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**MASTER THESIS**

**THE BANK RECOVERY AND RESOLUTION DIRECTIVE AND THE  
BAIL-IN: SOME IMPLICATIONS**

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## **Abstract**

The well-known global crisis of 2007-2008 occurred after an economic boom made possible by U.S deregulation, which massively transformed the financial system in the early 2000s. The boom was characterized by accelerating housing market prices and financial innovation in the form of asset securitization, including the development of a complex derivative instruments market. These factors, together with a scarce supervision, fueled an asset price bubble, with the boost of the subprime mortgage market. What began on a local level in the US with failing institutions like Bear Stearns quickly spread globally due to the high interconnectivity of the financial sector.

As the crisis advanced, its effects passed from banks to the real economy, showing its severe spillovers especially in Europe. The European sovereign debt crisis made evident the fragility of monetary union under turmoil and the lack of macroeconomic tools for effective intervention. The cross-border exposure of some big European Union banks to sovereign debt in weaker (peripheral) European economies was quite significant in some countries. Cyprus, Greece, Ireland, Italy, Portugal and Spain were unable to repay or refinance their government debt and/or to bail out their “national” banks without assistance from the European Central Bank (ECB), or the International Monetary Fund (IMF). The European Stability Mechanism (ESM) was created as a special vehicle to provide direct financial assistance, forbidden under the EU functioning treaty. The crisis showed that the EU had to improve the European-wide system for coordination and cooperation in the management of cross-border banks. A system based on ad hoc coordination was insufficient in an integrated market and even more within a common currency.

All these considerations posed the basis for the drafting of the BRRD (2014/59/EU) whose aim is to create a common framework for bank resolution across all EU Member States, changing the focus of intervention from public bail-outs to bail-ins. Actually, the Directive gives authorities and central banks further tools before the liquidation of a failing institution. However, the real question, besides the technical aspects involved in its implementation, is whether and when a full bail-in will be put in action.

From a first analysis it seems that market isn't capable to insert the bail-in risk, letting CDS prices and rating evaluations be free from resolution considerations. The management of recent bank crises raised questions about the EU credibility to impose private losses without demanding a sacrifice to the public.

The thesis is structured as follows. Chapter 1 is intended to give a clue on the idiosyncrasies of the bail-in approach compared to the bail-out procedure in preventing and tackling banking crises; Chapter 2 analyses the main features of the European Bank Resolution and Recovery Directive, including an overview on the most famous cases of resolution intervention within the bail-in framework; Chapter 3 explains the methodology adopted in the assessment of the coherence among bail-in and risk indicators under a three dimensions framework; Chapter 4 summarizes the results obtained; Chapter 5, the last one, picks up the conclusions.



# **1. Financial crisis: from Bail-out to Bail-in**

## **1.1 Bail-outs should be no more the proper solution**

A common policy response undertaken by several countries after the 2007-2008 crisis was the bail-out of national banks, justified with the priority to avoid the systemic threat that the failure of any bank beyond a certain size carries with it, in a sort of too big to fail perspective. Furthermore, the unforeseen dimension of the post-Lehman panic and the unprecedented level of money market disruption of that crisis discouraged many economists and politicians to talk of bail-in as a tool for managing such crises.

Bail-outs take various forms, each subtly different in their benefit to different stakeholders and their likely impact on the government's finances and therefore on taxpayers tout court. The main tool is the recapitalization of the struggling bank. The central bank allows for the injection of funds (cash or other instruments) in return for an equity stake or subordinated debt, which tends to dilute existing shareholders in favour of senior creditors; the degree to which dilution occurs depends on the price of the equity. The higher the stock price, the fewer shares must be sold to raise the same amount of capital. An alternative approach is to provide a government guarantee instead of cash. Guarantees typically require an insurance premium payment by the covered bank. For instance, the UK put up 40 percent of GDP in guarantees at the disposal of its banks; many other countries provided a multiple of that through assurances for the entire deposit base. It is true that the back-stops broadly worked, the guarantees were often not used, and bank capital injections by the state in some cases even turned out to be profitable for the state (as occurred in Italy, see Figure 1). However, even if the guarantee shows a profit in the end, it may benefit both the creditors and the shareholders ex ante and therefore bail-outs are hugely unpopular. Sometimes it may be the case that the ongoing business is performing poorly and a third way to bail out creditors is the acquisition of troubled assets (e.g. NPLs) at an above-market price. This method was supposed to be implemented in the U.S under the name of troubled asset relief program (TARP). By doing so banks are still able to pursue their core activities without damaging the whole financial industry.

In November 2011, the U.S Congress forced a one-time audit of the Federal Reserve to disclose the amount of emergency lending, kept idle until then. After the audit, the public found out the bail-out was in trillions not billions<sup>1</sup>, as originally stated, and that there were no requirements attached to the bail-out money, that is: the banks could use it for any purpose.

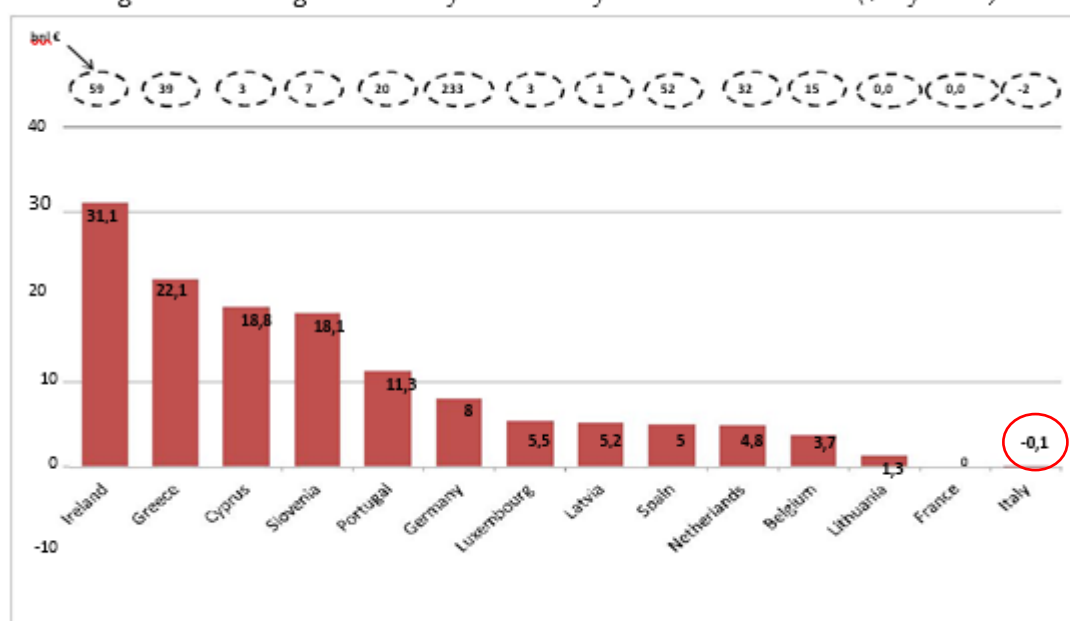
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<sup>1</sup> Collins M. (2015).

The total bill reached \$7.7 trillion<sup>2</sup>, 600 billion of them were used only to save Fannie Mae and Freddie Mac. In Europe the biggest bail-out cases concerned Dexia and Fortis and the bill rose to €800 billion. The subsequent sovereign debt and banking crises within the eurozone led national governments to underpin the balance sheets of several banks through extensive bail-outs at the expense of taxpayers<sup>3</sup>.

As shown in Figure 1, in 11 European member states the fiscal impact of the bail-out measures undertaken between 2008 and 2014 exceeded 3% of the 2014 GDP; in Ireland, it reached 31.1%; and in Greece, Cyprus and Slovenia, more than 18%.

Figure 1. Banking sector: Net fiscal costs of state aid in 2008-14 (% of GDP)



Data sources: ECB, *Economic Bulletin*, No. 6/2015, and Eurostat for 2014 GDP.

One may ask: isn't capitalism designed to get rid of the weak and the failed? Why didn't regulators just let them fail? The answer was that they were, as stated before, too big to fail and allowing them to fail could have created greater losses leading a worldwide depression. However, using central banks as lenders of last resort made the big even bigger, causing a vicious circle.

Clearly, bail-outs are a potential source of moral hazard and can undermine market discipline, given that the use of public money is a market-distortive action. For these reasons, regulatory authorities throughout the world are trying to introduce resolution regimes that allow, in principle, banks to fail without resorting to public funding. These bundle of reforms aims at internalizing the costs of bank failure of which the foremost is the drawing up of bank creditor bail-ins. Essentially, bail-in constitutes a radical rethinking of who bears the ultimate

<sup>2</sup> Ivry, Keoun & Kuntz (2011).

<sup>3</sup> Micossi, Bruzzone & Cassella (2016).

costs of rescuing a distressed bank. The bail-in approach is intended to counter the dual threat of systemic disruption and sovereign over-indebtedness. It is based on the penalty principle, namely, that the costs of bank failures are shifted to where they best belong: bank shareholders and creditors. Namely, bail-in replaces the public subsidy with private penalty (Huertas, 2013) or with private insurance (KPMG, 2012; Gordon, Ringe, 2014) forcing banks to internalize the cost of risks which they assume.

This is an important development, since in the past banks' subordinated debt did not provide any cover when bank liquidation was not an option, which meant that subordinated creditors were bailed out alongside senior creditors by taxpayers (Gleeson, 2012). This led to a sticky situation of creditor inertia because creditors, bearing almost no risk, had no incentive to watch over the manager's actions. Shareholders, instead, have every incentive to monitor the management's behaviour since it affects their return on equity.

Turning unsecured debt into bail-in-able debt should incentivize creditors to resume a monitoring function, thereby helping to restore market discipline. For example, as the potential costs of bank failure would fall on creditors, in addition to shareholders, such creditors should become more alert about the levels of leverage the bank carries (Coffee, 2011), limiting one of the most likely causes of bank failures and the governance costs associated with excessive leverage (Admati et al. 2013; Avgouleas and Cullen, 2014b).

Such monitoring might, in turn, reduce the scale of loss in the event of a bank failure: creditors could force the bank to behave more cautiously, especially where the bail-in regime allows for earlier intervention and closure than a bail-out mechanism. It should also, in principle, eliminate the too-big-to-fail subsidy enjoyed by bigger banks.

Essentially, bail-in means that, to a certain extent, a pre-planned contract replaces the bankruptcy process giving greater certainty (Coffee, 2011) about the sufficiency of funds to cover bank losses and facilitating early recapitalization. Moreover, the bail-in tool can be used to keep the bank as a going concern and avoid disruptive liquidation of the financial institution in distress.

In these new schemes, apart from the shareholders, the losses of bank failure are to be borne by ex-ante funded resolution funds, financed by industry levies, and certain classes of bank creditors whose fixed debt claims on the bank will be converted to equity, thereby restoring the equity buffer needed for on-going bank operation. At the same time, sometimes cautiously sometimes audaciously, policy makers have already embarked on the route towards bailing in. Certainly, the most famous and controversial experience was the bail-in of bank creditors of Laiki Bank. Before and after the Cyprian bank there had been a few other cases in

Denmark (Amagerbanken), Spain (Bankia), Netherlands (Dutch bank SNS Reaal) and Portugal (Novo Banco), all with their idiosyncrasies.

Public outrage for the enormous losses placed on taxpayers convinced policy-makers and legislators across the Atlantic, under the auspices of the G-20 and the Financial Stability Board, that the traditional system of underpinning fractional reserve banking with an implicit public guarantee had to be discontinued, and that bank shareholders and creditors should be called in to take losses and suffer the full consequences of reckless management through bail-in, before any public back-stop could come into play<sup>4</sup>.

When in 2012 the European Council acknowledged the need to break the vicious circle between sovereign and bank debt in the eurozone, the overhaul of the regulatory framework was sped up. By mid-2014, the Single Rulebook for all member states and the Banking Union legislation, establishing the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) for the eurozone, were legally in place.

The new regulatory system involves higher capital requirements as well as new rules on bank resolution establishing the credible promise that shareholders and creditors would carry the full burden of bank losses, mainly through the new bail-in instrument, with three main goals. The first one is to eradicate moral hazard within the banking system by eliminating the implicit subsidy of the banking charter that had encouraged bankers to over-borrow and take excessive risks. The second goal is to make it possible for even a large bank to fail without systemic repercussions on aggregate financial stability, minimizing reliance on public support. The third goal is to make sure that different national approaches to bank rescues will not undermine the internal market by resulting in different costs of funding for banks with similar creditworthiness<sup>5</sup>.

During the transition to the new system, the European Commission used the control of state aid as an instrument to coordinate the response of the member states wishing to support distressed banks either by providing liquidity aid or helping them restructure and return to viability. The legal basis to assess the compatibility of state aid with the Treaty was found in Article 107, paragraph 3, letter b, TFEU, which allows the Commission to declare state aid compatible with the Treaty if it is necessary to remedy a serious disturbance in the economy of a member state.

One of the key principles of a free market economy is that owners and creditors are supposed to bear the losses of a failed venture. But the idea that the penalty for failure can be

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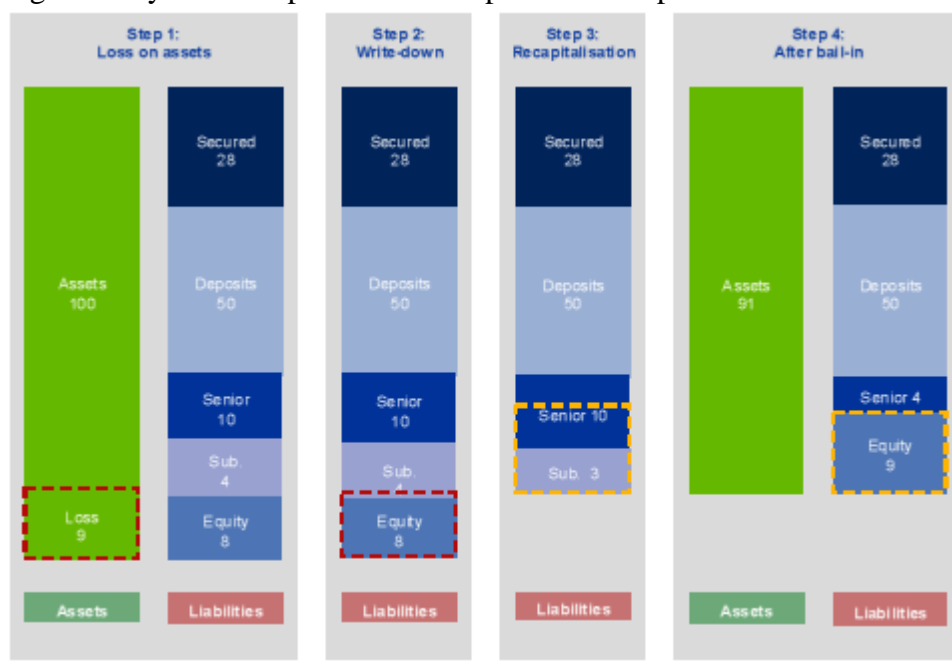
<sup>4</sup> Ibidem.

<sup>5</sup> Ibidem.

shifted onto an institution, such as a bank, is incorrect. Ultimately all penalties, and similarly benefits, should be absorbed by individuals, not inanimate institutions. When it is said that the bank will pay the penalty of failure, this essentially means that the penalty is paid, in the guise of worsened terms, by bank managers, bank staff, bank creditors, borrowers and so on and so forth. The real question is which individuals will be asked to absorb the cost<sup>6</sup>.

Figure 2 briefly shows how a round of bail-in works. In this example, in the first step, a bank experiences a loss of nine units on its assets side and, therefore, breaches the threshold required by the supervisory authority, thus triggering a bail-in. In a second step, its liabilities side is therefore written down to absorb the losses. In this example, the entire equity and part of the subordinated debt is lost. In a third step, the bank will be recapitalized to 10.5% CET1. The recapitalization requires new equity of roughly nine units: the entire subordinated debt and a fraction of the senior unsecured debt need to be bailed in. The final step illustrates the balance sheet of the bank after the bail-in.

Figure 2. Stylised example of loss absorption and recapitalization after a bail-in



Note: Block sizes are not to scale.

Source: *Financial Stability Review, May 2016 - Special features*

In 2014, the Bank Recovery and Resolution Directive (BRRD) and the SRM Regulation, which are now in force since the 1<sup>st</sup> of January 2016, established the conditions under which the assets of shareholders and creditors of distressed banks are bailed-in, either on a stand-alone basis or as part of the resolution procedure.

<sup>6</sup> Avgouleas & Goodhart (2014).

Expectations on the use of burden-sharing and of the bail-in tool by competition and resolution authorities directly affect the risk of capital instruments in the banking sector and, if not properly governed, may in turn become a source of instability, rather than firming up the system.

## **1.2 Bail-in challenges**

There is a long list of actual or hypothetical advantages attached to bail-in recapitalizations. Most importantly the bail-in tool involves replacing the implicit public guarantee, on which fractional reserve banking has operated, with a system of private penalties. The bail-in tool may, theoretically, be much superior in the case of idiosyncratic failure (e.g. a fraud). Nonetheless, there is need for a closer examination of the bail-in process and its potential shortcomings, whether it can be a successful substitute to the unpopular bail-out approach.

The desire to find an effective way to replace the public subsidy behind the bail-out process is entirely understandable but, at the same, time, there is a danger of over-reliance on bail-ins, in part owing to the growing momentum for its introduction. In placing bail-in at the heart of bank resolution regimes, legislators and regulatory authorities ought not to overlook some important shortcomings attached to this approach. In a discussion paper of 2014, E. Avgouleas and C. A. Goodhart, have tried to discuss the potential shortcomings and explain why, arguably, bail-in regimes will not remove, in the case of resolution of a large complex cross-border bank, (unless the risk is idiosyncratic), or in the event of a systemic crisis, the need for public injection of funds.

Bail-in is a pre-condition for bank resolution in the EU and for ESM implemented bank recapitalization within the Eurozone. It is clear that the European Union holds high hopes about the effectiveness of this mechanism, an approximation to which has already been tried in Cyprus in March 2013 and for the restructuring of the Spanish banking sector. It is also hoped that bail-in will nullify the need for state aid for the banking sector across the EU and not just within the confines of the Eurozone (Angeloni, Lennihan, 2014).

Yet the legal entity by legal entity approach raises its own set of difficult issues. In the case of non-EBU groups, resolution colleges might smooth coordination issues but, a bail-in decision has distributional consequences, potentially with clear losers. Hence in some cases it might even create a crisis of confidence in a member state's banking system, and strong disagreements are bound to arise as to which subsidiary is bailed-in and which is not. Where there are subsidiaries in non-EBU European countries such disagreements could even go as

far as creating serious problems in the relationship of the EBU with non-EBU European countries, especially where losses are bound to fall unevenly. One possible solution may be to adopt a US-like approach, aggregating all the losses to the group entity. However, this would reinforce subsidiarization, which goes against the leading principles of the single European market, based on the free economy spirit.

Another significant challenge that the EU approach to bail-in raises is the issue of liquidity support from resolution funds and central banks. This could be provided either to each legal entity, against the collateral available to that entity, or sent through a parent company. In either case, if that happens within the Eurozone, all liquidity funding from the central banks would eventually have to be booked on the ECB's balance sheet, at least until the bank is successfully restructured.

The EU has an "open" bank resolution process (going concern principle) that is reliant on the successful bail-in of the struggling bank. The bail-in process is seen as a substitute to liquidation of either the entire group or of parts of the group, combined with the use of other resolution tools. This is not an unreasonable approach, especially in the case of a largely idiosyncratic cause of failure. But there are four essential conditions that have to be met when using the bail-in process as a resolution substitute: timing, market confidence, the extent of restructuring required and accurate determination of losses.

First, the issue of when to trigger the bail-in process, taking also into account the requirements of early intervention regimes is matter of cardinal importance. Identification of the right time and conditions to trigger the bail-in tool in a process that extends conversion beyond specially designed bail-able debt will be one of the most important for any bank supervisor. If the supervisor triggers bail-in early, then the full measure of losses may not have been fully revealed, risking further rounds of bail-in. But if the supervisor determines to use the bail-in tool at a later stage, when the full scale of losses to be imposed on creditors is revealed, they risk a flight of bank creditors who do not hold bail-able debt.

Moreover, speed of resolution (at the expense of flexibility) is one of the reasons for the popularity of bail-in among regulators (Sommer, 2014). Yet, there is still doubt whether the adoption of bail-in regimes would lead to earlier regulatory intervention than under the bail-out regimes. There may be legal concerns about imposing potentially large losses on private creditors and this could unduly delay resolution, until the last possible minute. By then the liabilities needed to be written down could extend beyond specially designated bail-able debt. Bail-out, being undertaken by the authority of the government, is, one could argue, somewhat less liable to legal suit than bail-in. Indeed, before any country, within the EU boundaries, is able to rescue a national bank the approval of the European Commission is

required. This approval, even if the bail-out is nested on public interest motivations, can prove difficult to receive. On the other hand, bail-in of bank liabilities that extends beyond bail-able debt affects a wider range of creditors; there are more parties to the negotiation, and hence a greater effort is needed to tackle the problem. The more delayed will be the action of resolution, the more essential it will be to put huge emphasis on an earlier recovery scheme.

There are also other concerns. In the absence of a fiscal backstop for other parts of the financial system, if bail-in is triggered before measures have been taken to assist the rest of the financial system a creditor flight from other banks will be certain, spreading the tremors throughout the financial system, even if those banks retain sufficient amounts of bail-able debt.

Secondly, market confidence in the bailed-in institution would have to be quickly restored in order to preserve franchise value and repay official liquidity support (Sommer, 2014). Reversing the trend would doubtlessly prove a challenging task if the institution has entered a vicious spiral with customers, creditors and depositors. A bank run will be as more likely as the rumours on a possible bail-in get insistent, making the going concern value hard to handle and maintain.

Thirdly, triggering the bail-in process will prove unsuccessful if bank losses are not properly identified in some finite form. The determination of bank losses including unrealized future losses must be accurately determined in order to avoid successive rounds of bail-in losses accruing to bank creditors. For instance, bank losses in the recent crisis have consistently been underestimated.

Normally bank failures occur when macro-economic conditions have worsened, and asset values are falling. Bank failures during boom conditions are easier to handle with less danger of contagion. In the uncertain conditions of generalized asset value declines, the new (incoming) accountants, employed by the resolution agency, are likely to take a bad scenario (or even a worst case) as their base case for identifying losses, to be borne by the bailed-in creditors, partly also to minimize the above-mentioned danger of underestimation leading to further calls on creditors. Previously the accountants of the failing bank itself will have been encouraged (by management) to take a more positive view of its (going concern) value. Thus, the transition to bail-in is likely to lead to a huge discontinuity, a massive drop, in published accounting valuations. This could put into question amongst the public the existing valuations of other banks, and lead to a contagious crisis<sup>7</sup>.

