure must be properly balanced against the distortions of competition, in order for the distortions to be limited to the minimum necessary to reach the measure's objectives.

As such, Piraeus Bank has benefited and continues to benefit from State guarantees under the Greek Banks Support Scheme worth €9.9 billion, and State-guaranteed Emergency Liquidity Assistance (ELA) worth €31.4 billion. In addition, Piraeus Bank has received a capital injection of €750 million under the recapitalisation measure of the Greek Banks Support Scheme, as well as several recapitalisation proceedings from the Hellenic Financial Stability Fund.

[44] European Commission Circular - SA.34823 (2012/C), SA.36004 (2013/NN), SA.37965 (2013/N), SA.37966 (2013/N), SA.37967 (2013/N)

c. Quantitative Analysis – Abnormal Returns Analysis

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**23-Jul-10**	The Greek authorities submitted a Restructuring Plan to the Commission.	**23-Jul-10**	The European Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32787 (2011/PN).

Piraeus Bank: Event Window [1]

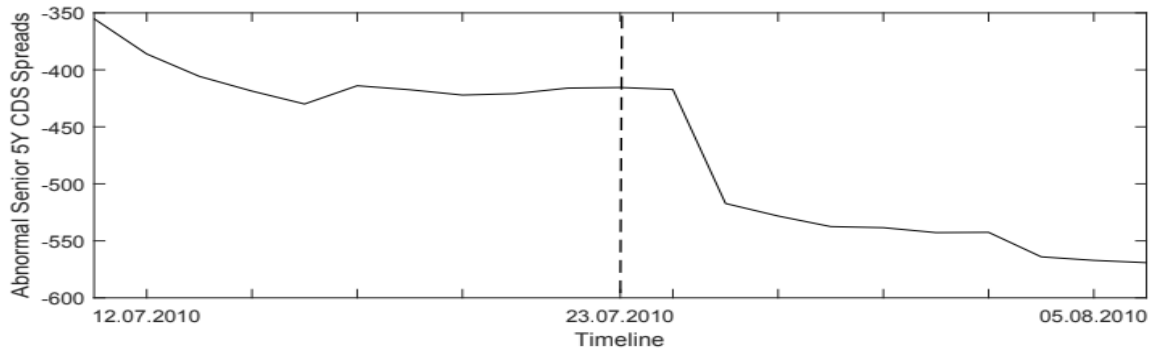

Figure 14: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [1]

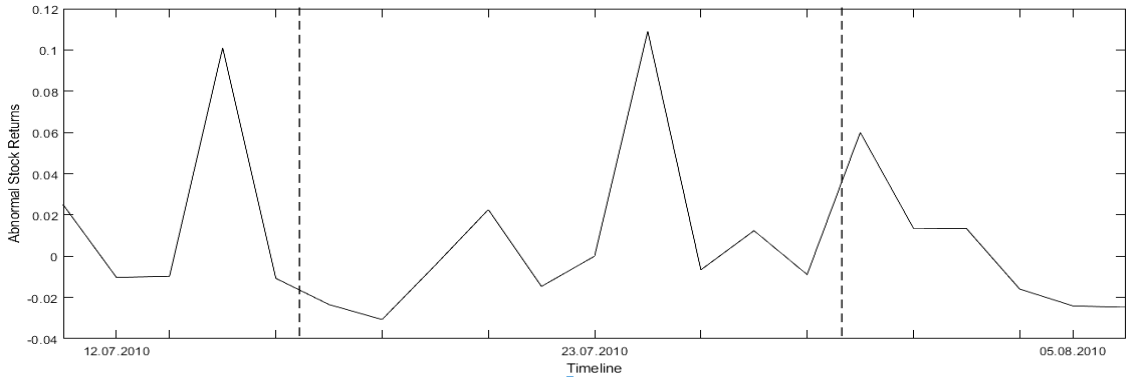

Figure 15: Abnormal Stock Returns for Piraeus Bank at Event Window [1]

Figure for Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [1] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**20-Apr-12**	The Hellenic Financial Stability Fund ("HFSF") provided Piraeus Bank with a letter committing to participate in a planned share capital increase of the Bank.	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 4 700 million to the Bank ("the first bridge recapitalisation").

Piraeus Bank: Event Window [2]

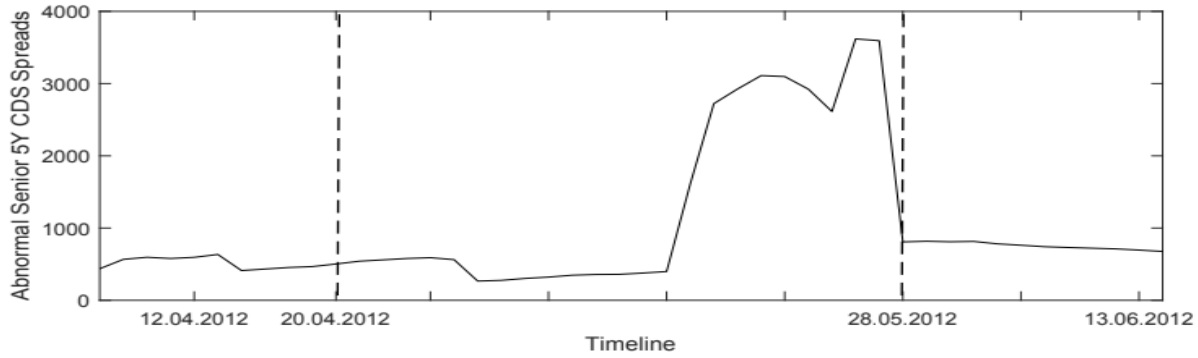

Figure 16: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [2]

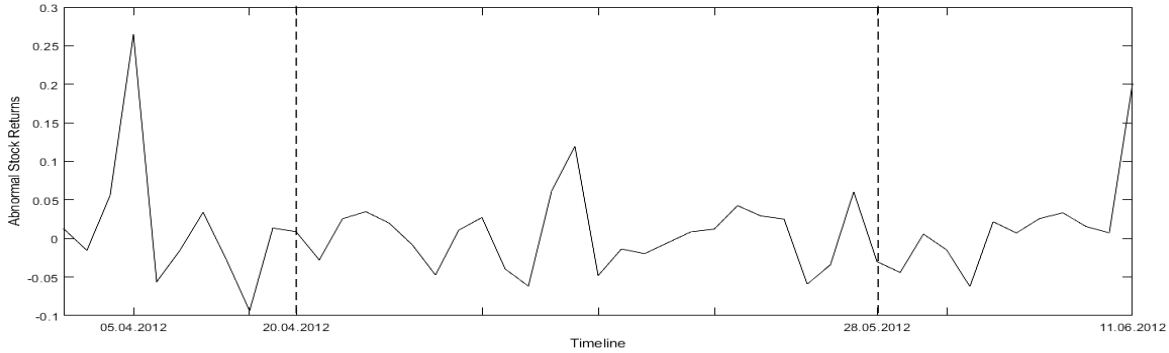

Figure 17: Abnormal Stock Returns for Piraeus Bank at Event Window [2]

Figure for Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [2] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 553 million to the Bank ("the second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in instruments to be issued, for a total amount of up to EUR 1 082 million convertible capital.	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 553 million to the Bank ("the second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in instruments to be issued, for a total amount of up to EUR 1 082 million convertible capital

Piraeus Bank: Event Window [3]

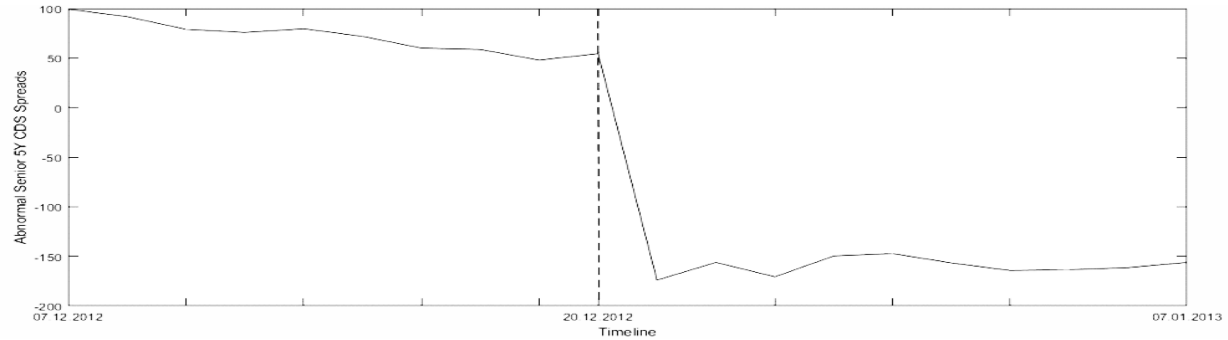

Figure 18: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [3]

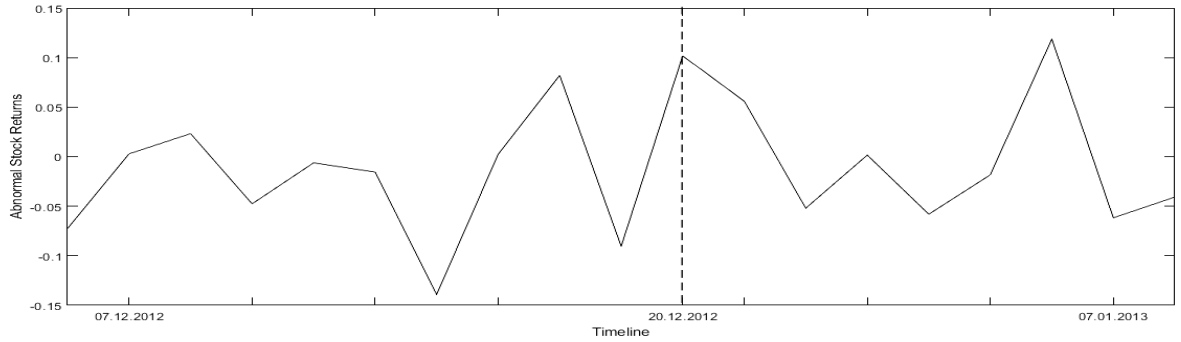

Figure 19: Abnormal Stock Returns for Piraeus Bank at Event Window [3]

Figure for Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [3] are documented in the Appendix

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [4]	**03-Jun-13**	The HFSF partially converted the first and second bridge recapitalisations into equity for a total of EUR 5 891 million. The HFSF also injected an additional amount of EUR 1 094 million into the Bank, as committed at the time of the acquisitions by the Bank of the good part of Agricultural Bank of Greece ("ATE") and of the Greek branches of three Cypriot Banks. In addition, private investors injected EUR 1 444 million. The total recapitalisation amounted to EUR 8 429 million and is referred to as "the Spring 2013 recapitalisation".	**03-Jun-13**	The HFSF partially converted the first and second bridge recapitalisations into equity for a total of EUR 5 891 million. The HFSF also injected an additional amount of EUR 1 094 million into the Bank, as committed at the time of the acquisitions by the Bank of the good part of Agricultural Bank of Greece ("ATE") and of the Greek branches of three Cypriot Banks. In addition, private investors injected EUR 1 444 million. The total recapitalisation amounted to EUR 8 429 million and is referred to as "the Spring 2013 recapitalisation".

Piraeus Bank: Event Window [4]

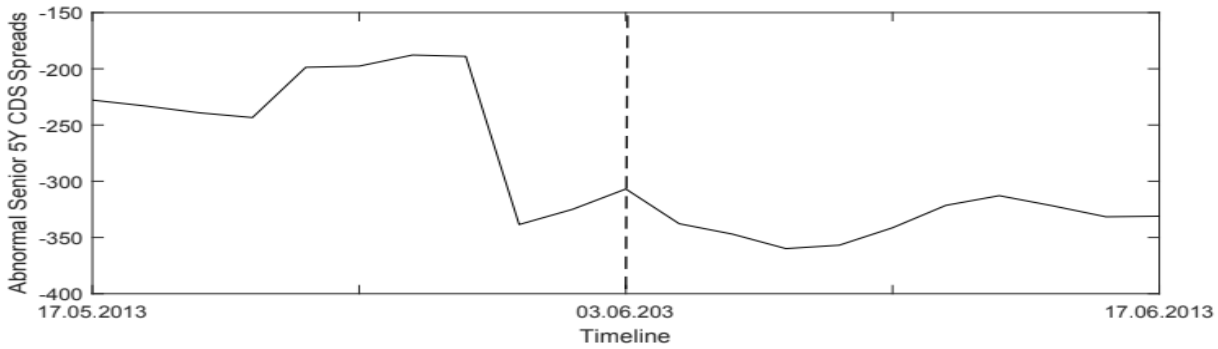

Figure 20: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [4]

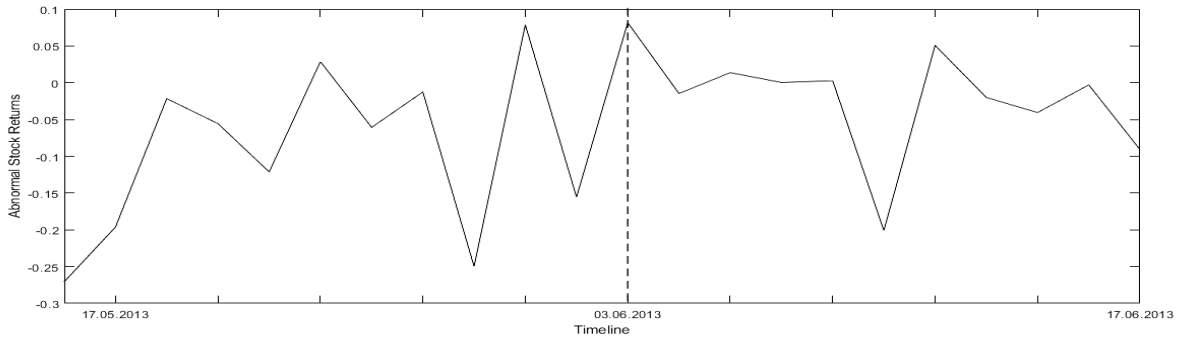

Figure 21: Abnormal Stock Returns for Piraeus Bank at Event Window [4]

Figure for Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [4] are documented in the Appendix

d. Synthesis of Findings

Bail-In Announcement - European Commission/Hellenic Financial Stability Fund
Bail-In Approval - Hellenic Financial Stability Fund

Event	Type	Date	Details	Abnormal 5Y Senior CDS Spreads	Abnormal 10Y Senior CDS Spreads	Abnormal Stock Returns
[1]	Announcement	23-Jul-10	On 23 July 2010, the Greek authorities submitted a restructuring plan to the Commission.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 5Y Senior CDS, ranging from *-575 bps* to *-350 bps*. The magnitude of change in Abnormal CDS Spreads implies that the Bail-In Announcement/Approval had initially subdued and stabilised investors' risk perception. However, perhaps due to a lack of credibility or confidence in the Greek authorities, the optimistic sentiment of the Bail-In Announcement/Approval was not sustained, evidenced by a downward spiral of the Abnormal CDS Spreads for the rest of the Event Window. The persistent downward spiral of the Abnormal CDS Spreads implies strong fear or doubts regarding Piraeus Bank's ability to address its capital adequacy issues. In addition, an observed delay before the downward spiral of the Abnormal CDS Spread could be attributed to uncertainty regarding the credibility of the Bail-In Announcement/Approval or the occurrence of another confounding event.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 10Y Senior CDS, ranging from *-475 bps* to *-275 bps*. The outlook for Abnormal 10Y Senior CDS Spreads bears strong resemblance to its 5Y counterpart, differing only in terms of magnitude of Abnormal CDS Spreads. In general, the 10Y Senior CDS Spreads were observed to be less negative than its 5Y counterpart. In addition, a delay of similar magnitude could also be observed for the 10Y Senior CDS Spreads.	The persistently volatile Abnormal Stock Returns prior and post Bail-In Announcement/Approval suggest conflicting investors' risk perception regarding the viability of Piraeus Bank. In addition, an observed delay before the increase in Abnormal Stock Returns on 23 Jul-10, the date of Bail-In Announcement/Approval, suggests either a lack of investors' confidence or the occurrence of another confounding event.
[1]	Approval	23-Jul-10	The Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32787 (2011/PN).			
[2]	Announcement	20-Apr-12	On 20 April 2012, the Hellenic Financial Stability Fund ("HFSF") provided the Bank with a letter committing to participate in a planned share capital increase of the Bank.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement for the 5Y Senior CDS, ranging from *+500 bps* to *+3,500 bps*. There are no notable changes in magnitude of the Abnormal CDS Spreads despite the Bail-In Announcement. The lack of significant response yielded by HFSF's letter of commitment could be interpreted as a lack of credibility and confidence towards the Fund. Essentially, the letter of commitment has failed to instil confidence in investors.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement for the 10Y Senior CDS. Positive spreads of similar outlook and magnitude were observed for both 5Y and 10Y Senior CDS. Similar to the 5Y Senior CDS Spreads, there are no notable changes in magnitude of the Abnormal 10Y CDS Spreads despite the Bail-In Announcement.	Bail-In Announcement reflects a positive Abnormal Stock Returns of *0%*. A short term upward trend existed prior to the Bail-In Announcement, suggesting perhaps the regaining of market confidence. This trend persisted towards the Bail-In Announcement before turning volatile for the rest of the Event Window. The persistently volatile Abnormal Stock Returns prior and post Bail-In Announcement suggest conflicting investors' risk perception regarding the viability of Piraeus Bank.
[2]	Approval	28-May-12	On 28 May 2012, the HFSF granted a bridge recapitalisation of EUR 4 700 million to the Bank ("the first bridge recapitalisation").	The Abnormal 5Y Senior CDS Spreads subsided immediately on 28 May-12, the date of Bail-In Approval, and remained subdued at *+1,000 bps* for the rest of the Event Window. This observation could be attributed to the stipulations of the first bridge recapitalisation, which is likely to only implicate the Subordinated debtholders.	Similar to the 5Y Senior CDS Spreads, the Abnormal 10Y Senior CDS Spreads subsided immediately on 28 May-12, the date of Bail-In Approval, and remained subdued at *+1,000 bps* for the rest of the Event Window.	Bail-In Approval reflects a negative Abnormal Stock Returns of *-0.025%*. However, no concrete conclusion could be derived at, due to the volatility of the Abnormal Stock Returns prior and post Bail-In Approval. The persistently volatile Abnormal Stock Returns prior and post Bail-In Approval suggest conflicting investors' risk perception regarding the viability of Alpha Bank.
[3]	Announcement	20-Dec-12	On 20 December 2012, the HFSF granted a second bridge recapitalisation of EUR 1 553 million to the Bank ("the second bridge recapitalisation").The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in instruments to be issued, for a total amount of up to EUR 1 082 million convertible capital	Positive Abnormal CDS Spreads have been observed prior Bail-In Announcement/Approval for the 5Y Senior CDS, before eventually turning negative for the rest of the Event Window. The Abnormal CDS Spreads ranges from *-175 bps* to *+100 bps*. The steady decline in Abnormal CDS Spreads occurs on 20 Dec-12, which coincides with the date of Bail-In Announcement/Approval. The magnitude of change in the Abnormal 5Y CDS Spreads suggests that the Senior debtholders were protected and affirmed of the viability of their financial instruments post recapitalization.	Positive Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 10Y Senior CDS, before eventually turning negative for the rest of the Event Window. The Abnormal CDS Spreads ranges from *-100 bps* to *+150 bps*. Positive spreads of similar outlook and magnitude were observed for both 5Y and 10Y Senior CDS.	Bail-In Announcement/Approval reflects a positive Abnormal Stock Returns of *+0.1%*. The Bail-In Announcement/Approval coincides with a peak in Abnormal Stock Returns, which remained volatile for the rest of the Event Window. As the Abnormal Stock Returns post Bail-In Announcement/Approval did not demonstrate any significant positive outlook, this suggests either (1) Market irrationality or (2) Market's discontentment with regards to the value of the recapitalisation granted by the HFSF.
[3]	Approval	20-Dec-12	On 20 December 2012, the HFSF granted a second bridge recapitalisation of EUR 1 553 million to the Bank ("the second bridge recapitalisation").The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in instruments to be issued, for a total amount of up to EUR 1 082 million convertible capital			

[4]	Announcement	03-Jun-13	On 3 June 2013, the HFSF partially converted the first and second bridge recapitalisations into equity for a total of EUR 5 891 million. The HFSF also injected an additional amount of EUR 1 094 million into the Bank, as committed at the time of the acquisitions by the Bank of the good part of Agricultural Bank of Greece ("ATE") and of the Greek branches of three Cypriot Banks (see section 1.2). In addition, private investors injected EUR 1 444 million. The total recapitalisation amounted to EUR 8 429 million and is referred to as "the Spring 2013 recapitalisation".	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 5Y Senior CDS, ranging from *-550 bps* to *-200 bps*. The magnitude of change in Abnormal CDS Spreads implies that the Bail-In Announcement/Approval had initially subdued and stabilised investors' risk perception.	Negative Abnormal CDS Spreads have been observed prior and post Bail-In Announcement/Approval for the 10Y Senior CDS, ranging from *-400 bps* to *-275 bps*. The outlook for Abnormal 10Y CDS Spreads bears strong resemblance to its 5Y counterpart, differing only in terms of magnitude of Abnormal CDS Spreads.	Abnormal Stock Returns observed prior and post Bail-In Announcement/Approval suggests possible market irrationality, due to changes in Abnormal Stock Returns of significant magnitude. Abnormal Stock Returns post Bail-In Announcement/Approval demonstrates that the recapitalisation was successful in alleviating the volatility in Abnormal Stock Returns, whilst instilling market confidence in Piraeus Bank's capital adequacy. The Abnormal Stock Returns for the rest of the Event Window implies optimism regarding investors' risk perception.
[4]	Approval	03-Jun-13	On 3 June 2013, the HFSF partially converted the first and second bridge recapitalisations into equity for a total of EUR 5 891 million. The HFSF also injected an additional amount of EUR 1 094 million into the Bank, as committed at the time of the acquisitions by the Bank of the good part of Agricultural Bank of Greece ("ATE") and of the Greek branches of three Cypriot Banks (see section 1.2). In addition, private investors injected EUR 1 444 million. The total recapitalisation amounted to EUR 8 429 million and is referred to as "the Spring 2013 recapitalisation".			

Table 12: Synthesis of Findings for Piraeus Bank at Event Windows of Interest

Synthesis of Findings

As the heterogeneity of results across announcements and events demonstrates, investors were very hesitant. The senior CDS spreads do not react to the Bail-in announcements like subordinated CDS do because senior debt instruments were not included in the pre-defined pecking order of the announced Bail-in tools implemented in the restructuring process. Hence, it is not surprising that the abnormal stock returns and senior CDS spreads do not always move in an opposite way.

For almost all the Event Windows, the Bail-in announcement and approval resulted in a stock return correction, sometimes in a limited but consistently clearly negative way. The Bail-in announcements seem to effectuate the flattening or decrease in senior CDS spread, as Senior debtholders were ascertained that their instruments would not be bailed-in. The same lags observed before are visible on the senior CDS reaction, with a slightly larger impact on 5Y CDS than 10Y CDS.

The abnormal returns on the stock prices are aligned with *Hypothesis [1]*, while the results are less easy to interpret for the CDS spreads and do not allow us to derive at any assertion. In addition, the absence of data regarding junior CDS spreads impedes the possibility of drawing any substantial conclusion as far as *Hypothesis [2]* is concerned.