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<sup>7</sup> Ibidem.



## **2. The bail-in and its legal framework**

### **2.1 The European approach: the BRRD**

A precondition for a functioning market economy is that when a company turns insolvent, it exits the market in an organized manner, without damaging (strongly) other market participants. This principle, although simple, is difficult to apply to failing financial institutions. The financial turmoil post 2007-2008 crisis demonstrated that, when it comes to let financial firms fail, banks are different. Lehman Brothers default has showed that the insolvency of a large or interconnected financial institution can result in a tragic meltdown of the entire industry. The lack of appropriate tools for the resolution of banks generated the necessity to resort to public funds to maintain financial stability (see Chapter 1 for further details on the cost of the crisis).

The European Union showed its determination to remedy this unsatisfactory situation. The clear goal is that taxpayers should no longer be liable to bail-out troubled institutions. Therefore, the European legislator established a toolkit that allows the orderly resolution of banks without compromising financial stability and resorting to public funds. This toolkit goes under the name of Bank Recovery and Resolution Directive (2014/59/EU), also known as BRRD, which came into force on the January 1<sup>st</sup>, 2016. However, as it will be showed in section 2.4.1, its procedures and principles had been exploited to face banking crises all over Europe even before that date<sup>8</sup>.

The broad scope of the Directive is explained in one of its first whereas. The BRRD has been created to provide authorities with a credible set of tools to intervene sufficiently early and quickly in an unsound or failing institution so as to ensure the continuity of the institution's critical economic functions. The Banking Recovery and Resolution Directive has thus become one of the most important building blocks of the Banking Union together with the rules on capital and liquidity requirements (CRD IV and CRR), which form the single supervision mechanism (SSM), and on the European deposit insurance scheme (EDIS)<sup>9</sup>.

From a pure theoretical point of view the main scope of the BRRD is to prevent the moral hazard effect by making the bail-out of banks virtually impossible given that any extraordinary public financial support will normally entail at least some bail-in of shareholders and creditors, in accordance with the order of their priority claims under normal

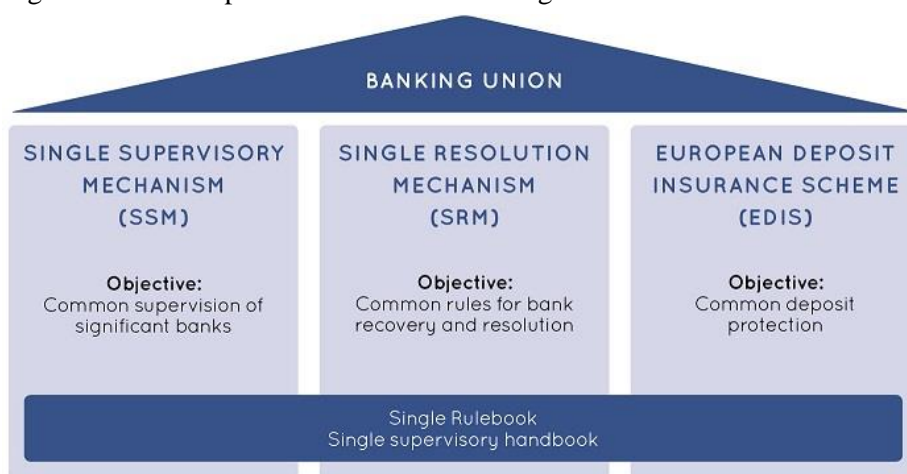
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<sup>8</sup> The Directive explicitly states: "In order to allow for effective resolution outcomes, it should be possible to apply the bail-in tool before 1 January 2016".

<sup>9</sup> Unlike the first two pillars of Banking Union, the third pillar is (so far) not based on a centralized system shifting competencies and powers to the European level but relies on the traditional concept of rule harmonization to ensure a common scope and level of deposit insurance (deposits up to € 100.000 are insured per person per bank).

insolvency proceedings. The hope is that what is often referred to as “too-big-to-fail situation” will no longer occur.

Figure 3. The three pillars on which rests the Single Rulebook



Source: Oesterreichische Nationalbank

The BRRD is the outcome of a long negotiation process<sup>10</sup>. The new bank recovery and resolution framework has wide reaching implications, both within the EU but also for countries with banking relationships with the EU. The Directive will additionally have indirect effects on many more EU entities and group members, including branches outside the EU, even though they may not fall directly within the scope of the legislation.

Together with higher capital and liquidity requirements, the enhancement of resolution regimes is a central element of the international regulatory response to increase banks’ resilience. The Financial Stability Board’s Key Attributes of Effective Resolution Regimes for Financial Institutions (KA), endorsed by the G20 in 2011, provided the new harmonized international standard for resolution regimes for financial institutions. The KA, although focused on global systemically important banks (G-SIBs or, alternatively, SIFIs), serve as guidance to jurisdictions that are adopting or amending national resolution regimes. The BRRD considers the recommendations of the Financial Stability Board (FSB) and is aligned with the regulatory framework of the EU for financial institutions. The BRRD’s scope includes those institutions that are subject to the prudential supervision and regulatory capital requirements provisions in the EU Capital Requirements Directive (CRD IV); that is, credit institutions and big investment firms with an initial capital above 730,000€ and financial

<sup>10</sup> After formal consensus was reached in 2014 political reluctance and technical uncertainties prevailed in several Member States. This delayed the implementation and triggered the referral of six Member States to the European Court of Justice for failing to transpose the BRRD into national law within the established timeframe. Source: Financial Sector Advisory Center of the World Bank (2017).

holding companies established in the EU. Moreover, the Directive lays down rules for the following entities: parent financial holding companies in a Member State, Union parent financial holding companies, parent mixed financial holding companies in a Member State, Union parent mixed financial holding companies and branches of institutions that are established outside the Union<sup>11</sup>.

Notably the BRRD resolution toolkit is applied only if justified by public interest. This means that this bundle of laws is intended to be applied to G-SIBs in order to ensure the continuation of their critical functions, i.e. the going concern.

Finally, it is important to stress that the BRRD is a Directive of minimum harmonization. Consequently, Member States must implement the minimum harmonized set of resolution tools and powers of the BRRD into national law, but may choose to go beyond these. In doing so, Member States are free to introduce additional tools at national level to deal with crises, as long as they are compatible with the resolution objectives and principles set out in the BRRD, other EU legislation, and the EU state aid rules.

## **2.2 The key points of the Directive**

Before explaining the function and the issues related to the bail-in tool, it is useful to highlight that the Directive 2014/59/EU introduced other resolution solutions, namely: the sale of business, the asset separation and the creation of a bridge bank. As the name of the tool indicates, the bridge bank institution tool is an interim solution. Article 41(2) of the BRRD provides that a bridge bank must be built with a view to maintaining access to critical functions and its sale to one or more private sector purchasers when conditions are appropriate. The assets and liabilities which are not transferred to it remain in the failing or bad bank which has to be wound up in a conventional insolvency proceeding. Recent examples of the application of the bridge bank tool have included, inter alia, the Italian Banca Marche, Cassa di Risparmio di Ferrara, Banca Etruria and CariChieti<sup>12</sup>.

Besides contemplating the possibility of precautionary recapitalizations not preceded by the write-down or conversion of subordinated debt, the BRRD, also provides some principles and criteria for the application of bail-in and, more generally, the write-down and conversion of capital instruments, as follows.

The main rule regards the imposition of a hierarchy. For loss absorption or recapitalization in resolution procedures, the shareholders will bear the first losses and the

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<sup>11</sup> As stated in points d) and e) of the Art. 1 of Directive 2014/59/EU, freely available on EUR-Lex (web source).

<sup>12</sup> White & Case (2017) web source.

creditors of the institution will bear losses after the shareholders in accordance with the order of priority claims under normal insolvency proceedings (bail-in tout court), while covered deposits are fully protected (Art. 34(1) (a, b, h)).

The authorities shall follow the priority of claims under national insolvency proceedings also for write-down and conversion of capital instruments outside resolution proceedings (Art. 60).

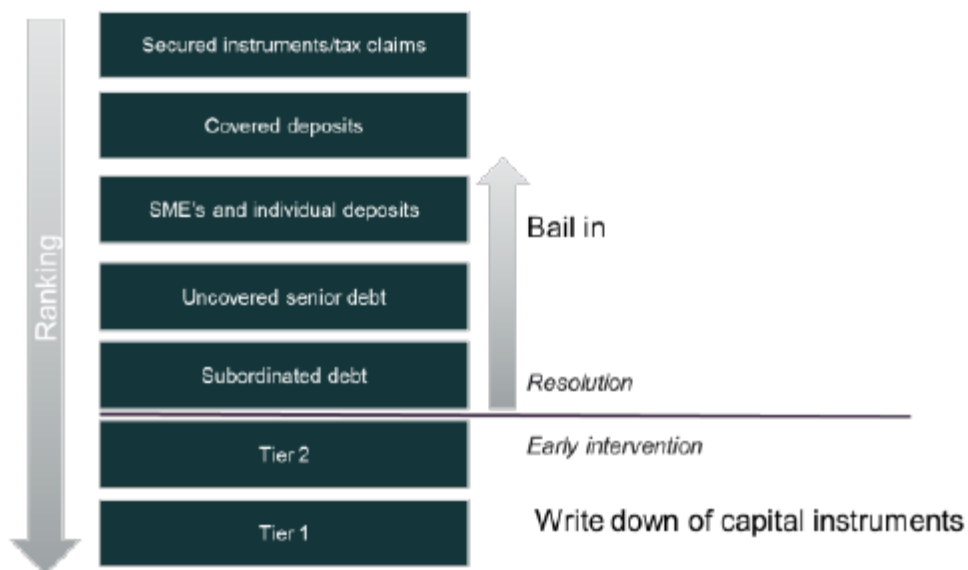


Figure 4. Source: Van Malleghem & Colla (2015)

As highlighted in Figure 4, the contribution of each creditor or shareholder will depend upon the nature of the liability.

The second rule contemplates the adoption of no creditor worse off principle, which means that it should be impossible, for any creditor, to bear losses higher than what would have been occurred if the institution had been wound up under the normal insolvency procedures (Article 34(1)(g)).

Pursuant to Article 37, another general principle of resolution procedures is that the resolution authority may seek funding from alternative financing sources with government stabilization tools provided in Articles 56 up to 58 only in the very extraordinary situation of a systemic crisis and only after a contribution to loss absorption and recapitalization of bail-in able assets equal to an amount not less than 8% of total liabilities.

In a nutshell, before a Member State is allowed to use external (i.e. public) resources for direct recapitalization of a failing bank, a round of bail-in contributions must have taken place. National regulators must first impose initial losses representing at least 8% of the bank's liabilities on shareholders and creditors before they can use the national resolution fund to absorb losses or to inject fresh capital into an institution, and then only up to 5% of

the bank's liabilities. In the event that bank losses exceed 13% of its liabilities, a further bail-in round may take place in order for the residual losses to be absorbed by creditors. These conditions make public assistance an absolute last resort in order both to counter moral hazard and to reduce the risk of mutualization of liability for bank rescues in the Eurozone. Moreover, the adoption of a resolution scheme entailing state aid or resort to resolution funds is made conditional on the approval by the Commission under state aid rules ex art 107 TFEU.

The fourth general rule goes under the name of depositor preference, which consists in the exclusion to the losses contributions of all the deposits up to 100.000€ of natural persons and SMEs. The article 44 point 3 provides the possibility of totally or partially excluding, in exceptional circumstances, other liabilities from the application of the write-down or conversion powers when certain conditions are met.

Finally, some ancillary provisions to the bail-in tool include provisions on public back-stops (e.g. government financial stabilization tools, consisting either of a public equity support tool or temporary public ownership), which can be used as a last resort, having assessed and experimented with the other resolution tools to the maximum extent practicable whilst maintaining financial stability.

The write-down and conversion of capital instruments may be exercised either independently of a resolution action or in combination with it when the conditions for resolution are met. Article 59 requires the write-down or conversion of capital instruments when one of the following circumstances is verified:

- when the conditions of resolution are met, before any resolution action is taken;
- when the appropriate authority determines that the write-down or conversion action is necessary to avoid the institution becoming no longer viable;
- more generally, even when those two conditions do not apply, prior to any measure entailing an 'extraordinary public financial support'.

Related to this article, any public financial support can be injected only when the institution concerned is solvent, and the injection of funds or purchase of capital instruments takes place at prices and on terms that do not confer an advantage upon the institution, that is at market prices.

## **2.3 MREL and TLAC**

In the wake of the financial crisis policy makers have shifted their focus to bank resolution by the introduction of the total loss absorbing capacity (TLAC) which apply to all bank subject to Basel Committee standards, including not G-SIBs.

At the EU level, the Bank Recovery and Resolution Directive also sets out a framework for all European banks and investment firms (not just G-SIBs) to satisfy a minimum requirement for own funds and eligible liabilities (named MREL). Although the parameters, scope and requirements of TLAC and MREL differ in several ways, both aim to ensure that banks have in place sufficient resources to cover losses and meet recapitalisation needs in a resolution. National resolution authorities or (in relation to certain eurozone banks) the Single Resolution Board will set the levels of MREL for individual banks and investment firms based on assessment criteria set out in regulatory technical standards (RTS) adopted under the BRRD.

In November 2016 the European Commission proposed revisions to the EU Capital Requirements Regulation (CRR) with the objective of establishing harmonized TLAC requirements for EU G-SIBs. Simultaneously, the Commission proposed amendments to the BRRD and the Single Resolution Mechanism Regulation to align MREL requirements with the TLAC standard, including proposals for revised insolvency rankings to help banks satisfy subordination requirements for TLAC eligibility<sup>13</sup>.

### **2.3.1 The MREL concept**

The minimum requirement for own funds and eligible liabilities should ensure there is sufficient loss-absorption capacity by shareholders and creditors to enable an effective bail-in and an orderly resolution without creating further contagion and without recourse to public funds. The BRRD introduces the MREL as a highly loss absorbing buffer like the TLAC concept of the Financial Stability Board. The MREL is expressed as a percentage of the total liabilities and own funds of the institution, where the numerator is composed of own funds and a specific type of liabilities (the MREL-eligible liabilities). The BRRD does not provide for a harmonized minimum level but MREL is meant to be set by the resolution authority for each individual bank on a case-by-case basis as part of the resolution strategy.

It is important to stress that not all bail-in able liabilities are eligible for MREL. Those requirements should consist of liabilities that can be bailed-in with minimum legal and operational risk and without endangering financial stability or creating contagion.

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<sup>13</sup> Financial Sector Advisory Center of the World Bank (2017).

In Table 1 it is possible to have an overview of the deposits eligible for MREL depending on the amount, the maturity and the kind of the client (whether natural person, corporate or institution).

Table 1. Overview of deposits eligible for MREL and bail-in

AMOUNT	MATURITY	DEPOSITS OF NATURAL PERSONS AND SMES	DEPOSITS OF CORPORATES	DEPOSITS OF FINANCIAL INSTITUTIONS
<= 100 thousands €	<= 1 year	No bail-in and not MREL eligible (Covered by DGS)	No bail-in and not MREL eligible (Covered by DGS)	Bail-in able but not MREL eligible
	> 1 year			Bail-in able and MREL eligible
> 100 thousands €	<= 1 year	Bail-in able but not MREL eligible	Bail-in able but not MREL eligible	Bail-in able but not MREL eligible
	> 1 year		Bail-in able and MREL eligible	Bail-in able and MREL eligible

The MREL is based on the resolution strategy and the resolvability assessment and is a key element of the resolution plan. Although there is no common or minimum MREL, the prior 8% bail-in requirement that applies before the use of the resolution fund or public support is to be considered for banks that will be resolved. The other features of MREL are stated in the following lines.

The first element of MREL, the loss-absorption amount, is based on the definition of the prudential capital requirement. There is no binding minimum level for loss-absorbing capital foreseen but the MREL level set by the resolution authority is binding for the respective bank. The loss-absorption amount set by the national resolution authority should, as a baseline default, be equal to the prudential capital requirements (including Pillar II and the combined buffers) as determined by the supervisory authority.

The second element of MREL, the recapitalization amount, should ensure that the institution meets the conditions for authorization (licensing requirements) after resolution (at a minimum 8% of total risk exposure amount) and that the capital level is high enough to ensure market confidence following resolution. The appropriate level could be determined in comparison with peer groups. The recapitalization amount will regularly be zero for institutions that are expected to come under liquidation. Though unlikely, resolution authorities may require a recapitalization amount even for those banks that are expected to be liquidated, to ensure that liquidation achieves the resolution objectives.

MREL may be further increased if this is viewed necessary to support market confidence following resolution. It may also be necessary to increase the MREL following consideration of the potential adverse impact of an institution's failure on financial stability, or to allow for the exclusion of certain liabilities (under the no creditor worst off test). Though in principle applicable to all institutions, adverse effects on financial stability may especially

be assumed for Global Systemically Important Institutions (G-SIIs) and Other Systemically Important Institutions (O-SIIs) as determined by competent authorities.

### 2.3.2 MREL compared to TLAC

Both TLAC and MREL are defined as minimum amounts of own funds and specific debt obligations required for banks to ensure that they can be restructured or wound down in orderly ways. Despite having the same purpose, i.e. to facilitate private sector loss absorbency, they have significant divergences.

In terms of the scope of application, MREL is addressed to all credit institutions while the TLAC covers only global systemically important banks (G-SIBs). At the European level, MREL has been in force since the beginning of 2015. Initial MREL target levels are expected in 2016 (with interim targets during a transitional period). The Single Resolution Board has announced a MREL target of not less than 8 % of total assets for all banks under its control. MREL is set on a case-by-case basis with no differentiation between pillar 1 and pillar 2 requirements.

TLAC is (formally) based on RWA instead of total assets and defines a mandatory minimum pillar 1 requirement equivalent to 16 % of risk-weighted assets (18 % from 2022) and at least 6 % of the leverage ratio denominator from 1 January 2019 (6.75 % from 2022), with scope for resolution authorities to set additional firm-specific requirements on top of this (as per pillar 2 requirements). Contrary to MREL, capital buffers (typically ranging from 2.5 to 6 % of risk-weighted assets) are not included in TLAC so that Common Equity Tier 1 (CET1) capital cannot count simultaneously towards both TLAC and regulatory capital buffers<sup>14</sup>.

MREL and TLAC share the same purpose but are quite different in terms of scope, eligibility of instruments, subordination, and implementation (see Figure 5).

Regarding the eligibility criteria, the FSB TLAC term sheet requires sub-ordination of TLAC eligible instruments, excluding operational liabilities (e.g. such as short-term debt) thereby ensuring that liabilities within the same rank are treated equally and minimizing legal risks (esp. the risks of breach of the no-creditor-worse-off principle). According to the BRRD framework, mandatory subordination of MREL liabilities is not required and *pari passu* liabilities can be excluded on an ad hoc basis from bail-in or simply not qualify for bail-in (e.g. due to maturity reasons). Resolution authorities may, however, require that MREL eligible liabilities should be subordinated on a case-by-case basis, depending on the resolution strategy and the structure of a bank's liabilities.

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<sup>14</sup> Ibidem.



Figure 5. TLAC compared to MREL

	TLAC	MREL
Scope	G-SIBs	EU banks and investment firms
Minimum level	Pillar 1	Pillar 2
Denominator	RWAs and leverage ratio denominator	Own funds + total liabilities
Eligible liabilities	Narrow category	Broad category
Subordination	Mandatory	Not mandatory
Implementation	Phase in from 1 Jan 2019 to 1 January 2022 (or 2025-2028 for emerging market G-SIBs)	1 Jan 2016
Disclosures	Specified	Not covered

Source: Clifford Chance website

## 2.4 Bail-in episodes

### 2.4.1 Before the BRRD: five cases under the spotlight

One of the earliest cases of bail-in is the one occurred to the creditors of the Danish bank *Amagerbanken*. The small retail bank (the country's eleventh largest), with total assets of only 4.5 billion euros, was wound up under the Danish national resolution procedure, named Bank Package III. On February 2011, the bank announced the transfer of its assets to a state-owned bank, called Financial Stability Company, established by the government in the wake of the 2008 financial crisis. Under Bank Package III, a two-year blanket state guarantee of bank deposits and senior debt terminated at the end of September 2010 was replaced by a more limited guarantee for deposits of €100,000. *Amagerbanken*'s small depositors were protected, but instead equity, subordinated capital and creditor claims were written down in line with the value of the assets. Given that *Amagerbanken*'s assets were worth around 60% of its senior unsecured liabilities, the bank's creditors faced a haircut of 40%, a rare event in European banking<sup>15</sup>. The same result has been estimated by CreditSights which calculated that holders of senior debt and unsecured deposits faced a haircut of 41%. Notably, the authorities in Denmark, which is not part of the eurozone, decided to bail in bank creditors long before the decision of the European banking union and the creation of the SRM and the adoption of bail-in. It is a case of interest because involved senior unsecured debt as well as large deposits.

The second resolution situation occurred in Spain. The Spanish government applied for ESM assistance in bank restructuring and recapitalization in June 2012. The restructuring plans were submitted for Commission approval as foreseen by the Memorandum of Understanding (MoU) agreed between Spain and the Eurogroup one month later, in July

<sup>15</sup> The Economist Intelligence Unit (2011).

2012. Initially the recapitalization concerned four banks: *FA/Bankia*, *NCG Banco*, *Catalunya Banc* and *Banco de Valencia*, but this last one was sold, through a competitive tender process, to Caixa Bank because Spanish authorities and the Commission agreed that the bank's viability could not be restored on a stand-alone basis<sup>16</sup>. In the case of BFA/Bankia, NCG Banco and Catalunya Banc, the Commission found that the proposed restructuring measures will ensure that the three banks return to long term viability as sound credit institutions in Spain. The balance sheet of each bank should be reduced by more than 60% compared to 2010. Those banks had to refocus their business model on retail and SMEs lending in their historical core regions. This should contribute to reinforcing their capital and liquidity positions and reduce their reliance on wholesale and central bank funding. Moreover, the absorption of losses borne by the banks and their stakeholders will ensure, together with the restructuring measures, a satisfactory burden-sharing and an adequate own contribution to the financing of the significant restructuring costs. This reduced the state aid needed to restructure the banks by about €10 bn.

The third case regarded the creditor bail-in of the Dutch bank *SNS Reaal*, which had total assets of about 80 billion euros. After the bank had suffered from substantial write-downs on its real estate portfolio during the year 2012, which led its core tier 1 down to 8.8% (triggering the 9% imposed by EBA<sup>17</sup>), the Dutch government nationalized SNS Reaal on 1 February 2013. In the context of nationalization, the state injected 3.7 billion euros, shareholders and junior creditors were both wiped out. One billion of subordinated debt was expropriated with zero compensation under a new Dutch law. This trouble happened during the negotiation of the SRM. Its political spillover effect was probably further magnified for an additional reason: the Dutch Finance minister in charge had just been appointed as the president of the Eurogroup. Hence, his involvement in the decision to bail in creditors in the Netherlands was a strong indication for the future stance of the Eurogroup<sup>18</sup>, including in their negotiations with the next case, Cyprus.

Cyprus is the main bail-in event because it clearly gave the signal that the euro area was going for a bail-in of creditors in bank restructurings and moreover that the bail-in basis could be very wide, including senior unsecured debt and even large deposits. Indeed, apart from the Danish case, retail investors had not yet faced haircuts. It all started in 2006 when Marfin Investment Group purchases shares in Laiki Bank, and rebrands it as Marfin Popular

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<sup>16</sup> Press Release of the European Commission, 28<sup>th</sup> November 2012.

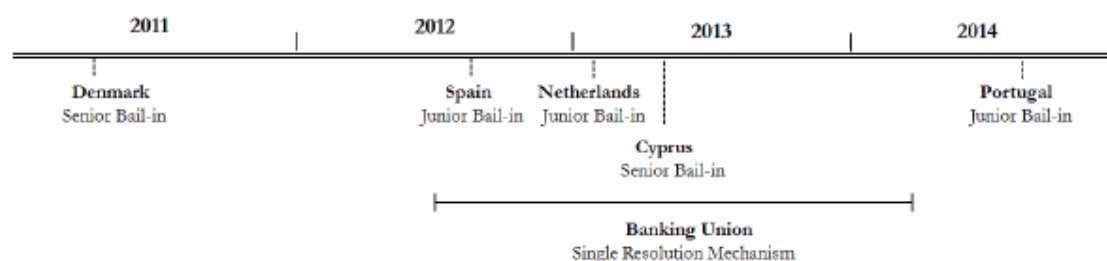
<sup>17</sup> *Il sole 24 Ore* (2013).

<sup>18</sup> Schäfer, Schnabel & Weder di Mauro (2016).

Bank. In October 2011 Europe agrees to restructure Greek sovereign bonds, leading ultimately to a loss of 2.3 billion euros for Laiki. In 2012 Laiki first receives a 1.8 bn euro bail-out from the Cypriot government but at the end of the year depositors started a bank run after reports of a possible levy on accounts became public. In February 2013 Laiki's assets were sold at a 15% discount to raise funds<sup>19</sup>. On 18 March 2013, the government of Cyprus and the eurozone Finance Ministers announced that all deposits, including those below €100.000 (the legal deposit guarantee limit in the EU), would be facing losses. Following a week of further frenetic negotiations, the deal was finally announced on 25 March 2013: senior unsecured debt and large deposits were bailed in but not retail deposits below €100.000. The bank's debts and all savings over €100,000 were vehicled into a bad bank, while savings under €100,000 and most of the bank's assets transferred to the Bank of Cyprus.

The last case involved the bail-in of the Portuguese Banco Espírito Santo, which had total assets of about 85 billion euros. On 10 July 2014, fears over this bank briefly triggered a stock sell-off across European financial markets. Portugal's PSI 20 share index dropped by 4.3%, the biggest drop in more than a year<sup>20</sup>. The epilogue resembled the Cypriot case. On 4 August 2014, the bank was split up into a good bank and a bad bank after a frenetic weekend of negotiations between Portuguese and European Union officials. The good bank, Novo Banco, received all sound assets, deposits and senior debt plus a capital injection of 4.9 billion euros. The bad assets were transferred to the bad bank and its losses had to be borne by junior creditors. The Bank of Portugal said that the rescue of Banco Espírito Santo had been designed so that no creditor would face a greater loss now than they would have if the bank had been liquidated<sup>21</sup>. Here authorities applied the same principle of 'no creditor worse off' currently in the Directive.

Figure 6. Timeline of bail-in events before the entrance into force of the BRRD



Source: Schäfer A., Schnabel I. & Weder di Mauro B. (2016)

<sup>19</sup> Kremer (2013) web source.

<sup>20</sup> Financial Times (July 2014) web source.

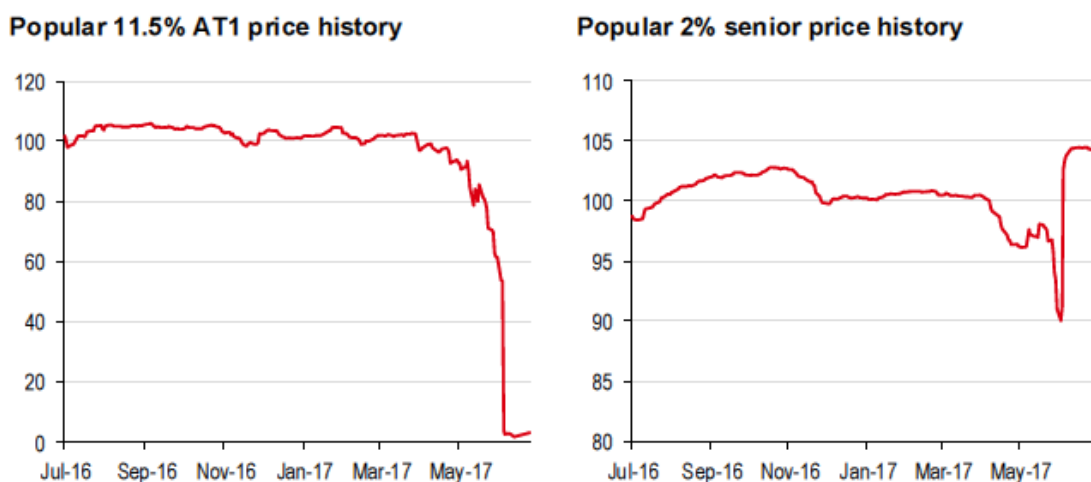
<sup>21</sup> Reuters (August 2014) web source.

## 2.4.2 After the BRRD: first tests

As stated in chapter 1, the Directive entered into force only on the 1<sup>st</sup> of January 2016 but few cases have already showed how its full implementation is hard to put in action.

The most famous and recent resolution case involved Banco Popular, occurred on the 7<sup>th</sup> June 2017 due to a sudden liquidity crisis, so severe that the bank may have not opened the following day. This is a resolution of cardinal importance because it resulted in the first write-down of an Additional Tier 1 layer of equity.

Figure 7. Market's reaction to the resolution decision



Source: I. Zubo, D. Kini, "European banks credit", HSBC global research, July 2017

The European Central Bank and the Single Resolution Board were quick to orchestrate an overnight rescue, which did not involve taxpayers' money but wiped out shareholders and junior bondholders. When European markets opened in the morning, they were largely unperturbed<sup>22</sup>. The day before, the ECB decided that the bank was failing or likely to fail and notified the SRB accordingly. What is very surprising is that the Spanish bank reacted quite well at the 2016 stress tests conducted by the European Banking authority. The stress test projected that Popular would have a capital ratio of 13.5% of assets in 2018 under the normal scenario. This was only slightly lower than the sample average of 13.8%, meaning Popular should have been able to carry on just fine in the absence of shocks<sup>23</sup>.

In the 2016 EBA report, the common equity Tier 1 stood at 10.2% of assets, which was below the 12.6% average among 51 big European banks, but not the worst on the list. Even in a so-called adverse scenario, the 2016 test said, Banco Popular would have excess

<sup>22</sup> Bloomberg view (June 2017).

<sup>23</sup> Ibid.

capital of 6.6%. During the spring, in the middle of an adverse situation, this supposed capital cushion vanished almost overnight. After top Banco Popular managers said they needed to raise capital in April, the institution began to experience a run. Then, in early June the bank received \$4 billion in emergency assistance from the Spanish central bank; it was consumed in two days. The Santander deal quickly followed<sup>24</sup>.

Table 2. 2016 EU-wide Stress Test: Main results for Banco Popular

(min EUR, %)	Actual (starting year)	Baseline Scenario	Adverse Scenario
	31/12/2015	31/12/2018	31/12/2018
Cumulative 3y: Net interest income		7,079.09	5,275.66
Cumulative 3y: Gains or (-) losses on financial assets and liabilities held for trading or designated at fair value through profit and loss, net		65.95	-174.85
Cumulative 3y: (Impairment or (-) reversal of impairment on financial assets not measured at fair value through profit or loss)		-1,177.31	-3,465.95
Cumulative 3y: Profit or (-) loss for the year		<b>1,809.83</b>	<b>-1,366.40</b>
Coverage ratio - Default stock	36.58%	34.28%	35.35%
Common Equity Tier 1 capital	9,827.87	10,116.67	5,302.10
Total Risk exposure amount	74,992.01	75,204.72	75,637.25
Common Equity Tier 1 ratio, %	13.1%	13.5%	7.0%
Fully loaded Common Equity Tier 1 ratio, %	10.2%	13.5%	6.6%
Tier 1 capital	9,827.87	11,416.15	6,601.57
Total leverage ratio exposures	157,788.27	157,788.27	157,788.27
Leverage ratio, %	6.2%	7.2%	4.2%
Fully loaded leverage ratio, %	5.7%	7.2%	4.0%
<b>Memorandum items</b>			
Total amount of instruments with mandatory conversion into ordinary shares upon a fixed date in the 2016 -2018 period (cumulative conversions) <sup>1</sup>			0
Total Additional Tier 1 and Tier 2 instruments eligible as regulatory capital under the CRR provisions that convert into Common Equity Tier 1 or are written down upon a trigger event <sup>2</sup>			1,250
Of which: eligible instruments whose trigger is above CET1 capital ratio in the adverse scenario <sup>2</sup>			0

<sup>1</sup> Conversions not considered for CET1 computation

<sup>2</sup> Excluding instruments with mandatory conversion into ordinary shares upon a fixed date in the 2016 -2018 period

Source: European Banking Authority

Banco Popular was officially put into a resolution scheme and simultaneously bought out by Santander for a token price of €1. Santander raised €7 bn of new capital to protect its own capital ratios in the process. The managers of Santander said the impact on CET 1 has been neutral, while the consequences for Popular have been dramatic<sup>25</sup>. Popular's AT1 bonds have been cancelled, while the illiquid Tier 2 subordinated bonds have also been wiped out through the conversion into new shares.

The second case of an intervention of the ECB on troubled banks regarded two institutions in the Veneto region, Banca Popolare di Vicenza (also referred to as BPVI) and the smaller Veneto Banca, which suffered deeply from bad loans and weak capital. In June 2017, both banks were classified as 'failing or likely to fail' by the ECB based on their lack of capital<sup>26</sup>. Both were effectively bailed out by the state, after they were taken over by Intesa, which agreed to acquire only certain assets and liabilities of the two ailing banks for a token

<sup>24</sup> Morgenson (2017) web source.

<sup>25</sup> Raymond J., Karia P. & Knepper L. (2017).

<sup>26</sup> European Central Bank (June 2017).

price of €1. Intesa rose 4.4 percent at 12:58 p.m. in Milan trading, rushing a 1.4 percent advance in the Bloomberg Europe Banks and Financial Services Index<sup>27</sup>.

The default of BPVI and Veneto Banca were caused by poor management. Both banks had accumulated too many bad loans, the worst of them being non-performing loans, NPLs. Fundamentally, this was because loans were frequently made on the basis of personal relationships and trust between officials at the bank and borrowers, instead of objective financial assessments<sup>28</sup>. Both Veneto Banca and BPVI were closely attached to the local community within Veneto, since they were unlisted and mutual banks. Local shareholders had a strong influence over the operations of the banks. The shares of both banks were sold in private markets, where share prices were determined by the bank's management according to auditors, and approved by shareholder's annually. In April 2015, the Board of Directors of Popolare di Vicenza decided to cut shares by 23%, passing from 62.55 to 48€. Two months later, under the reform of cooperative banks<sup>29</sup>, shareholders were forced to keep their stocks<sup>30</sup>.

Once supervision of BPVI was taken over by the ECB under the rules of the Single Supervisory Mechanism, European regulators quickly identified irregularities and concerning business practices. However, those multiple inspections and investigations that did not lead to any concrete corrective action. A 2014 stress test of European significant banks by the ECB found that BPVI needed to raise capital. In 2015, the ECB identified a 'loan-sharing' scheme, which occurred at least in two occasions in 2013 and 2014 at BPVI. Between 2012-2014, the unlisted bank granted financing to clients for around 1 billion euros so they would purchase its shares, artificially boosting the lender's capital strength, the prosecutors said in the warrant, dated Sept. 21 and seen by Reuters. The fact that the ECB rapidly identified irregularities at BPVI within months of beginning to supervise the bank suggests that Italian regulators, which seem to have failed to identify the problems, were far too lax in their supervision<sup>31</sup>.

Before the ECB pronouncement over the likelihood to fail of the two venetian banks, the state of Italy tried to respond differently with the respect of the Spanish authorities, opted to extend a public guarantee on the bank's bonds. This would have turned these securities into de facto sovereign debt, which could have been posted at the ECB in exchange for

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<sup>27</sup> Bloomberg news (June 2017) web source.

<sup>28</sup> FT (November 2016) web source.

<sup>29</sup> The Law Decree 3/2015, named "Investment Compact", established that popular banks that overcame €8 bn of total assets must transform in limited banks (e.g. SpA) within 18 months, that is July 2016.

<sup>30</sup> Veneto Economia (March 2016) web source.

<sup>31</sup> Kanaris Miyashiro (2017).

liquidity. Both banks needed assistance and the government responded with an emergency decree on 23 December 2016. This addressed bankruptcy laws and introduced a government guarantee mechanism for senior tranches of securitized nonperforming loans. One of the primary aims is to increase the recovery rate on non-performing loans and make them easier to sell. Recalling that nonperforming loans of banks in Italy were about 21% of GDP in 2016, among the highest in the EU, this should be a primary objective. When no private bank nor fund showed its interest in saving those banks (neither Atlante<sup>32</sup>, a fund set up in April 2016 to ensure the success of capital raising requested by the supervisory authority from banks that face market difficulties acting as a shareholder of last resort<sup>33</sup>), the government liquidated the two venetian banks with a loan up to 17 billion of euros (5 of them in cash and the remaining 12 in public guarantees). The solution invalidate the EU policy aimed at ending the taxpayer-financed rescue operations and removing the problem of failed big banks<sup>34</sup>

After Banca Intesa stepped forward to confirm market rumours that it would be open to acquire “certain assets and liabilities” and “certain legal relationships” of both banks (but only if it had a neutral effect on its Common Equity Tier 1 ratio) the ECB declared that both banks were “failing or likely to fail”, the wording used as a precursor to put them into resolution under the BRRD. However, the Single Resolution Board determined that resolution was not warranted in the public interest in this case, allowing the Italian authorities to wind down the banks under national insolvency law and avoid bailing in senior bondholders. The European Commission said the Italian government would provide a cash injection of €4.8 bn and up to €12 bn in state guarantees to facilitate the orderly wind-down and support Intesa’s acquisition. By using state aid, the Italian authorities could protect deposits and senior bonds (many of which are retail-owned), a key political aim. Shareholders and subordinated debt holders will, however, be written down as part of state aid “burden sharing” rules, although reports suggest that retail holders that were mis-sold €200 mn of subordinated debt (out of the total €1.2 bn) will be compensated<sup>35</sup>.

These divergent outcomes, the Spanish and the Italian ones, revealed the big shortcoming in Europe’s resolution framework, which is an unwillingness to impose losses on senior creditors, who rank above shareholders and junior bondholders in banks’ capital structures. There is no reason why such investors should be free from risk, unless those bonds, when placed into the market, explicitly entail some retroactive mechanism. For example, the so

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<sup>32</sup> Il Sole 24 Ore (May 2017) web source.

<sup>33</sup> Lintner & Lincoln (2017).

<sup>34</sup> Uymaz (2017).

<sup>35</sup> Sackey-Addo et alia (2017).

called CoCos (Contingent Convertibles) are bonds that, whenever a pre-specified trigger is reached, convert into equity. Another hybrid form of capital are the Equity Recourse Notes (ERNs) which start their life as debt but convert into equity *payment-at-a-time* when the issuer suffers large losses in market value subsequent to the original issue date<sup>36</sup>.

Furthermore, the almost inconsistent interventions in the cases of Popular, Popolare di Vicenza and Veneto Banca put into question the future of the BRRD. This is not the end of Directive, but political considerations will continue to be an important input and this seems very clear in the situation with Vicenza and Veneto. There was a great contradiction between the SRB statement noting that the banks are not systemic enough to justify its involvement, and the Italian government and the EC signing off on a rescue package that may ultimately cost the Italian taxpayer up to €17 bn<sup>37</sup>. Spain opted for a quicker route than Italy. Shareholders and junior bondholders have paid a hefty price, but the overall cost was almost certainly lower than it would have been had if the crisis had continued. It must be clear that, when it comes to decide upon the destiny of a troubled bank, the two main options, resolution and liquidation, differ substantially. The former is governed by the Directive (2014/59/EU), while the latter is regulated by national insolvency laws.

Optimists see the fruits of reform in both episodes while pessimists argue that all the promises made to protect taxpayers are broken after the Italian deal, and that hopes of moving towards a true banking union are dead. The reality perhaps lies somewhere in the middle. Europe's post-crisis reforms have brought some progresses. First, the ECB's supervisory powers over eurozone banks are welcome. Second, junior bondholders can now be certain that they will be wiped out when banks get into deep trouble. The third reason regards the Italian position on non-performing loans (NPLs), historically bad managed. Its passive view on the non-performing assets worked as an obstacle for its banks, estimated at €349bn (gross) by the Bank of Italy (as of 2016). One reason for the delay has been a political issue: the fact that retail investors are big owners of Italian bank debt. Imposing losses on creditors is less attractive when the effect is to wipe out the savings of ordinary citizens. The liquidations have avoided this outcome<sup>38</sup>.

To conclude, managing losses from a bank failure is an inherently political judgment. That is why ordinary depositors are protected. The reluctance to hit senior investors reflects the fear of sparking wider contagion, and panic too. Financial regulators tried to be pragmatic in their response. From now on they should make sure that banks issue equity and layers of

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<sup>36</sup> For a detailed description of ERNs structure and functioning see Bulow & Klemperer (2014).

<sup>37</sup> HSBC report on European Banks Credit, (July 2017) web source.

<sup>38</sup> The Economist (July 2017) web source.



explicitly at-risk debt to institutional investors in large enough quantities to minimize the chances of having to bail-in anyone else.

### 3. The relationship between bail-in, CDS and rating

#### 3.1 The three dimensions framework

As previously discussed, the relevant introduction of the European BRRD is that, from now on, the contribution to the losses of a failing bank will be borne primarily by its shareholders and other creditors, according to a pre-planned ranking. From a situation of systemic bank bail-outs we have turned into a bail-in principle. However, as the cases demonstrated in Chapter 2.4, the full bail-in implementation is far from being adopted.

My research focused on a comparison among bail-in simulations over the resilience of an institution, CDS spreads and ratings. The main scope, at least from an ex-ante perspective, was to find out the presence of coherence among these three dimensions, that should be correlated. Since the rating of whatever institution is mainly affected by its soundness I should expect that banks more resilient to bail-in get better ratings. Vice versa CDS, by indicating the perceived likelihood of the default, should be lower for resilient banks.

The following example should make things clearer. Let's consider two banks, namely Alpha and Beta, with the same amount of liabilities (which represents the basis to calculate the minimum share of losses, 8%, borne by bailed-in parties). Let's say they have different capital structures and that, after a potential bail-in on creditors, they result in different levels of resilience<sup>39</sup>. Alpha has a stronger bail-in resilience indicator than Beta, that means Alpha's shareholders and creditors will bear an inferior amount of losses. Supposedly, I would expect Alpha to have both a lower CDS spread and a better rating than Beta.

Figure 8. Different capital structures can lead to different indicators

	Bank Alpha	Bank Beta
Liabilities	=	=
Bail-in resilience	+	-
CDS spread	↓	↑
Rating	↑	↓

<sup>39</sup> I will explain later in this Chapter the definition of bail-in resilience within the framework of my research.

## 3.2 The sample

For the purpose at hand I decided to focus on the main European banks since the BRRD is set at a European level. In this way, the most capitalized banks in the world are out of my concern because they are headquartered mainly in the U.S or China<sup>40</sup>. In order to find the leading EU banks, I targeted the Euro STOXX index. This index is a capitalization weighted one and includes only institution whose core activities are headquartered in Europe. STOXX Ltd. is an established global provider of innovative index concepts with a European heritage. The Euro STOXX index has a fixed number of constituents (26 for the year 2016) and is weighted according to free-float market capitalization, with base value 100€ on December 31, 1991<sup>41</sup>. The index includes banks from eight different countries, namely Austria, Belgium, France, Germany, Ireland, Italy, Netherlands and Spain<sup>42</sup>.

### 3.2.1 Bloomberg balance sheets

Once I have detected the institutions to which focus on, I chose to rely on the software Bloomberg as the provider for the balance sheets of such institutions. The analysis is conducted on the balance sheets from 2012 until 2016, euro currency.

The accounting data of Bloomberg, being a U.S. based provider, are collected according to the Generally accepted accounting principles (GAAP), which are a common set of accounting principles, standards and procedures that companies must follow when they compile their financial statements. GAAP improves the clarity of the communication of financial information and facilitates the cross comparison of financial information across different companies<sup>43</sup>.

The U.S-centered GAAP differentiate in some ways from the International Financial Reporting Standard (IFRS), which is taken worldwide as the main guideline in financial statement compiling. The key divergent features concern the treatment of intangibles, of inventory costs, of write-downs and of discontinued operations. Hence, these singularities should not cause huge bias in the final results of the research.

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<sup>40</sup> Data on the biggest banks by market cap, as of April 2017, are taken from Statista (web source).

<sup>41</sup> STOXX index methodology guide of Dec 2017.

<sup>42</sup> Except for Finland which has no representative bank in the index, these are also the top EU countries for GDP in 2016, according to the data of the World Bank.

<sup>43</sup> Investopedia (web source).