Section VI Case Studies – Spain

1. Summary

The inherent weaknesses in the capitalization of Spanish financial institutions were exposed during the financial crisis of 2007-2008, and were further exacerbated by the real estate crash, and subsequent sovereign debt crisis in Spain. As domestic efforts to support, sustain and restructure Spanish financial institutions proved to be futile, aid from the European Stability Mechanism (ESM) was made available to these affected institutions. Since then, eight financial institutions were recapitalized via the public Fund for Orderly Bank Restructuring (FROB), a banking bailout and reconstruction program initiated by the Spanish government in June 2009. A private-public asset management vehicle (SAREB) was also initiated to facilitate the imminent winding down of real estate assets, valued at EUR 51.8 billion, within 15 years.

However, in adhering to the blueprint of minimizing public support, part of the losses had to be borne by shareholders – who were almost completely diluted – and by existing holders of preference shares and subordinated debt, of which approximately EUR 13.6 billion were originated via "Subordinated Liability Exercises" (SLE). In addition, it was noted that the liquidity mechanism for "bailed-in" holders of subordinated debt underwritten by the Deposit Guarantee Fund (DGS), coupled by a less intrusive SLE scope, was instrumental in reducing the occurrences of litigation in resolution.

2. Background

After two decades of strong growth, highlighted by a considerable construction boom in Spain, domestic and foreign implications have had a significant role in leaving Spain's economy in tatters. Notably, the bust of the real estate bubble, further compounded by the increase in ratio of non-performing loans, sharp decline in real estate prices, as well as excessive leveraging and risk taking, have escalated bank's provisions needs and capital requirements. Newly enforced regulatory requirements, which advocate a more realistic valuation of real estate assets in hope of avoiding a systemic risk, further augmented the demand for capital.

However, despite the systemicity, the financial crisis in Spain were largely concentrated in saving banks - the "Cajas". In contrast to commercial banks, which were able to supplement their capital requirements independently, numerous "Cajas" were unable to remain solvent without public financial support. This inherent weakness from a capital adequacy perspective is attributed to the structural deficiencies of saving banks, which possess an ownership structure without formal shareholders, whilst being governed by both public and private stakeholders without profit distribution. These traits nurtured an environment that often displayed poor or inadequate risk management, and aggressive lending behaviour.

To avoid a catastrophic impact on the financial system, via the likelihood of contagion effects, the recapitalization and restructuring of institutions with public support was deemed necessary. The resolution decision was conferred by the Bank of Spain, based on independent economic valuations of the institutions in question, with respect to both going-concern and liquidation scenarios. This valuation established the proportionality of the measure and ensured the equality of treatment with regards to the shareholders and creditors. Stress tests were conducted on banks' balance sheets to assess the prospective amount of capital shortfalls under adverse scenarios.

3. Spain – Case BFA-Bankia

a. Background

BFA-Bankia[45] is a large universal retail bank, with a presence in all main business segments: namely, mortgage, consumer lending, small and medium-sized enterprises (SMEs) and large corporations, as well as public and private institutions. BFA-Bankia was inaugurated via an agreement on the 14th June 2010 to integrate seven Spanish savings banks into BFA, a regulatory consolidated group, as endorsed via the Institutional Protection Scheme (IPS). The seven founding Spanish savings banks are: Caja de Ahorros y Monte de Piedad de Madrid (CajaMadrid), Caja de Ahorros de Valencia, Castellón y Alicante (Bancaja), Caja Insular de Ahorros de Canarias (Caja Insular), Caixa D'Estalvis Laietana (Caixa Laietana), Caja de Ahorros Monte de Piedad de Avila (Caja de Avila), Caja de Ahorros y Monte de Piedad de Segovia (Caja Segovia) and Caja de Ahorros de la Rioja (Caja Rioja).

The consolidation process also stipulated the granting of State aid by the newly established Fondo de Reestructuración Ordenada Bancaria (FROB), which subscribed to EUR 4465 million worth of convertible preference shares under its recapitalisation scheme.

b. Timeline & Milestones of Events

Year	Date	Event Description
2008	**-**	The aftermath of the financial crisis spurred the Spanish government towards establishing legal restrictions, via Royal Decree Law 9/2009, towards the restructuring of the Spanish banking sector. These clauses seek to address the structural weakness in the saving banks - "Cajas", such as weak corporate governance and legal limitations towards raising of regulatory capital.
2010	**-**	BFA benefited from the legislation as it received a capital injection of EUR 4465 million from the FROB, in terms of convertible preference shares, as a support for the merger of the seven founding savings banks whilst partially funding the corresponding restructuring costs.
2011	**-**	The European Banking Authority (EBA) published a recommendation regarding the creation and supervision of capital buffers to restore market confidence. Although BFA Group was noted to bear a shortfall in capital of EUR 1329 million, the Group was exempted from the final recapitalization exercise under the assurance of the Spanish authorities that it will undergo a deep restructuring process.
2011	**18-Feb-11**	Spain adopted a more stringent regulatory capital requirement for the entire financial sector, which compels all institutions to meet the latest higher minimum regulatory solvency levels – also known as "capital principal". In accordance with the new solvency requirements, BFA is required to raise EUR 5.8 billion of addition capital in order to address the new 10% capital principal ratio.
2012	**-**	The BFA Group's management requested from the FROB an additional EUR 19 billion of capital, of which 12 to 14 billion was expected to be for Bankia alone. The Group also revised and published its 2011 annual financials, by recognising additional losses of EUR 4952 million. Liquidity issues have since impede the BFA Group, as it lacks the capital to adequately meet the more stringent regulatory requirements approved by the Spanish government.
2012	**25-Jun-12**	Moody's[46] assigned a Ba2 rating to Bankia's long-term rating, considering the Spanish government's effort to stabilize the banking system. In response to a negative economic valuation of BFA by three independent investment banks, the FROB converted all its convertible preference shares into ordinary equity of BFA, to increase the solvency of the bank. Upon the conversion, FROB became the sole shareholder of the BFA.
2012	**31-Aug-12**	Public disclosure[47] of financial information regarding BFA Group's performance for the first half of 2012 revealed losses of EUR 2.8 billion in BFA and EUR 4.5 billion in Bankia. These losses resulted in a negative equity for BFA, and a shortfall of regulatory capital for both BFA and Bankia.
2012	**04-Sep-12**	Capital injection of EUR 4.5 billion was initiated by FROB. This afforded the Group a solvency rate of 8.2% in anticipation of its submission of the Restructuring Plan, which is expected to lead to a final recapitalization by the FROB.
2012	**28-Sep-12**	Results of a bottom-up stress test conducted by Oliver Wyman, an independent consultant, under the context of the MoU[48] stress test, revealed a capital shortfall of EUR 24 743 million under the test's adverse scenario and EUR 13 230 under its base case.

[45] European Commission Circular - State aid° SA.35253 (2012/N) – Spain: Restructuring and Recapitalisation of the BFA Group
[46] Moody's Investors Service: Global Credit Research – 25 Jun 2012 [BFA-Bankia]
[47] Moody's Investors Service: Global Credit Research – 31 Aug 2012 [BFA-Bankia]
[48] Moody's Investors Service: Global Credit Research – 28 Sep 2012 [BFA-Bankia]

2012	**15-Oct-12**	Moody's[49] downgraded Bankia's long-term rating to BB following a sector review.
2012	**09-Nov-12**	Spain communicated the final content for its proposed Restructuring Plan, in accordance with the stipulations stated by the Memorandum of Understanding[50] on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU).

Table 13: Timeline of BFA-Bankia's Credit Rating

[49] Moody's Investors Service: Global Credit Research – 15 Oct 2012 [BFA-Bankia]
[50] Moody's Investors Service: Global Credit Research – 09 Nov 2012 [BFA-Bankia]

c. Approach of Resolution: Resolution via Public Recapitalization, Bail-in and the Creation of an Asset Management Vehicle (2012)

From an operational perspective, BFA-Bankia's performance was impeded by excessive exposure to the underperforming real estate sector, attributed to each of its seven founding savings banks. In turn, the Group oversaw an increment in terms of its non-performing loan at 11.62% as of 30th June 2012, over-reliance on wholesale funding with a loan-to-deposit ratio of 185% as of 30th June 2012, and liquidity issues because of constrained access to whole sale market due to its downgraded rating.

These exposures revealed vulnerability of the BFA Group in terms of the credit quality of its portfolio composition, as well as its ability to turn profitable under the impairments of its growing liquidity problems. The MoU Stress Test also puts into perspective the magnitude of the capital shortfall of the BFA Group – EUR 24 743 million, under the adverse scenario in order to reach the required solvency level of 6% of its Risk Weighted Assets (RWA) by 31st December 2014.

Measure	Description	Amount (EUR million)	Approved	%RWA
A	State guarantees on senior unsecured debt: under the Spanish Guarantee Scheme	€34 963	23.12.2008 25.06.2009 09.02.2012	Not applicable
B	State guarantees on senior unsecured debt: under the Spanish Guarantee Scheme	€19 000	27.06.2012	Not applicable
C	Recapitalisation measure: *FROB I convertible preference shares*	€4 465	30.06.2010	[0-5] %
D	Averted losses linked to the FROB intervention in Banco de Valencia	€1 759	28.11.2012	[0-5] %
E	Recapitalisation measures: *Conversion of the FROB I preference shares (Measure C) into equity*	€4 465	27.06.2012	[…]
F	Recapitalisation Measure	€4 500	07.09.2012	[0-5] %
G	Recapitalisation Measure	€17 959	28.11.2012	[5-10] %
H	Impaired asset Measure	€12 000	28.11.2012	[5-10] %

Table 14: Overview of the Aid Measures for BFA Bankia

As stipulated by the Memorandum of Understanding on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU) and Royal Decree Law 24/2012, prior to benefiting from State aid, it is mandatory for aided banks to conduct burden-sharing exercises on existing shareholders and on holders of hybrid and subordinated debt instruments so as to maximise the loss-absorption capacity of the aided bank whilst minimising the cost for the tax payer.

However, in view of the systemic nature of BFA-Bankia within the Spanish and European financial sector, the Spanish authorities will carry out an in-depth restructuring of BFA Group as set out in the Restructuring Plan[51]. According to the Royal Decree Law 24/2012. By extension, as expounded upon Article 107(3)(b) TFEU[52], the magnitude of the aid conferred should comply with the following conditions:

a) ***Appropriateness:*** The conferred aid must be well-targeted in order to effectively address the issue of remedying a serious disturbance in the economy.

b) ***Necessity*****:** The aid measure must, in its amount and form, be necessary to address this issue. Hence, it must be of the minimum amount necessary and most appropriate form to achieve the objective.

c) ***Proportionality:*** The implications of the enforced measure must be properly balanced against the distortions of competition, in order for the distortions to be limited to the minimum necessary to reach the measure's objectives.

[51] European Commission Circular - State aid° SA.35253 (2012/N) – Spain: Restructuring and Recapitalisation of the BFA Group
[52] European Commission Circular - SA.34823 (2012/C), SA.36004 (2013/NN), SA.37965 (2013/N), SA.37966 (2013/N), SA.37967 (2013/N)

From the aforementioned aid measures, BFA-Bankia has benefited from State guarantees on unsecured senior debt under the Spanish bank guarantee scheme (see MEX/12/0629) worth €53.9 billion, averted potential losses linked to credit lines extended to Banco de Valencia which amounts to €17 59 million and benefited from the recapitalisation of €18 billion in the form of contingent convertible bonds (CoCos) subscribed by the FROB, and transfer of impaired assets and loans into an asset management entity for an aid amount of around €12 000 million. The latest measures as stipulated under the European Commission Circular[53] address the follows:

- **Measure D:** The capital relief measure affords BFA-Bankia the economic flexibility as it averted the losses that the BFA Group would have incurred in the event of Banco de Valencia's insolvency, which would have occurred without FBOB's intervention.
- **Measure G:** The recapitalisation measure affords BFA-Bankia the capital flexibility by fortifying its core capital, allowing it to restore its regulatory solvency ratio whilst avoiding technical insolvency.
- **Measure H:** The impaired assets measure affords BFA-Bankia the strategic advantage of transferring its most risky portfolio off balance sheet; hence, allowing it to avoid foreseeable adverse consequences of potential future losses on those assets. In addition, the designated transfer price of the assets, while conservative in nature, remains above the current market price of which a private investor is willing to pay for.

In summary, these measures demonstrate the flexibility in allowing BFA-Bankia to de-risk its current activities, whilst strengthening its capital position.

In December 2012, the Fund for Orderly Bank Restructuring (FROB) ascertained the economic values of the BFA Group via reports commissioned by three independent experts. The BFA Group was valued at EUR -10.44 billion, whilst Bankia, its listed counterpart, was determined to be worth EUR -4.15 billion. The proposed resolution was objectively justified from the public interest's perspective as the value of the entities would surged to EUR -64.02 billion under liquidation scenario.

As such, BFA-Bankia was injected with EUR 18 billion of capital, via FROB, whilst being afforded a transfer of its "bad" assets valued at EUR 22.3 billion to SAREB, a private-public asset management vehicle. This transfer of "bad" assets amounted to nearly half of SAREB's portfolio. In turn, the FROB demanded the issuance of contingent convertible bonds, without a preferential subscription right, by Bankia amounting to EUR 10.7 billion. These bonds were to be subscribed by BFA, and by extension, owned by FROB. These bonds seek to temporarily cover the existing capital shortfall in Bankia, with a repayment period of up to 5 years.

The recapitalization of BFA-Bankia was completed in April 2013, and adopted the following measures:

a) **Reduction in Capital for Loss-Absorption:** Reducing the nominal value of existing shares from their then value of EUR 2 down to EUR 0.0. All existing shareholders bears the burden of losses in proportion to their existing stakes prior to the capital injection.
b) **Counter-Split/Bundling of Shares:** To return the share to its nominal value of EUR 2, the number of shares outstanding were reduced following the capital reduction.
c) **Capital Increase:** An initial capital increase, followed by a subsequent round, was initiated by the FROB through BFA, to allow the bringing in of the group's preference shares and subordinated debt into Bankia's capital. In early 2015, the nominal value of a share was reduced to EUR 0.8, as FROB resides over an 64 % ownership of Bankia.

[53] European Commission Circular[53] - State aid° SA.35253 (2012/N)

d. Quantitative Analysis – Abnormal Returns Analysis

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**19-Jun-12**	On 19 June 2012, the Spanish authorities notified the Commission that the convertible preference shares subscribed for by the FROB in BFA were to be converted into ordinary shares. Additionally, a liquidity guarantee of up to EUR 19 billion was also to be granted to BFA in the context of that conversion.	**27-Jun-12**	The Commission approved both measures on 27 June 2012 ("the Conversion Decision").

BFA-Bankia: Event Window [1]

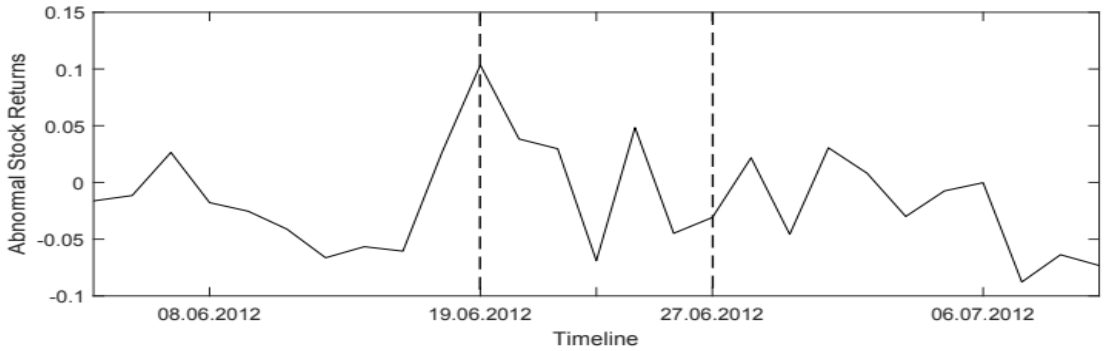

Figure 22: Abnormal Stock Returns for BFA-Bankia at Event Window [1]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**03-Sep-12**	On 3 September 2012, the Spanish authorities notified a new aid measure in favour of the BFA group, which includes BFA and its banking subsidiary Bankia ("the BFA Group" or "BFA/BANKIA") via a new capital injection of up to EUR 4.5 billion.	**07-Sep-12**	The Commission approved the measure through a rescue decision on 7 September 2012 ("the Urgent Recapitalisation Decision").

BFA-Bankia: Event Window [2]

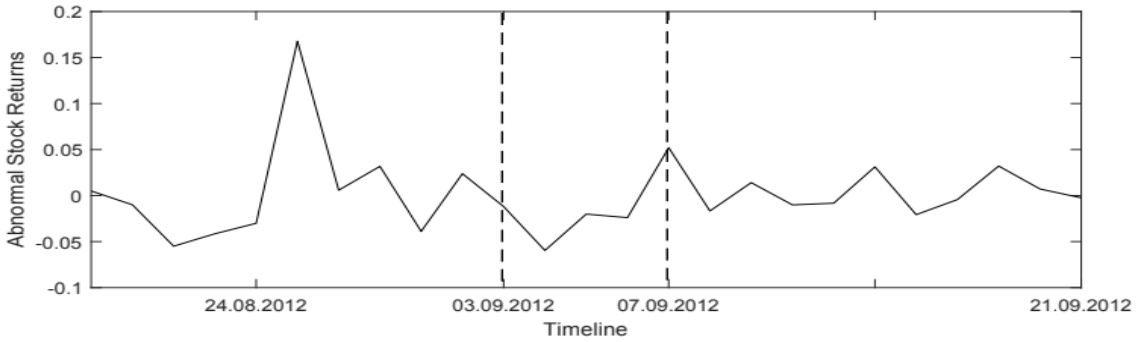

Figure 23: Abnormal Stock Returns for BFA-Bankia at Event Window [2]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**09-Nov-12**	On 9 November 2012, Spain communicated the final content of the Restructuring Plan, including the final figures pertaining to the size, composition and valuation of the assets and credit portfolio to be transferred to an Asset Management Company ("AMC") in the context of an impaired asset measure	**28-Nov-12**	On 28 November 2012, European Commission approves the capital relief through the FROB's intervention in Banco de Valencia, proposed recapitalisation measure of November 2012, and the segregation of impaired assets to the Asset Management Company

BFA-Bankia: Event Window [3]

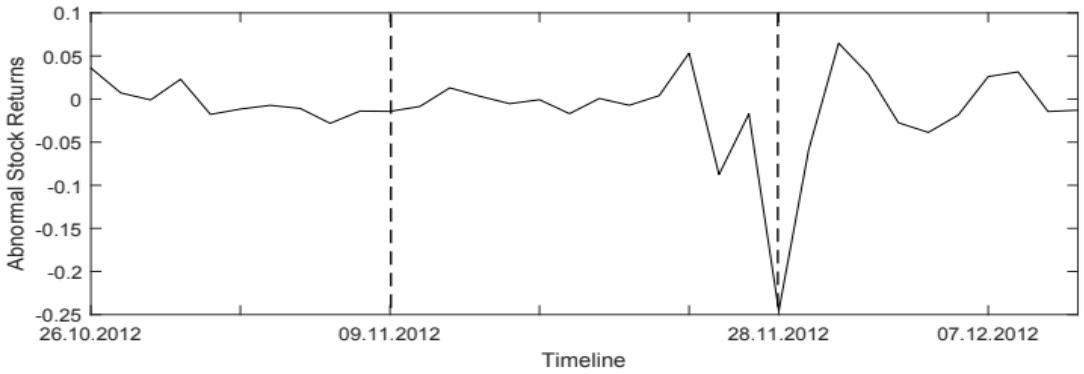

Figure 24: Abnormal Stock Returns for BFA-Bankia at Event Window [3]

e. Synthesis of Findings

Bail-In Announcement - European Commission/Spanish Authorities
Bail-In Approval - European Commission/Fondo de Reestructuración Ordenada Bancaria ("FROB")

Event	Type	Date	Details	Abnormal Stock Returns	Observations
[1]	Announcement	19-Jun-12	On 19 June 2012, the Spanish authorities notified the Commission that the convertible preference shares subscribed for by the FROB in BFA were to be converted into ordinary shares. Additionally, a liquidity guarantee of up to EUR 19 billion was also to be granted to BFA in the context of that conversion.	Positive Abnormal Stock Returns have been trending days prior to the actual Bail-In Announcement, suggesting heightened anticipation of Bail-in. The trend persisted and peaked on 19 June 2012, the actual date of announcement from the Spanish Authorities, reaching an Abnormal Stock Return of *+0.10%*. However, the positive outlook tapered off dramatically post announcement, hinting strongly that the liquidity guarantee was far below the expectations of the market participants.	Negative impact on investors' risk perception was observed as a liquidity guarantee that is below the market's expectation suggests the actuality of inherent weaknesses within the financial system. The observed reaction demonstrated a clear and immediate reaction.
[1]	Approval	27-Jun-12	The Commission approved both measures on 27 June 2012 ("the Conversion Decision").	Negative Abnormal Stock Return was observed during the actual date of approval from the European Commission. The actual date of approval occurred in the middle of a short increasing pattern. Stock Abnormal Returns were highly volatile after the actual date of approval from the European Commission, fluctuating between positive and negative Abnormal Stock Returns.	No clear outlook regarding investors' risk perception could be deduced with absolute certainty. Market sentiments seem conflicted by the measures stipulated by the Conversion Decision, as suggested by the increased volatility which persisted for weeks.
[2]	Announcement	03-Sep-12	On 3 September 2012, the Spanish authorities notified a new aid measure in favour of the BFA group, which includes BFA and its banking subsidiary Bankia ("the BFA Group" or "BFA/BANKIA") via a new capital injection of up to EUR 4.5 billion.	Positive Abnormal Stock Returns have been trending weeks prior to the actual Bail-In Announcement, suggesting heightened anticipation of Bail-in. However, the positive outlook tapered off dramatically prior to the actual date of announcement, demonstrating a distinct downward spiral. The downward trend persisted even after the actual date of announcement from the Spanish Authorities. On 03 Sep 2012, the actual date of announcement, an Abnormal Stock Return of *0%* was observed.	No clear outlook regarding investors' risk perception could be observed upon the date of announcement from the Spanish Authorities. It is highly probable that details pertaining to the liquidity guarantee were leaked to the public weeks prior to the actual date of announcement, evidenced by the heightened abnormal stock returns during said period. Since the observed Abnormal Stock Returns peak of *+0.15%*, the positive outlook tapered off dramatically as the actual date of announcement approaches, implying strongly that the liquidity guarantee was far below the expectation of the market participants.
[2]	Approval	07-Sep-12	The Commission approved the measure through a rescue decision on 7 September 2012 ("the Urgent Recapitalisation Decision").	Positive Abnormal Stock Returns have been trending days prior to the actual Bail-In Approval from the European Commission. The trend persisted and peaked on 07 Sep 2012, the actual date of approval, reaching an Abnormal Stock Return of *+0.05%*. However, upon the actual date of approval, the Abnormal Stock Returns contracted immediately and decreased to negative returns after the event, accompanied by increased volatility which persisted for several weeks.	Market sentiments seem conflicted by the measures stipulated by the Urgent Recapitalisation Decision, as suggested by the increased volatility which persisted for weeks.
[3]	Announcement	09-Nov-12	On 9 November 2012, Spain communicated the final content of the Restructuring Plan, including the final figures pertaining to the size, composition and valuation of the assets and credit portfolio to be transferred to an Asset Management Company ("AMC") in the context of an impaired asset measure.	Neutral Abnormal Stock Returns have been observed weeks prior to the actual Bail-In Announcement. The trend persisted and demonstrated an Abnormal Stock Return of *0%*, on 19 June 2012, the actual date of announcement from the Spanish Authorities.	Market confidence regarding the near term outlook of BFA/Bankia post Restructuring Plan could be inferred. This could be attributed towards the positive effects of the imminent transfer of portfolio assets to an Asset Management Company.
[3]	Approval	28-Nov-12	On 28 November 2012, European Commission approves the capital relief through the FROB's intervention in Banco de Valencia, proposed recapitalisation measure of November 2012, and the segregation of impaired assets to the Asset Management Company.	Negative Abnormal Stock Returns have been trending days prior to the actual Bail-In Approval from the European Commission. The trend persisted and reached a trough on 28 Nov 2012, the actual date of approval, reaching an Abnormal Stock Return of *-0.25%*. However, the Abnormal Stock Returns rebounded readily after the date of approval, reaching an Abnormal Stock Return of *+0.05%* days after.	Market confidence was restored post approval of capital relief and segregation of impaired assets. The dramatic variations to the Abnormal Stock Returns prior and post-date of approval could be attributed towards market irrationality and uncertainty, prior to the approval of the Restructuring Plan by the European Commission. There might be fear amongst investors that the capital relief and segregation of impaired assets might not **come to fruition.** The rise in Abnormal Stock Returns after the date of approval demonstrates the positive impact of the aid measure in favour of the BFA group, which is critical to the institution's credibility. This observation is further supported by the magnitude of the positive impact of the approval by the European Commission. Shortly after the date of approval by the European Commission, the Abnormal Stock Returns reversed towards a positive outlook, reaching a peak of *+0.05%*, with averages of above *0%* since.