Table 3. List of the 26 banks composing the Euro STOXX index and their status in 2016

Bank	G-SIB	O-SIB
BNP Paribas	✓	✓
Deutsche Bank	✓	✓
Crédit Agricole	✓	✓
Société Générale	✓	✓
Banco Santander	✓	✓
UniCredit	✓	✓
ING Group	✓	✓
Banco Bilbao Vyzcaya Argentaria		✓
Intesa Sanpaolo		✓
Natixis		
Commerzbank		✓
ABN Amro Group		✓
Caixa Bank		✓
KBC Group		✓
Banco Sabadell		✓
Erste Group Bank		✓
Bankia		
Bank of Ireland Group		✓
Unione di banche italiane		
Raiffeisen		✓
Allied Irish Banks		✓
Mediobanca		
Bankinter		
BPER		
BPM		
Fineco Bank		

As seen in Chapter 2, the status of Globally Systemically Important Bank or Other Systemically Important Bank is important for the TLAC requirements.

The list is ranked by the values of balance sheet total assets as of 30 December 2016, from the highest to the lowest.

### 3.2.2 Building the simulation on the first scenario of bail-in

In the following, I outline the methodology employed to investigate the degree of bail-in resilience of the institutions in the sample.

Basically, the aim is to find the amount of losses that shareholders and other creditors would have borne if a bail-in had occurred.

In order to cope with this task only few items are necessary: the total amount of liabilities, the total amount of risk weighted assets (aka RWA), the value of the equity including minorities, of Tier 1 (preferably explicitly divided between Core Equity and Additional) and of Tier 2. These data are not hard to find and handle if the company is listed. For the sake of clarity, it should be stated that this is an ex-post analysis about the past trend of soundness of the banks not a stress test with a forecast purpose. It is not a precise measure

of soundness but it could give a first estimate of the degree of soundness of the institutions. The analysis may lack of accuracy, apart from the accounting principles employed, also because it comprises the term 2012-2016 where capital structures and buffers were (and still are) facing continuous changes since the requirements of Basel III are under the phase-in.

Table 4. Waterfall approach to calculate the extent of losses on 8% of TL

2016	DBK GY
Base case	Deutsche bank AG
A) Total assets	1.590.546
B) Total liabilities	1.525.727
C) Risk weighted assets	356.235
D) 8% of liabilities	122.058
E) Equity + minorities	64.819
F) E-D	-57.239
Equity cutting down %	<b>100%</b>
G) Core equity tier 1	47.782
H) Additional tier 1	7.704
I) Total Tier 1	55.486
L) F+I	-1.753
Tier 1 cutting down %	<b>100%</b>
M) Tier 2	6.672
Tier 2 cutting down %	26,28%

What I am going to explain applies to each bank of the sample and for each year considered. The table above (Table 2) refers to a bail-in simulation computed on Deutsche Bank for the year 2016. The denomination DBK GY refers to the ticker used by the software Bloomberg to uniquely identify the German bank. For the complete excel tables with the entire set of computations, please see the Annex.

Recall that the objective here is to find out the amount of losses that the bank would have borne if a bail-in procedure had been implemented. In order to gauge this, I divided the total bank losses into three levels of loss: one for shareholders and the remaining two for the main tranches of creditors. These levels are expressed via the percentage of equity cut down, Tier 1 cut down and Tier 2 cut down. The procedure adopted starts from the total liabilities (B) and calculates the corresponding 8% (D), which is the minimum share of losses that bank must bear before any other possible aid (in the form of cash injection or guarantees) might come from the government or other funds. This amount has to be subtracted from the value of equity including minorities (E) and constitutes the record F.

The equity cut down is computed according to this formula:  $\min(100\%; \frac{D}{E})$ . In other words, if the value of equity is insufficient to cover the loss, then a 100% cut down of the

equity is reported, as happened for Deutsche Bank in 2016. Otherwise, the percentage of loss will be proportionate to the extent of loss over the initial value of equity.

In the case of a 100% cut down of equity, the next step is to add the total Tier 1 to F (L). If this last value is negative it means that neither the first cushion of protection is sufficient to cover a loss. The Tier 1 cut down was calculated in the following way:  $\min(100\%; \frac{I-L}{I})$ . Hence, a 100% Tier 1 cut down will be reported. When L is positive it means that Tier 1 was enough to deal with losses.

In the case of a 100% Tier 1 cut down, the last step is to calculate the extent of loss on the Tier 2. The Tier 2 cut down comes out from a longer equation:  $\min(100\%; \frac{M-(E+I+M)-D}{M})$ .

As a matter of fact, if none of the cushions were sufficient, the bank will end up with 100% losses on all the three tranches. In this case Deutsche Bank would have been able to absorb the imposition of losses at 8% of the total liabilities with all its equity, its Tier 1 and a portion on Tier 2.

### 3.2.3 Building the simulation on the second scenario of bail-in

Table 5. Waterfall approach to calculate the extent of losses on 20% of RWA

2016	DBK GY
<b>Exceptional case</b>	<b>Deutsche bank AG</b>
A) Total assets	1.590.546
B) Total liabilities	1.525.727
C) Risk weighted assets	356.235
D) 20% of RWA	71.247
E) Equity + minorities	64.819
F) E-D	-6.428
Equity cutting down %	<b>100%</b>
G) Core equity tier 1	47.782
H) Additional tier 1	7.704
I) Total Tier 1	55.486
L) F+I	49.058
Tier 1 cutting down %	11,58%
M) Tier 2	6.672
Tier 2 cutting down %	

What I am going to explain applies to each bank of the sample and for each year considered. The second bail-in simulation works similarly to the first one. I inserted this second scenario because in a provision of the BRRD it is stated that, under exceptional

circumstances, on the discretionary will of the European Commission, the first losses may be imposed based on the 20% or risk weighted assets.

For consistency, the table above (Table 3) refers to the simulation applied to Deutsche Bank in 2016. Again, the procedure follows a waterfall approach. The starting point in this case are the risk weighted assets (C), from which it has to be calculated the relative 20% (D). Then the computations continue straightforward as in the other simulation, thus computing the three levels of losses with the same formulas, for the equity (100%), for Tier 1 creditors (11,58%) and Tier 2 creditors (null).

Notably the losses here had smaller impact in magnitude with the respect to the 8% case. The possible reasons will be analyzed in the next chapter.

### **3.3 Overlook on CDS**

The credit default swaps, or CDS, are the most famous kind of credit derivative contracts traded over-the-counter. They act as an insurance against the risk of a default by a certain company (a firm as well as a bank) on its debt or other instruments, which are often referred to as *reference entities*. The total face value of the saleable bond is usually called the CDS *notional*. As a normal insurance contract, the buyer of the CDS makes periodic payments to the seller until the end of the life of the contract or whenever a credit event occurs. We can have credit default swaps on the senior bond, on junior bond, on a special loan (a.k.a. LCDS) and so on and so forth. Because these kinds of debt securities will often have lengthy terms to maturity, also more than ten years, it will often be difficult for the buyer to know with certainty whether the issuer will be in a sound financial position after that time span.

Moreover, if the security in question is not well-rated, a default on the part of the issuer may be more likely. Roughly speaking, the risk against which the buyer wants to hedge is the risk of non-payment. Through a CDS, the buyer can mitigate the risk of its investment in the company by shifting all or a portion of that risk into an insurance company or other CDS seller. The buyer of the insurance obtains the right to sell the reference entity issued by the company for its face value when (or better, if) a credit event occurs. As a matter of fact, if the debt issuer does not default and if all goes well the CDS buyer will end up losing some money, but this is the traditional concept of hedging. In this way the buyer avoids losing a much greater proportion of its investment if the issuer defaults.

The key aspect inside a CDS contract is the definition of credit event (i.e. a default). Usually a credit event is defined as a failure to make a payment as it becomes due, a restructuring of debt, or a bankruptcy.

Commonly Established CDS Credit Events	
Bankruptcy	The reference entity becomes insolvent or is unable to pay its debts
Failure to Pay	The reference entity fails to make interest or principal repayments when due
Debt Restructuring	The configuration of debt obligations is changed in such a way that the credit holder is unfavorably affected
Obligation Acceleration or Obligation Default	The debt obligations of the issuer become due before their originally scheduled maturity date
Repudiation/ Moratorium	The issuer of the underlying bond (the reference entity) rejects their debt, effectively refusing to pay interest and principal

Figure 9. Source: International Swaps and Derivatives Association

It must be stressed that, unlike the traditional insurance case, who buys the protection does not necessarily own the asset to be protected (thus constituting the so called CDS *naked*). The advantage over other credit derivatives is that the way they work is straightforward. There is one important difference between credit default swaps and the other over-the-counter derivatives (i.e. interest rate swaps, total return equity swaps, asset back securities and others). These other OTC instruments depend on interest rates, exchange rates, equity indices, commodity prices and so on. There is no reason to assume that any market participant has better information than any other about these variables. Credit default swap premia, instead, depend on the probability that a company will default during a period. Only managers of this company may be able to gauge this probability and financial institutions that work closely with the company are likely to have more information about the creditworthiness of the company with the respect to another financial institution that has no dealings with the company<sup>44</sup>. Hence the CDS trading is very complex, risk-oriented and its market is prone to a high degree of speculation. The more the holder of a security thinks its issuer is likely to default, the more desirable a CDS is and the more the premium is worth it. For these reasons, CDS prices should move together with the ratings made by the credit agencies.

### 3.3.1 The CDS on unsecured debt and the choice of the maturity

For my research I looked for the CDS prices of senior unsecured debt and junior unsecured debt of all the 26 banks included in the sample. The former, being on a higher level of seniority, usually shows cheaper premia since its likelihood of default is lower. I based the analysis on the unsecured debt because it is a good proxy for the perceived risk of the default

<sup>44</sup> Hull (2015), page 573.



of the issuer, banks in this case. Once again, I chose to rely on Bloomberg software as the provider of data. I picked the average value of monthly CDS prices at one, two and five years for the term 2012-2016, euro currency. However, it was not possible to retrieve all the data for all the years considered, with a ratio of missed data of nearly 5% over the whole data needed. For some institutions I had no data available at all, forcing me to discard them. These are three Italian banks, namely Banco Popolare dell'Emilia Romagna (a.k.a. BPER), Banco Popolare di Milano and Fineco Bank. This should not invalidate the final results as the fact that those banks have the lowest level of total assets, representing just 1% of the entire sample<sup>45</sup>.

In the following figure (Figure 10) it is possible to observe the pattern that CDS prices, on senior and junior unsecured debt, had over the period considered (from 2012 to 2016) at three levels of maturity (one year, two years and five years).

Both charts show the same decreasing trend, reflecting a better market confidence in the financial soundness of the European banks. This may be due either to the implementation of Basel III (entered into force in 2014), which aims at enhancing banks solvability through a greater retention of liquidity, either to the quantitative easing adopted by the ECB, which contributed to alleviate the credit crunch consequent to the crisis of 2007-2008.

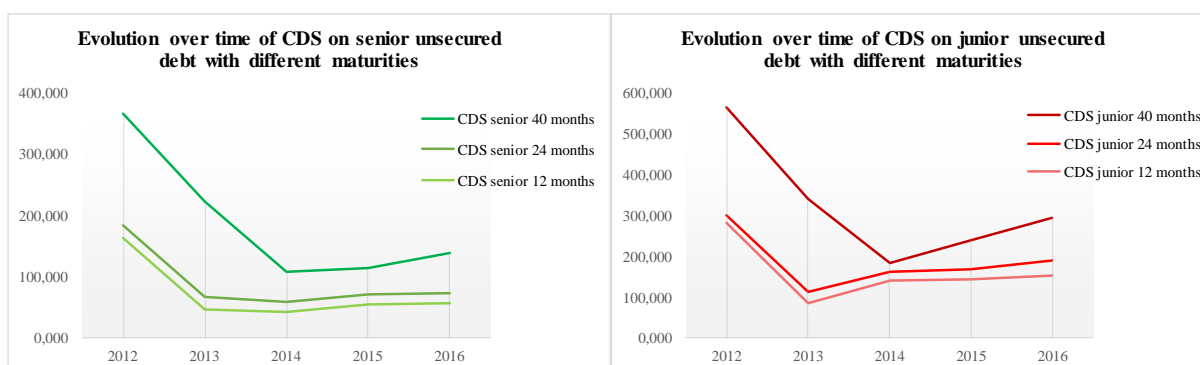


Figure 10.

Since the evolution of the CDS prices, both senior and junior, shows the same trend across the three maturities analyzed, I decided to focus the attention exclusively on the credit default swap on unsecured debt with five years of maturity because it incorporates the medium-term expectations and it is the one usually adopted in the business practice to study the issuer's risk of default.

<sup>45</sup> The entire sample accounts for a level of total assets, based on Bloomberg data, equal to 14.400.000 million €, while the three small Italian banks hardly reach 140.000 million €.

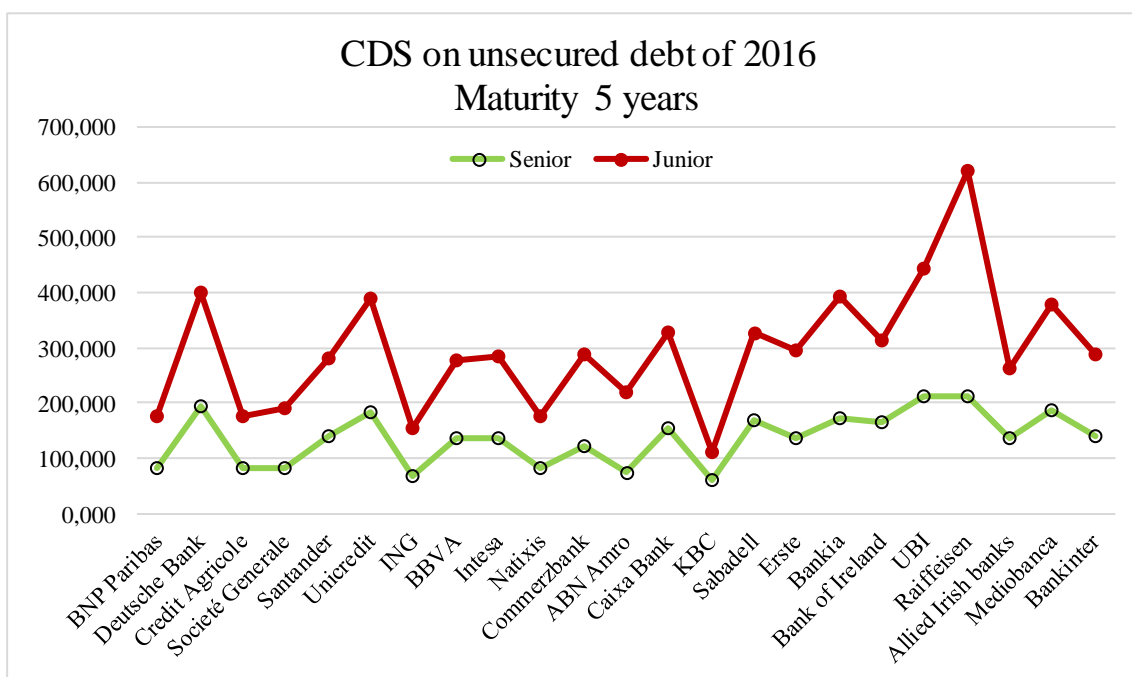


Figure 11.

Figure 11 shows the values of CDS prices for the year 2016 across the 23 banks for which data on credit default swaps were available. The sample shows a large degree of heterogeneity in both type of CDS premia on the unsecured debt, either senior (green line) either junior (red line). The minimum prices (around 100.000€) belongs to the Belgian multi-channel bank KBC, while the worst performer (with the junior CDS reaching 600.000€) has been the biggest Austrian bank Raiffeisen, perhaps due to the troubles related to a change in the Austrian requirements for derivatives, and consequent intervention of the EBA, which led to a sensible devaluation of its assets<sup>46</sup>.

A certain degree of consistency can be observed through the other years (2012-2015). The best and worst performers vary over time but the heterogeneity in CDS premia continues to be a constant feature of the sample.

### 3.3.2 The CDS spread

In order to target the “pure” bail-in component in the bank’s perceived risk I computed the spread between the CDS junior and senior prices. By doing so, I eliminated all the other factors that might have affected the price on the unsecured debt, as the sovereign risk. The CDS spread could be taken as a measure that expresses how likely is that a bail-in will be implemented. Indeed, in such event, junior creditors will be asked to bear losses before the senior creditors. Thus, the CDS price on junior unsecured debt will be quite high since it is

<sup>46</sup> Franceschi (July 2016), web source.

likely that the issuer or the seller of the credit default swap will have to repay the face value of the bond. For all these reasons, a low CDS spread means that the market perception on a bail-in is remote while to a high CDS spread corresponds a higher probability of a bail-in.

In Figure 12 I plotted the dynamics over time (the period starts the 31/01/2012 and ends the 30/12/2016) of both the sample average CDS spread and the STOXX index performance in order to compare the two trends on a monthly basis. It is quite evident the opposite movements of the variables: when the CDS spread showed upward sloping, the Euro STOXX performed poorly. Arguably this negative correlation reflects the fact that, under normal circumstances, the positive market confidence in the banking sector, mirrored by the increased index price, reduces the likelihood of the default, thus cutting the spread between junior and senior unsecured debt.

The chart confirms the riskier nature of the CDS market, which shows more volatility than the equity market. The Euro STOXX price, indeed, is more constant over time with a minimum value of 78.30€, registered on May 2012 and a maximum of 157.65€, reached on July 2015.

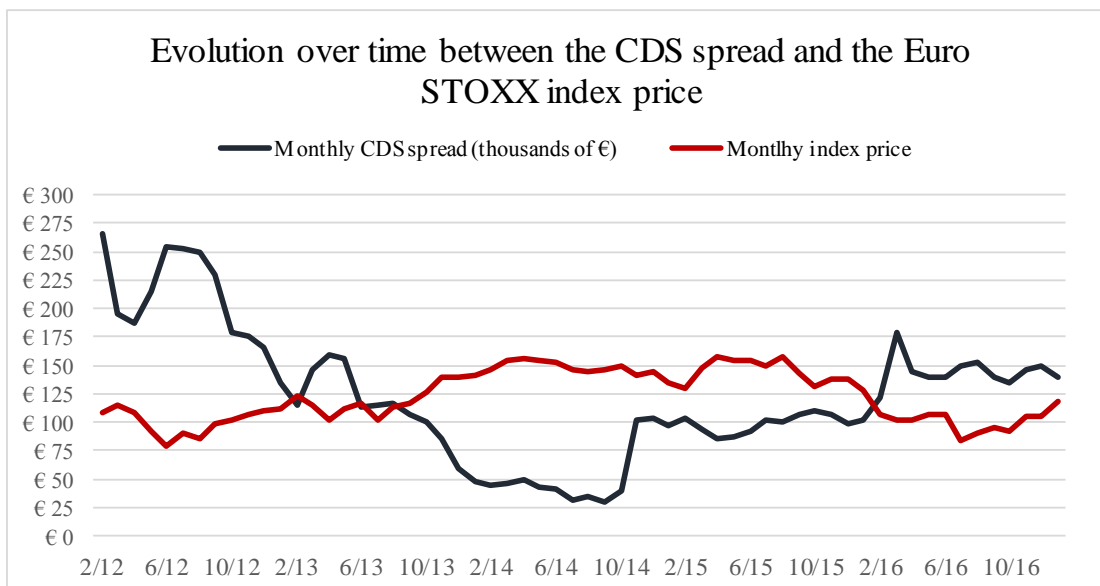


Figure 12.

### 3.4 Ratings

The third dimension included in my analysis is the degree of creditworthiness of banks. For this indicator I chose to rely on the data provided by the rating agency Moody's, one of the top provider of credit evaluations together with Standard & Poor's and Fitch. It has been estimated that they control nearly 95% of the credit ratings market, in large part because

their status was protected in the original Securities and Exchange Commission regulations of the sector of 1975<sup>47</sup>.

I decided to base the comparison with the bail-in resilience and the CDS spread on the rating given to the unsecured debt. Unsecured debt, being the portion of debt not backed by a guarantee or any other type of asset, is clearly riskier than a secured debt. For this reason, the rating on the unsecured debt reflects the issuer rating in most cases.

### **3.4.1 Moody's methodology**

The Moody's methodology for a comprehensive rating assignment can be divided in three different stages. First, a raw assessment, based on fundamental credit factors, is determined by a Baseline Credit Assessment (BCA). Then expectations related to various forms of external support are incorporated within a Joint Default Analysis. Finally, the BCA is enhanced with other considerations in rating the obligations of related entities such as specialized covered bonds issuers and bank holding companies and bank obligations in failure or default<sup>48</sup>. I chose to make exclusively use of the raw BCAs because they reflect Moody's opinion of the bank's intrinsic, or standalone, strength absent of any extraordinary support from affiliates or government. The BCAs are not a rating tout court but a primitive assignment of a bank's probability of requiring support to avoid a default, or defaulting on a debt obligation<sup>49</sup>.

The BCA scorecard is a simple reference tool to approximate the credit profile of financial institutions under the assumption of no external support. It is expressed as a three-notch range on an alphanumeric scale, which goes from the lowest, C, up to triple Aaa.

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<sup>47</sup> Council on foreign relations (February 2015), web source.

<sup>48</sup> Moody's INVESTOR SERVICE (September 2017).

<sup>49</sup> Ibidem.