Table 15: Synthesis of Findings for BFA-Bankia at Event Windows of Interest

Synthesis of Findings

Event Window [1] reflects a clear and immediate negative impact on investors' risk perception as a liquidity guarantee that is below the market's expectations suggest the actuality of inherent weaknesses within the financial system. Positive abnormal stock return has been trending days prior to the actual Bail-in Announcement, suggesting heightened anticipation of Bail-in. The trend persisted and peaked during the actual date of announcement from the Spanish Authorities, reaching an abnormal stock returns of *0.10%*. However, the positive outlook tapered off dramatically post announcement, hinting strongly that the liquidity guarantee was far below the expectation of the market participants.

In contrast, Event Window [2] does not afford a clear nor distinct impact on investors' risk perception upon the date of announcement from the Spanish Authorities. It is highly probable that details pertaining to the liquidity guarantee were leaked to the public weeks prior to the actual date of announcement, evidenced by the heightened abnormal stock returns during said period. Since the observed abnormal stock returns peak of *0.15%*, the positive outlook tapered off dramatically as the actual date of announcement approaches, implying strongly that the liquidity guarantee was far below the expectation of the market participants. In addition, market sentiments remain conflicted by the measures stipulated by the Urgent Recapitalisation Decision, as suggested by the increased volatility which persisted for weeks.

For Event Window [3], the flattening pattern of abnormal returns suggests market confidence regarding the positive effects of the imminent Restructuring Plan on BFA/Bankia's operations – in particular, the transfer of portfolio assets to an Asset Management Company. The rise in abnormal returns after the Approval date emphasizes the positive impact of the aid measure in favour of the BFA group, especially the importance of its credibility, as shown by the large positive impact of the Approval decision by the Commission. Shortly after the date of approval by the European Commission, an abnormal stock returns peak of *0.05%* was observed.

The difference in magnitudes across window events for the same financial instruments characteristics – maturity and seniority – could be attributed to a resolution that occurred earlier than expected. Hence, investors were not fully aware of the severity of the bank's financial health, or expecting a bail-out and were confounded by the bail-in occurrence despite former commitments (Beck, Todorov, Wagner, 2013)[54].

[54] Beck, T., Todorov, R., Wagner, W., « Supervising cross-border banks : theory, evidence and policy », *Economic Policy*, Vol 28, January 2013, pp. 5-44

4. Spain – Case Liberbank S.A.

a. Background

Liberbank S.A.[55] is a regional Spanish commercial bank operating mainly in Asturias, Cantabria, Extremadura and Castilla La Mancha. Liberbank was formed in 2011 as a result of the integration of three local savings banks, Caja de Ahorros de Asturias (CajAstur), Caja de Ahorros y Monte de Piedad de Extremadura (Caja Extremadura) and Caja de Ahorros de Santander y Cantabria (Caja Cantabria), with total assets amounting to €50.7 billion (in 2011).

Liberbank's core focus initially lies on retail banking, dedicated to individuals and SMEs. This has since changed, as the Bank has been expanding its business areas, evidenced by its investments in the real estate and development sector. Liberbank was not a beneficiary of any form of state aid, in the form of direct capital, in the past. However, since 2010, Liberbank has benefited or will be expected to benefit from three aid measures.

b. Timeline & Milestones of Events

Year	Date	Event Description
2008	**-**	The aftermath of the financial crisis spurred the Spanish government towards establishing legal restrictions, via Royal Decree Law 9/2009, towards the restructuring of the Spanish banking sector. These clauses seek to address the structural weakness in the saving banks - "Cajas", such as weak corporate governance and legal limitations towards raising of regulatory capital.
2008	**23-Dec-08**	The European Commission approved the creation of a debt guarantee scheme (Spanish Guarantee Scheme) (State aid case NN 54b/2008 OJ C 122/2009 of 29.05.2009). The scheme was eventually modified, extended, reintroduced and prolonged up to 31st December 2102.
	2009 - 2012: Liberbank has benefited from the Spanish Guarantee Scheme, receiving guarantees on bonds issued worth EUR 3 875 million.	
2011	**13-Sep-11**	Moody's[56] assigned a deposit, long and short-term debt ratings of Baa1 to the new established Liberbank. Liberbank's dated subordinated debt was rated at Baa2.
2012	**15-Feb-12**	Moody's[57] downgraded the long-term debt and deposit ratings for Liberbank to Ba1, from Baa1, following Moody's assessment regarding the Spanish government's reduction in its ability to provide support to its banks. The outlook on Liberbank reflects the effects of a fragile operating environment, coupled by the constrained access to market funding due to the bank's credit profile.
2012	**13-Jun-12**	Moody's[58] downgraded the rating of Spain's FROB from A3 to Baa3, whilst placing the rating on review for pending downgrades in line with the sovereign rating action. The outlook for FROB is reflected by (i) a further increase in debt burden evidenced by the Spanish government's intention to borrow up to EUR 100 million from the European Financial Stability Facility (EFSF) or its successor, the European Stability Mechanism (ESM), to recapitalise its banking system; (ii) the Spanish government's limited access to financial markets, evidenced by its overreliance on the EFSF or ESM for recapitalization funds, as well as its growing dependence on its domestic banks as the primary purchasers of its newly issued bonds, who essentially obtained its funding form the ECB; (iii) Spanish economy's continued weakness enumerates to the vulnerability of the government should a sudden stop in funding occurs.
2012	**28-Sep-12**	Results of a bottom-up stress test conducted by Oliver Wyman, an independent consultant, under the context of the MoU stress test, revealed a capital shortfall of EUR 1 198 million under the test's adverse scenario and EUR 103 under its base case.
2012	**05-Oct-12**	Moody's[59] downgraded the long-term debt and deposit ratings for Liberbank to Ba2, from Ba1, following the conclusion of a review process initiated on 25th June 2012. Liberbank is noted to remain vulnerable due to its capital shortfall.
2012	**24-Oct-12**	Moody's[60] downgraded the long-term debt and deposit ratings for Liberbank to Ba3, from Ba2, following the break-up of its planned merger with Ibercaja Banco. In addition, the downgrade was also attributed towards the fact that Liberbank is now required to undergo a recapitalisation or restructuring process, with a high likelihood of requiring public support to reinforce its capital adequacy.

[55] European Commission Circular - State aid n° SA.35490 (2012/N) – Spain: Restructuring of Liberbank S.A.
[56] Moody's Investors Service: Global Credit Research - 13 September 2011 [Liberbank S.A.]
[57] Moody's Investors Service: Global Credit Research - 15 February 2012 [Liberbank S.A.]
[58] Moody's Investors Service: Global Credit Research – 13 June 2012 [Liberbank S.A.]
[59] Moody's Investors Service: Global Credit Research – 5 October 2012 [Liberbank S.A.]
[60] Moody's Investors Service: Global Credit Research – 24 October 2012 [Liberbank S.A.]

2012	**31-Oct-12**	The Bank of Spain announced that Liberbank is expected to utilise public support within its capitalization framework to address its capital inadequacy issues. The Memorandum of Understanding on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU) stress test results confer a Group 2 status for Liberbank. A Group 2 status categorises banks with capital shortfalls identified by the stress test and is unable to meet these shortfalls privately without recourse to State aid.
2012	**12-Dec-12**	Spain communicated the final content for its proposed Restructuring Plan, in accordance with the stipulations stated by the Memorandum of Understanding on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU). In addition, the plan covered details of the capital injection to be made through the Fondo de Reestructuraciòn Ordenanda Bancaria (FROB) and the final figures pertaining to the size, composition and valuation of the assets and credit portfolio to be transferred to an Asset Management Company (AMC) in the context of an impaired asset measure. Liberbank required a capital injection of EUR 124 million to address the requirements of the new Spanish regulatory solvency criteria. Based on the stipulations of the proposed Restructuring Plan, the FROB will subscribe for the EUR 124 million in the form of convertible contingent bonds (CoCos). In addition, Liberbank is required to transfer its assets and credit portfolio to an AMC, benefitting from an impaired asset measure. This measure seeks to attenuate the uncertainty regarding future values of Liberbank's most complicated asset portfolio, affording it undivided attention towards the execution of the Restructuring Plan.
2013	**11-Jun-13**	Moody's[61] downgraded the long-term debt and deposit ratings for Liberbank to B1 from Ba3. The downgrade was prompted by the normalisation of support assumptions by Moody's, with regards to the likelihood and availably of extraordinary government support. The certainty of government support offsets doubts regarding the bank's intrinsic weakness and how its credit profile would emerge from the restructuring.

Table 16: Timeline of Liberbank S.A's Credit Rating

[61] Moody's Investors Service: Global Credit Research – 11 June 2013 [Liberbank S.A.]

c. Approach of Resolution: Resolution via Public Recapitalization, Bail-in and the Creation of an Asset Management Vehicle (2012)

From an operational perspective, Liberbank's performance was impeded by excessive exposure to the underperforming real estate sector, attributed to each of its three founding savings banks. In turn, Liberbank oversaw an increment in terms of its non-performing loan, and over-reliance on wholesale funding with a loan-to-deposit ratio of [100-130] % as of June 2012.

These exposures revealed vulnerability of the Liberbank in terms of the credit quality of its portfolio composition, as well as its ability to turn profitable under the impairments of its growing liquidity problems. The MoU Stress Test also puts into perspective the magnitude of the capital shortfall of Liberbank – EUR 1 198 million, under the adverse scenario in order to reach the required solvency level of 6% of its Risk Weighted Assets (RWA) by 31st December 2014.

Measure	Description	Amount (EUR million)	Approved	%RWA
A	Spanish Guarantee Scheme	3 875	2009-2012	Not applicable
B	Recapitalisation measure	124	20.12.2012	0.45 %
C	Transfer of impaired assets	1 000	20.12.2012	3.6%

Table 17: Overview of the Aid Measures for Liberbank

As stipulated by the Memorandum of Understanding on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU) and Law 9/2012, prior to benefiting from State aid, it is mandatory for aided banks to conduct burden-sharing exercises on existing shareholders and on holders of hybrid and subordinated debt instruments so as to maximise the loss-absorption capacity of the aided bank whilst minimising the cost for the tax payer.

By extension, as expounded upon Article 107(3)(b) TFEU[62], the magnitude of the aid conferred should comply with the following conditions:

a) ***Appropriateness:*** The conferred aid must be well-targeted in order to effectively address the issue of remedying a serious disturbance in the economy.

b) ***Necessity*****:** The aid measure must, in its amount and form, be necessary to address this issue. Hence, it must be of the minimum amount necessary and most appropriate form to achieve the objective.

c) ***Proportionality:*** The implications of the enforced measure must be properly balanced against the distortions of competition, in order for the distortions to be limited to the minimum necessary to reach the measure's objectives.

From the three aid measures, Liberbank has benefited from State guarantees on unsecured senior debt under the Spanish bank guarantee scheme (see MEX/12/0629) worth €3 875 million, recapitalisation of €124 million in the form of contingent convertible bonds (CoCos) subscribed by the FROB, as well as from a transfer of its impaired assets and loans into an asset management entity (SAREB) for an aid amount of around €1 000 million. The latest measures as stipulated under the European Commission Circular[63] address the follows:

a) **Measure B:** The recapitalisation measure affords Liberbank the capital flexibility to adequately address further losses whilst remaining above the minimum solvency ratio under the adverse scenario. In addition, the subscription of Cocos would not have been made available on the market under current circumstances.

[62] European Commission Circular - SA.34823 (2012/C), SA.36004 (2013/NN), SA.37965 (2013/N), SA.37966 (2013/N), SA.37967 (2013/N)
[63] European Commission Circular - State aid n° SA.35490 (2012/N)

b) **Measure C:** The impaired assets measure affords Liberbank the strategic advantage of transferring its most risky portfolio off balance sheet; hence, allowing it to avoid foreseeable adverse consequences of potential future losses on those assets. In addition, the designated transfer price of the assets, while conservative in nature, remains above the current market price of which a private investor is willing to pay for.

In summary, both measures demonstrate the flexibility in allowing Liberbank to de-risk its current activities, whilst strengthening its capital position.

d. Quantitative Analysis – Abnormal Returns Analysis

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**20-Dec-12**	On 12 December 2012, Spain communicated the final content of the Restructuring Plan ("the Restructuring Plan") to the Commission, including the capital injection to be made through the FROB and the final figures pertaining to the size, composition and valuation of the assets and credit portfolio to be transferred to an Asset Management Company ("AMC") in the context of an impaired asset measure.	**20-Dec-12**	Transfer of impaired assets with the recapitalization, approved on 20 December 2012.

e. Synthesis of Findings

Although we were able to define an Event Window for Liberbank, we are unable to perform the required analysis due to a lack of information pertaining to the CDS spreads and relevant stock data. The desired financial information was only available after the event of interest.

Section VII Case Studies – United Kingdom

a. Summary

The first recorded creditor Bail-in of a UK bank occurred prior to the enforcement of the Bank Recovery and Resolution Directive (BRRD), but against the backdrop of the UK Banking Act legislation (2009)[64] that effectively permits the same actions.

The Co-operative Bank was recapitalized via a negotiated Bail-in arrangement in 2013. The recapitalized process is worthy of attention as it is a commercially consensual agreement supported by the Co-operative Bank's retail investor groups. A consensual Bail-in process, also classified as Liability Management Exercise (LME), affords the flexibility of a commercial solution to the imminent problem of a failing financial institution by operating outside the statutory constraints of a resolution.

The certainty of ownership rights/conversion of existing rights is also more probable under this process, due to the involvement of creditors alongside the negotiation process. However, the inclusion of a consensual Bail-in arrangement, as part of a firm's recovery plan, should be orchestrated under the administration of resolution authorities and national regulators.

b. Background

The Co-operative Bank plc (Co-op)[65] is a retail and commercial bank in the United Kingdom. The bank differentiates itself as an ethical bank, seeking to avoid investing in companies that are involved in certain elements of arms trade, fossil fuel extraction, genetic engineering, animal testing, and use of sweatshop labour as stated in its ethical policy.

Following the Co-op's announcement on 17th June 2013, regarding its capital shortfall of £1.5 billion, the Prudential Regulation Authority (PRA) necessitated the raising of the equivalent amount in further Common Equity Tier 1 capital by the end of 2013. The Co-op's initial remedy was a proposed Recapitalization Plan, published in June 2013, effectuated through an exchange offer. However, the Co-op was unable to secure sufficient bondholder support for its proposed Recapitalization Plan, due to a lack of sufficient information regarding the intricacies pertaining to the proposed exchange offer and means of capital-raising.

[64] The UK Banking Act 2009
[65] The Co-operative Bank, Annual Report 2017

c. Timeline & Milestones of Events

Year	Date	Event Description
2013	**09-May-13**	Moody's[66] downgraded the deposit and senior debt ratings of Co-operative Bank to Ba3, following its lowering of the bank's baseline credit assessment (BCA) to b1 from baa1. The lowering of the BCA reflects Moody's opinion that (1) the bank faces the risk of further substantial losses in its non-core portfolio, as demonstrated recently by the unexpectedly significant deterioration of its commercial real estate (CRE) exposures, that will exert downward pressure on capital ratios that are already low relative to its peers'; (2) its vulnerability to losses is heightened by the low level of provisions held against its lending portfolio; and (3) the bank's slow progress in realising merger-related revenue and cost benefits has diminished its ability to replenish capital through earnings
2013	**17-Jun-13**	To address the £1.5 billion CET1 capital shortfall, the Co-operative Group and the bank initiated a Recapitalisation Plan ("2013 Recapitalisation Plan"). The Recapitalisation Plan encompasses: the 2013 Liability Management Exercise (LME); CET capital contributions from Co-operative Banking Group Limited (CBG); and interest savings on securities surrendered in the 2013 Liability Management Exercise (LME).
2013	**18-Jun-13**	Moody's[67] downgraded the deposit and senior debt ratings of Co-operative Bank to Caa1, from Ba3, following its lowering of the bank's baseline credit assessment (BCA) to ca, from the previous BCA of b1. Moody's also downgraded Co-operative Bank's subordinated debt and junior subordinated debt ratings to Ca and Ca from B2 and B3 respectively. These ratings were a direct reflection following the Bank's announcement of a regulatory capital shortfall requiring a recapitalisation via burden-sharing with junior creditors and asset disposals. The announcement affirms Moody's view that the Co-operative Bank may only return to be a fully solvent, operational entity through a substantial recapitalization, which as proposed would involve a Bail-in of junior creditors, together with a very significant restructuring of the bank's operations.
2013	**18-Dec-13**	The Co-operative Bank withdrew its subordinated and junior subordinated debts, following the successful execution of the Liability Management Exercise (LME).
2013	**23-Dec-13**	Moody's[68] withdrew the ratings for Co-operative Bank's subordinated and junior subordinated debts, following the completion of the bank's restructuring via Liability Management Exercise (LME).
2014	**May-14**	In May 2014, the Co-operative Bank (Co-op) plc further improved upon its capital position by successfully raising an additional £400 million of CET1 capital.
2015	**Jul-15**	In July 2015, the Co-operative Bank (Co-op) plc issued £250 million worth of Tier 2 subordinated capital. In addition, the Bank further inaugurated several turnout measures, including: the deleveraging of significant Non-Core businesses; the reduction of the Bank's existing operating base; the addressing of legacy conduct issues; and the successful remediation of a breach in FCA threshold conditions.
2015	**31-Jul-15**	Moody's[69] confirmed the ratings for Co-operative Bank's deposit and senior debt ratings to Caa2, following the upgrading of the bank's baseline credit assessment (BCA) to caa2 from ca.

Table 18: Timeline of Co-operative Bank's Credit Rating

[66] Moody's Investors Service: Global Credit Research – 09 May 2013 [Co-operative Bank]
[67] Moody's Investors Service: Global Credit Research – 18 June 2013 [Co-operative Bank]
[68] Moody's Investors Service: Global Credit Research – 23 December 2013 [Co-operative Bank]
[69] Moody's Investors Service: Global Credit Research – 31 July 2015 [Co-operative Bank]

d. Approach of Resolution: Resolution via Negotiated Bail-in outside the BRRD regime (2013)

After months of lengthy negotiations, an agreement regarding the terms of the revised Recapitalization Plan was reached in October 2013. The revised terms stipulated that the Lower Tier 2 bondholders would receive 70% of the shares in the Co-op, in addition to £100 million in principal amount of the newly issued Tier 2 securities, while the remaining 30% equity stake would be retained by the bank's parent, The Co-operative Group. With that, the Lower Tier 2 bondholders injected £125 million of liquidity into the Co-op.

The Recapitalization Plan, an amalgamation of a consensual Bail-in and rights offering, was effectuated through a UK Scheme of Arrangement under the Companies Act[70] (2006). The Scheme was subject to court sanction and had to be agreed by a numerical majority, representing at least 75 % in value of each class of scheme creditors. The PRA also had to approve the plan. This innovative means of resolution affords the Co-op a sound financial footing, via a market-based solution that is agreed upon between the bank and its bondholders.

Under stipulations of the Bank Recovery and Resolution Directive (BRRD)[71], a resolution authority can take resolution steps only if there is no reasonable prospect of private sector measures preventing a financial institution from failing within a reasonable timeframe. Where private sector measures are available, the institution cannot be deemed "no longer viable", even if the quantitative triggers for non-viability are met, making the exercise of write-down/conversion powers by the authorities outside of resolution not possible either.

However, the BRRD[72] does not explicitly dictate how far the requirements to prefer private sector measures extend. Before any resolution action is initiated, a resolution authority would need to be satisfied that private investors are unwilling or unable to recapitalize the institution, and that negotiations with shareholders regarding the dilution of their existing equity, and creditors on voluntary conversion of their claims, have failed. In practice, a national regulator could also use its early intervention powers to require a failing institution to consider a commercially negotiated Bail-in without specifying the terms of the restructuring[73].

[70] The Companies Act 2006 (c 46), Part 26
[71] EU Bank Recovery and Resolution Directive, Articles 59(3)(b), (c) and (d) and Article 59(4)
[72] EU Bank Recovery and Resolution Directive, Recital 23
[73] EU Bank Recovery and Resolution Directive, Article 27(1)(e)

e. Quantitative Analysis – Abnormal Returns Analysis

A consensual Bail-in process affords the flexibility of a commercial solution to the imminent problem of a failing financial institution by operating outside the legal constraints imposed by the BRRD[74]. This initiative[75] affords the failing institution the added benefits of autonomy and time flexibility in managing the process, instead of being subjugated by the resolution authorities, whilst attaining the core objectives of a resolution action by ensuring financial stability, keeping the financial institution operational, protecting retail customers, and refraining from using public funds.

The theoretical literature on the topic of consensual Bail-in is abundant, with both arguments in favour of these instruments (Pennacchi et al., 2011; Martynova and Perotti, 2012; Zeng, 2012; Flannery, 2010; Duffie, 2010) and against them (Sundaresan and Wang, 2013). Due to insufficient data, we were unable to perform an in-depth quantitive analysis for Co-operative Bank, similar in terms of attributes to that for prior cases. Under such constraints, we seek to instead bring empirical evidence to the debate on the efficacy of contingent capital instruments in practice by drawing parallel from existing empirical work.

By extension, empirical evidences from a technical study by Vallée et al. (2016) strengthens the argument for contingent capital instruments, as an effective alternative to raising common equity requirements in practice. In addition, it was demonstrated empirically that by limiting financial distress costs in times of stress, contingent capital may replace higher capital requirement at a cheaper cost for the economy.

[74] Legal Constraints on resolution measures and the application of the bail-in tool under BRRD and SMR", Dr. Axel Kunde, Single Resolution Board
[75] Financial Sector Advisory Center (FinSAC) Guidebook to the Bank Recovery and Resolution Directive (BRRD), Chapters 3 and 4

f. Synthesis of Findings

Consensual Bail-in provides an outlook that is more favourable than traditional Bail-in process within resolution, affording the certainty of ownership rights. Debtors were documented to respond positively to these exercises, while equity holders were noted to discriminate according to the stipulations of the operation. Moreover, banks implementing liability management exercises exhibit higher economic performance, and better preserved lending activity from their dedicated users. This result is robust to controlling for government bail-out and seasonal equity offering. In addition, the efficacy of consensual Bail-in, as an effective alternative to the dilemma of bank capital regulation, has been validated by Vallée et al. (2016) empirically.

Furthermore, consensual Bail-in alleviates the occurrence of litigations, which are commonly seen from non-consensual resolution actions. Thus, resolution authorities and national regulators should evaluate the distinct circumstances of a financial institution, to consider the feasibility of negotiated Bail-in as a probable recovery option within the institution's recovery plan. The certainty of ownership rights/conversion of existing rights is also more predictable under this process, due to the involvement of creditors alongside the negotiation process. However, the inclusion of a consensual Bail-in arrangement, as part of a firm's recovery plan, should be orchestrated under the administration of resolution authorities and national regulators.

Amidst its numerous benefits, consensual Bail-in does raise some of the same key issues which would arise during a resolution. Due to the complexity and intricacies involved in a consensual Bail-in process, confidentiality and thus, the access to and sharing of key data, could likely be jeopardised. A possible leakage of confidential information might thus translate into insider dealing issues. In addition, the duties of directors to creditors remain ambiguous in many legal systems against the backdrop of regulatory capital or liquidity shortfalls in contrast with insolvency. These issues, although probable, are not insurmountable.

Section VIII Challenges & Recommendations

Since the adoption of the Key Attributes of Effective Resolution Regimes for Financial Institutions[76] in November 2011, authorities in Crisis Management Groups (CMGs) have been intensifying their efforts to develop firm-specific resolution strategies and plans for global systemically important banks (G-SIBs). Despite revisions to the intricacies pertaining to the Bail-in execution process, the principles of the process remain adamant.

The principles[77] of Bail-in execution seek to identify actions that authorities should undertake to ensure that a Bail-in process can be implemented in a manner that is credible, timely, consistent across home and host jurisdictions, and transparent to market participants as possible.

A notable feature of the European Union's response to the financial crisis is the inception of the BRRD, a robust framework that affords decision makers with the flexibility to deal with idiosyncratic issues that may put systemic stability at risk. However, the transition to the new regime is expected to give rise to significant challenges for banks and authorities alike. Notably, the shift from reliance on taxpayer support for failing banks to explicitly imposing losses on its shareholders and unsecured creditors remains one of the most profound reform till date, with ramifications that must not be underestimated.

As evidenced by the numerous cases of resolution since, there remains a long way before we could derive at the appropriate level of readiness and attain the desired level of comfort in terms of our preparations for future shocks. There are numerous impediments towards Bail-in execution, but surmountable.

To overcome these impediments to resolution, there must be sufficient conviction to undertake difficult decisions. An appropriate level of loss absorbing capacity had to be enforced, at the expense of profitability, to ensure compliance and restore confidence in the resulting entity. In addition, adequate expertise and resources are to be devoted to the resolution process, to sustain sufficient liquidity for failed institutions' operating needs throughout the resolution process

Lastly, it is essential to advocate transparency and clarity with regards to Bail-in execution, which should be addressed swiftly and unequivocally. Hence, it is of paramount importance to adhere to the core tents of the new regime to avoid confusing market participants. By ensuring transparency and clarity with regards to Bail-in execution would attenuate the likelihood of dramatic reactions with regards to price formation and reduce any ambiguity that exists around issues such as creditor hierarchy or constraints to coupon payments on instruments.

[76] Key Attributes of Effective Resolution Regimes for Financial Institutions (http://www.fsb.org/wp-content/uploads/r_141015.pdf), October 2014
[77] Principles on Loss-absorbing and Recapitalisation of G-SIBs in Resolution and Total Loss-absorbing Capacity (TLAC) Term Sheet, November 2015

Section IX Conclusion of Thesis

From the onset, we collated a comprehensive database that encompasses historical stock price and CDS spread for Alpha Bank, Eurobank Ergasias, Piraeus Bank, and BFA-Bankia. The abnormal returns and spreads across our defined event windows of interest were extracted and analysed, to determine the potential impact of Bail-in announcements and approvals on equity and debt investors' expectations. Our goal was to quantify the magnitude of change in investors' risk perception, a reflection of the credibility of resolution events, whilst considering the statistical significance of these occurrences.

In summary, our analysis ascertained the ramification and significance of Bail-in events. As demonstrated in our case studies, Bail-in affords a significant negative impact upon investors' expectations[78] when it was not supported by the national fund aid for recapitalizing the failing institution. Conversely, without this mitigant to potential losses, investors tend to lose confidence in the banks' future performances and exhibit negative market sentiment[79] following a Bail-in announcement or approval.

We found differences in magnitudes across window events for financial instruments with same seniority and maturity. We explain it by the fact that investors were not fully informed regarding the banks' financial conditions, or that investors expected a Bail-out and were surprised by the occurrence of a Bail-in. The strength of investors' reactions is expected to depend on the credibility of resolution announcements.

Notably, news affecting only a single bank appear to be translated into market prices with a time lag in comparison with news affecting several banks concurrently. This observed lag is attributed towards the lower trading volume of the CDS of a single bank, as compared to the accumulated trading volumes of several banks' CDS contracts. News affecting several banks altogether appear to be transmitted more rapidly to investors, which translate it almost immediately into market information.

For regional bank, such as Piraeus Bank, Bail-in announcement is reflected with a lag in its Abnormal Stock Returns, attributed towards the lower liquidity of its shares as compared to big national banks whose shares are traded more readily. In times of financial difficulties for financial institutions, stock returns also appear to reflect newly available information in a quicker way than CDS spreads do.

Consensual Bail-in provides an outlook that is more favourable than the traditional Bail-in process within resolution, affording the certainty of ownership rights. In addition, consensual Bail-in alleviates the occurrence of ligations, which are commonly seen from non-consensual resolution actions. Thus, resolution authorities and national regulators should evaluate the distinct circumstances of a financial institution, to consider the feasibility of negotiated Bail-in as a probable recovery option within the institution's recovery plan.

[78] An increase in Abnormal Stock Returns with a corresponding decrease in Abnormal CDS spreads
[79] A decrease in Abnormal Stock Returns with a corresponding increase in Abnormal CDS spreads

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Section XI Appendix – Figures & Tables

Quantitative Analysis – Alpha Bank

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**02-Aug-10**	The Greek authorities submitted a Restructuring Plan in respect of the Bank to the Commission.	**02-Aug-10**	The European Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then SA.32786 (2011/PN).

Alpha Bank: Event Window [1]

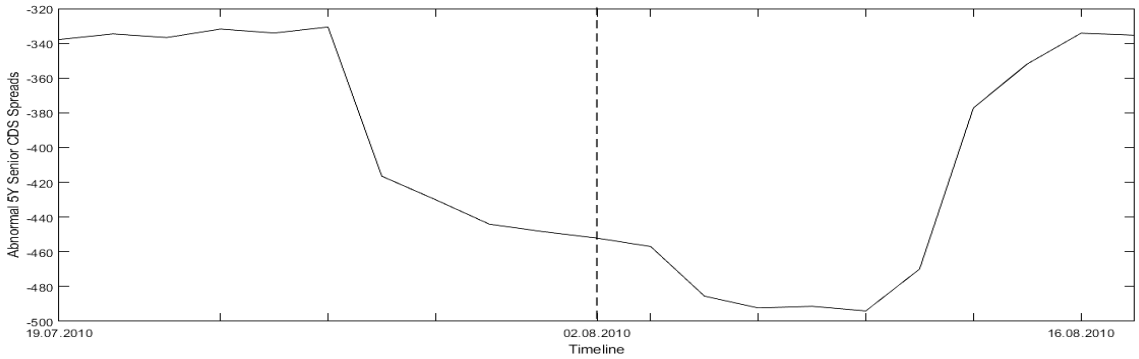

Figure 1: Abnormal 5 Year Senior CDS Spreads for Alpha Bank at Event Window [1]

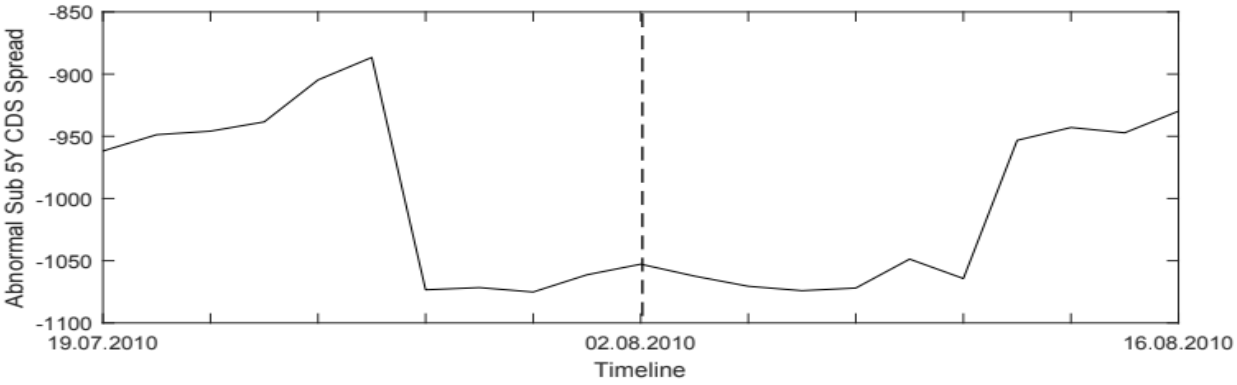

Figure 2: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [1]

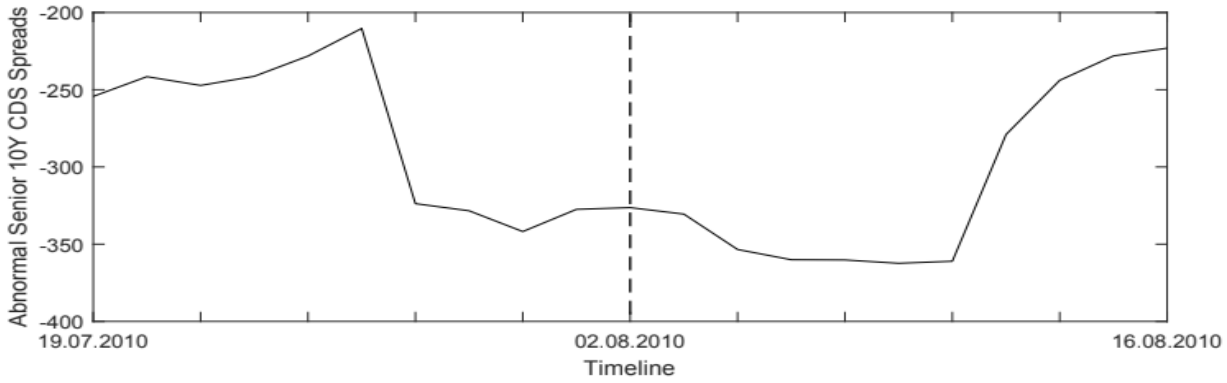

Figure 3: Abnormal 10 Year Senior CDS Spreads for Alpha Bank at Event Window [1]

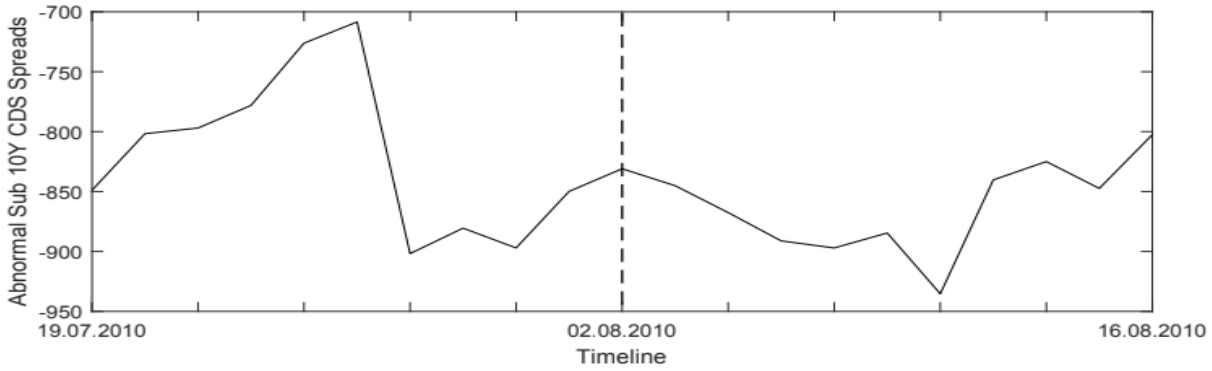

Figure 4: Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [1]

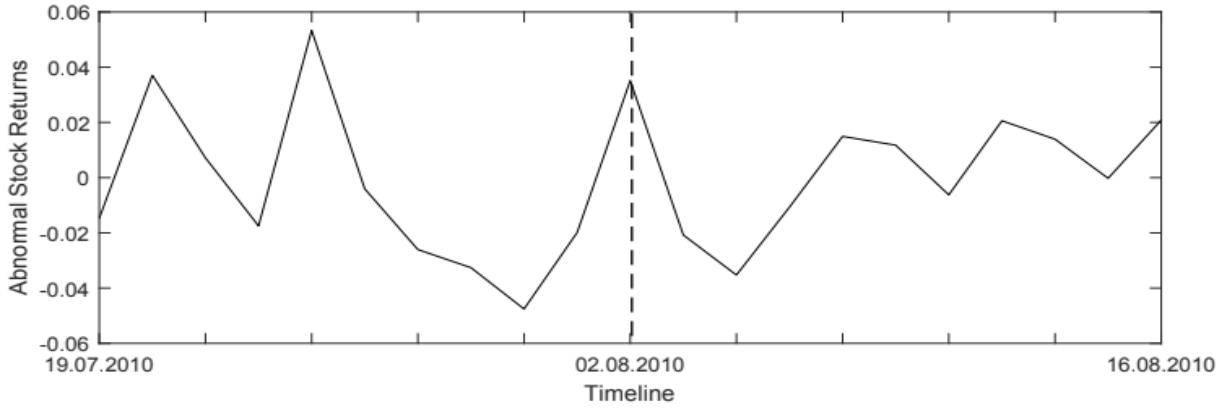

Figure 5: Abnormal Stock Returns for Alpha Bank at Event Window [1]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**20-Apr-12**	The Hellenic Financial Stability Fund ("HFSF") provided the Bank with a letter committing to participate in a planned share capital increase of the Bank.	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 1 900 million to the Bank ("first bridge recapitalisation").

Alpha Bank: Event Window [2]

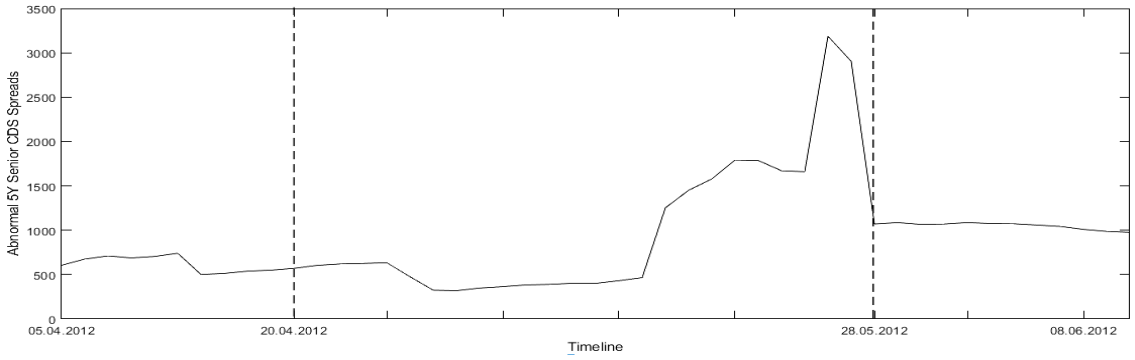

Figure 6: Abnormal 5 Year Senior CDS Spreads for Alpha Bank at Event Window [2]

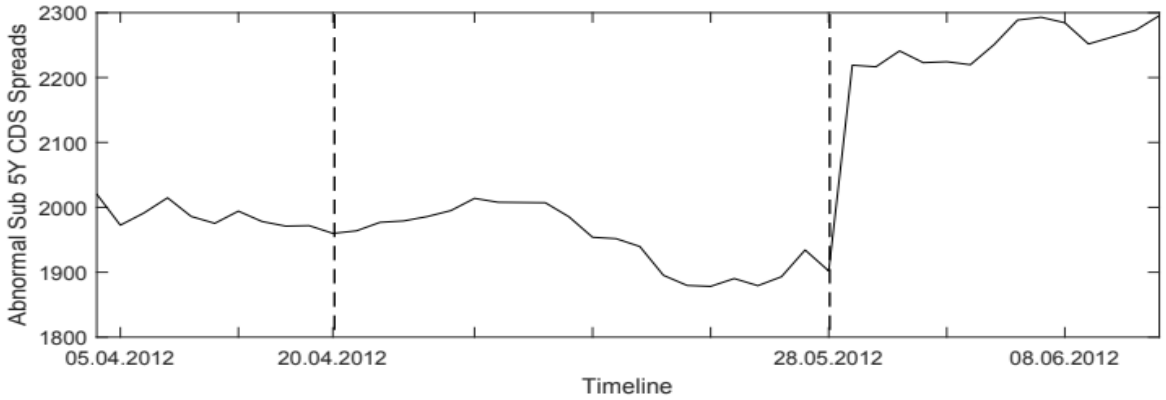

Figure 7: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [2]

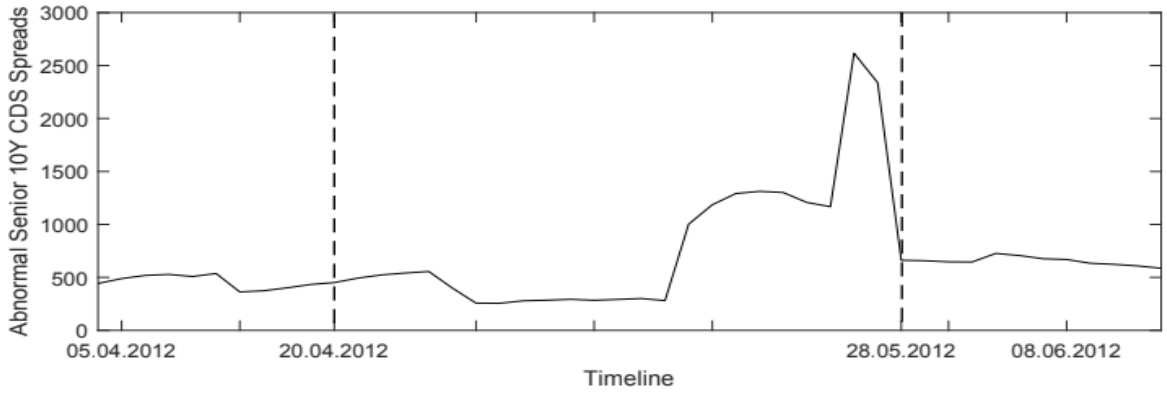

Figure 8: Abnormal 10 Year Senior CDS Spreads for Alpha Bank at Event Window [2]

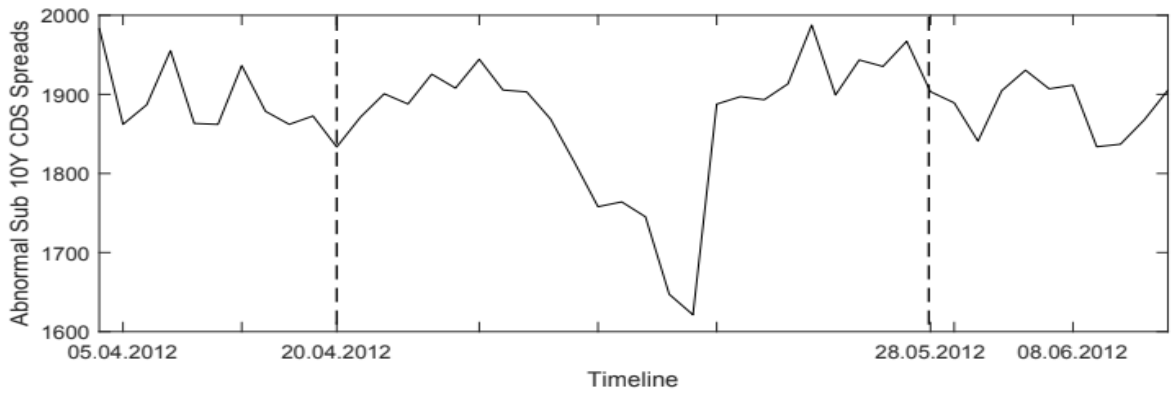

Figure 9: Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [2]

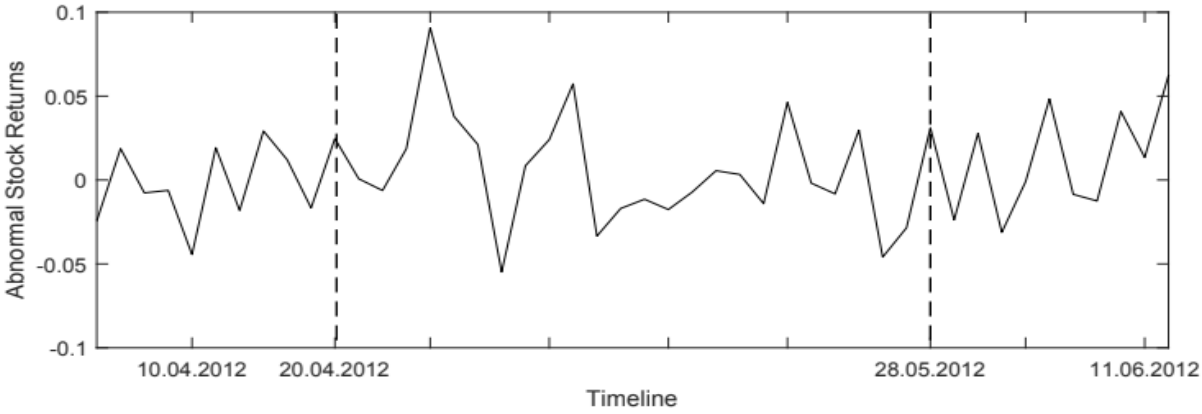

Figure 10: Abnormal Stock Returns for Alpha Bank at Event Window [2]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 042 million to the Bank ("second bridge recapitalisation"). On 20 December 2012, the HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount of up to EUR 1 629 million.	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 042 million to the Bank ("second bridge recapitalisation"). On 20 December 2012, the HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount of up to EUR 1 629 million.