Figure 13. Moody's BCA scale

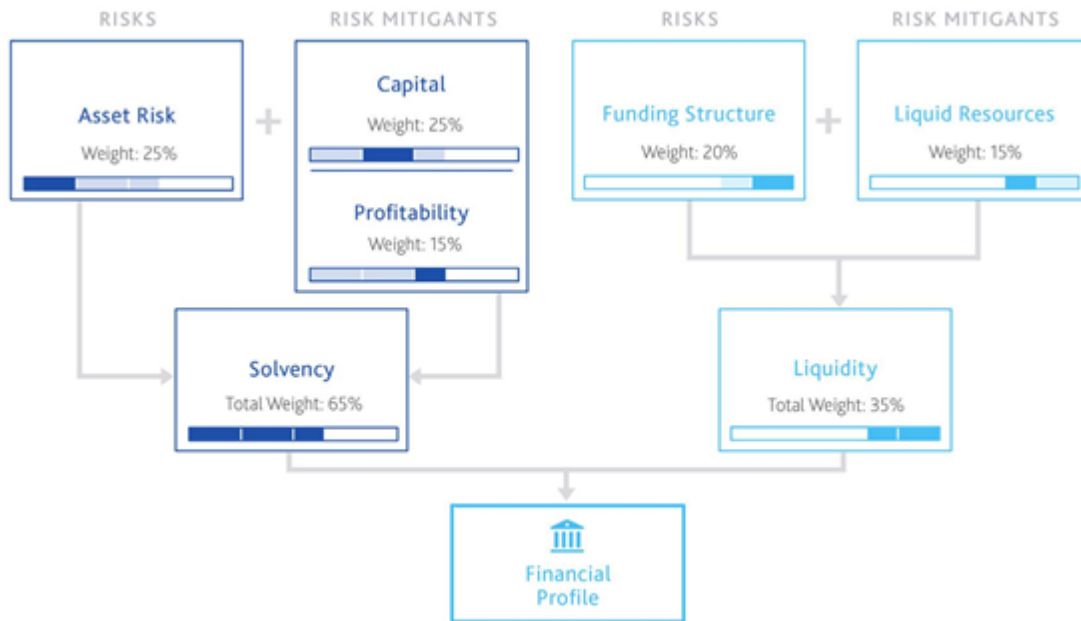
<b>aaa</b>	Issuers assessed <b>aaa</b> are judged to have the highest intrinsic, or standalone, financial strength, and thus subject to the lowest level of credit risk absent any possibility of extraordinary support from an affiliate or a government.
<b>aa</b>	Issuers assessed <b>aa</b> are judged to have high intrinsic, or standalone, financial strength, and thus subject to very low credit risk absent any possibility of extraordinary support from an affiliate or a government.
<b>a</b>	Issuers assessed <b>a</b> are judged to have upper-medium-grade intrinsic, or standalone, financial strength, and thus subject to low credit risk absent any possibility of extraordinary support from an affiliate or a government.
<b>baa</b>	Issuers assessed <b>baa</b> are judged to have medium-grade intrinsic, or standalone, financial strength, and thus subject to moderate credit risk and, as such, may possess certain speculative credit elements absent any possibility of extraordinary support from an affiliate or a government.
<b>ba</b>	Issuers assessed <b>ba</b> are judged to have speculative intrinsic, or standalone, financial strength, and are subject to substantial credit risk absent any possibility of extraordinary support from an affiliate or a government.
<b>b</b>	Issuers assessed <b>b</b> are judged to have speculative intrinsic, or standalone, financial strength, and are subject to high credit risk absent any possibility of extraordinary support from an affiliate or a government.
<b>caa</b>	Issuers assessed <b>caa</b> are judged to have speculative intrinsic, or standalone, financial strength, and are subject to very high credit risk absent any possibility of extraordinary support from an affiliate or a government.
<b>ca</b>	Issuers assessed <b>ca</b> have highly speculative intrinsic, or standalone, financial strength, and are likely to be either in, or very near, default, with some prospect for recovery of principal and interest; or, these issuers have avoided default or are expected to avoid default through the provision of extraordinary support from an affiliate or a government.
<b>c</b>	Issuers assessed <b>c</b> are typically in default, with little prospect for recovery of principal or interest; or, these issuers are benefiting from a government or affiliate support but are likely to be liquidated over time; without support there would be little prospect for recovery of principal or interest.

Source: Moody's Investor Service

Banks are financial institutions specialized in risk and maturity transformation. The intrinsic strength of a bank, therefore, depends principally on the extent of the transformation undertaken and the resulting risks. Consistent with this, the Moody's approach in determining a bank's relative financial strength is focused on the view that its strength, and, hence, its viability, is largely a function of its solvency and its liquidity, which are the characteristics to which are assigned, respectively, 65% and 35% weight (Table 4). Solvency could be defined as the combination of asset risk, leverage and earnings, while liquidity is determined by a bank's funding profile together with its ability to access cash. Moreover, these factors are related: all other variables being equal, stronger capitalization increases the capacity to absorb losses, increasing the confidence of counterparties and reducing the risk of a liquidity problem. Greater liquid assets, meanwhile, indirectly enhance solvency because they imply that a bank is less likely to need to sell illiquid assets at a loss in the event of a funding problem. The reverse is also true, and weak solvency can undermine liquidity.

Therefore, in order to analyse each bank's financial profile, Moody's identifies five fundamental credit sub-factors (Table 4): asset risk, capital, profitability, funding structure and liquid resources.

Figure 14. Overview of weights to address the Financial Profile



Source: Moody's Investors Service

Once explained why Moody's perspective on rating could be a good proxy for the credit quality of the unsecured debt, I collected the data in table 6.

As occurred with the CDS on unsecured debt, not all ratings were available. Thus, the final sample includes 24 of the initial 26 banks composing the Euro STOXX index, with the Italian institutions Mediobanca and Fineco Bank out of the list.

Red cells stand for a downgrade in the credit quality of the senior unsecured debt with the respect to the previous year, while green cells stand for the opposite. In few cases the rating was withdrawn (yellow cell) by Moody's. There may be several reasons sometimes unrelated to the creditworthiness of the issuer. Should no rating be assigned, the reason may be one of the following:

- I. An application was not received or accepted.
- II. The issue or issuer belongs to a group of securities or entities that are not rated as a matter of policy.
- III. There is a lack of essential data pertaining to the issue or issuer.
- IV. The issue was privately placed, in which case the rating is not published in Moody's publications<sup>50</sup>.

In line with the better economic conditions after the turmoil occurred on many sovereign debts in 2011 (especially for PIIGS countries), the trend in rating is positive with the number of downgrades drastically reduced from year to year. However, the most trusted banks

<sup>50</sup> Ibidem.

resulted to be the French BNP Paribas and Cr dit Agricole, that never experienced a downgrade.

Table 6. Moody's ratings of senior unsecured debt

Bank	2011	2012	2013	2014	2015	2016
BNP Paribas SA	A2	A2	A2	A1	A1	A1
Deutsche bank AG	A2	A2	A2	A3	A3	A3
Credit Agricole SA	A2	A2	A2	A2	A2	A1
Soci�t� Generale SA	A1	A2	A2	A2	A2	A2
Banco Santander SA		Not found	Not found	Baa1	Baa2	Baa2
UniCredit SpA	A3	Baa2	Baa2	Baa2	Baa1	Baa1
ING Groep NV	A1	A3	A3	A3	Baa1	Baa1
B. Bilbao Vyzcaya Argentaria SA	Aa3	Baa3	Baa3	Baa2	Withdrawn	Baa1
Intesa Sanpaolo SpA	A2	Baa2	Baa2	Baa2	Baa1	Baa1
Natixis SA	Aa3	A2	A2	A2	A2	A2
Commerzbank AG	A2	A3	Baa1	Baa1	Baa1	A2
ABN Amro Group NV	Aa3	A2	A2	A2	A2	A1
Caixa Bank SA	A3	Baa3	BAa3	BAa3	Baa2	Baa2
KBC Group NV	A2	Baa1	Baa1	A3	Withdrawn	Baa1
Banco de Sadabell SA	Baa1	Ba1	Ba1	Ba2	Ba1	Baa3
Erste Group bank AG	A3	A3	A3	Baa2	Baa2	Baa1
Bankia SA	BAa3	Ba2	B1	B1	B1	Ba3
Bank of Ireland Group PLC	bA2	Ba2	Ba3	Ba1	Ba1	Baa2
Unione di banche italiane SpA	A3	Baa2	Baa3	Baa3	Baa2	Baa5
Raiffeisen Bank International AG	A1	A2	A2	Baa1	Baa2	Baa2
Allied Irish Banks PLC	bA3	Ba3	B1	Ba3	Ba1	Baa3
BankInter SA	A2	Ba1	Ba1	Baa3	Baa2	Baa2
BPER Banca		Not found	Not found	Not found	Ba2	Ba2
Popolare di Milano	BAa3	Baa3	B1	B1	Ba3	Ba2

Legend

	Upgrade
	Downgrad
	Withdrawn

Source: Moody's site

### 3.4.2 The numeric equivalent

The alphanumeric scale can be converted into a pure numeric scale according to a precise conversion, proposed by Moody's itself. The best rating (aaa), coincides with a numeric equivalent of 1, while to the worst (caa3) corresponds a numeric equivalent of 19.

Factor score	aaa	aa1	aa2	aa3	a1	a2	a3	baa1	baa2	baa3	ba1	ba2	ba3	b1	b2	b3	caa1	caa2	caa3
Numeric equivalent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

In this way the baseline credit assignments are made easier to handle so that a comparison among companies rating will be more intuitive.

### 3.5 Grouping

The initial goal was to discover any empirical trace of coherence among the abovementioned indicators behind the three dimensions framework (for a quick review, please see figure 1 page 1).

However, the data didn't reveal the supposed correspondence with the ex-ante expectations. Some banks showed very good bail-in resilience, expressed by the relatively small Tier 1 cut down, but high CDS spread and poor rating. On the other hand, some

institutions, although presenting huge Tier 1 losses, were given creditworthiness by the rating agency and showed limited CDS spread.

My approach at this point was to divide the sample into two subgroups following a country-based criterion. Banks belonging to Austria, Belgium, France, Germany and Netherlands were grouped into Pool A, all the others into Pool B.

The two pools share the same average value of market capitalization, even if banks inside Pool A have much greater assets (100% more on average) in their balance sheets.

	POOL A	POOL B
Average value of total assets*	856	406
Average value of market cap*	21.590	20.213

*Source: Bloomberg*

\*values are in billions of € as of Dec. 2016

Market capitalization can be thought as a rough measure of a company's total value and equals the number of outstanding shares, multiplied by the share price. In theory, this is the amount of money you would need if you were to buy all outstanding shares and fully own the company. Actually, the market cap does not reflect the cost for which the company could be purchased under a merger transaction because considerations about debt and synergies must be taken into account. To estimate what it would cost for an investor to buy a company outright, the enterprise value calculation should be more appropriate. Total assets amount, instead, shows how big the company is in the marketplace. Especially during economic downturns, these asset-rich companies tend to walk away with the least damage as they often dominate their respective markets<sup>51</sup>.

For these reasons market capitalization is more a measure of size while total assets a measure of strength.

### 3.6 The benefit score

As explained in the sections 3.2.2 and 3.2.3, I realized two types of past simulations on balance sheet values in order to assess the bail-in resilience: one at 8% of total liabilities and one at 20% of the risk-weighted assets. The reason lies in the possibility that, under extraordinary circumstances and after the approval of the EC, the basis on which to impose losses on shareholders can be set on RWA. This provision, apart from inserting further discretion on authorities' behaviour, gave me the clue to look for discrepancies in resilience between the base case and the exceptional case. For this purpose, I created what I called the "benefit score", which tries to resume in just one number the degree of advantage that a financial institution enjoys via the application of a bail-in at 20% of RWA. The score goes

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<sup>51</sup> Ozyasar (2016), web source.



from 1 to 10, where 1 stands for the complete disadvantage after the imposition of losses based on risk weighted assets while 10 represents the opposite. A score of 10 is hard but not impossible to observe because it would mean that a bank resulted completely solvent on its Tier 1 in the case of a bail-in at 20% and totally insolvent with the 8% scenario. When the two simulations bring the same Tier 1 cut down the relative benefit score is in between 5 and 6, meaning that the bank is quite neutral in the application of the two losses-imposition bases.

Table 7. Building the Benefit score

Difference in Tier 1 cut down between scenarios		Score	
-100%	-80%	<b>1</b>	Banks with this score prefer a loss imposition on the <b>8% of TL</b>
-80%	-60%	<b>2</b>	
-60%	-40%	<b>3</b>	
-40%	-20%	<b>4</b>	
-20%	0%	<b>5</b>	
0%	20%	<b>6</b>	Banks with this score are <b>neutral</b> wrt loss-imposition basis
20%	40%	<b>7</b>	
40%	60%	<b>8</b>	
60%	80%	<b>9</b>	
80%	100%	<b>10</b>	Banks with this score prefer a loss imposition on the <b>20% of RWA</b>

Basically, as shown in the example below, to build the benefit score I computed the difference between the percentage of losses on Tier 1 under the two scenarios (8% of total liabilities minus 20% of risk weighted assets) for each year and each financial institution.

In the case of Deutsche Bank, the benefit score is among the highest across all the period considered, being consistently between 9 and 10. An application of the bail-in to the German investment bank would have been more bearable for its shareholders and creditors if the authorities had opted for a loss imposition calculated on the 20% of RWA.

Table 8. Deutsche Bank example

Deutsche bank AG		
2016	88,42%	Legend Difference in % of Tier 1 cut down BS Benefit Score
BS	10	
2015	78,05%	
BS	9	
2014	80,61%	
BS	10	
2013	70,30%	
BS	9	
2012	75,28%	
BS	9	

Further analysis will follow in the next Chapter.

## 4. Assessing results

In this section I am going to discuss the main evidences that could be found analyzing the data and the methodology seen in the previous Chapter.

The sample used is based on banks included in the Euro STOXX, a capitalization-weighted index which includes financial institutions that are participating in the European and Economic Monetary Union (EMU) involved in the banking sector.

In the following table there is a list of the twelve most capitalized banks of the Euro STOXX index in 2016

Table 9. Top 12 banks of the Euro STOXX index by market cap

TOP 12 Euro Stoxx Banks	MARKET CAPITALIZATION AS OF DEC. 2016 (On average, values in Millions of €)
Banco Santander	89.493
BNP Paribas	55.060
ING Group	40.145
Banco Bilbao Vyzcaya Argentaria	35.226
Intesa Sanpaolo	32.115
Société Générale	26.006
Crédit Agricole	24.602
KBC Group	20.163
Deutsche Bank	20.046
Allied Irish Banks	17.322
UniCredit	16.674
ABN Amro Group	16.174

Source: Bloomberg

The bail-in simulation computed on balance sheet values from 2012 to 2016 showed a general improvement towards the resilience to resolution. This is quite understandable since we are still under phase-in of the Basel III, which will become fully effective in January 2019. This package of measures, progressively implemented, is intended to lead to a significant increase in the banking industry's capital requirements, thus strengthening solvency. The prices of the CDS, and consequently the CDS spread between junior and senior layers of debt, are quite volatile across the sample and all over the five years considered. The range on Moody's ratings instead is less pronounced since the top-ranked banks are assigned an A1 while the worst ones got B1. Recall that the complete scale of rating goes from C up to triple A.

The sample showed a wide heterogeneity in the fields of resilience to resolution, expressed as the percentage of loss on tier 1 in the case of a bail-in procedure, of risk, measured through 5 years CDS spread on senior and junior unsecured debt tranches, and of

rating, based on the numeric equivalent score given by Moody's rating agency. For these reasons, I split the sample in two subgroups, namely Pool A and Pool B, on a country-based criterion (see figure 15). The aim was to find coherence among the three variables.

Pool A gathers banks from continental European countries: Germany, France, Belgium and Austria. Pool B groups peripheral banks from Italy, Spain and Ireland, usually perceived as weak economies inside the European Union.

Figure 15. Pool comparison over the years

	2012	2013	2014	2015	2016	Average	
<b>POOL A</b>	% Loss on Tier 1 Base case	90,73%	71,43%	63,84%	67,48%	63,51%	71%
	Benefit score	7,18	7,00	7,00	7,09	7,27	7,11
	Moody's numeric equivalent	6,45	6,43	6,82	7,00	6,64	6,67
	CDS Senior 5y	146,814	93,343	87,548	79,663	102,905	102,055
	$\Delta$ CDS 5y	143,881	54,805	103,162	88,585	125,998	103,286
<b>POOL B</b>	% Loss on Tier 1 Base case	32,94%	25,08%	18,86%	12,44%	25,66%	23%
	Benefit score	4,00	4,08	4,17	4,50	4,50	4,25
	Moody's numeric equivalent	10,60	11,10	10,45	9,90	9,36	10,28
	CDS Senior 5y	338,065	153,699	117,049	142,178	148,758	179,950
	$\Delta$ CDS 5y	178,135	84,939	155,547	151,444	177,467	149,506

Banks inserted in Pool A showed a higher average percentage of Tier 1 losses than Pool B, 71% against 23%, while its credit merit, expressed converting the traditional rating score in letters with its numerical equivalent, is low (6.67 on average) considering that it could reach 19 that represents a C. This means that banks inside Pool A got a rating between A2 and A3. The same indicator applied to Pool B produced a score of 10.28, basically a Baa3, four notches more than the other pool. The Pool A CDS spread has been constantly lower than Pool B CDS spread with an average value of 103€ against 149€. It seems that a misalignment among risk, resilience to bail-in and credit quality is in place.

This lack of consistency is supported by the results of the linear correlations between the Tier 1 cut down at the 8% scenario against the CDS spread and the rating, measured with the numeric equivalent.

Table 10. Pearson correlations

	2012	2013	2014	2015	2016
CORR (% Tier 1 cut down; CDS spread)	-0,297	-0,327	-0,428	-0,474	-0,162
CORR (% Tier 1 cut down; Numeric equivalent)	-0,598	-0,488	-0,591	-0,666	-0,653

The computations are made relying on the CORREL Excel function, which returns the correlation coefficient of two arrays. The estimated correlation is linear, so the presence of other types of relationships cannot be excluded a priori.

The values are negative across all the years considered, indicating that the variables share opposite trends. From an ex-ante perspective, instead, I would expect positive values.

Table 11. Pearson correlations with second scenario

	2012	2013	2014	2015	2016
CORR (% Tier 1 cut down; CDS spread)	0,705	0,318	0,501	0,482	0,305
CORR (% Tier 1 cut down; Numeric equivalent)	0,356	0,261	0,090	0,337	0,219

Here I estimated the linear correlations in the same way as before, but under the 20% RWA assumption. Values this time are positive, meaning that the indicators of risk, namely the CDS spread and the rating, seem to follow the fundamentals linked with a bail-in on the second scenario.

In order to explain this bias among CDS spread, rating and the simulation results the benefit score (Chapter 3.6) could turn useful. This indicator points out, in a scale from 1 to 10, the level of benefit a bank receives from the application of a bail-in procedure under the 20% RWA loss absorption instead the 8% of total liabilities (including own funds). Pool A got a score higher than 7 while Pool B got 4.25. The difference is sizable but may explain why banks in Pool A, which performed poorly in the first scenario-bail-in resilience test, encountered the market favour, being well rated by Moody's and showing low risk on CDS spread.

A possible reason for the difference in the two scenarios may lie in the core activities of the institutions composing the index. German and French banks are more focused on trading financial assets rather than lending money to firms and families, which is instead the main activity for banks of Pool B, such as Unicredit or Santander. Former banks hold more assets and, as a consequence of their core business, more derivatives contracts. It is not unlikely that given their nature of G-SIBs, they assess their capital requirements for credit risk with an internal rating based approach instead of a standardized method. In this sense, banks are allowed to adopt a mark-to-market model, thus computing the weights for the assets according to their own models, which could be hard to gauge for external investors. Being derivatives harder to price with respect to other financial instruments and given that most of the transactions are made over-the-counter, such banks may be prone to make their balance sheets opaquer. Moreover, the BRRD states that a derivative *may* be bailed-in (to the extent

that it is not secured by a collateral) only once the derivative contract has been terminated and closed out. This give investment banks a certain level of flexibility.

Whether a derivative contract is ultimately bailed-in or not, the BRRD provides the resolution authority with the power to suspend the termination rights of parties to contracts with the institution under resolution until midnight on the business day following official notice of the resolution action. This power will apply if all obligations regarding payments, deliveries and collateral exchange are up-to-date. This power is intended to ensure that a resolution authority's attempts to achieve an orderly resolution are not contrasted by a market panic, sparked by derivatives counterparties attempting to protect their positions with the institution<sup>52</sup>.

The economies of Italy, Spain and Ireland, on the other hand, are characterized by the widespread presence of small and medium enterprises that find difficult to receive credit from the market and are forced to address banks in order to collect funds and undertake important investments. It may be not a coincidence that the recent resolution troubles, after the BRRD came into force, have concerned Italian and Spanish banks (with the cited cases of Banco Popular, Popolare di Vicenza and Veneto Banca). Given the entrepreneurial structure of these economies, it is likely that the market asks for a greater attention to the soundness of their banks, whose core activity is focused on giving credit to local SMEs. Broadly speaking, Italian and Spanish banks are less prone to deeply enter into the investment bank business. Hence, one may see a lack of diversification and, consequently, a major difficulty in recovering losses in case of financial turmoil with the respect to the continental banks competitors (i.e. Deutsche Bank).

The recent introduction, in Italy, of PIRs, literally individual saving plans, may be an important step towards the access of cheaper funds for SMEs and the change in core business for Italian banks. Introduced with the Budget Law n. 232 of November 2016, they are aimed at funding Italian companies through a tailored investment plan that can enjoy attractive fiscal benefits, since PIRs are exempted from the payment of both the capital gains and the inheritance tax if kept in the portfolio at least for five years. Any investment linked with a PIR must be duly qualified, that means it must be compliant with some allocation standards. At least 70% of each PIR capital must be compulsory invested in financial instruments (equities or bonds) issued by Italian and foreign companies (EU and EEA) permanently established in Italy under the domestic fiscal regime. Of this 70%, at least 30% (which corresponds to 21% of total investable assets) must be in Italian small and mid-caps quoted outside the main index, FTSE MIB, such as the Star, the MidCap or the AIM segments. The remaining PIR's

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<sup>52</sup> Financial Sector Advisory Center of the World Bank (2017).

capital can be freely allocated regardless the mentioned 70% allocation rule with just an exception: investments related to all foreign companies established in “no cooperative” (black list) countries cannot – in any case – be admitted<sup>53</sup>. Last, but not least, it is not possible to allocate more than 10% of any PIR available capital in financial products and bank accounts issued by companies belonging to the same company group. In other words: the concentration risk in one single investment asset is limited to 10%.

Since their debut PIRs had a huge success, collecting more than 5 billion euros in their first six months against the initial expectations estimated by the Ministry of Finance set at 1.8 billion<sup>54</sup>. From a Deloitte field-research it emerged that experts are confident that several billions of new flows to the industry will be generated through PIRs in the next five years<sup>55</sup>.

Figure 16. Performance comparison between AIM segment and FTSE MIB for the year 2017



Figure 16 highlights the positive trend of the AIM index, which is the Italian exchange segment designed to gather the small and medium enterprises with high growth potential. The AIM segment performed better than FTSE MIB consistently during the last year. This increasing pattern means that even SMEs can find alternative source of funding and it may be due to a fall of liquidity directly linked with the introduction of PIRs.

Their success is expressed also by another indicator, the number of IPOs, which experienced a substantial growth in Italy in 2017, passing from a monthly average of one to more than two<sup>56</sup>.

<sup>53</sup> Lecchi (May 2017), web source.

<sup>54</sup> Repubblica (September 2017), web source.