Alpha Bank: Event Window [3]

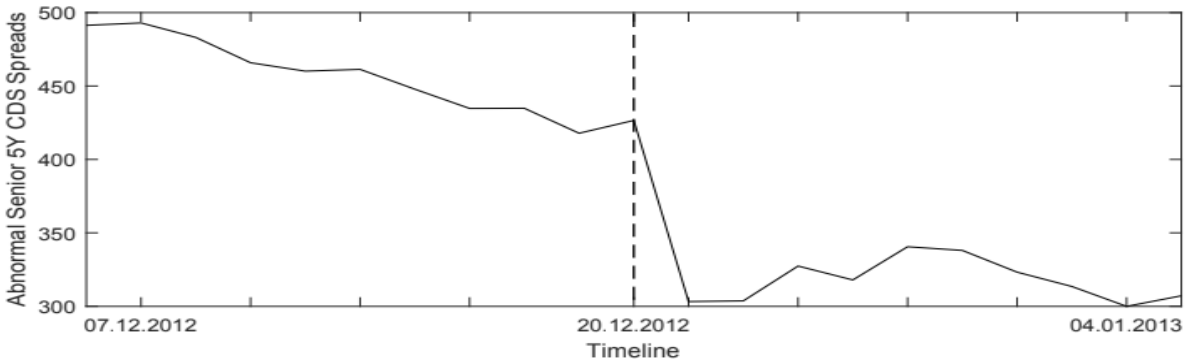

Figure 11: Abnormal 5 Year Senior CDS Spreads for Alpha Bank at Event Window [3]

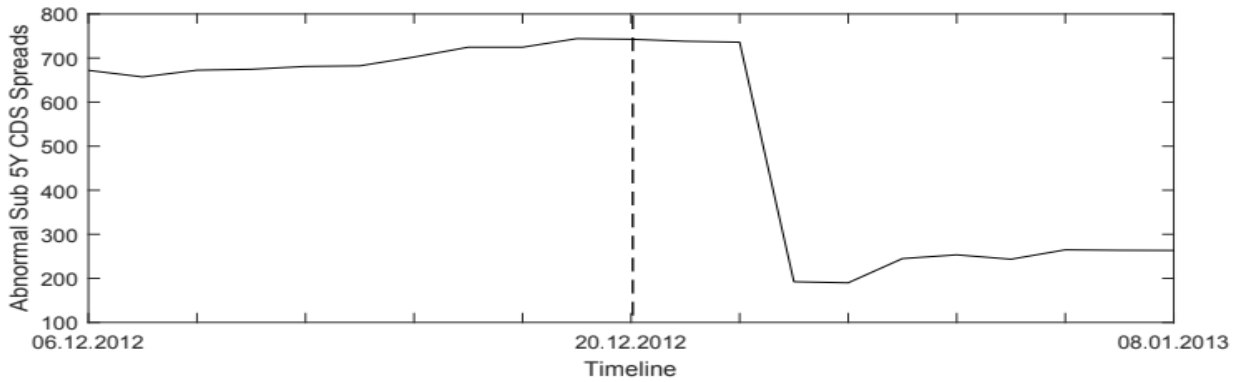

Figure 12: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [3]

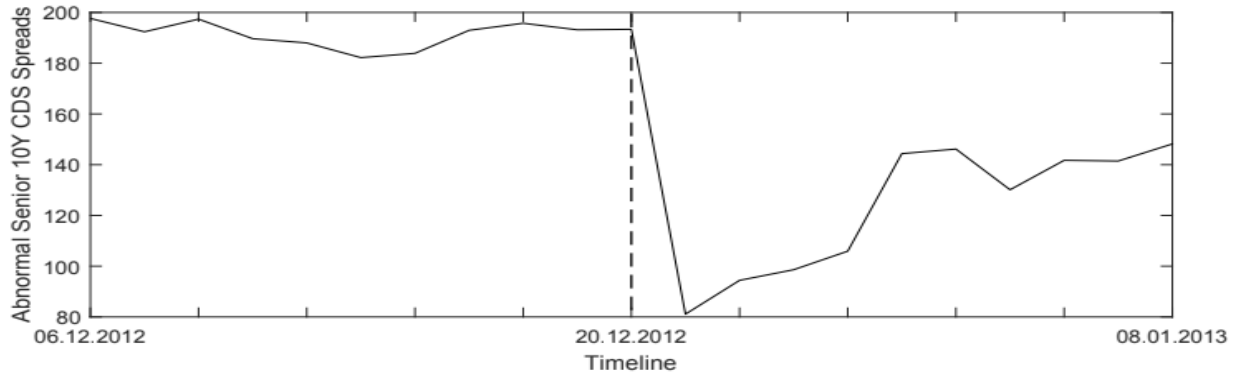

Figure 13: Abnormal 10 Year Senior CDS Spreads for Alpha Bank at Event Window [3]

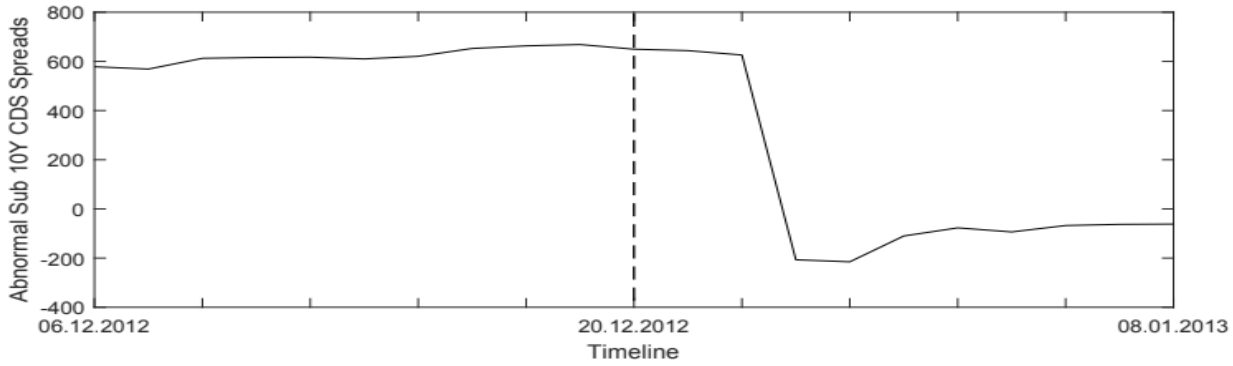

Figure 14: Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [3]

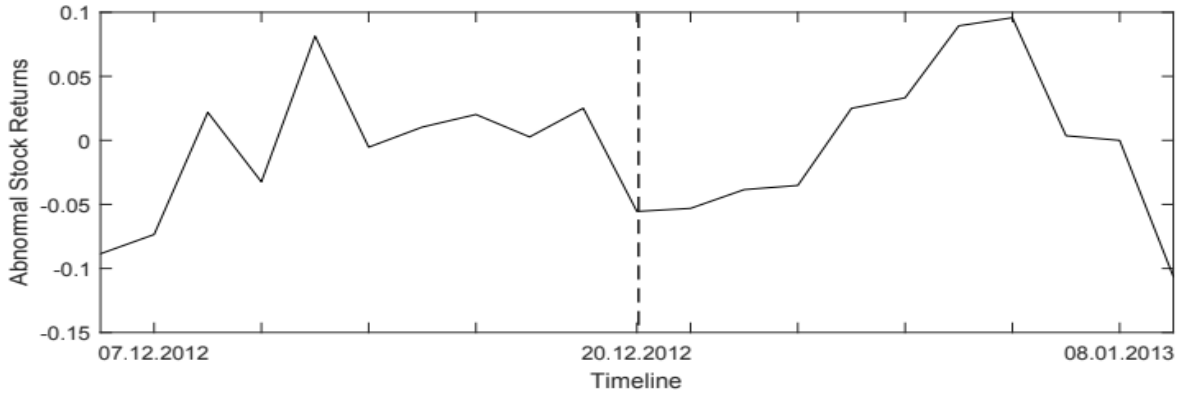

Figure 15: Abnormal Stock Returns for Alpha Bank at Event Window [3]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [4]	**03-Jun-13**	The HFSF converted the first and second bridge recapitalisations into equity and injected a further EUR 1 079 million of capital into the Bank (the "Spring 2013 recapitalisation").	**03-Jun-13**	The HFSF converted the first and second bridge recapitalisations into equity and injected a further EUR 1 079 million of capital into the Bank (the "Spring 2013 recapitalisation").

Alpha Bank: Event Window [4]

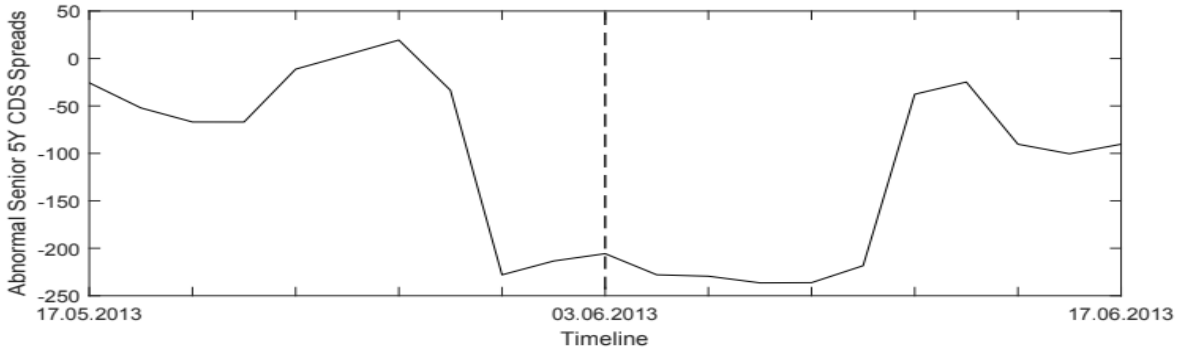

Figure 16: Abnormal 5 Year Senior CDS Spreads for Alpha Bank at Event Window [4]

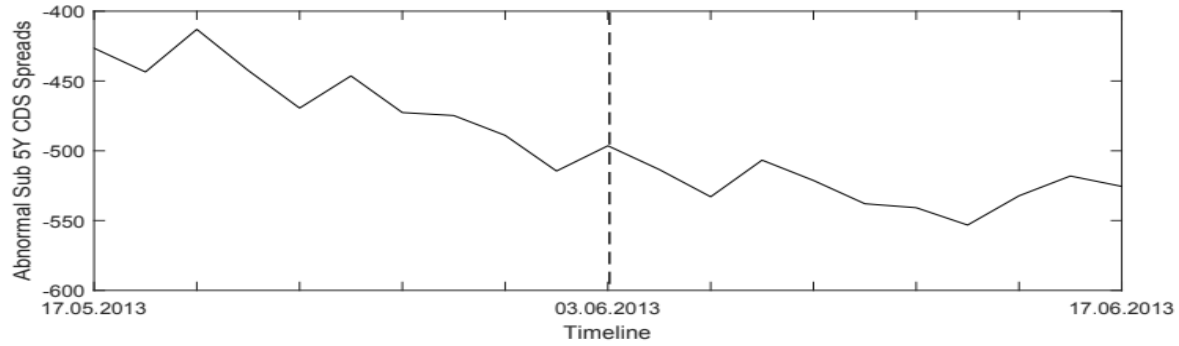

Figure 17: Abnormal 5 Year Subordinated CDS Spreads for Alpha Bank at Event Window [4]

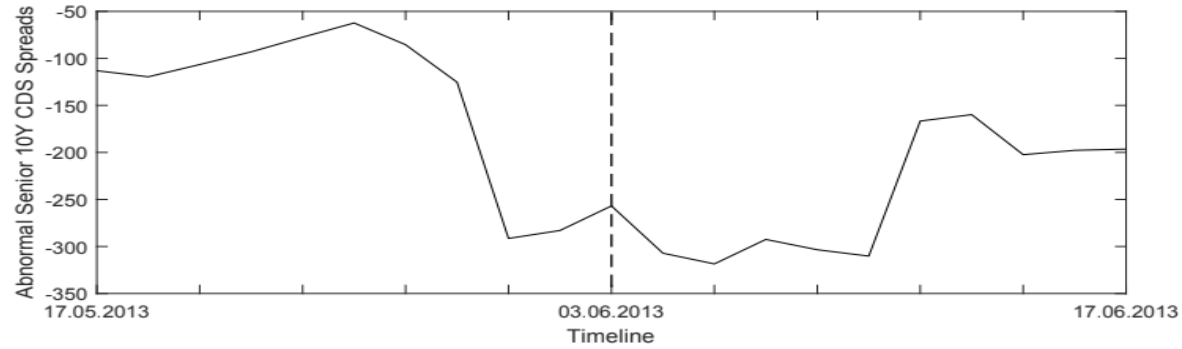

Figure 18: Abnormal 10 Year Senior CDS Spreads for Alpha Bank at Event Window [4]

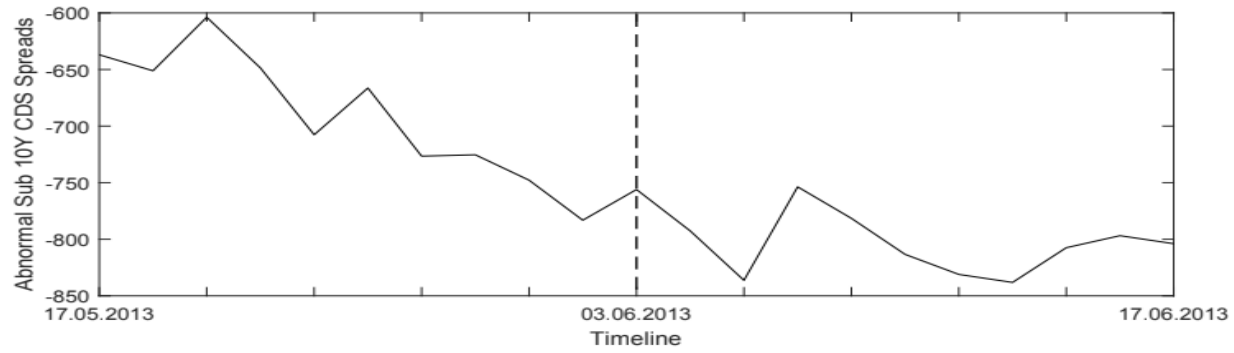

Figure 19: Abnormal 10 Year Subordinated CDS Spreads for Alpha Bank at Event Window [4]

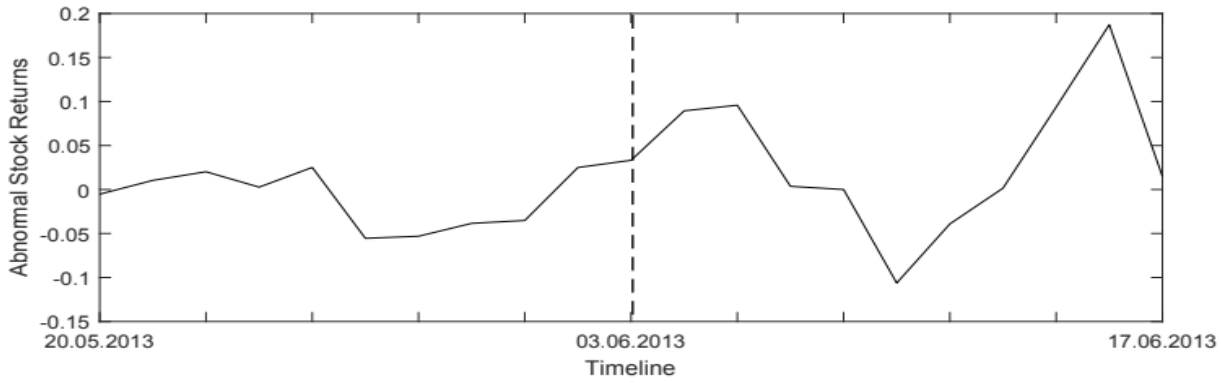

Figure 20: Abnormal Stock Returns for Alpha Bank at Event Window [4]

Quantitative Analysis – **Eurobank Ergasias**

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**02-Aug-10**	The Greek authorities submitted a Restructuring Plan in respect of the Eurobank Group to the Commission.	**02-Aug-10**	The European Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32789 (2011/PN).

Eurobank Ergasias: Event Window [1]

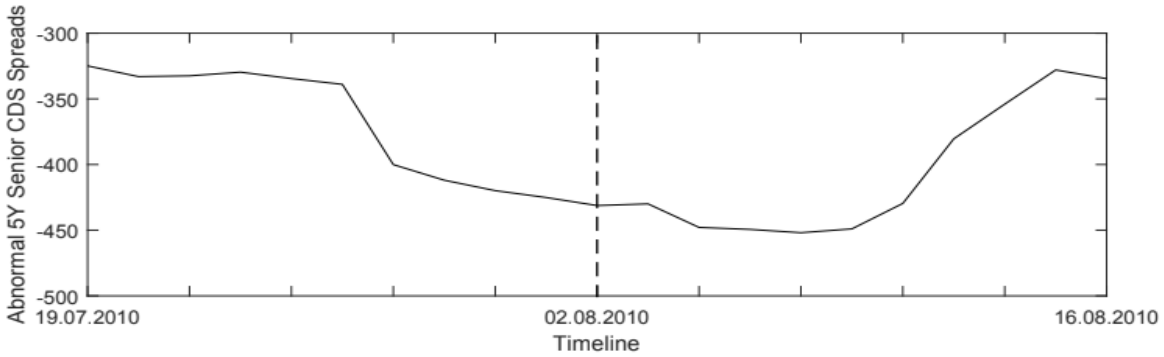

Figure 21: Abnormal 5 Year Senior CDS Spreads for Eurobank Ergasias at Event Window [1]

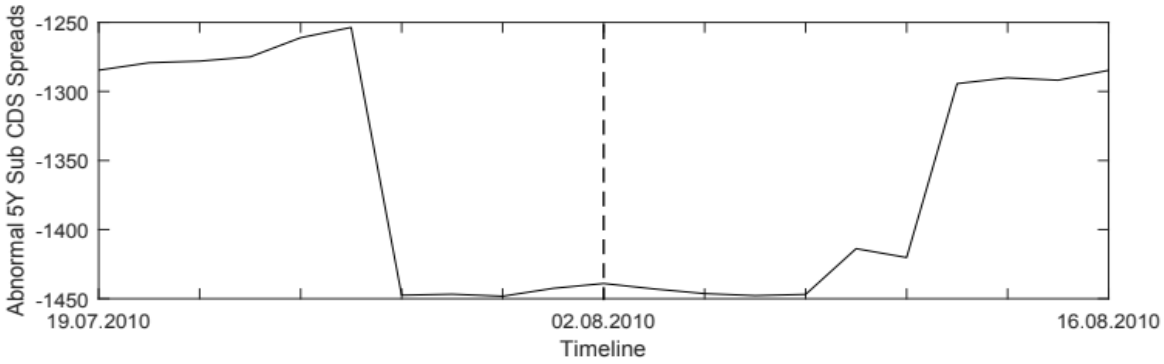

Figure 22: Abnormal 5 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [1]

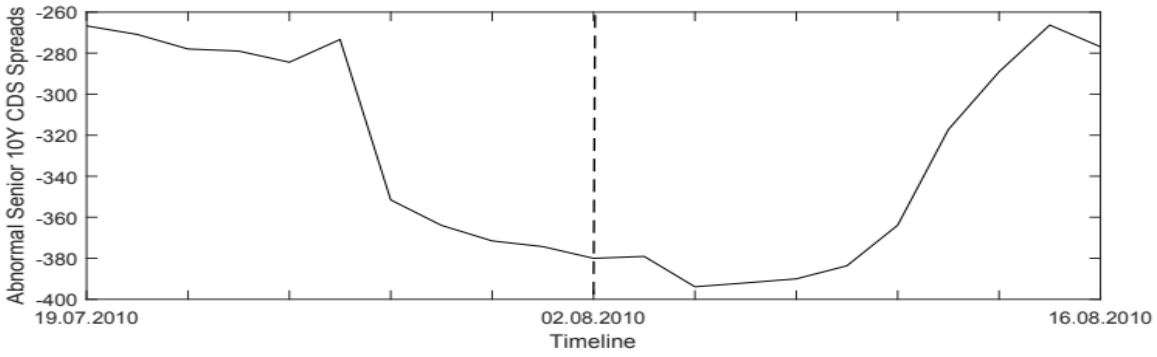

Figure 23: Abnormal 10 Year Senior CDS Spreads for Eurobank Ergasias at Event Window [1]

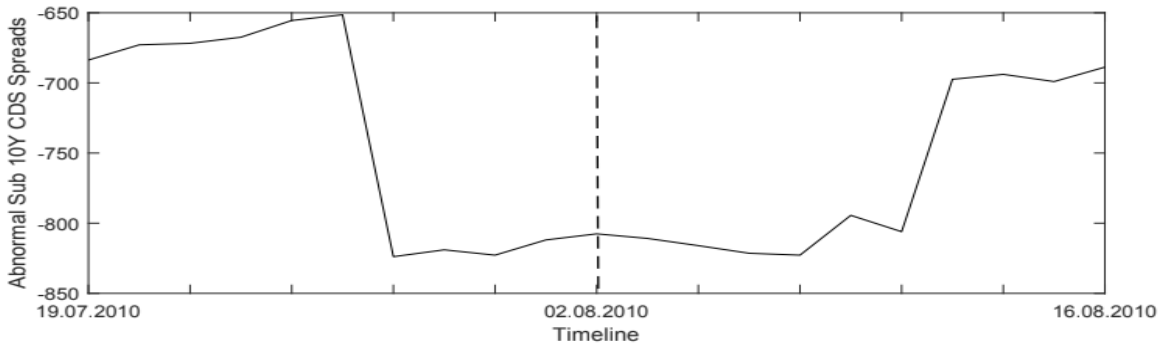

Figure 24: Abnormal 10 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [1]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**20-Apr-12**	The Hellenic Financial Stability Fund ("HFSF") provided Eurobank with a letter committing to participate in a planned share capital increase of the Bank.	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 3 970 million to the Bank ("first bridge recapitalisation").

Eurobank Ergasias: Event Window [2]

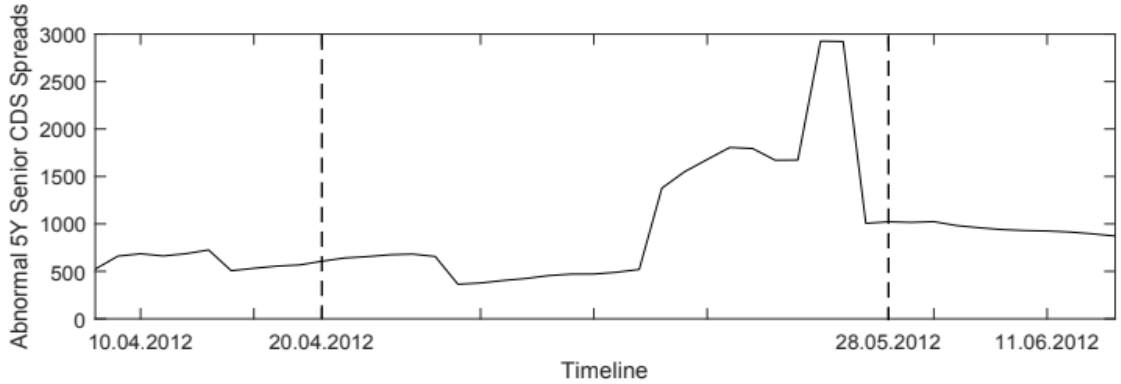

Figure 25: Abnormal 5 Year Senior CDS Spreads for Eurobank Ergasias at Event Window [2]

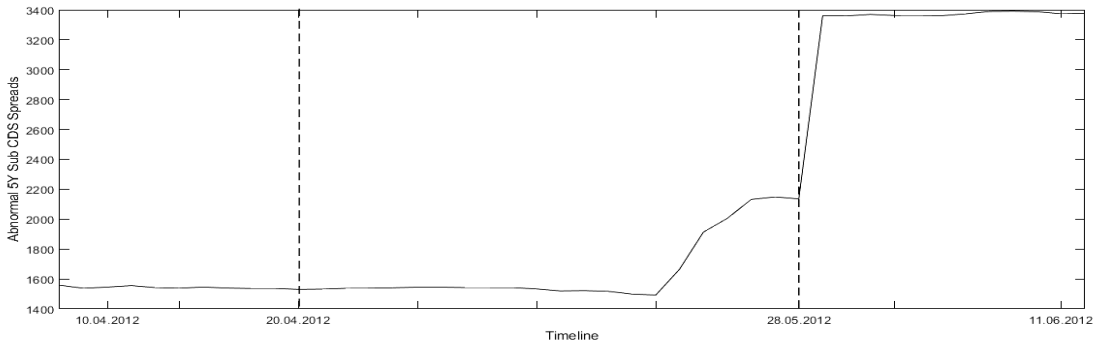

Figure 26: Abnormal 5 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [2]

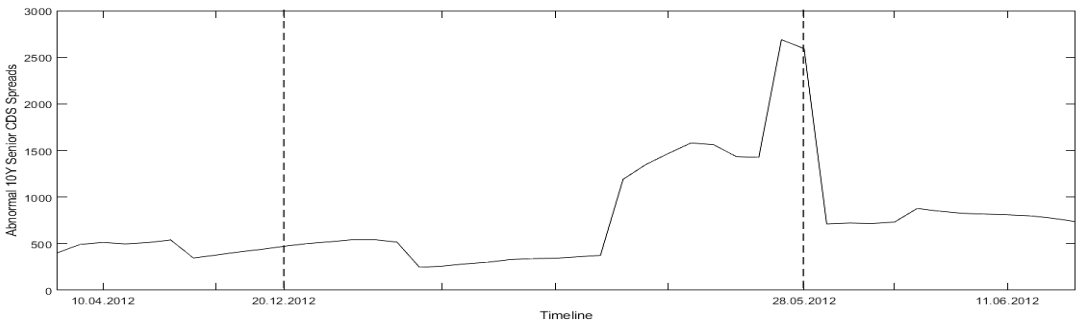

Figure 27: Abnormal 10 Year Senior CDS Spreads for Eurobank Ergasias at Event Window [2]

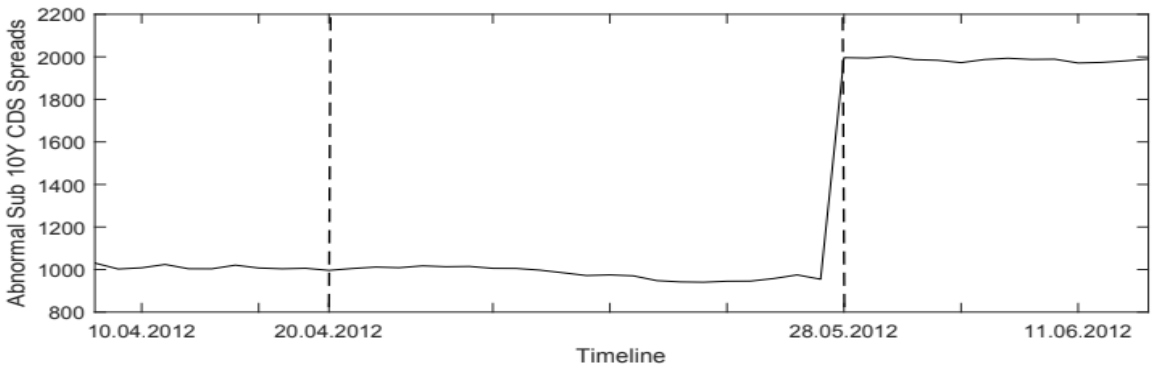

Figure 28: Abnormal 10 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [2]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 341 million to the Bank ("second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 528 million.	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 341 million to the Bank ("second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 528 million.

Eurobank Ergasias: Event Window [3]

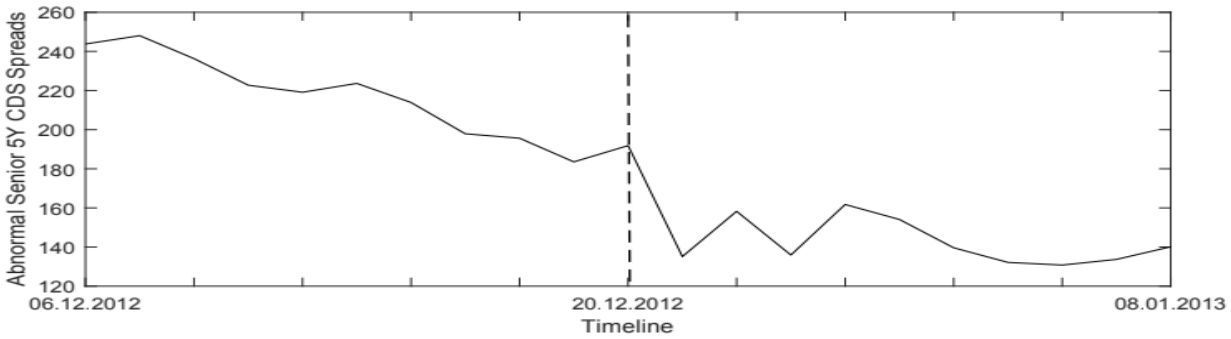

Figure 29: Abnormal 5 Year Senior CDS Spreads for Eurobank Ergasias at Event Window [3]

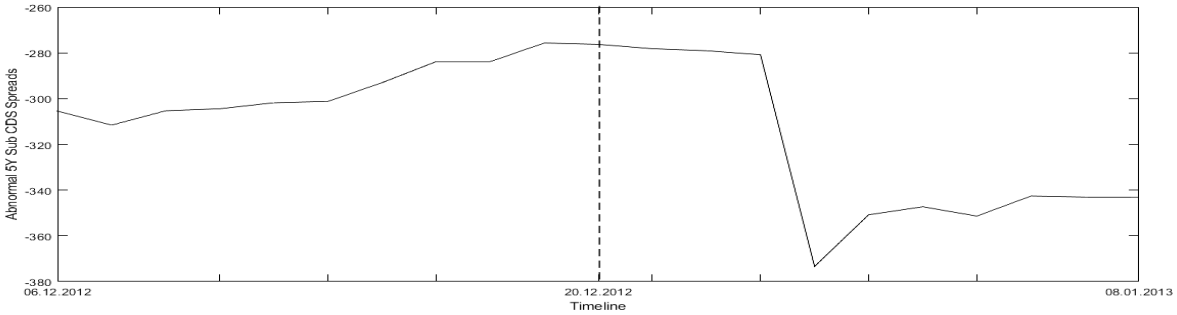

Figure 30: Abnormal 5 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [3]

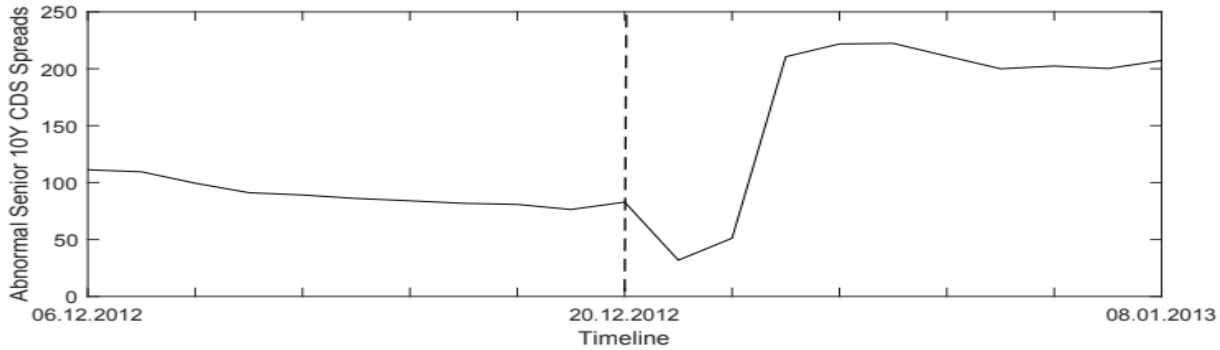

Figure 31: Abnormal 10 Year Senior CDS Spreads for Eurobank Ergasias at Event Window [3]

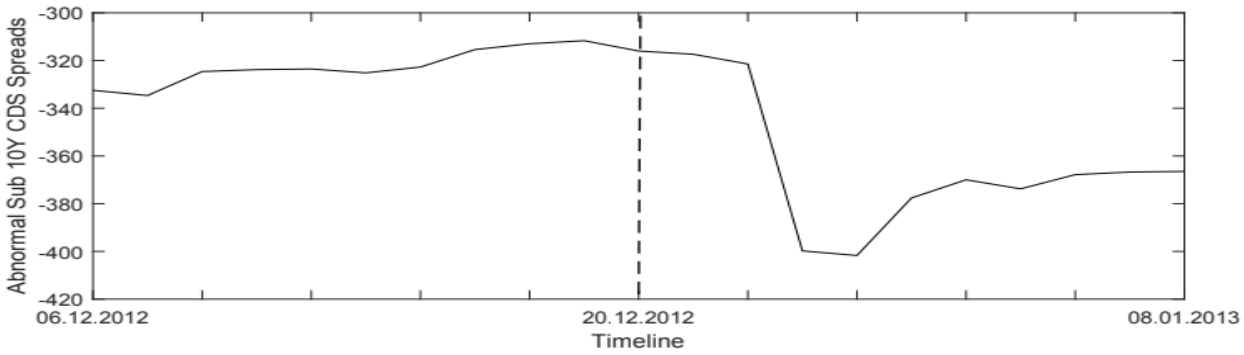

Figure 32: Abnormal 10 Year Subordinated CDS Spreads for Eurobank Ergasias at Event Window [3]

Quantitative Analysis – **Piraeus Bank**

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**23-Jul-10**	The Greek authorities submitted a Restructuring Plan to the Commission.	**23-Jul-10**	The European Commission registered that plan and its subsequent updates as well as additional information submitted by the Greek authorities as Case SA.30342 (PN 26/2010) and then Case SA.32787 (2011/PN).

Piraeus Bank: Event Window [1]

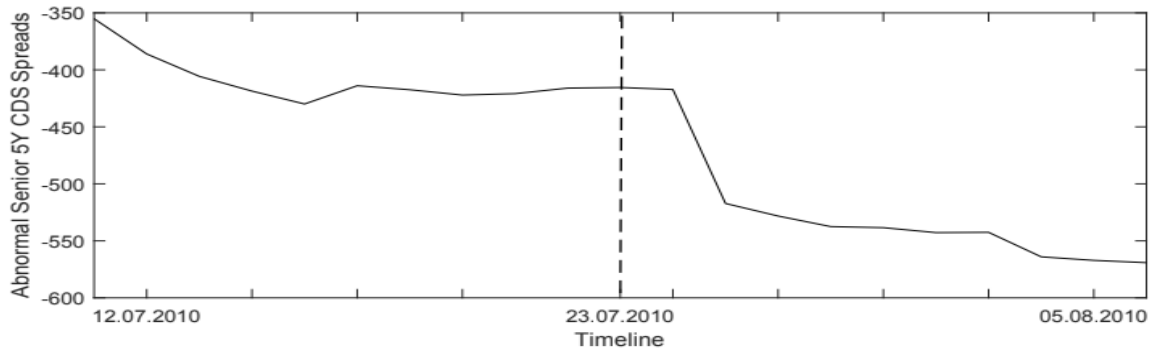

Figure 33: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [1]

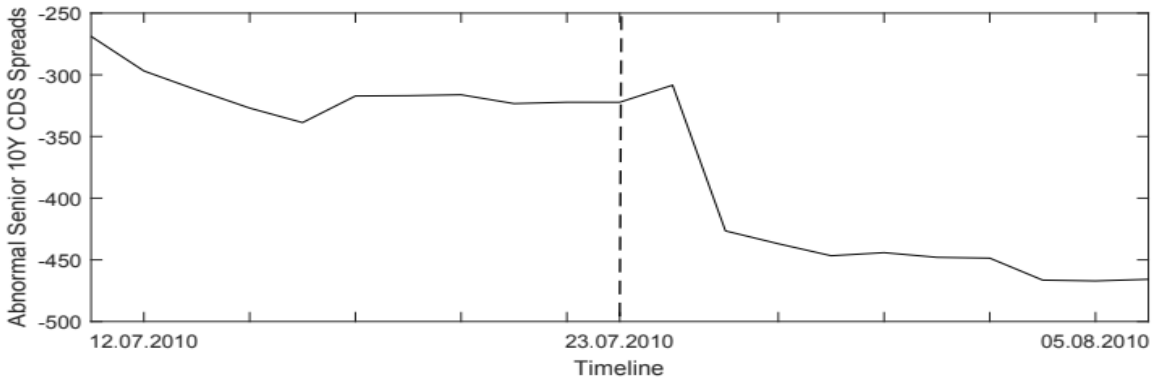

Figure 34: Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [1]

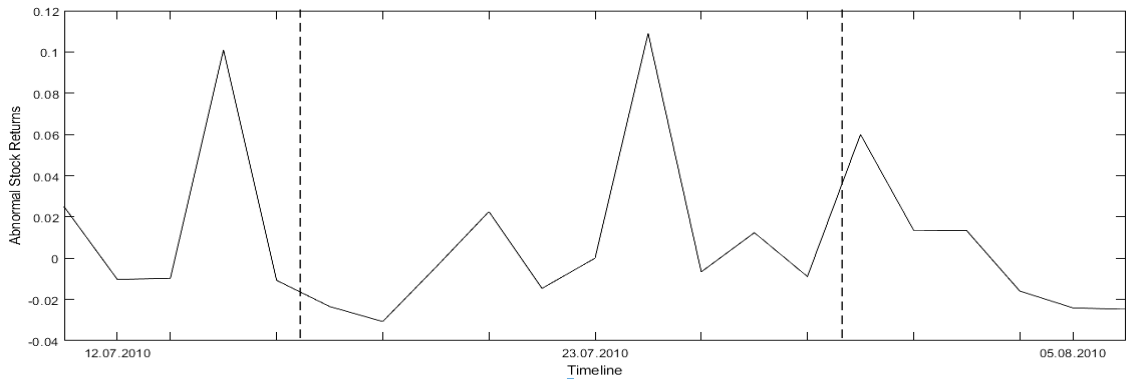

Figure 35: Abnormal Stock Returns for Piraeus Bank at Event Window [1]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**20-Apr-12**	The Hellenic Financial Stability Fund ("HFSF") provided Piraeus Bank with a letter committing to participate in a planned share capital increase of the Bank.	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 4 700 million to the Bank ("the first bridge recapitalisation").

Piraeus Bank: Event Window [2]

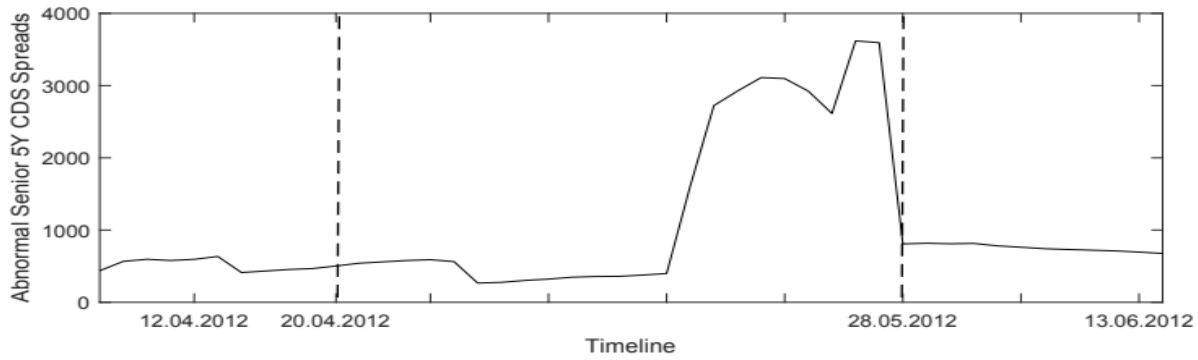

Figure 36: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [2]

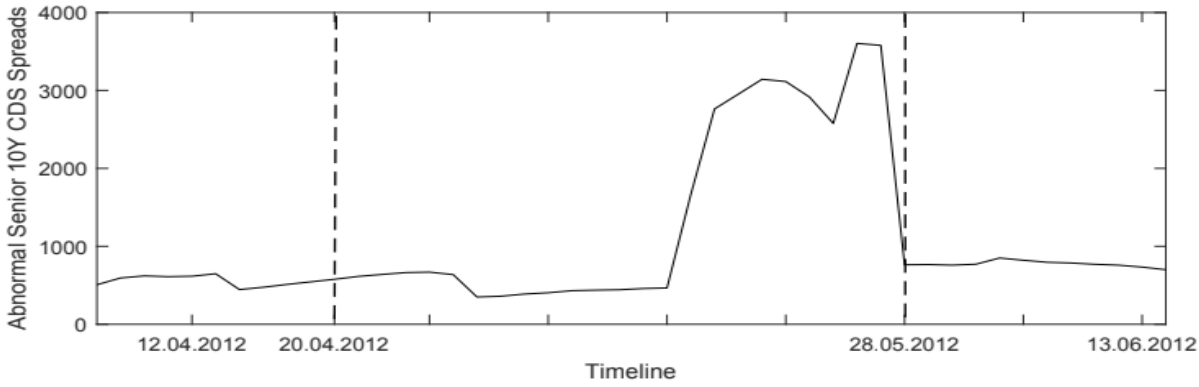

Figure 37: Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [2]

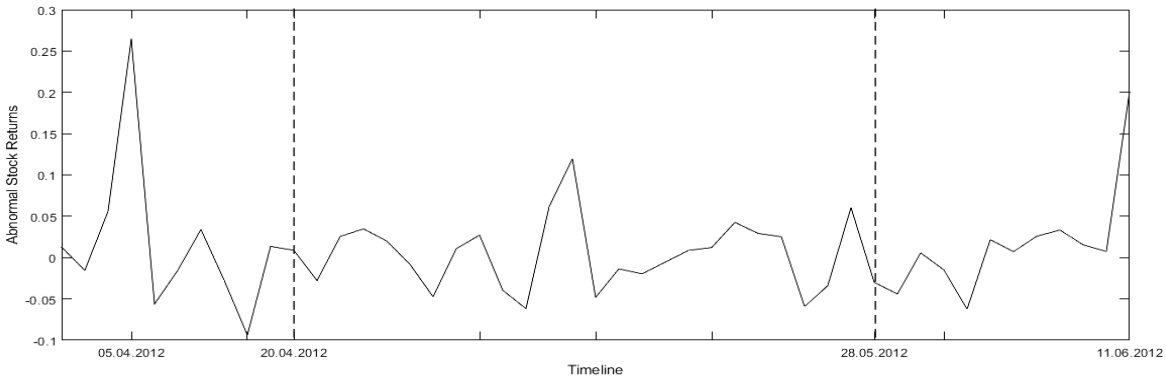

Figure 38: Abnormal Stock Returns for Piraeus Bank at Event Window [2]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 553 million to the Bank ("the second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in instruments to be issued, for a total amount of up to EUR 1 082 million convertible capital.	**20-Dec-12**	The HFSF granted a second bridge recapitalisation of EUR 1 553 million to the Bank ("the second bridge recapitalisation"). The HFSF also provided the Bank with a commitment letter for its participation in a share capital increase of the Bank and in instruments to be issued, for a total amount of up to EUR 1 082 million convertible capital

Piraeus Bank: Event Window [3]

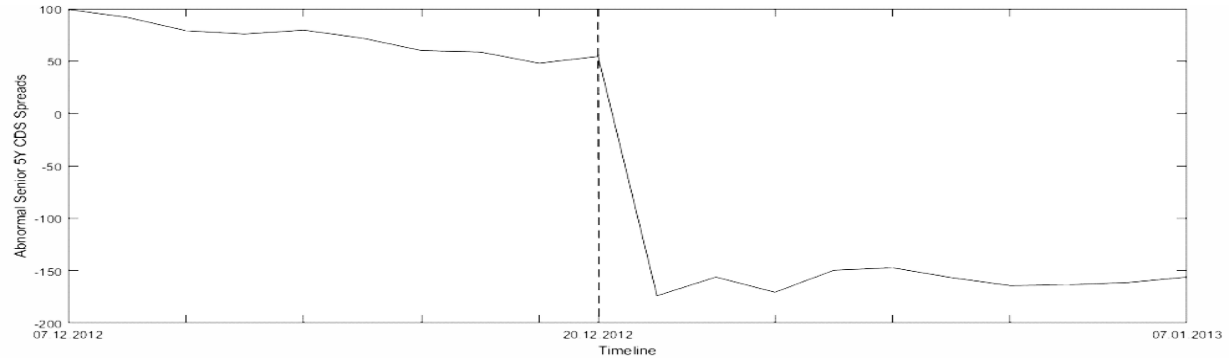

Figure 39: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [3]

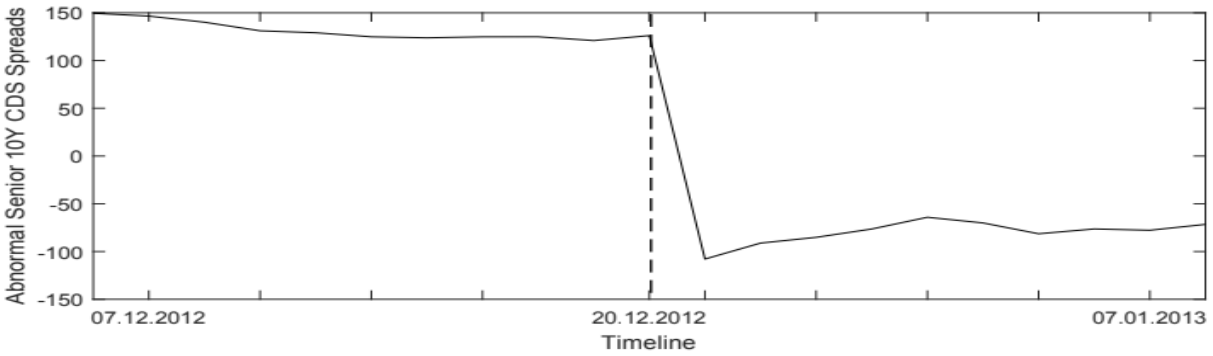

Figure 40: Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [3]

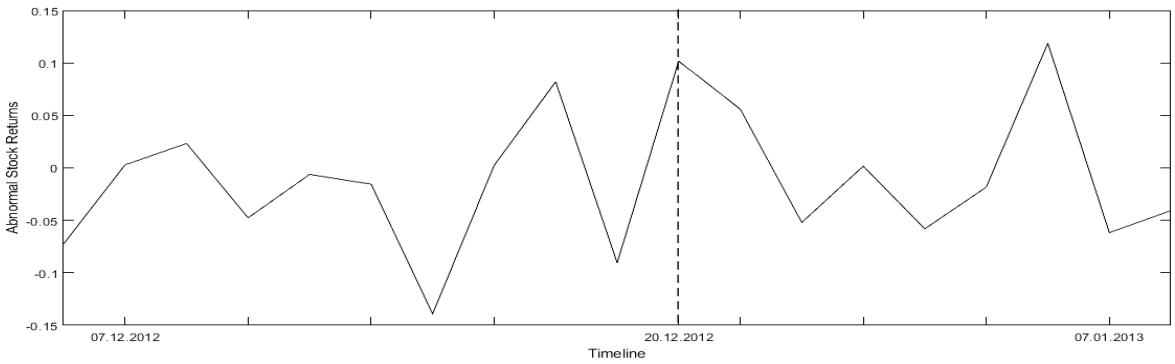

Figure 41: Abnormal Stock Returns for Piraeus Bank at Event Window [3]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [4]	**03-Jun-13**	The HFSF partially converted the first and second bridge recapitalisations into equity for a total of EUR 5 891 million. The HFSF also injected an additional amount of EUR 1 094 million into the Bank, as committed at the time of the acquisitions by the Bank of the good part of Agricultural Bank of Greece ("ATE") and of the Greek branches of three Cypriot Banks. In addition, private investors injected EUR 1 444 million. The total recapitalisation amounted to EUR 8 429 million and is referred to as "the Spring 2013 recapitalisation".	**03-Jun-13**	The HFSF partially converted the first and second bridge recapitalisations into equity for a total of EUR 5 891 million. The HFSF also injected an additional amount of EUR 1 094 million into the Bank, as committed at the time of the acquisitions by the Bank of the good part of Agricultural Bank of Greece ("ATE") and of the Greek branches of three Cypriot Banks. In addition, private investors injected EUR 1 444 million. The total recapitalisation amounted to EUR 8 429 million and is referred to as "the Spring 2013 recapitalisation".