<sup>55</sup> Deloitte white paper (May 2017).

<sup>56</sup> Zenti (December 2017), web source.

Figure 17 aims at highlighting what explained before taking into consideration the first eight banks of the index. We would expect that the two series, the benefit score and the numeric equivalent, share the same trend because to a low benefit score, which expresses good resilience to 8% bail-in, should correspond a low numeric equivalent, which reflects top credit quality, other things being equal.

However, the graph tells us the opposite story. For continental banks, which performed poorly in the bail-in test, Moody's had assigned better ratings. Vice versa Pool B banks, despite the good bail-in resilience, have been assigned lower ratings. This reverse-trends chart constitutes a further proof of the bias between rating and 8% bail-in simulation results.

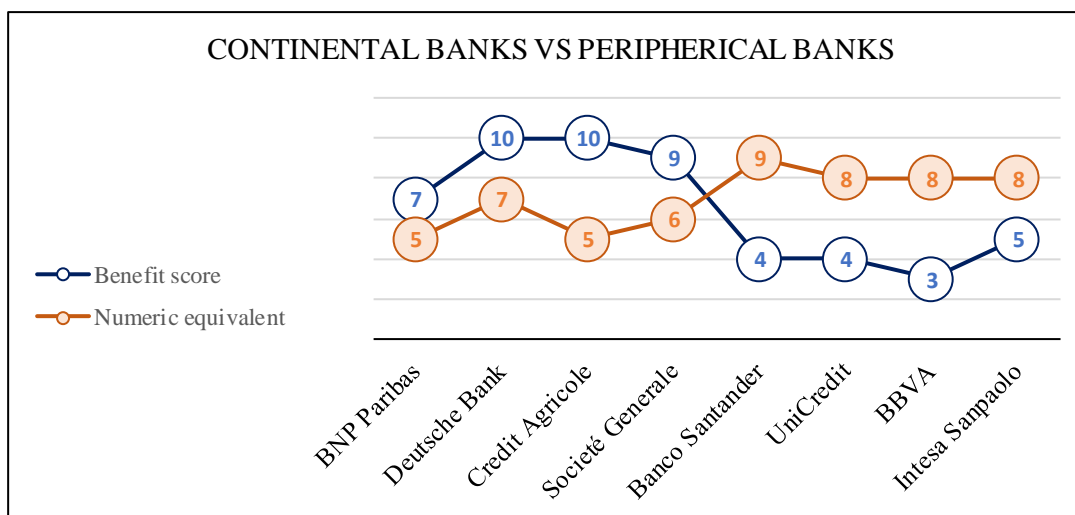


Figure 17.

Let's switch from the subgroups to a more granular level of analysis by looking at the results linked with the highest capitalized banks of the sample (see Figure 18). Here I can observe something puzzling: the banks with the highest losses on Tier 1, most of the times reaching 100%, entail the highest ratings and the less expensive CDS. BNP Paribas, one of the most capitalized of the Euro STOXX Banks index, has the best rating (A1), together with Credit Agricole and ABN Amro, and one of the smallest CDS spread over the years considered. It had not the best performance in the bail-in scenario, though. Banco Santander, the second banks for market capitalization, did perform better as bail-in resilience. As a matter of fact, its Tier 1 losses barely go over 20%, but Moody's has only assigned a low Baa2, which corresponds to four notches more than A1. The reason may lie on the perceived risk of default signaled by the CDS spread which skyrocketed to 131,149, +300 % with the respect of year 2013, when it was fairly under 50. The other important Spanish institution included in the sample, BBVA, has the same indicators for risk and resilience but has been

assigned a slightly better rating, Baa1. For instance, Credit Agricole shows a percentage of loss on Tier 1 in the base case of 100% along all the years considered, while its CDS spread is 94.481, quite below the sample average and got a single A by Moody's. On the contrary, Unicredit, even if it shows a good bail-in resilience having a Tier 1 loss average below 30% (29.77%), is far from being trustworthy given that Moody has assigned a Baa1 rating, three notches more than the French bank. Moreover, the market asked for a large premium to cover a default risk of the Italian bank given that its CDS spread in 2016 was 179,391 (135,625 on average). The other important Italian group, namely Intesa San Paolo, although it has the same rating, has been given a better risk premium, its CDS spread lies below 100 on average, and shows better bail-in resilience. Deutsche Bank shows a more coherent situation: given that its Tier 1 losses has been high along all the analyzed period, the 2016 CDS spread indicates a high perceived default risk (247,693). However, Moody's confirmed the A3 rating, a notch less than Unicredit. Société Générale has never shown Tier 1 losses under 75%, but the downward trend is clearly evident: since 2012 it is falling at a rate of 5% per year. This pattern may explain the good rating, A2, and the small CDS spread of the year 2016 (34,087). KBC, had strong responses to the bail-in resilience test and had the lowest CDS spread in the last two years, namely 2015 and 2016. Despite these information, the first Belgian bank got just a Baa1 from Moody's.

For the other minor banks of the Euro STOXX index the main thing to put under the spotlight is that the two Austrian banks, Raiffeisen and Erste Group, have benefit score in some cases lower than banks in Pool B (respectively 3.40 and 2.75) and similar ratings (Baa1 and Baa2) but CDS spreads are quite divergent: Erste Group showed values above average while Raiffeisen has been the less risky of all the sample. Broadly speaking, it can be observed a global improvement on the rating side from year 2011, where the financial crisis reached the peak on the European economy.

Figure 18. Summary of the results for the main banks of the index

	% Loss on Tier 1 Base case	Benefit score	MOODY'S	Numeric equivalent	CDS Senior 5y	ΔCDS 5y
BNP Paribas	63,93%	7	A1	5	84,768	109,587
Deutsche Bank	100,00%	10	A3	7	166,415	247,693
Credit Agricole	100,00%	10	A1	5	73,677	107,158
Société Generale	76,93%	9	A2	6	170,293	34,087
Banco Santander	0,00%	4	Baa2	9	120,631	131,149
UniCredit	63,19%	4	Baa1	8	175,771	179,391
BBVA	0,00%	3	Baa1	8	124,089	136,570
Intesa Sanpaolo	12,02%	5	Baa1	8	140,010	139,251
Commerzbank	24,25%	5	A2	6	118,490	185,976
KBC Group	21,14%	7	Baa1	8	53,000	72,515



To conclude, my suggestion is that these discrepancies between the signals given by the couple CDS spreads-rating and the results produced by the ex-post analysis on the resilience to an 8% bail-in resolution, measured via the percentage of loss on Tier 1, are due to the scarce market confidence in the strict application of the BRRD. The objectives of resolution under the Directive are manifold, comprehensive, and mainly of a generic qualitative nature: to ensure the continuity of critical functions on the basis of the *going* concern value, not *gone* concern; to avoid significant adverse effects on the financial system; to avoid, or at least minimize, reliance on taxpayers' money. These objectives set the bar high and make it challenging to assess, ex-ante and under considerable time pressure, if they can be met to the same extent through normal insolvency proceedings. The threshold to meet the conditions for resolution set in the public interest test is relatively low and open to interpretation. Resolution authorities may use the discretion provided by the abstract and generic definition of public interest under the BRRD towards the resolution actions.

Depending on the practical interpretation and application of the “public interest” definition, it seems credible that resolution could be deemed to be in the public interest as a general rule in line with the BRRD. Under a wide interpretation of the public interest test, only the smallest banks (if at all) may be determined not to fulfil the conditions and be wound down under normal insolvency proceedings. Serious care must therefore be taken in order to justify resolution actions and the use of resolution financing arrangements.

## 5. Conclusions

It is early to say whether the European response to the lack of a coherent resolution framework has been sufficient. For sure, the BRRD created a unique legislation for managing banking crises at a systemic level (recall that resolution tools applied to G-SIBs). The main issue is the transition from the old regime to the new one. For several years to come, the new resolution tools will have to be applied to balance sheets that are not quite ready for it, since Basel III requirements are still ongoing. This is bound to create bitter legal and political fights as the presented cases show. However, the evidence suggests that bail-in can work in and it is already producing significant changes in some dimensions. Thanks to the help of hard-headed policymakers inside the ECB and the European Commission, it can become credible and effective. Hence, a cautious optimism about the future of the Directive 2014/59/EU shall be maintained.

Another issue in resolution is the distinction between individual bank failure and systemic crises. Avgouelas and Goodhart (2014) discuss the shortcomings of the bail-in regime, and argue that bail-out would still be necessary in extreme cases. They review the many advantages of bail-ins, from incentives to reduced losses, but they also emphasize important shortcomings, in particular, regarding the bail-in of a 'going-concern' bank, the burden on different groups of creditors, liquidity concerns once the bail-in has been triggered, and creditor flight. They conclude that a bail-out would still be required in case of a systemic threat, a simultaneous failure of multiple banks, or a failure of a large, complex cross-border bank.

The Italian rescue cases deviated significantly from the scope of the BRRD. The Single Resolution Board justified the exception, i.e. not let Venetian banks fail, with the avoidance of a systemic panic among Italian savers. If this is perceived as politically unacceptable, the appropriate response would be a combination of harmonized principles for the resolution of non-systemically relevant bank institutions and more restrictive state-aid regulation, rather than the extension of the resolution toolbox to all cases of bank insolvency, irrespective of the systemic relevance of the institution in question.

Moreover, the evidences of my analysis have shown an important break in the circle between fundamentals, namely the bail-in resilience tests, and risk indicators, namely CDS spreads and ratings. The initial assumptions about the relationship among the three variables investigated are not satisfied. Given the negative correlation between bail-in resilience and the risk indicators I would say that the market still cannot believe the European authorities to have a credible strength. Continental banks continue to get more creditworthiness with the respect to the peripheral competitors.

Overall, it will always be difficult to fully implement a bail-in until discretionary provisions and political spillovers play the role of disturbance factors, contributing to the bias between soundness and risk.

## 6. Annexes

In this section I collected all the data regarding the CDS prices on senior and junior unsecured debt, picked from Bloomberg and concerning 23 banks of the Euro STOXX index, and the computation of the CDS spread. All values are in €. The wording N.A. stands for “Not available”.

BNP Paribas									
Monthly CDS price on senior unsecured debt									
30/12/2016	86,261	31/12/2015	70,064	31/12/2014	63,895	31/12/2013	83,881	31/12/2012	140,644
30/11/2016	80,669	30/11/2015	66,973	28/11/2014	65,794	29/11/2013	86,658	30/11/2012	168,514
31/10/2016	73,326	30/10/2015	75,056	31/10/2014	61,881	31/10/2013	106,874	31/10/2012	155,744
30/09/2016	70,973	30/09/2015	73,031	30/09/2014	55,697	30/09/2013	117,443	28/09/2012	173,538
31/08/2016	73,013	31/08/2015	70,912	29/08/2014	65,637	30/08/2013	120,035	31/08/2012	218,121
29/07/2016	82,351	31/07/2015	72,024	31/07/2014	66,004	31/07/2013	139,962	31/07/2012	253,106
30/06/2016	92,807	30/06/2015	75,250	30/06/2014	62,464	28/06/2013	148,000	29/06/2012	267,906
31/05/2016	82,334	29/05/2015	67,169	30/05/2014	66,860	31/05/2013	128,917	31/05/2012	277,728
29/04/2016	79,412	30/04/2015	62,337	30/04/2014	67,689	30/04/2013	155,875	30/04/2012	243,210
31/03/2016	81,156	31/03/2015	56,459	31/03/2014	79,297	29/03/2013	146,826	30/03/2012	195,243
29/02/2016	110,079	27/02/2015	60,935	28/02/2014	82,051	28/02/2013	126,595	29/02/2012	204,836
29/01/2016	73,931	30/01/2015	63,461	31/01/2014	84,007	31/01/2013	124,449	31/01/2012	240,126
Monthly CDS price on junior unsecured debt									
30/12/2016	192,629	31/12/2015	137,065	31/12/2014	128,323	31/12/2013	126,841	31/12/2012	229,962
30/11/2016	179,932	30/11/2015	137,038	28/11/2014	133,921	29/11/2013	133,363	30/11/2012	279,882
31/10/2016	168,268	30/10/2015	146,892	31/10/2014	122,587	31/10/2013	166,564	31/10/2012	279,044
30/09/2016	151,321	30/09/2015	146,466	30/09/2014	80,986	30/09/2013	184,329	28/09/2012	321,102
31/08/2016	155,549	31/08/2015	144,540	29/08/2014	90,525	30/08/2013	195,655	31/08/2012	401,845
29/07/2016	174,818	31/07/2015	147,117	31/07/2014	97,617	31/07/2013	232,141	31/07/2012	445,132
30/06/2016	189,564	30/06/2015	152,055	30/06/2014	93,517	28/06/2013	230,919	29/06/2012	477,970
31/05/2016	168,817	29/05/2015	136,711	30/05/2014	107,014	31/05/2013	199,834	31/05/2012	506,535
29/04/2016	167,962	30/04/2015	126,161	30/04/2014	105,937	30/04/2013	253,305	30/04/2012	404,578
31/03/2016	171,318	31/03/2015	118,595	31/03/2014	122,385	29/03/2013	250,268	30/03/2012	339,503
29/02/2016	231,706	27/02/2015	122,340	28/02/2014	121,484	28/02/2013	225,419	29/02/2012	369,707
29/01/2016	156,119	30/01/2015	133,773	31/01/2014	125,440	31/01/2013	208,056	31/01/2012	483,840
Monthly CDS spread between junior and senior									
30/12/2016	106,369	31/12/2015	67,001	31/12/2014	64,428	31/12/2013	42,961	31/12/2012	89,318
30/11/2016	99,263	30/11/2015	70,065	28/11/2014	68,128	29/11/2013	46,705	30/11/2012	111,368
31/10/2016	94,942	30/10/2015	71,836	31/10/2014	60,706	31/10/2013	59,690	31/10/2012	123,300
30/09/2016	80,348	30/09/2015	73,435	30/09/2014	25,289	30/09/2013	66,886	28/09/2012	147,564
31/08/2016	82,536	31/08/2015	73,628	29/08/2014	24,888	30/08/2013	75,620	31/08/2012	183,724
29/07/2016	92,466	31/07/2015	75,093	31/07/2014	31,613	31/07/2013	92,179	31/07/2012	192,027
30/06/2016	96,757	30/06/2015	76,805	30/06/2014	31,053	28/06/2013	82,919	29/06/2012	210,064
31/05/2016	86,483	29/05/2015	69,542	30/05/2014	40,154	31/05/2013	70,917	31/05/2012	228,807
29/04/2016	88,551	30/04/2015	63,824	30/04/2014	38,248	30/04/2013	97,430	30/04/2012	161,367
31/03/2016	90,162	31/03/2015	62,136	31/03/2014	43,088	29/03/2013	103,442	30/03/2012	144,260
29/02/2016	121,627	27/02/2015	61,405	28/02/2014	39,433	28/02/2013	98,824	29/02/2012	164,871
29/01/2016	82,188	30/01/2015	70,312	31/01/2014	41,433	31/01/2013	83,607	31/01/2012	243,714

**Deutsche Bank**

Monthly CDS price on senior unsecured debt

30/12/2016	192,642	31/12/2015	95,240	31/12/2014	75,024	31/12/2013	83,774	31/12/2012	97,977
30/11/2016	225,416	30/11/2015	90,912	28/11/2014	79,006	29/11/2013	86,910	30/11/2012	123,534
31/10/2016	217,607	30/10/2015	89,054	31/10/2014	76,691	31/10/2013	99,923	31/10/2012	140,159
30/09/2016	214,419	30/09/2105	94,647	30/09/2014	61,430	30/09/2013	103,881	28/09/2012	153,985
31/08/2016	208,999	31/08/2015	91,106	29/08/2014	71,296	30/08/2013	107,619	31/08/2012	186,015
29/07/2016	215,261	31/07/2015	89,781	31/07/2014	75,938	31/07/2013	112,339	31/07/2012	201,062
30/06/2016	192,554	30/06/2015	88,659	30/06/2014	63,432	28/06/2013	112,801	29/06/2012	189,850
31/05/2016	174,081	29/05/2015	74,583	30/05/2014	69,947	31/05/2013	96,547	31/05/2012	187,508
29/04/2016	176,527	30/04/2015	72,608	30/04/2014	73,489	30/04/2013	115,191	30/04/2012	175,552
31/03/2016	179,158	31/03/2015	64,367	31/03/2014	83,664	29/03/2013	112,416	30/03/2012	146,824
29/02/2016	226,170	27/02/2015	64,951	28/02/2014	89,431	28/02/2013	103,666	29/02/2012	152,662
29/01/2016	114,753	30/01/2015	72,812	31/01/2014	88,982	31/01/2013	90,365	31/01/2012	172,436

Monthly CDS price on junior unsecured debt

30/12/2016	428,926	31/12/2015	188,104	31/12/2014	172,818	31/12/2013	129,558	31/12/2012	178,599
30/11/2016	451,883	30/11/2015	180,826	28/11/2014	179,133	29/11/2013	133,882	30/11/2012	232,296
31/10/2016	433,787	30/10/2015	185,171	31/10/2014	176,340	31/10/2013	160,985	31/10/2012	254,754
30/09/2016	424,272	30/09/2105	191,492	30/09/2014	102,811	30/09/2013	167,267	28/09/2012	256,770
31/08/2016	417,330	31/08/2015	190,899	29/08/2014	99,550	30/08/2013	177,031	31/08/2012	298,294
29/07/2016	435,760	31/07/2015	183,850	31/07/2014	109,242	31/07/2013	188,018	31/07/2012	329,979
30/06/2016	398,515	30/06/2015	182,186	30/06/2014	92,809	28/06/2013	187,002	29/06/2012	312,932
31/05/2016	365,028	29/05/2015	159,230	30/05/2014	106,428	31/05/2013	160,193	31/05/2012	314,614
29/04/2016	381,768	30/04/2015	151,387	30/04/2014	115,838	30/04/2013	211,325	30/04/2012	281,225
31/03/2016	395,079	31/03/2015	142,268	31/03/2014	134,198	29/03/2013	213,425	30/03/2012	249,721
29/02/2016	454,073	27/02/2015	149,877	28/02/2014	137,115	28/02/2013	203,093	29/02/2012	248,590
29/01/2016	224,620	30/01/2015	171,936	31/01/2014	134,607	31/01/2013	159,093	31/01/2012	310,200

Monthly CDS spread between junior and senior

30/12/2016	236,284	31/12/2015	92,864	31/12/2014	97,794	31/12/2013	45,785	31/12/2012	80,622
30/11/2016	226,467	30/11/2015	89,914	28/11/2014	100,128	29/11/2013	46,972	30/11/2012	108,762
31/10/2016	216,181	30/10/2015	96,117	31/10/2014	99,649	31/10/2013	61,063	31/10/2012	114,595
30/09/2016	209,852	30/09/2105	96,845	30/09/2014	41,381	30/09/2013	63,387	28/09/2012	102,786
31/08/2016	208,331	31/08/2015	99,793	29/08/2014	28,253	30/08/2013	69,413	31/08/2012	112,279
29/07/2016	220,499	31/07/2015	94,070	31/07/2014	33,304	31/07/2013	75,680	31/07/2012	128,917
30/06/2016	205,961	30/06/2015	93,527	30/06/2014	29,378	28/06/2013	74,201	29/06/2012	123,081
31/05/2016	190,946	29/05/2015	84,646	30/05/2014	36,481	31/05/2013	63,646	31/05/2012	127,106
29/04/2016	205,241	30/04/2015	78,780	30/04/2014	42,350	30/04/2013	96,134	30/04/2012	105,673
31/03/2016	215,922	31/03/2015	77,902	31/03/2014	50,535	29/03/2013	101,008	30/03/2012	102,896
29/02/2016	227,904	27/02/2015	84,925	28/02/2014	47,684	28/02/2013	99,427	29/02/2012	95,928
29/01/2016	109,867	30/01/2015	99,123	31/01/2014	45,625	31/01/2013	68,728	31/01/2012	137,764

**Credit Agricole**

Monthly CDS price on senior unsecured debt

30/12/2016	76,192	31/12/2015	69,589	31/12/2014	67,272	31/12/2013	104,225	31/12/2012	158,427
30/11/2016	72,975	30/11/2015	71,251	28/11/2014	68,036	29/11/2013	111,758	30/11/2012	183,463
31/10/2016	68,618	30/10/2015	75,364	31/10/2014	65,569	31/10/2013	139,661	31/10/2012	186,184
30/09/2016	68,952	30/09/2105	77,880	30/09/2014	57,602	30/09/2013	154,315	28/09/2012	219,813
31/08/2016	71,391	31/08/2015	76,872	29/08/2014	72,225	30/08/2013	159,338	31/08/2012	271,465
29/07/2016	81,281	31/07/2015	78,673	31/07/2014	71,994	31/07/2013	182,942	31/07/2012	300,232
30/06/2016	90,021	30/06/2015	78,548	30/06/2014	63,466	28/06/2013	182,178	29/06/2012	339,924
31/05/2016	80,988	29/05/2015	69,640	30/05/2014	72,861	31/05/2013	159,077	31/05/2012	356,517
29/04/2016	80,188	30/04/2015	66,655	30/04/2014	79,697	30/04/2013	191,519	30/04/2012	298,505
31/03/2016	80,949	31/03/2015	59,117	31/03/2014	91,459	29/03/2013	176,258	30/03/2012	245,230
29/02/2016	110,326	27/02/2015	63,545	28/02/2014	93,317	28/02/2013	168,543	29/02/2012	239,131
29/01/2016	73,934	30/01/2015	69,298	31/01/2014	102,904	31/01/2013	157,951	31/01/2012	257,557

Monthly CDS price on junior unsecured debt

30/12/2016	85,553	31/12/2015	150,646	31/12/2014	149,721	31/12/2013	155,192	31/12/2012	307,364
30/11/2016	92,438	30/11/2015	152,944	28/11/2014	N.A.	29/11/2013	167,337	30/11/2012	370,698
31/10/2016	163,312	30/10/2015	161,394	31/10/2014	N.A.	31/10/2013	225,653	31/10/2012	375,759
30/09/2016	148,844	30/09/2105	164,816	30/09/2014	77,167	30/09/2013	255,422	28/09/2012	413,630
31/08/2016	N.A.	31/08/2015	159,682	29/08/2014	106,839	30/08/2013	259,005	31/08/2012	539,922
29/07/2016	N.A.	31/07/2015	160,764	31/07/2014	107,756	31/07/2013	301,172	31/07/2012	600,127
30/06/2016	164,307	30/06/2015	157,730	30/06/2014	95,677	28/06/2013	296,814	29/06/2012	644,235
31/05/2016	168,080	29/05/2015	145,286	30/05/2014	116,925	31/05/2013	269,585	31/05/2012	628,774
29/04/2016	168,814	30/04/2015	137,056	30/04/2014	122,376	30/04/2013	335,170	30/04/2012	509,933
31/03/2016	172,978	31/03/2015	128,021	31/03/2014	143,560	29/03/2013	329,784	30/03/2012	451,562
29/02/2016	239,400	27/02/2015	140,485	28/02/2014	142,018	28/02/2013	300,381	29/02/2012	472,542
29/01/2016	167,694	30/01/2015	155,045	31/01/2014	148,399	31/01/2013	272,936	31/01/2012	560,744