Piraeus Bank: Event Window [4]

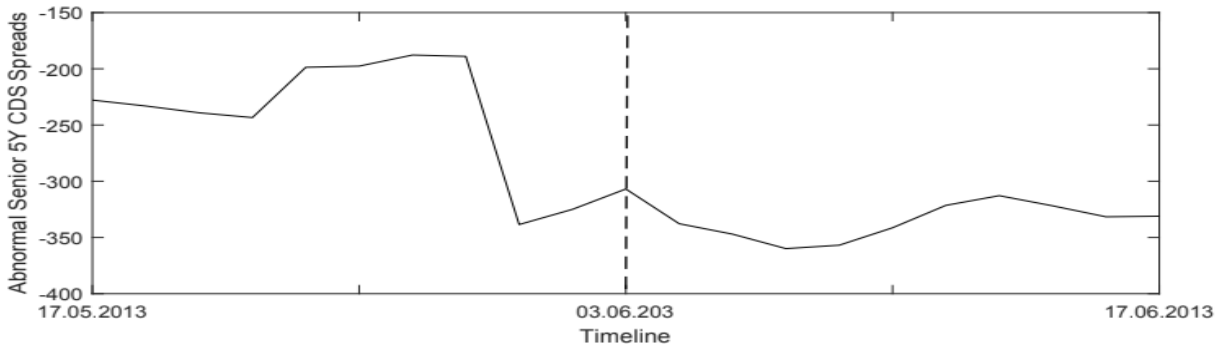

Figure 42: Abnormal 5 Year Senior CDS Spreads for Piraeus Bank at Event Window [4]

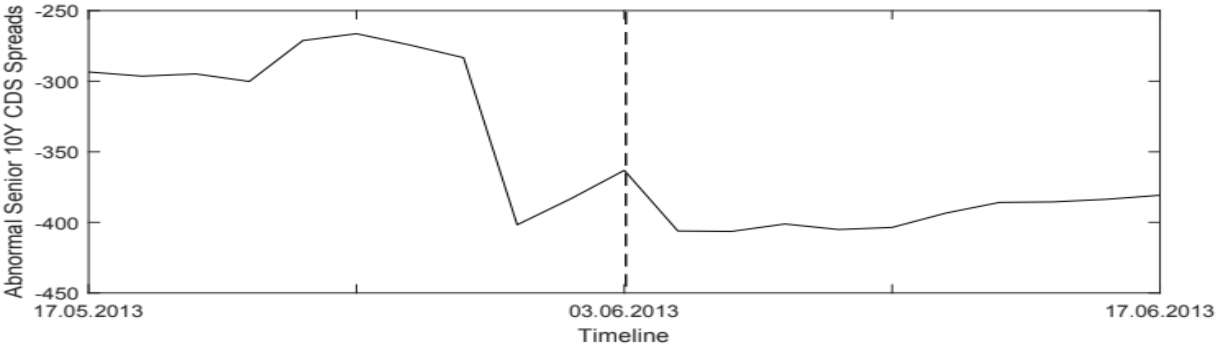

Figure 43: Abnormal 10 Year Senior CDS Spreads for Piraeus Bank at Event Window [4]

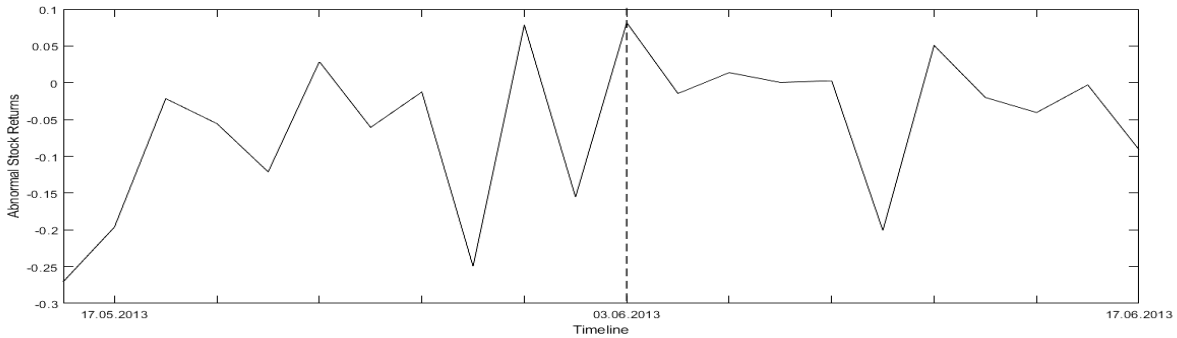

Figure 44: Abnormal Stock Returns for Piraeus Bank at Event Window [4]

Quantitative Analysis – **BFA-Bankia**

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [1]	**19-Jun-12**	On 19 June 2012, the Spanish authorities notified the Commission that the convertible preference shares subscribed for by the FROB in BFA were to be converted into ordinary shares. Additionally, a liquidity guarantee of up to EUR 19 billion was also to be granted to BFA in the context of that conversion.	**27-Jun-12**	The Commission approved both measures on 27 June 2012 ("the Conversion Decision").

BFA-Bankia: Event Window [1]

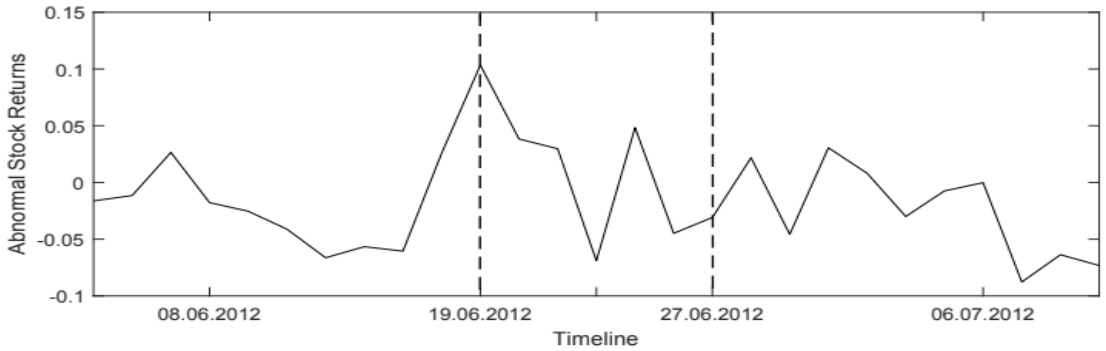

Figure 45: Abnormal Stock Returns for BFA-Bankia at Event Window [1]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [2]	**03-Sep-12**	On 3 September 2012, the Spanish authorities notified a new aid measure in favour of the BFA group, which includes BFA and its banking subsidiary Bankia ("the BFA Group" or "BFA/BANKIA") via a new capital injection of up to EUR 4.5 billion.	**07-Sep-12**	The Commission approved the measure through a rescue decision on 7 September 2012 ("the Urgent Recapitalisation Decision").

BFA-Bankia: Event Window [2]

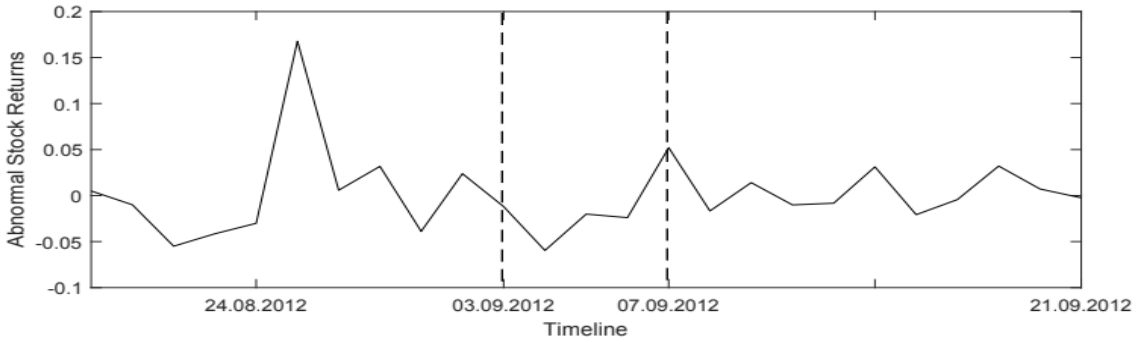

Figure 46: Abnormal Stock Returns for BFA-Bankia at Event Window [2]

Event Window Summary & Description

Classification	Date of Announcement	Event Description	Date of Approval	Event Description
Event Window [3]	**09-Nov-12**	On 9 November 2012, Spain communicated the final content of the Restructuring Plan, including the final figures pertaining to the size, composition and valuation of the assets and credit portfolio to be transferred to an Asset Management Company ("AMC") in the context of an impaired asset measure	**28-Nov-12**	On 28 November 2012, European Commission approves the capital relief through the FROB's intervention in Banco de Valencia, proposed recapitalisation measure of November 2012, and the segregation of impaired assets to the Asset Management Company

BFA-Bankia: Event Window [3]

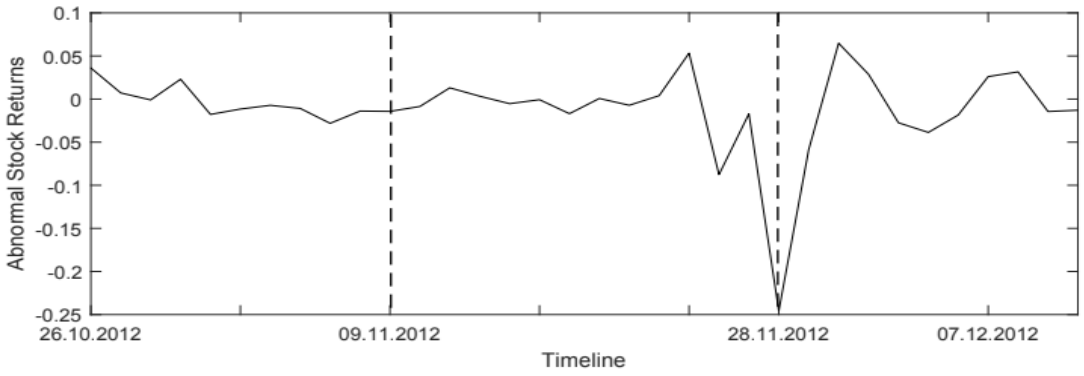

Figure 47: Abnormal Stock Returns for BFA-Bankia at Event Window [3]

Timeline & Milestones of Events

Year	Date	Event Description
2008	**-**	The European Commission approved a scheme designed to ensure the stability of the Greek financial system. The Greek Banks Support Scheme[80] affords the granting of aid under its constituent measures – a recapitalization measure, a guarantee measure, and a government bond loan measure.
2009	**-**	Alpha Bank was recapitalized by Greece under the recapitalization measure. Alpha Bank has since benefited the Greek Banks Support Scheme, as well as State-guaranteed emergency liquidity assistance (State-guaranteed ELA).
2011	**09-Mar-11**	Moody's[81] downgraded the deposit and senior debt ratings of Alpha Bank Group to Ba3, from Ba1, following the downgrade of Greece's sovereign rating from Ba1 to B1, and Moody's reassessment of the bank's standalone credit strength – reflected in its bank financial strength ratings (BFSRs). The outlook on the banks' deposit and debt ratings is reflected by (i) the negative outlook on the government bond ratings; and (ii) Greece's persistently challenging operating conditions and unfavourable macroeconomic environment.
2011	**03-Jun-11**	Moody's[82] downgraded the deposit and senior debt ratings of Alpha Bank Group to B3, from Ba3, following the downgrade of Greece's sovereign rating from B1 to Caa1. The outlook on the banks' deposit and debt ratings is reflected by (i) the increasing likelihood of a sovereign debt restructuring, reflected in the rating actions undertaken upon the Greek sovereign; and (ii) high correlation of default between Greece and Greek banks.
2011	**23-Sep-11**	Moody's[83] downgraded the deposit and senior debt ratings of Alpha Bank Group from B3 to Caa2. The main factors driving the rating actions on domestically owned Greek banks are reflected by (i) the impact of recent impairments of Greek Government Bonds (GGBs), and the increasing risk of significant additional impairments of GGBs, on banks' capital levels; (ii) the expected impact of the deteriorating domestic economic environment on non-performing loans (NPLs) and potential additional provisioning costs from the upcoming diagnostic asset quality study, initiated by Bank of Greece (BoG) and to be conducted by external consultants (BlackRock); and (iii) the decline in deposit bases and still fragile liquidity positions, as illustrated by limited remaining eligible collateral for funding from the ECB and the recent activation of Emergency Liquidity Assistance (ELA) by the BoG.
2012	**20-Apr-12**	The Hellenic Financial Stability Fund (HFSF) committed to participate in the planned share capital increase of Alpha Bank.
2012	**23-May-12**	The HFSF granted a bridge recapitalisation of EUR 1 900 million to the Bank (First Bridge Recapitalisation).
2012	**21-Dec-12**	The HFSF granted another bridge recapitalisation of EUR 1 042 million to the Bank (Second Bridge Recapitalisation), and also committed to participate in the planned share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 1 629 million.
2013	**03-Jun-13**	The HFSF converted the two bridge recapitalisations into equity and further injected EUR 1 079 million of capital into the Bank (Spring 2013 Recapitalisation).
2013	**06-Dec-13**	Moody's[84] upgraded the deposit and senior debt ratings of Alpha Bank Group to Caa1 from Caa2. The outlook on the banks' deposit and debt ratings is reflected by (i) the recent improvement in the creditworthiness of the Government of Greece, reflected by Moody's upgrade of Greece's sovereign bond rating to Caa3 from C.
2014	**12-Jun-14**	The Greek authorities submitted a final Restructuring Plan for the Bank to the European Commission. and notify the Commission of the HFSF's commitment to fully underwrite the Bank's upcoming recapitalisation. In addition, Greek authorities supplemented information on the State-guaranteed ELA, whilst indicating their intentions to continue providing the Bank with liquidity support, as well as State guarantees on debt instruments and government bond loans under the Greek Banks Support Scheme[85].

Table 1: Timeline of Alpha Bank Group's Credit Rating

[80] Commission decision of 19 November 2008 in State Aid N 560/2008 *"Support Measures for the Credit Institutions in Greece"* (OJ C 125, 5.6.2009, p. 6). It was attributed the number SA.26678 (N 560/2008).
[81] Moody's Investors Service: Global Credit Research – 09 March 2011 [Alpha Bank]
[82] Moody's Investors Service: Global Credit Research – 03 June 2011 [Alpha Bank]
[83] Moody's Investors Service: Global Credit Research – 23 September 2011 [Alpha Bank]
[84] Moody's Investors Service: Global Credit Research – 06 December 2013 [Alpha Bank]
[85] The notification was registered under number SA.36005 (2013/NN).

Timeline & Milestones of Events

Year	Date	Event Description
2008	**-**	The European Commission approved a scheme designed to ensure the stability of the Greek financial system. The Greek Banks Support Scheme[86] affords the granting of aid under its constituent measures – a recapitalization measure, a guarantee measure, and a government bond loan measure.
2009	**-**	Eurobank Ergasias was recapitalized by Greece under the recapitalization measure. Eurobank Ergasias has since benefited the Greek Banks Support Scheme, as well as State-guaranteed emergency liquidity assistance (State-guaranteed ELA).
2011	**09-Mar-11**	Moody's[87] downgraded the deposit and senior debt ratings of Eurobank Ergasias to Ba3, from Ba1, following the downgrade of Greece's sovereign rating from Ba1 to B1, and Moody's reassessment of the bank's standalone credit strength – reflected in its bank financial strength ratings (BFSRs). The outlook on the banks' deposit and debt ratings is reflected by (i) the negative outlook on the government bond ratings; and (ii) Greece's persistently challenging operating conditions and unfavourable macroeconomic environment.
2011	**03-Jun-11**	Moody's[88] downgraded the deposit and senior debt ratings of Eurobank Ergasias to B3, from Ba3, following the downgrade of Greece's sovereign rating from B1 to Caa1. The outlook on the banks' deposit and debt ratings is reflected by (i) the increasing likelihood of a sovereign debt restructuring, reflected in the rating actions undertaken upon the Greek sovereign; and (ii) high correlation of default between Greece and Greek banks.
2011	**23-Sep-11**	Moody's[89] downgraded the deposit and senior debt ratings of Eurobank Ergasias from B3 to Caa2. The main factors driving the rating actions on domestically owned Greek banks are reflected by (i) the impact of recent impairments of Greek Government Bonds (GGBs), and the increasing risk of significant additional impairments of GGBs, on banks' capital levels; (ii) the expected impact of the deteriorating domestic economic environment on non-performing loans (NPLs) and potential additional provisioning costs from the upcoming diagnostic asset quality study, initiated by BoG and to be conducted by external consultants (BlackRock); and (iii) the decline in deposit bases and still fragile liquidity positions, as illustrated by limited remaining eligible collateral for funding from the European Central Bank (ECB) and the recent activation of Emergency Liquidity Assistance (ELA) by the Bank of Greece (BoG).
2012	**20-Apr-12**	The Hellenic Financial Stability Fund (HFSF) committed to participate in the planned share capital increase of Eurobank Ergasias.
2012	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 3 970 million to the Bank (First Bridge Recapitalisation).
2012	**21-Dec-12**	The HFSF granted another bridge recapitalisation of EUR 1 341 million to the Bank - second bridge recapitalisation, and also committed to participate in the planned share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 528 million.
2013	**28-May-13**	The HFSF participated in the Bank's share capital increase, agreed upon previously in December 2012. The HFSF also converted the two bridge recapitalisations into equity and further injected EUR 528 million of capital into the Bank ("Spring 2013 recapitalisation").
2013	**06-Dec-13**	Moody's[90] upgraded the deposit and senior debt ratings of Eurobank Ergasias to Caa1 from Caa2. The outlook on the banks' deposit and debt ratings is reflected by (i) the recent improvement in the creditworthiness of the Government of Greece, reflected by Moody's upgrade of Greece's sovereign bond rating to Caa3 from C.
2014	**31-Mar-14**	The HFSF made a commitment to the Bank for its future participation in a share capital increase.
2014	**16-Apr-14**	The Greek authorities submitted a final Restructuring Plan for the Bank to the European Commission and notify the Commission of the HFSF's commitment to fully underwrite the Bank's upcoming recapitalisation. In addition, Greek authorities supplemented information on the State-guaranteed ELA, whilst indicating their intentions to continue providing the Bank with liquidity support, as well as State guarantees on debt instruments and government bond loans under the Greek Banks Support Scheme[91].

Table 2: Timeline of Eurobank Ergasias' Credit Rating

[86] Commission decision of 19 November 2008 in State Aid N 560/2008 *"Support Measures for the Credit Institutions in Greece"* (OJ C 125, 5.6.2009, p. 6)
[87] Moody's Investors Service: Global Credit Research – 09 March 2011 [Eurobank Ergasias]
[88] Moody's Investors Service: Global Credit Research – 03 June 2011 [Eurobank Ergasias]
[89] Moody's Investors Service: Global Credit Research – 23 September 2011 [Eurobank Ergasias]
[90] Moody's Investors Service: Global Credit Research – 06 December 2013 [Eurobank Ergasias]
[91] The notification was registered under number SA.34825 (2014/NN).

Timeline & Milestones of Events

Year	Date	Event Description
2008	**-**	The European Commission approved a scheme designed to ensure the stability of the Greek financial system. The Greek Banks Support Scheme[92] affords the granting of aid under its constituent measures – a recapitalization measure, a guarantee measure, and a government bond loan measure.
2009	**-**	Piraeus Bank was recapitalized by Greece under the recapitalization measure. Piraeus Bank has since benefited the Greek Banks Support Scheme, as well as State-guaranteed emergency liquidity assistance (State-guaranteed ELA).
2011	**09-Mar-11**	Moody's[93] downgraded the deposit and senior debt ratings of Piraeus Bank to Ba3, from Ba1, following the downgrade of Greece's sovereign rating from Ba1 to B1, and Moody's reassessment of the bank's standalone credit strength – reflected in its bank financial strength ratings (BFSRs). The outlook on the banks' deposit and debt ratings is reflected by (i) the negative outlook on the government bond ratings; and (ii) Greece's persistently challenging operating conditions and unfavourable macroeconomic environment.
2011	**03-Jun-11**	Moody's[94] downgraded the deposit and senior debt ratings of Piraeus Bank to B3, from Ba3, following the downgrade of Greece's sovereign rating from B1 to Caa1. The outlook on the banks' deposit and debt ratings is reflected by (i) the increasing likelihood of a sovereign debt restructuring, reflected in the rating actions undertaken upon the Greek sovereign; and (ii) high correlation of default between Greece and Greek banks.
2011	**23-Sep-11**	Moody's[95] downgraded the deposit and senior debt ratings of Piraeus Bank from B3 to Caa2. The main factors driving the rating actions on domestically owned Greek banks are reflected by (i) the impact of recent impairments of Greek Government Bonds (GGBs), and the increasing risk of significant additional impairments of GGBs, on banks' capital levels; (ii) the expected impact of the deteriorating domestic economic environment on non-performing loans (NPLs) and potential additional provisioning costs from the upcoming diagnostic asset quality study, initiated by BoG and to be conducted by external consultants (BlackRock); and (iii) the decline in deposit bases and still fragile liquidity positions, as illustrated by limited remaining eligible collateral for funding from the ECB and the recent activation of Emergency Liquidity Assistance (ELA) by the BoG.
2012	**20-Apr-12**	The HFSF committed to participate in the planned share capital increase of Piraeus Bank.
2012	**28-May-12**	The HFSF granted a bridge recapitalisation of EUR 4 700 million to the Bank (First Bridge Recapitalisation).
2012	**21-Dec-12**	The HFSF granted another bridge recapitalisation of EUR 1 553 million to the Bank (Second Bridge Recapitalisation) and committed to participate in the planned share capital increase of the Bank and in convertible capital instruments to be issued, for a total amount up to EUR 1 082 million.
2013	**03-Jun-13**	The HFSF partially converted the two bridge recapitalisations into equity for a total of EUR 5 891 million and further injected EUR 1 094 million of capital into the Bank (Spring 2013 Recapitalisation). In addition, private investors injected EUR 1 444 million. The total recapitalisation constitutes EUR 8 429 million.
2013	**06-Dec-13**	Moody's[96] upgraded the deposit and senior debt ratings of Piraeus Bank to Caa1 from Caa2. The outlook on the banks' deposit and debt ratings is reflected by (i) the recent improvement in the creditworthiness of the Government of Greece, reflected by Moody's upgrade of Greece's sovereign bond rating to Caa3 from C.
2014	**25-Jun-14**	The Greek authorities submitted a final Restructuring Plan for the Bank to the European Commission and notify the Commission of the HFSF's commitment to fully underwrite the Bank's upcoming recapitalisation. In addition, Greek authorities supplemented information on the State-guaranteed ELA, whilst indicating their intentions to continue providing the Bank with liquidity support, as well as State guarantees on debt instruments and government bond loans under the Greek Banks Support Scheme[97].