Monthly CDS spread between junior and senior

30/12/2016	9,361	31/12/2015	81,057	31/12/2014	82,449	31/12/2013	50,967	31/12/2012	148,937
30/11/2016	19,463	30/11/2015	81,693	28/11/2014	N.A.	29/11/2013	55,579	30/11/2012	187,235
31/10/2016	94,694	30/10/2015	86,029	31/10/2014	N.A.	31/10/2013	85,992	31/10/2012	189,575
30/09/2016	79,892	30/09/2105	86,936	30/09/2014	19,565	30/09/2013	101,107	28/09/2012	193,817
31/08/2016	N.A.	31/08/2015	82,809	29/08/2014	34,613	30/08/2013	99,668	31/08/2012	268,457
29/07/2016	N.A.	31/07/2015	82,091	31/07/2014	35,762	31/07/2013	118,230	31/07/2012	299,895
30/06/2016	74,286	30/06/2015	79,183	30/06/2014	32,211	28/06/2013	114,636	29/06/2012	304,310
31/05/2016	87,092	29/05/2015	75,646	30/05/2014	44,064	31/05/2013	110,508	31/05/2012	272,258
29/04/2016	88,626	30/04/2015	70,401	30/04/2014	42,679	30/04/2013	143,652	30/04/2012	211,428
31/03/2016	92,029	31/03/2015	68,904	31/03/2014	52,101	29/03/2013	153,527	30/03/2012	206,332
29/02/2016	129,074	27/02/2015	76,940	28/02/2014	48,702	28/02/2013	131,838	29/02/2012	233,411
29/01/2016	93,760	30/01/2015	85,747	31/01/2014	45,496	31/01/2013	114,985	31/01/2012	303,187

Société Générale

Monthly CDS price on senior unsecured debt

30/12/2016	86,493	31/12/2015	70,209	31/12/2014	85,964	31/12/2013	101,757	31/12/2012	173,168
30/11/2016	79,026	30/11/2015	72,765	28/11/2014	76,023	29/11/2013	107,414	30/11/2012	204,081
31/10/2016	70,283	30/10/2015	82,559	31/10/2014	75,021	31/10/2013	132,738	31/10/2012	195,490
30/09/2016	70,373	30/09/2015	85,994	30/09/2014	66,126	30/09/2013	150,807	28/09/2012	222,530
31/08/2016	72,233	31/08/2015	84,723	29/08/2014	82,734	30/08/2013	158,464	31/08/2012	271,222
29/07/2016	80,333	31/07/2015	82,608	31/07/2014	80,843	31/07/2013	181,745	31/07/2012	298,413
30/06/2016	90,539	30/06/2015	86,649	30/06/2014	70,835	28/06/2013	183,295	29/06/2012	331,579
31/05/2016	80,650	29/05/2015	78,502	30/05/2014	84,085	31/05/2013	161,821	31/05/2012	354,547
29/04/2016	80,181	30/04/2015	77,803	30/04/2014	91,156	30/04/2013	195,397	30/04/2012	314,603
31/03/2016	81,942	31/03/2015	71,979	31/03/2014	96,659	29/03/2013	177,034	30/03/2012	260,725
29/02/2016	111,794	27/02/2015	79,287	28/02/2014	93,787	28/02/2013	174,790	29/02/2012	265,372
29/01/2016	75,133	30/01/2015	90,008	31/01/2014	101,903	31/01/2013	165,684	31/01/2012	323,159

Monthly CDS price on junior unsecured debt

30/12/2016	204,653	31/12/2015	164,182	31/12/2014	185,641	31/12/2013	152,180	31/12/2012	314,604
30/11/2016	190,878	30/11/2015	165,589	28/11/2014	182,952	29/11/2013	162,506	30/11/2012	376,374
31/10/2016	171,467	30/10/2015	189,294	31/10/2014	166,472	31/10/2013	217,467	31/10/2012	379,091
30/09/2016	159,517	30/09/2015	189,173	30/09/2014	100,263	30/09/2013	247,247	28/09/2012	395,752
31/08/2016	165,151	31/08/2015	181,801	29/08/2014	110,759	30/08/2013	257,599	31/08/2012	468,970
29/07/2016	180,585	31/07/2015	176,869	31/07/2014	114,926	31/07/2013	299,771	31/07/2012	517,275
30/06/2016	200,419	30/06/2015	189,145	30/06/2014	100,955	28/06/2013	297,984	29/06/2012	574,856
31/05/2016	182,675	29/05/2015	172,145	30/05/2014	131,518	31/05/2013	272,173	31/05/2012	609,647
29/04/2016	186,882	30/04/2015	164,815	30/04/2014	139,266	30/04/2013	338,567	30/04/2012	514,997
31/03/2016	193,350	31/03/2015	162,172	31/03/2014	155,778	29/03/2013	331,327	30/03/2012	441,761
29/02/2016	261,508	27/02/2015	174,524	28/02/2014	143,310	28/02/2013	306,912	29/02/2012	466,272
29/01/2016	182,608	30/01/2015	201,652	31/01/2014	150,875	31/01/2013	278,475	31/01/2012	573,532

Monthly CDS spread between junior and senior

30/12/2016	118,160	31/12/2015	93,974	31/12/2014	99,677	31/12/2013	50,423	31/12/2012	141,436
30/11/2016	111,852	30/11/2015	92,825	28/11/2014	106,930	29/11/2013	55,091	30/11/2012	172,293
31/10/2016	101,184	30/10/2015	106,735	31/10/2014	91,451	31/10/2013	84,729	31/10/2012	183,602
30/09/2016	89,144	30/09/2015	103,179	30/09/2014	34,137	30/09/2013	96,440	28/09/2012	173,223
31/08/2016	92,918	31/08/2015	97,077	29/08/2014	28,026	30/08/2013	99,135	31/08/2012	197,748
29/07/2016	100,252	31/07/2015	94,261	31/07/2014	34,083	31/07/2013	118,026	31/07/2012	218,862
30/06/2016	109,881	30/06/2015	102,496	30/06/2014	30,120	28/06/2013	114,690	29/06/2012	243,277
31/05/2016	102,025	29/05/2015	93,644	30/05/2014	47,433	31/05/2013	110,352	31/05/2012	255,101
29/04/2016	106,701	30/04/2015	87,012	30/04/2014	48,109	30/04/2013	143,170	30/04/2012	200,394
31/03/2016	111,408	31/03/2015	90,193	31/03/2014	59,119	29/03/2013	154,294	30/03/2012	181,036
29/02/2016	149,714	27/02/2015	95,237	28/02/2014	49,523	28/02/2013	132,122	29/02/2012	200,900
29/01/2016	107,475	30/01/2015	111,644	31/01/2014	48,972	31/01/2013	112,791	31/01/2012	250,373

Santander

Monthly CDS price on senior unsecured debt

30/12/2016	128,307	31/12/2015	125,927	31/12/2014	75,339	31/12/2013	129,147	31/12/2012	274,989
30/11/2016	138,364	30/11/2015	122,902	28/11/2014	76,599	29/11/2013	150,359	30/11/2012	315,065
31/10/2016	124,646	30/10/2015	128,524	31/10/2014	75,629	31/10/2013	188,569	31/10/2012	304,343
30/09/2016	125,699	30/09/2015	125,797	30/09/2014	62,318	30/09/2013	235,445	28/09/2012	317,680
31/08/2016	128,443	31/08/2015	111,597	29/08/2014	82,002	30/08/2013	249,806	31/08/2012	390,431
29/07/2016	150,353	31/07/2015	100,043	31/07/2014	81,598	31/07/2013	298,723	31/07/2012	432,987
30/06/2016	159,814	30/06/2015	98,753	30/06/2014	76,413	28/06/2013	273,284	29/06/2012	423,928
31/05/2016	137,947	29/05/2015	92,431	30/05/2014	93,721	31/05/2013	225,463	31/05/2012	411,922
29/04/2016	125,367	30/04/2015	89,591	30/04/2014	107,840	30/04/2013	276,387	30/04/2012	404,206
31/03/2016	123,591	31/03/2015	77,006	31/03/2014	126,965	29/03/2013	284,415	30/03/2012	306,633
29/02/2016	176,963	27/02/2015	81,519	28/02/2014	133,395	28/02/2013	276,943	29/02/2012	267,461
29/01/2016	150,724	30/01/2015	80,262	31/01/2014	132,961	31/01/2013	245,837	31/01/2012	305,480

Monthly CDS price on junior unsecured debt

30/12/2016	265,246	31/12/2015	241,251	31/12/2014	164,787	31/12/2013	172,666	31/12/2012	382,689
30/11/2016	286,224	30/11/2015	231,818	28/11/2014	171,638	29/11/2013	208,323	30/11/2012	444,743
31/10/2016	255,582	30/10/2015	244,465	31/10/2014	173,946	31/10/2013	273,174	31/10/2012	455,341
30/09/2016	243,711	30/09/2015	243,869	30/09/2014	102,134	30/09/2013	335,830	28/09/2012	473,541
31/08/2016	250,961	31/08/2015	222,284	29/08/2014	104,044	30/08/2013	354,618	31/08/2012	609,048
29/07/2016	290,722	31/07/2015	194,961	31/07/2014	112,865	31/07/2013	399,159	31/07/2012	688,932
30/06/2016	312,460	30/06/2015	193,709	30/06/2014	106,931	28/06/2013	368,747	29/06/2012	667,453
31/05/2016	280,334	29/05/2015	180,203	30/05/2014	130,532	31/05/2013	308,270	31/05/2012	664,663
29/04/2016	264,717	30/04/2015	173,963	30/04/2014	146,956	30/04/2013	401,897	30/04/2012	633,424
31/03/2016	265,923	31/03/2015	159,062	31/03/2014	173,132	29/03/2013	416,157	30/03/2012	480,711
29/02/2016	371,042	27/02/2015	161,914	28/02/2014	178,744	28/02/2013	411,682	29/02/2012	437,442
29/01/2016	295,770	30/01/2015	168,595	31/01/2014	173,464	31/01/2013	344,599	31/01/2012	511,861

Monthly CDS spread between junior and senior

30/12/2016	136,939	31/12/2015	115,324	31/12/2014	89,448	31/12/2013	43,519	31/12/2012	107,700
30/11/2016	147,860	30/11/2015	108,917	28/11/2014	95,039	29/11/2013	57,964	30/11/2012	129,679
31/10/2016	130,936	30/10/2015	115,941	31/10/2014	98,318	31/10/2013	84,605	31/10/2012	150,998
30/09/2016	118,012	30/09/2015	118,072	30/09/2014	39,816	30/09/2013	100,386	28/09/2012	155,861
31/08/2016	122,518	31/08/2015	110,687	29/08/2014	22,042	30/08/2013	104,812	31/08/2012	181,617
29/07/2016	140,369	31/07/2015	94,918	31/07/2014	31,267	31/07/2013	100,436	31/07/2012	255,945
30/06/2016	152,647	30/06/2015	94,956	30/06/2014	30,518	28/06/2013	95,463	29/06/2012	243,526
31/05/2016	142,387	29/05/2015	87,772	30/05/2014	36,811	31/05/2013	82,806	31/05/2012	252,741
29/04/2016	139,350	30/04/2015	84,373	30/04/2014	39,116	30/04/2013	125,510	30/04/2012	229,218
31/03/2016	142,332	31/03/2015	82,056	31/03/2014	46,167	29/03/2013	131,743	30/03/2012	174,078
29/02/2016	194,079	27/02/2015	80,396	28/02/2014	45,349	28/02/2013	134,739	29/02/2012	169,981
29/01/2016	145,047	30/01/2015	88,333	31/01/2014	40,502	31/01/2013	98,762	31/01/2012	206,382

**Unicredit**

Monthly CDS price on senior unsecured debt

30/12/2016	188,726	31/12/2015	124,652	31/12/2014	114,285	31/12/2013	158,166	31/12/2012	298,182
30/11/2016	212,735	30/11/2015	117,458	28/11/2014	98,913	29/11/2013	197,637	30/11/2012	342,106
31/10/2016	176,332	30/10/2015	127,253	31/10/2014	99,952	31/10/2013	255,591	31/10/2012	340,031
30/09/2016	179,889	30/09/2015	139,027	30/09/2014	84,887	30/09/2013	307,637	28/09/2012	348,063
31/08/2016	175,678	31/08/2015	134,672	29/08/2014	114,694	30/08/2013	306,758	31/08/2012	476,273
29/07/2016	187,421	31/07/2015	133,872	31/07/2014	107,721	31/07/2013	348,076	31/07/2012	556,254
30/06/2016	194,844	30/06/2015	129,953	30/06/2014	89,479	28/06/2013	341,193	29/06/2012	538,007
31/05/2016	173,643	29/05/2015	118,063	30/05/2014	117,413	31/05/2013	274,544	31/05/2012	516,861
29/04/2016	170,806	30/04/2015	110,827	30/04/2014	129,058	30/04/2013	344,734	30/04/2012	417,304
31/03/2016	168,557	31/03/2015	96,324	31/03/2014	154,378	29/03/2013	351,995	30/03/2012	335,702
29/02/2016	228,124	27/02/2015	112,062	28/02/2014	156,658	28/02/2013	329,335	29/02/2012	336,612
29/01/2016	152,316	30/01/2015	127,169	31/01/2014	157,538	31/01/2013	279,104	31/01/2012	453,665

Monthly CDS price on junior unsecured debt

30/12/2016	380,410	31/12/2015	259,401	31/12/2014	240,689	31/12/2013	209,935	31/12/2012	496,736
30/11/2016	440,066	30/11/2015	245,243	28/11/2014	229,091	29/11/2013	270,826	30/11/2012	578,233
31/10/2016	395,146	30/10/2015	267,689	31/10/2014	238,818	31/10/2013	367,877	31/10/2012	572,510
30/09/2016	385,899	30/09/2015	290,115	30/09/2014	142,738	30/09/2013	441,036	28/09/2012	576,427
31/08/2016	375,251	31/08/2015	287,022	29/08/2014	149,142	30/08/2013	453,377	31/08/2012	776,022
29/07/2016	400,313	31/07/2015	272,945	31/07/2014	145,345	31/07/2013	500,937	31/07/2012	853,953
30/06/2016	417,171	30/06/2015	269,492	30/06/2014	119,990	28/06/2013	497,057	29/06/2012	829,701
31/05/2016	380,435	29/05/2015	241,935	30/05/2014	156,985	31/05/2013	449,006	31/05/2012	802,001
29/04/2016	366,024	30/04/2015	229,339	30/04/2014	170,583	30/04/2013	595,137	30/04/2012	673,215
31/03/2016	361,784	31/03/2015	214,810	31/03/2014	199,310	29/03/2013	590,176	30/03/2012	559,651
29/02/2016	459,077	27/02/2015	250,289	28/02/2014	201,694	28/02/2013	546,800	29/02/2012	548,257
29/01/2016	315,281	30/01/2015	272,007	31/01/2014	204,995	31/01/2013	448,034	31/01/2012	801,957

Monthly CDS spread between junior and senior

30/12/2016	191,685	31/12/2015	134,750	31/12/2014	126,404	31/12/2013	51,769	31/12/2012	198,554
30/11/2016	227,331	30/11/2015	127,784	28/11/2014	130,178	29/11/2013	73,189	30/11/2012	236,126
31/10/2016	218,814	30/10/2015	140,436	31/10/2014	138,866	31/10/2013	112,285	31/10/2012	232,479
30/09/2016	206,010	30/09/2015	151,089	30/09/2014	57,851	30/09/2013	133,399	28/09/2012	228,364
31/08/2016	199,573	31/08/2015	152,350	29/08/2014	34,448	30/08/2013	146,619	31/08/2012	299,749
29/07/2016	212,892	31/07/2015	139,073	31/07/2014	37,624	31/07/2013	152,861	31/07/2012	297,699
30/06/2016	222,327	30/06/2015	139,540	30/06/2014	30,512	28/06/2013	155,864	29/06/2012	291,693
31/05/2016	206,792	29/05/2015	123,872	30/05/2014	39,573	31/05/2013	174,462	31/05/2012	285,140
29/04/2016	195,218	30/04/2015	118,512	30/04/2014	41,525	30/04/2013	250,403	30/04/2012	255,911
31/03/2016	193,227	31/03/2015	118,486	31/03/2014	44,932	29/03/2013	238,181	30/03/2012	223,949
29/02/2016	230,952	27/02/2015	138,227	28/02/2014	45,036	28/02/2013	217,465	29/02/2012	211,645
29/01/2016	162,965	30/01/2015	144,839	31/01/2014	47,457	31/01/2013	168,930	31/01/2012	348,292

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Monthly CDS price on senior unsecured debt

30/12/2016	64,379	31/12/2015	52,138	31/12/2014	55,858	31/12/2013	78,541	31/12/2012	109,072
30/11/2016	68,432	30/11/2015	51,395	28/11/2014	48,795	29/11/2013	80,809	30/11/2012	135,808
31/10/2016	66,213	30/10/2015	54,707	31/10/2014	52,938	31/10/2013	99,083	31/10/2012	158,405
30/09/2016	64,988	30/09/2015	78,252	30/09/2014	54,955	30/09/2013	120,422	28/09/2012	194,958
31/08/2016	60,710	31/08/2015	68,382	29/08/2014	52,110	30/08/2013	119,597	31/08/2012	208,797
29/07/2016	62,430	31/07/2015	68,933	31/07/2014	61,075	31/07/2013	116,792	31/07/2012	210,898
30/06/2016	89,617	30/06/2015	85,030	30/06/2014	60,012	28/06/2013	140,985	29/06/2012	222,546
31/05/2016	68,029	29/05/2015	69,111	30/05/2014	57,418	31/05/2013	135,961	31/05/2012	245,811
29/04/2016	65,367	30/04/2015	62,487	30/04/2014	64,000	30/04/2013	136,299	30/04/2012	232,079
31/03/2016	68,652	31/03/2015	55,492	31/03/2014	69,887	29/03/2013	179,009	30/03/2012	207,784
29/02/2016	82,145	27/02/2015	50,353	28/02/2014	81,037	28/02/2013	155,466	29/02/2012	160,238
29/01/2016	62,737	30/01/2015	54,162	31/01/2014	93,509	31/01/2013	105,002	31/01/2012	154,282

Monthly CDS price on junior unsecured debt

30/12/2016	150,830	31/12/2015	119,812	31/12/2014	131,324	31/12/2013	136,694	31/12/2012	194,857
30/11/2016	154,595	30/11/2015	120,645	28/11/2014	133,918	29/11/2013	136,888	30/11/2012	244,114
31/10/2016	158,257	30/10/2015	137,562	31/10/2014	128,487	31/10/2013	166,706	31/10/2012	273,771
30/09/2016	143,268	30/09/2015	147,519	30/09/2014	82,321	30/09/2013	183,466	28/09/2012	274,750
31/08/2016	146,426	31/08/2015	143,871	29/08/2014	83,341	30/08/2013	187,336	31/08/2012	308,202
29/07/2016	157,797	31/07/2015	150,019	31/07/2014	88,134	31/07/2013	207,695	31/07/2012	349,893
30/06/2016	170,340	30/06/2015	152,302	30/06/2014	84,875	28/06/2013	212,531	29/06/2012	358,225
31/05/2016	149,528	29/05/2015	141,510	30/05/2014	97,851	31/05/2013	198,119	31/05/2012	377,726
29/04/2016	145,004	30/04/2015	127,422	30/04/2014	106,462	30/04/2013	270,579	30/04/2012	340,847
31/03/2016	142,961	31/03/2015	114,029	31/03/2014	125,024	29/03/2013	264,707	30/03/2012	272,499
29/02/2016	185,796	27/02/2015	126,459	28/02/2014	137,593	28/02/2013	221,996	29/02/2012	264,206
29/01/2016	133,727	30/01/2015	138,807	31/01/2014	138,904	31/01/2013	177,951	31/01/2012	355,215

Monthly CDS spread between junior and senior

30/12/2016	86,451	31/12/2015	67,674	31/12/2014	75,466	31/12/2013	58,153	31/12/2012	85,785
30/11/2016	86,163	30/11/2015	69,250	28/11/2014	85,123	29/11/2013	56,079	30/11/2012	108,306
31/10/2016	92,044	30/10/2015	82,855	31/10/2014	75,549	31/10/2013	67,623	31/10/2012	115,366
30/09/2016	78,280	30/09/2015	69,267	30/09/2014	27,366	30/09/2013	63,044	28/09/2012	79,792
31/08/2016	85,716	31/08/2015	75,489	29/08/2014	31,231	30/08/2013	67,739	31/08/2012	99,405
29/07/2016	95,367	31/07/2015	81,086	31/07/2014	27,059	31/07/2013	90,903	31/07/2012	138,995
30/06/2016	80,723	30/06/2015	67,272	30/06/2014	24,863	28/06/2013	71,546	29/06/2012	135,679
31/05/2016	81,499	29/05/2015	72,399	30/05/2014	40,433	31/05/2013	62,158	31/05/2012	131,915
29/04/2016	79,637	30/04/2015	64,935	30/04/2014	42,462	30/04/2013	134,280	30/04/2012	108,768
31/03/2016	74,309	31/03/2015	58,537	31/03/2014	55,137	29/03/2013	85,698	30/03/2012	64,715
29/02/2016	103,651	27/02/2015	76,106	28/02/2014	56,556	28/02/2013	66,530	29/02/2012	103,968
29/01/2016	70,990	30/01/2015	84,645	31/01/2014	45,395	31/01/2013	72,949	31/01/2012	200,933