Table 3: Timeline of Piraeus Bank Group's Credit Rating

[92] Commission decision of 19 November 2008 in State Aid N 560/2008 *"Support Measures for the Credit Institutions in Greece"* (OJ C 125, 5.6.2009, p. 6). It was attributed the number SA.26678 (N 560/2008).
[93] Moody's Investors Service: Global Credit Research – 09 March 2011[Piraeus Bank]
[94] Moody's Investors Service: Global Credit Research – 02 June 2011 [Piraeus Bank]
[95] Moody's Investors Service: Global Credit Research – 23 September 2011 [Piraeus Bank]
[96] Moody's Investors Service: Global Credit Research – 06 December 2013 [Piraeus Bank]
[97] The notification was registered under number SA.36005 (2013/NN).

Timeline & Milestones of Events

Year	Date	Event Description
2008	**-**	The aftermath of the financial crisis spurred the Spanish government towards establishing legal restrictions, via Royal Decree Law 9/2009, towards the restructuring of the Spanish banking sector. These clauses seek to address the structural weakness in the saving banks - "Cajas", such as weak corporate governance and legal limitations towards raising of regulatory capital.
2010	**-**	BFA benefited from the legislation as it received a capital injection of EUR 4465 million from the FROB, in terms of convertible preference shares, as a support for the merger of the seven founding savings banks whilst partially funding the corresponding restructuring costs.
2011	**-**	The European Banking Authority (EBA) published a recommendation regarding the creation and supervision of capital buffers to restore market confidence. Although BFA Group was noted to bear a shortfall in capital of EUR 1329 million, the Group was exempted from the final recapitalization exercise under the assurance of the Spanish authorities that it will undergo a deep restructuring process.
2011	**18-Feb-11**	Spain adopted a more stringent regulatory capital requirement for the entire financial sector, which compels all institutions to meet the latest higher minimum regulatory solvency levels – also known as "capital principal". In accordance with the new solvency requirements, BFA is required to raise EUR 5.8 billion of addition capital in order to address the new 10% capital principal ratio.
2012	**-**	The BFA Group's management requested from the FROB an additional EUR 19 billion of capital, of which 12 to 14 billion was expected to be for Bankia alone. The Group also revised and published its 2011 annual financials, by recognising additional losses of EUR 4952 million. Liquidity issues have since impede the BFA Group, as it lacks the capital to adequately meet the more stringent regulatory requirements approved by the Spanish government.
2012	**25-Jun-12**	Moody's[98] assigned a Ba2 rating to Bankia's long-term rating, considering the Spanish government's effort to stabilize the banking system. In response to a negative economic valuation of BFA by three independent investment banks, the FROB converted all its convertible preference shares into ordinary equity of BFA, to increase the solvency of the bank. Upon the conversion, FROB became the sole shareholder of the BFA.
2012	**31-Aug-12**	Public disclosure[99] of financial information regarding BFA Group's performance for the first half of 2012 revealed losses of EUR 2.8 billion in BFA and EUR 4.5 billion in Bankia. These losses resulted in a negative equity for BFA, and a shortfall of regulatory capital for both BFA and Bankia.
2012	**04-Sep-12**	Capital injection of EUR 4.5 billion was initiated by FROB. This afforded the Group a solvency rate of 8.2% in anticipation of its submission of the Restructuring Plan, which is expected to lead to a final recapitalization by the FROB.
2012	**28-Sep-12**	Results of a bottom-up stress test conducted by Oliver Wyman, an independent consultant, under the context of the MoU[100] stress test, revealed a capital shortfall of EUR 24 743 million under the test's adverse scenario and EUR 13 230 under its base case.
2012	**15-Oct-12**	Moody's[101] downgraded Bankia's long-term rating to BB following a sector review.
2012	**09-Nov-12**	Spain communicated the final content for its proposed Restructuring Plan, in accordance with the stipulations stated by the Memorandum of Understanding[102] on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU).

Table 4: Timeline of BFA-Bankia's Credit Rating

[98] Moody's Investors Service: Global Credit Research – 25 Jun 2012 [BFA-Bankia]
[99] Moody's Investors Service: Global Credit Research – 31 Aug 2012 [BFA-Bankia]
[100] Moody's Investors Service: Global Credit Research – 28 Sep 2012 [BFA-Bankia]
[101] Moody's Investors Service: Global Credit Research – 15 Oct 2012 [BFA-Bankia]
[102] Moody's Investors Service: Global Credit Research – 09 Nov 2012 [BFA-Bankia]

Timeline & Milestones of Events

Year	Date	Event Description
2008	**-**	The aftermath of the financial crisis spurred the Spanish government towards establishing legal restrictions, via Royal Decree Law 9/2009, towards the restructuring of the Spanish banking sector. These clauses seek to address the structural weakness in the saving banks - "Cajas", such as weak corporate governance and legal limitations towards raising of regulatory capital.
2008	**23-Dec-08**	The European Commission approved the creation of a debt guarantee scheme (Spanish Guarantee Scheme) (State aid case NN 54b/2008 OJ C 122/2009 of 29.05.2009). The scheme was eventually modified, extended, reintroduced and prolonged up to 31st December 2102.
	2009 - 2012: Liberbank has benefited from the Spanish Guarantee Scheme, receiving guarantees on bonds issued worth EUR 3 875 million.	
2011	**13-Sep-11**	Moody's[103] assigned a deposit, long and short-term debt ratings of Baa1 to the new established Liberbank. Liberbank's dated subordinated debt was rated at Baa2.
2012	**15-Feb-12**	Moody's[104] downgraded the long-term debt and deposit ratings for Liberbank to Ba1, from Baa1, following Moody's assessment regarding the Spanish government's reduction in its ability to provide support to its banks. The outlook on Liberbank reflects the effects of a fragile operating environment, coupled by the constrained access to market funding due to the bank's credit profile.
2012	**13-Jun-12**	Moody's[105] downgraded the rating of Spain's FROB from A3 to Baa3, whilst placing the rating on review for pending downgrades in line with the sovereign rating action. The outlook for FROB is reflected by (i) a further increase in debt burden evidenced by the Spanish government's intention to borrow up to EUR 100 million from the European Financial Stability Facility (EFSF) or its successor, the European Stability Mechanism (ESM), to recapitalise its banking system; (ii) the Spanish government's limited access to financial markets, evidenced by its overreliance on the EFSF or ESM for recapitalization funds, as well as its growing dependence on its domestic banks as the primary purchasers of its newly issued bonds, who essentially obtained its funding form the ECB; (iii) Spanish economy's continued weakness enumerates to the vulnerability of the government should a sudden stop in funding occurs.
2012	**28-Sep-12**	Results of a bottom-up stress test conducted by Oliver Wyman, an independent consultant, under the context of the MoU stress test, revealed a capital shortfall of EUR 1 198 million under the test's adverse scenario and EUR 103 under its base case.
2012	**05-Oct-12**	Moody's[106] downgraded the long-term debt and deposit ratings for Liberbank to Ba2, from Ba1, following the conclusion of a review process initiated on 25th June 2012. Liberbank is noted to remain vulnerable due to its capital shortfall.
2012	**24-Oct-12**	Moody's[107] downgraded the long-term debt and deposit ratings for Liberbank to Ba3, from Ba2, following the break-up of its planned merger with Ibercaja Banco. In addition, the downgrade was also attributed towards the fact that Liberbank is now required to undergo a recapitalisation or restructuring process, with a high likelihood of requiring public support to reinforce its capital adequacy.
2012	**31-Oct-12**	The Bank of Spain announced that Liberbank is expected to utilise public support within its capitalization framework to address its capital inadequacy issues. The Memorandum of Understanding on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU) stress test results confer a Group 2 status for Liberbank. A Group 2 status categorises banks with capital shortfalls identified by the stress test and is unable to meet these shortfalls privately without recourse to State aid.
2012	**12-Dec-12**	Spain communicated the final content for its proposed Restructuring Plan, in accordance with the stipulations stated by the Memorandum of Understanding on Financial Sector Policy Conditionality between the Kingdom of Spain and the Heads of State and Government of the Euro Area (MoU). In addition, the plan covered details of the capital injection to be made through the Fondo de Reestructuraciòn Ordenanda Bancaria (FROB) and the final figures pertaining to the size, composition and valuation of the assets and credit portfolio to be transferred to an Asset Management Company (AMC) in the context of an impaired asset measure. Liberbank required a capital injection of EUR 124 million to address the requirements of the new Spanish regulatory solvency criteria. Based on the stipulations of the proposed Restructuring Plan, the FROB will subscribe for the EUR 124 million in the form of convertible contingent bonds (CoCos). In addition, Liberbank is required to transfer its assets and credit portfolio to an AMC, benefitting from an impaired asset measure. This measure seeks to attenuate the uncertainty regarding future values of Liberbank's most complicated asset portfolio, affording it undivided attention towards the execution of the Restructuring Plan.

[103] Moody's Investors Service: Global Credit Research - 13 September 2011 [Liberbank S.A.]
[104] Moody's Investors Service: Global Credit Research - 15 February 2012 [Liberbank S.A.]
[105] Moody's Investors Service: Global Credit Research – 13 June 2012 [Liberbank S.A.]
[106] Moody's Investors Service: Global Credit Research – 5 October 2012 [Liberbank S.A.]
[107] Moody's Investors Service: Global Credit Research – 24 October 2012 [Liberbank S.A.]

2013	**11-Jun-13**	Moody's[108] downgraded the long-term debt and deposit ratings for Liberbank to B1 from Ba3. The downgrade was prompted by the normalisation of support assumptions by Moody's, with regards to the likelihood and availably of extraordinary government support. The certainty of government support offsets doubts regarding the bank's intrinsic weakness and how its credit profile would emerge from the restructuring.

Table 5: Timeline of Liberbank S.A's Credit Rating

[108] Moody's Investors Service: Global Credit Research – 11 June 2013 [Liberbank S.A.]

Timeline & Milestones of Events

Year	Date	Event Description
2013	**09-May-13**	Moody's[109] downgraded the deposit and senior debt ratings of Co-operative Bank to Ba3, following its lowering of the bank's baseline credit assessment (BCA) to b1 from baa1. The lowering of the BCA reflects Moody's opinion that (1) the bank faces the risk of further substantial losses in its non-core portfolio, as demonstrated recently by the unexpectedly significant deterioration of its commercial real estate (CRE) exposures, that will exert downward pressure on capital ratios that are already low relative to its peers'; (2) its vulnerability to losses is heightened by the low level of provisions held against its lending portfolio; and (3) the bank's slow progress in realising merger-related revenue and cost benefits has diminished its ability to replenish capital through earnings
2013	**17-Jun-13**	To address the £1.5 billion CET1 capital shortfall, the Co-operative Group and the bank initiated a Recapitalisation Plan ("2013 Recapitalisation Plan"). The Recapitalisation Plan encompasses: the 2013 Liability Management Exercise (LME); CET capital contributions from Co-operative Banking Group Limited (CBG); and interest savings on securities surrendered in the 2013 Liability Management Exercise (LME).
2013	**18-Jun-13**	Moody's[110] downgraded the deposit and senior debt ratings of Co-operative Bank to Caa1, from Ba3, following its lowering of the bank's baseline credit assessment (BCA) to ca, from the previous BCA of b1. Moody's also downgraded Co-operative Bank's subordinated debt and junior subordinated debt ratings to Ca and Ca from B2 and B3 respectively. These ratings were a direct reflection following the Bank's announcement of a regulatory capital shortfall requiring a recapitalisation via burden-sharing with junior creditors and asset disposals. The announcement affirms Moody's view that the Co-operative Bank may only return to be a fully solvent, operational entity through a substantial recapitalization, which as proposed would involve a Bail-in of junior creditors, together with a very significant restructuring of the bank's operations.
2013	**18-Dec-13**	The Co-operative Bank withdrew its subordinated and junior subordinated debts, following the successful execution of the Liability Management Exercise (LME).
2013	**23-Dec-13**	Moody's[111] withdrew the ratings for Co-operative Bank's subordinated and junior subordinated debts, following the completion of the bank's restructuring via Liability Management Exercise (LME).
2014	**May-14**	In May 2014, the Co-operative Bank (Co-op) plc further improved upon its capital position by successfully raising an additional £400 million of CET1 capital.
2015	**Jul-15**	In July 2015, the Co-operative Bank (Co-op) plc issued £250 million worth of Tier 2 subordinated capital. In addition, the Bank further inaugurated several turnout measures, including: the deleveraging of significant Non-Core businesses; the reduction of the Bank's existing operating base; the addressing of legacy conduct issues; and the successful remediation of a breach in FCA threshold conditions.
2015	**31-Jul-15**	Moody's[112] confirmed the ratings for Co-operative Bank's deposit and senior debt ratings to Caa2, following the upgrading of the bank's baseline credit assessment (BCA) to caa2 from ca.

Table 6: Timeline of Co-operative Bank's Credit Rating

[109] Moody's Investors Service: Global Credit Research – 09 May 2013 [Co-operative Bank]
[110] Moody's Investors Service: Global Credit Research – 18 June 2013 [Co-operative Bank]
[111] Moody's Investors Service: Global Credit Research – 23 December 2013 [Co-operative Bank]
[112] Moody's Investors Service: Global Credit Research – 31 July 2015 [Co-operative Bank]

Significance Test for Alpha Bank

Regression Statistics	
Multiple R	0.237596585
R Square	0.056452137
Adjusted R Square	0.056011021
Standard Error	612.6216528
Observations	2141

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	48029926.46	48029926.46	127.9756183	7.37303E-29
Residual	2139	802778014.1	375305.2894		
Total	2140	850807940.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	3611.02079	228.0087686	15.83720141	1.67506E-53	3163.8788	4058.16278	3163.8788	4058.16278
X Variable 1	-22.74782843	2.010834491	-11.31263092	7.37303E-29	-26.69122298	-18.80443388	-26.69122298	-18.80443388

Table 7: Significance Test for Alpha Bank 5 Year Senior CDS Spreads

Significance Test for Eurobank Ergasias

Regression Statistics	
Multiple R	0.094829601
R Square	0.008992653
Adjusted R Square	0.008517578
Standard Error	710.2223418
Observations	2088

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9548033.51	9548033.51	18.92889554	1.42228E-05
Residual	2086	1052211306	504415.7748		
Total	2087	1061759340			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-267.2808451	345.9928457	-0.772503965	0.004399035	-945.8080612	411.246371	-945.8080612	411.246371
X Variable 1	13.19635303	3.033131841	4.350735058	1.42228E-05	7.248072516	19.14463355	7.248072516	19.14463355

Table 8: Significance Test for Eurobank Ergasias 5 Year Senior CDS Spreads

Significance Test for Piraeus Bank

Regression Statistics	
Multiple R	0.022515718
R Square	0.000506958
Adjusted R Square	2.82732E-05
Standard Error	823.9828173
Observations	2090

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	719049.2544	719049.2544	1.059064302	0.303547887
Residual	2088	1417642762	678947.6832		
Total	2089	1418361812			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	18155.44276	3124.952546	5.809829906	1.34751E-05	11614.84191	24696.0436	11614.84191	24696.0436
X Variable 1	-153.1324496	28.3332906	-5.404682844	3.24592E-05	-212.4347084	-93.83019084	-212.4347084	-93.83019084

Table 9: Significance Test for Piraeus Bank 5 Year Senior CDS Spreads

Significance Test for Alpha Bank

Regression Statistics	
Multiple R	0.369966262
R Square	0.136875035
Adjusted R Square	0.136455227
Standard Error	456.6762269
Observations	2058

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	67997114.63	67997114.63	326.0420956	9.11243E-68
Residual	2056	428785330.3	208553.1762		
Total	2057	496782445			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	5593.197889	258.0173968	21.67759988	5.13295E-94	5087.195204	6099.200574	5087.195204	6099.200574
X Variable 1	-43.20184814	2.392574601	-18.05663578	9.11243E-68	-47.89397041	-38.50972587	-47.89397041	-38.50972587

Table 10: Significance Test for Alpha Bank 10 Year Senior CDS Spreads

Significance Test for Eurobank Ergasias

Regression Statistics	
Multiple R	0.003674565
R Square	1.35024E-05
Adjusted R Square	-0.000465877
Standard Error	638.1039564
Observations	2088

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	11468.71794	11468.71794	0.028166442	0.866734383
Residual	2086	849370511	407176.6592		
Total	2087	849381979.7			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	34967.45807	6233.990222	5.60916152	2.12469E-06	22336.19407	47598.72207	22336.19407	47598.72207
X Variable 1	-323.2529248	60.87922229	-5.309741364	5.39888E-06	-446.6059462	-199.8999034	-446.6059462	-199.8999034

Table 11: Significance Test for Eurobank Ergasias 10 Year Senior CDS Spreads

Significance Test for Piraeus Bank

Regression Statistics	
Multiple R	0.076270205
R Square	0.005817144
Adjusted R Square	0.005341003
Standard Error	755.7797416
Observations	2090

ANOVA

	df	SS	MS	F	Significance F
Regression	1	6978539.637	6978539.637	12.21726675	0.000483371
Residual	2088	1192671901	571203.0178		
Total	2089	1199650441			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	2649.468797	424.2297949	6.245362371	5.10819E-10	1817.511417	3481.426178	1817.511417	3481.426178
X Variable 1	-13.75276705	3.934622386	-3.495320694	0.000483371	-21.46895807	-6.036576027	-21.46895807	-6.036576027

Table 12: Significance Test for Piraeus Bank 10 Year Senior CDS Spreads

Significance Test for Alpha Bank

Regression Statistics	
Multiple R	0.407339052
R Square	0.165925103
Adjusted R Square	0.165520605
Standard Error	1058.188977
Observations	2064

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	459327210.4	459327210.4	410.2000487	2.48967E-83
Residual	2062	2308953182	1119763.91		
Total	2063	2768280393			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	5867.744985	211.6991187	27.71738032	5.3343E-144	5452.578642	6282.911327	5452.578642	6282.911327
X Variable 1	-35.49677749	1.752633362	-20.25339598	2.48967E-83	-38.93389328	-32.05966171	-38.93389328	-32.05966171

Table 13: Significance Test for Alpha Bank 5 Year Subordinate CDS Spreads

Significance Test for Eurobank Ergasias

Regression Statistics	
Multiple R	0.083064365
R Square	0.006899689
Adjusted R Square	0.006418769
Standard Error	2330.023909
Observations	2067

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	77889191.71	77889191.71	14.34684618	0.000156381
Residual	2065	11210908579	5429011.418		
Total	2066	11288797771			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	4113.719502	465.835059	8.830849937	2.17006E-18	3200.164104	5027.2749	3200.164104	5027.2749
X Variable 1	-14.60948475	3.85706252	-3.787723086	0.000156381	-22.17362192	-7.045347579	-22.17362192	-7.045347579

Table 14: Significance Test for Eurobank Ergasias 5 Year Subordinate CDS Spreads

Significance Test for Alpha Bank

Regression Statistics	
Multiple R	0.469395098
R Square	0.220331758
Adjusted R Square	0.219953462
Standard Error	936.5764159
Observations	2063

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	510895035.6	510895035.6	582.4320263	1.5334E-113
Residual	2061	1807858464	877175.3827		
Total	2062	2318753499			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	14146.999	527.4252015	26.82275887	3.4111E-136	13112.65717	15181.34083	13112.65717	15181.34083
X Variable 1	-118.0128536	4.889975554	-24.13362854	1.5334E-113	-127.6026613	-108.4230458	-127.6026613	-108.4230458

Table 15: Significance Test for Alpha Bank 10 Year Subordinate CDS Spreads

Significance Test for Eurobank Ergasias

Regression Statistics	
Multiple R	0.106294996
R Square	0.011298626
Adjusted R Square	0.010824656
Standard Error	1067.137876
Observations	2088

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	27146626.8	27146626.8	23.83827376	1.12734E-06
Residual	2086	2375501854	1138783.247		
Total	2087	2402648481			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	4580.612295	598.893265	7.648461858	3.08434E-14	3406.121594	5755.102996	3406.121594	5755.102996
X Variable 1	-27.11790379	5.554164191	-4.882445469	1.12734E-06	-38.01018556	-16.22562202	-38.01018556	-16.22562202

Table 16: Significance Test for Eurobank Ergasias 10 Year Subordinate CDS Spreads

Significance Test for Alpha Bank

Regression Statistics	
Multiple R	0.046493983
R Square	0.00216169
Adjusted R Square	0.001933509
Standard Error	0.042801173
Observations	4375

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.017354982	0.017354982	9.47355117	0.002097468
Residual	4373	8.011075573	0.00183194		
Total	4374	8.028430554			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-0.000520313	0.00064718	-0.803968975	0.421458594	-0.001789114	0.000748488	-0.001789114	0.000748488
X Variable 1	0.008137356	0.00264379	3.077913444	0.002097468	0.002954189	0.013320523	0.002954189	0.013320523

Table 17: Significance Test for Alpha Bank Stock Returns

Significance Test for Eurobank Ergasias

Regression Statistics	
Multiple R	0.443580923
R Square	0.196764035
Adjusted R Square	0.19658027
Standard Error	0.044142888
Observations	4373

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.086435074	2.086435074	1070.738407	2.944E-210
Residual	4371	8.51730698	0.001948595		
Total	4372	10.60374205			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-0.001191823	0.000667575	-1.785301114	0.074281805	-0.002500608	0.000116963	-0.002500608	0.000116963
X Variable 1	0.761560485	0.023273554	32.7221394	2.944E-210	0.715932522	0.807188447	0.715932522	0.807188447

Table 18: Significance Test for Eurobank Ergasias Stock Returns

Significance Test for Piraeus Bank

Regression Statistics	
Multiple R	0.458919934
R Square	0.210607506
Adjusted R Square	0.210421723
Standard Error	0.042427065
Observations	4251

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.040579722	2.040579722	1133.620218	1.6773E-220
Residual	4249	7.648437368	0.001800056		
Total	4250	9.689017089			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-0.001570177	0.00065077	-2.412797568	0.015872688	-0.002846027	-0.000294327	-0.002846027	-0.000294327
X Variable 1	0.75631441	0.022463043	33.66927707	1.6773E-220	0.71227511	0.80035371	0.71227511	0.80035371

Table 19: Significance Test for Piraeus Bank Stock Returns

Significance Test for BFA-Bankia

Regression Statistics	
Multiple R	0.314624461
R Square	0.098988551
Adjusted R Square	0.098453827
Standard Error	0.045256019
Observations	1687

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.379146677	0.379146677	185.1205215	4.45406E-40
Residual	1685	3.451060667	0.002048107		
Total	1686	3.830207343			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-0.002291947	0.001101874	-2.080044712	0.037672256	-0.004453132	-0.000130761	-0.004453132	-0.000130761
X Variable 1	1.056229502	0.077630255	13.60590025	4.45406E-40	0.903967628	1.208491376	0.903967628	1.208491376

Table 20: Significance Test for BFA-Bankia Stock Returns