**BBVA**

Monthly CDS price on senior unsecured debt

30/12/2016	130,151	31/12/2015	120,780	31/12/2014	75,020	31/12/2013	131,814	31/12/2012	287,419
30/11/2016	139,959	30/11/2015	121,082	28/11/2014	77,218	29/11/2013	157,168	30/11/2012	329,766
31/10/2016	123,459	30/10/2015	123,752	31/10/2014	76,294	31/10/2013	197,794	31/10/2012	324,765
30/09/2016	118,978	30/09/2105	124,074	30/09/2014	64,485	30/09/2013	247,866	28/09/2012	333,080
31/08/2016	118,577	31/08/2015	111,431	29/08/2014	81,559	30/08/2013	262,971	31/08/2012	416,392
29/07/2016	140,094	31/07/2015	101,875	31/07/2014	85,030	31/07/2013	308,370	31/07/2012	452,780
30/06/2016	150,780	30/06/2015	102,396	30/06/2014	79,352	28/06/2013	285,457	29/06/2012	459,165
31/05/2016	130,085	29/05/2015	93,475	30/05/2014	97,441	31/05/2013	238,537	31/05/2012	449,956
29/04/2016	122,752	30/04/2015	89,916	30/04/2014	111,434	30/04/2013	295,669	30/04/2012	420,326
31/03/2016	120,480	31/03/2015	77,163	31/03/2014	132,480	29/03/2013	302,906	30/03/2012	317,055
29/02/2016	175,820	27/02/2015	82,194	28/02/2014	136,193	28/02/2013	296,021	29/02/2012	274,577
29/01/2016	144,885	30/01/2015	81,514	31/01/2014	134,596	31/01/2013	262,664	31/01/2012	312,215

Monthly CDS price on junior unsecured debt

30/12/2016	269,163	31/12/2015	229,703	31/12/2014	163,947	31/12/2013	173,820	31/12/2012	407,844
30/11/2016	287,774	30/11/2015	226,181	28/11/2014	172,022	29/11/2013	214,299	30/11/2012	481,143
31/10/2016	252,872	30/10/2015	228,948	31/10/2014	179,574	31/10/2013	281,789	31/10/2012	503,523
30/09/2016	240,894	30/09/2105	238,996	30/09/2014	105,462	30/09/2013	349,035	28/09/2012	541,177
31/08/2016	242,492	31/08/2015	219,460	29/08/2014	106,021	30/08/2013	369,313	31/08/2012	697,913
29/07/2016	277,233	31/07/2015	196,946	31/07/2014	118,877	31/07/2013	410,111	31/07/2012	769,850
30/06/2016	300,312	30/06/2015	197,428	30/06/2014	109,600	28/06/2013	390,936	29/06/2012	774,305
31/05/2016	266,669	29/05/2015	180,783	30/05/2014	135,389	31/05/2013	344,232	31/05/2012	758,827
29/04/2016	261,481	30/04/2015	171,981	30/04/2014	150,672	30/04/2013	432,248	30/04/2012	718,068
31/03/2016	265,097	31/03/2015	156,948	31/03/2014	178,044	29/03/2013	455,456	30/03/2012	558,665
29/02/2016	368,761	27/02/2015	163,977	28/02/2014	180,043	28/02/2013	437,614	29/02/2012	522,806
29/01/2016	280,229	30/01/2015	170,288	31/01/2014	177,085	31/01/2013	370,274	31/01/2012	593,448

Monthly CDS spread between junior and senior

30/12/2016	139,012	31/12/2015	108,923	31/12/2014	88,927	31/12/2013	42,007	31/12/2012	120,425
30/11/2016	147,815	30/11/2015	105,099	28/11/2014	94,804	29/11/2013	57,130	30/11/2012	151,377
31/10/2016	129,413	30/10/2015	105,196	31/10/2014	103,280	31/10/2013	83,995	31/10/2012	178,758
30/09/2016	121,915	30/09/2105	114,923	30/09/2014	40,977	30/09/2013	101,169	28/09/2012	208,097
31/08/2016	123,915	31/08/2015	108,030	29/08/2014	24,462	30/08/2013	106,342	31/08/2012	281,521
29/07/2016	137,139	31/07/2015	95,071	31/07/2014	33,847	31/07/2013	101,742	31/07/2012	317,071
30/06/2016	149,532	30/06/2015	95,032	30/06/2014	30,248	28/06/2013	105,479	29/06/2012	315,140
31/05/2016	136,584	29/05/2015	87,309	30/05/2014	37,948	31/05/2013	105,694	31/05/2012	308,871
29/04/2016	138,729	30/04/2015	82,065	30/04/2014	39,239	30/04/2013	136,579	30/04/2012	297,742
31/03/2016	144,617	31/03/2015	79,786	31/03/2014	45,565	29/03/2013	152,550	30/03/2012	241,610
29/02/2016	192,942	27/02/2015	81,783	28/02/2014	43,850	28/02/2013	141,593	29/02/2012	248,229
29/01/2016	135,345	30/01/2015	88,774	31/01/2014	42,489	31/01/2013	107,610	31/01/2012	281,233

**Intesa**

Monthly CDS price on senior unsecured debt

30/12/2016	146,673	31/12/2015	89,738	31/12/2014	86,178	31/12/2013	152,997	31/12/2012	278,254
30/11/2016	160,022	30/11/2015	86,306	28/11/2014	79,421	29/11/2013	186,020	30/11/2012	326,926
31/10/2016	137,411	30/10/2015	94,168	31/10/2014	82,238	31/10/2013	235,436	31/10/2012	316,157
30/09/2016	136,218	30/09/2105	106,603	30/09/2014	69,364	30/09/2013	277,052	28/09/2012	325,384
31/08/2016	126,551	31/08/2015	102,966	29/08/2014	86,592	30/08/2013	280,558	31/08/2012	441,240
29/07/2016	140,314	31/07/2015	99,349	31/07/2014	85,796	31/07/2013	325,121	31/07/2012	490,995
30/06/2016	149,235	30/06/2015	98,502	30/06/2014	77,264	28/06/2013	327,050	29/06/2012	485,818
31/05/2016	126,367	29/05/2015	92,090	30/05/2014	97,102	31/05/2013	252,771	31/05/2012	483,284
29/04/2016	122,430	30/04/2015	88,856	30/04/2014	106,639	30/04/2013	323,241	30/04/2012	400,599
31/03/2016	117,869	31/03/2015	75,174	31/03/2014	129,465	29/03/2013	329,830	30/03/2012	315,422
29/02/2016	163,178	27/02/2015	82,815	28/02/2014	136,784	28/02/2013	308,979	29/02/2012	311,694
29/01/2016	107,705	30/01/2015	89,586	31/01/2014	150,610	31/01/2013	252,931	31/01/2012	431,977

Monthly CDS price on junior unsecured debt

30/12/2016	298,726	31/12/2015	181,988	31/12/2014	182,840	31/12/2013	197,910	31/12/2012	403,176
30/11/2016	333,740	30/11/2015	174,620	28/11/2014	182,284	29/11/2013	250,244	30/11/2012	482,336
31/10/2016	297,747	30/10/2015	192,194	31/10/2014	182,787	31/10/2013	326,170	31/10/2012	480,441
30/09/2016	279,243	30/09/2105	205,367	30/09/2014	110,295	30/09/2013	389,718	28/09/2012	499,574
31/08/2016	255,103	31/08/2015	204,543	29/08/2014	119,794	30/08/2013	406,621	31/08/2012	682,766
29/07/2016	293,707	31/07/2015	195,160	31/07/2014	124,342	31/07/2013	465,696	31/07/2012	751,610
30/06/2016	301,203	30/06/2015	196,075	30/06/2014	112,822	28/06/2013	456,367	29/06/2012	748,583
31/05/2016	261,231	29/05/2015	179,154	30/05/2014	136,029	31/05/2013	377,585	31/05/2012	760,846
29/04/2016	259,944	30/04/2015	168,545	30/04/2014	146,998	30/04/2013	503,728	30/04/2012	628,756
31/03/2016	261,787	31/03/2015	149,501	31/03/2014	176,058	29/03/2013	493,015	30/03/2012	510,866
29/02/2016	334,125	27/02/2015	161,394	28/02/2014	183,103	28/02/2013	459,483	29/02/2012	522,205
29/01/2016	223,423	30/01/2015	181,953	31/01/2014	192,734	31/01/2013	367,326	31/01/2012	723,394

Monthly CDS spread between junior and senior

30/12/2016	152,052	31/12/2015	92,251	31/12/2014	96,663	31/12/2013	44,912	31/12/2012	124,922
30/11/2016	173,718	30/11/2015	88,314	28/11/2014	102,863	29/11/2013	64,224	30/11/2012	155,410
31/10/2016	160,336	30/10/2015	98,027	31/10/2014	100,549	31/10/2013	90,734	31/10/2012	164,284
30/09/2016	143,024	30/09/2105	98,764	30/09/2014	40,931	30/09/2013	112,666	28/09/2012	174,190
31/08/2016	128,552	31/08/2015	101,576	29/08/2014	33,202	30/08/2013	126,063	31/08/2012	241,526
29/07/2016	153,393	31/07/2015	95,811	31/07/2014	38,547	31/07/2013	140,575	31/07/2012	260,615
30/06/2016	151,968	30/06/2015	97,573	30/06/2014	35,558	28/06/2013	129,317	29/06/2012	262,765
31/05/2016	134,864	29/05/2015	87,064	30/05/2014	38,926	31/05/2013	124,814	31/05/2012	277,562
29/04/2016	137,514	30/04/2015	79,689	30/04/2014	40,359	30/04/2013	180,487	30/04/2012	228,157
31/03/2016	143,918	31/03/2015	74,327	31/03/2014	46,594	29/03/2013	163,185	30/03/2012	195,444
29/02/2016	170,947	27/02/2015	78,579	28/02/2014	46,319	28/02/2013	150,504	29/02/2012	210,511
29/01/2016	115,718	30/01/2015	92,367	31/01/2014	42,124	31/01/2013	114,395	31/01/2012	291,417



**Natixis**

Monthly CDS price on senior unsecured debt

30/12/2016	80,030	31/12/2015	68,250	31/12/2014	58,010	31/12/2013	100,920	31/12/2012	175,000
30/11/2016	71,370	30/11/2015	72,800	28/11/2014	61,500	29/11/2013	95,000	30/11/2012	185,000
31/10/2016	70,960	30/10/2015	73,580	31/10/2014	64,340	31/10/2013	145,000	31/10/2012	193,090
30/09/2016	74,200	30/09/2105	81,560	30/09/2014	62,500	30/09/2013	165,600	28/09/2012	210,000
31/08/2016	70,500	31/08/2015	70,340	29/08/2014	51,500	30/08/2013	170,000	31/08/2012	253,495
29/07/2016	77,000	31/07/2015	66,420	31/07/2014	64,400	31/07/2013	165,000	31/07/2012	258,440
30/06/2016	93,500	30/06/2015	74,315	30/06/2014	66,075	28/06/2013	170,000	29/06/2012	277,230
31/05/2016	79,500	29/05/2015	64,455	30/05/2014	62,000	31/05/2013	169,250	31/05/2012	315,000
29/04/2016	77,500	30/04/2015	60,010	30/04/2014	68,500	30/04/2013	170,000	30/04/2012	237,335
31/03/2016	83,250	31/03/2015	59,385	31/03/2014	73,000	29/03/2013	209,465	30/03/2012	217,890
29/02/2016	110,290	27/02/2015	54,010	28/02/2014	83,000	28/02/2013	176,390	29/02/2012	216,945
29/01/2016	83,500	30/01/2015	57,010	31/01/2014	105,000	31/01/2013	171,000	31/01/2012	207,000

Monthly CDS price on junior unsecured debt

30/12/2016	180,215	31/12/2015	138,800	31/12/2014	137,010	31/12/2013	150,035	31/12/2012	325,000
30/11/2016	160,295	30/11/2015	146,910	28/11/2014	130,360	29/11/2013	145,860	30/11/2012	370,000
31/10/2016	165,050	30/10/2015	141,290	31/10/2014	143,895	31/10/2013	240,000	31/10/2012	385,040
30/09/2016	161,470	30/09/2105	160,335	30/09/2014	125,520	30/09/2013	264,380	28/09/2012	439,965
31/08/2016	154,000	31/08/2015	147,060	29/08/2014	75,010	30/08/2013	280,000	31/08/2012	451,360
29/07/2016	159,000	31/07/2015	141,610	31/07/2014	100,805	31/07/2013	282,000	31/07/2012	515,080
30/06/2016	202,500	30/06/2015	150,755	30/06/2014	101,620	28/06/2013	295,000	29/06/2012	524,990
31/05/2016	166,000	29/05/2015	138,300	30/05/2014	107,000	31/05/2013	265,000	31/05/2012	570,000
29/04/2016	159,000	30/04/2015	121,010	30/04/2014	108,000	30/04/2013	257,500	30/04/2012	444,960
31/03/2016	179,630	31/03/2015	121,710	31/03/2014	130,000	29/03/2013	355,025	30/03/2012	395,000
29/02/2016	221,505	27/02/2015	112,010	28/02/2014	133,000	28/02/2013	312,710	29/02/2012	386,145
29/01/2016	180,500	30/01/2015	125,520	31/01/2014	155,000	31/01/2013	309,995	31/01/2012	383,340

Monthly CDS spread between junior and senior

30/12/2016	100,185	31/12/2015	70,550	31/12/2014	79,000	31/12/2013	49,115	31/12/2012	150,000
30/11/2016	88,925	30/11/2015	74,110	28/11/2014	68,860	29/11/2013	50,860	30/11/2012	185,000
31/10/2016	94,090	30/10/2015	67,710	31/10/2014	79,555	31/10/2013	95,000	31/10/2012	191,950
30/09/2016	87,270	30/09/2105	78,775	30/09/2014	63,020	30/09/2013	98,780	28/09/2012	229,965
31/08/2016	83,500	31/08/2015	76,720	29/08/2014	23,510	30/08/2013	110,000	31/08/2012	197,865
29/07/2016	82,000	31/07/2015	75,190	31/07/2014	36,405	31/07/2013	117,000	31/07/2012	256,640
30/06/2016	109,000	30/06/2015	76,440	30/06/2014	35,545	28/06/2013	125,000	29/06/2012	247,760
31/05/2016	86,500	29/05/2015	73,845	30/05/2014	45,000	31/05/2013	95,750	31/05/2012	255,000
29/04/2016	81,500	30/04/2015	61,000	30/04/2014	39,500	30/04/2013	87,500	30/04/2012	207,625
31/03/2016	96,380	31/03/2015	62,325	31/03/2014	57,000	29/03/2013	145,560	30/03/2012	177,110
29/02/2016	111,215	27/02/2015	58,000	28/02/2014	50,000	28/02/2013	136,320	29/02/2012	169,200
29/01/2016	97,000	30/01/2015	68,510	31/01/2014	50,000	31/01/2013	138,995	31/01/2012	176,340

**Commerzbank**

Monthly CDS price on senior unsecured debt

30/12/2016	123,871	31/12/2015	88,721	31/12/2014	79,392	31/12/2013	112,662	31/12/2012	157,681
30/11/2016	129,046	30/11/2015	85,602	28/11/2014	84,122	29/11/2013	126,123	30/11/2012	189,008
31/10/2016	125,551	30/10/2015	93,583	31/10/2014	86,421	31/10/2013	142,556	31/10/2012	207,785
30/09/2016	118,246	30/09/2105	100,954	30/09/2014	76,765	30/09/2013	153,133	28/09/2012	220,814
31/08/2016	118,603	31/08/2015	95,990	29/08/2014	84,102	30/08/2013	162,105	31/08/2012	261,073
29/07/2016	121,737	31/07/2015	92,694	31/07/2014	88,415	31/07/2013	168,222	31/07/2012	294,894
30/06/2016	121,975	30/06/2015	95,420	30/06/2014	73,348	28/06/2013	173,452	29/06/2012	284,816
31/05/2016	113,211	29/05/2015	83,013	30/05/2014	88,029	31/05/2013	152,329	31/05/2012	281,469
29/04/2016	108,214	30/04/2015	82,569	30/04/2014	98,532	30/04/2013	174,568	30/04/2012	244,170
31/03/2016	108,116	31/03/2015	73,329	31/03/2014	108,899	29/03/2013	162,281	30/03/2012	211,243
29/02/2016	150,683	27/02/2015	72,424	28/02/2014	111,881	28/02/2013	152,665	29/02/2012	208,904
29/01/2016	101,583	30/01/2015	78,541	31/01/2014	115,176	31/01/2013	138,996	31/01/2012	244,507

Monthly CDS price on junior unsecured debt

30/12/2016	314,328	31/12/2015	188,564	31/12/2014	230,903	31/12/2013	215,712	31/12/2012	408,315
30/11/2016	322,198	30/11/2015	188,134	28/11/2014	234,604	29/11/2013	244,774	30/11/2012	486,492
31/10/2016	299,136	30/10/2015	212,341	31/10/2014	245,688	31/10/2013	325,247	31/10/2012	546,785
30/09/2016	277,308	30/09/2105	218,032	30/09/2014	157,606	30/09/2013	366,324	28/09/2012	543,337
31/08/2016	284,698	31/08/2015	208,579	29/08/2014	155,535	30/08/2013	390,110	31/08/2012	585,097
29/07/2016	299,515	31/07/2015	198,964	31/07/2014	165,999	31/07/2013	394,569	31/07/2012	644,137
30/06/2016	280,597	30/06/2015	201,015	30/06/2014	133,174	28/06/2013	361,932	29/06/2012	674,577
31/05/2016	259,360	29/05/2015	183,611	30/05/2014	145,386	31/05/2013	339,363	31/05/2012	693,984
29/04/2016	253,254	30/04/2015	190,301	30/04/2014	154,958	30/04/2013	426,840	30/04/2012	596,262
31/03/2016	259,098	31/03/2015	181,202	31/03/2014	183,484	29/03/2013	425,404	30/03/2012	562,156
29/02/2016	353,712	27/02/2015	189,207	28/02/2014	198,462	28/02/2013	439,496	29/02/2012	577,420
29/01/2016	225,351	30/01/2015	228,045	31/01/2014	212,561	31/01/2013	372,891	31/01/2012	778,438

Monthly CDS spread between junior and senior

30/12/2016	190,458	31/12/2015	99,843	31/12/2014	151,512	31/12/2013	103,051	31/12/2012	250,633
30/11/2016	193,152	30/11/2015	102,532	28/11/2014	150,482	29/11/2013	118,651	30/11/2012	297,484
31/10/2016	173,586	30/10/2015	118,758	31/10/2014	159,267	31/10/2013	182,691	31/10/2012	339,000
30/09/2016	159,063	30/09/2105	117,078	30/09/2014	80,842	30/09/2013	213,191	28/09/2012	322,522
31/08/2016	166,095	31/08/2015	112,589	29/08/2014	71,433	30/08/2013	228,005	31/08/2012	324,025
29/07/2016	177,778	31/07/2015	106,270	31/07/2014	77,584	31/07/2013	226,347	31/07/2012	349,243
30/06/2016	158,622	30/06/2015	105,595	30/06/2014	59,825	28/06/2013	188,480	29/06/2012	389,761
31/05/2016	146,149	29/05/2015	100,598	30/05/2014	57,357	31/05/2013	187,034	31/05/2012	412,515
29/04/2016	145,040	30/04/2015	107,733	30/04/2014	56,426	30/04/2013	252,272	30/04/2012	352,092
31/03/2016	150,982	31/03/2015	107,873	31/03/2014	74,585	29/03/2013	263,123	30/03/2012	350,913
29/02/2016	203,028	27/02/2015	116,783	28/02/2014	86,581	28/02/2013	286,831	29/02/2012	368,516
29/01/2016	123,767	30/01/2015	149,504	31/01/2014	97,385	31/01/2013	233,895	31/01/2012	533,931

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Monthly CDS price on senior unsecured debt

30/12/2016	65,185	31/12/2015	66,010	31/12/2014	61,825	31/12/2013	90,125	31/12/2012	N.A.
30/11/2016	70,415	30/11/2015	64,740	28/11/2014	57,580	29/11/2013	93,260	30/11/2012	N.A.
31/10/2016	68,600	30/10/2015	65,375	31/10/2014	62,165	31/10/2013	95,895	31/10/2012	N.A.
30/09/2016	72,125	30/09/2105	77,365	30/09/2014	64,470	30/09/2013	108,000	28/09/2012	N.A.
31/08/2016	67,220	31/08/2015	67,125	29/08/2014	58,185	30/08/2013	121,410	31/08/2012	N.A.
29/07/2016	73,465	31/07/2015	60,325	31/07/2014	63,895	31/07/2013	119,380	31/07/2012	N.A.
30/06/2016	83,640	30/06/2015	68,280	30/06/2014	62,160	28/06/2013	135,850	29/06/2012	N.A.
31/05/2016	72,870	29/05/2015	62,305	30/05/2014	64,570	31/05/2013	105,000	31/05/2012	N.A.
29/04/2016	78,385	30/04/2015	60,900	30/04/2014	72,500	30/04/2013	N.A.	30/04/2012	N.A.
31/03/2016	84,875	31/03/2015	59,690	31/03/2014	79,085	29/03/2013	N.A.	30/03/2012	N.A.
29/02/2016	95,515	27/02/2015	57,030	28/02/2014	81,320	28/02/2013	N.A.	29/02/2012	N.A.
29/01/2016	79,010	30/01/2015	62,535	31/01/2014	85,960	31/01/2013	N.A.	31/01/2012	N.A.

Monthly CDS price on junior unsecured debt

30/12/2016	246,300	31/12/2015	134,425	31/12/2014	120,165	31/12/2013	187,160	31/12/2012	206,490
30/11/2016	267,565	30/11/2015	139,570	28/11/2014	136,975	29/11/2013	187,770	30/11/2012	236,185
31/10/2016	270,595	30/10/2015	167,200	31/10/2014	143,935	31/10/2013	251,790	31/10/2012	251,655
30/09/2016	284,700	30/09/2105	197,730	30/09/2014	149,295	30/09/2013	259,100	28/09/2012	280,000
31/08/2016	216,770	31/08/2015	171,520	29/08/2014	134,635	30/08/2013	147,405	31/08/2012	309,995
29/07/2016	245,100	31/07/2015	154,100	31/07/2014	148,275	31/07/2013	275,000	31/07/2012	325,000
30/06/2016	277,630	30/06/2015	163,940	30/06/2014	144,745	28/06/2013	274,995	29/06/2012	332,900
31/05/2016	143,025	29/05/2015	149,540	30/05/2014	150,515	31/05/2013	275,005	31/05/2012	360,050
29/04/2016	153,980	30/04/2015	130,680	30/04/2014	148,735	30/04/2013	223,885	30/04/2012	320,000
31/03/2016	166,680	31/03/2015	128,070	31/03/2014	184,545	29/03/2013	271,670	30/03/2012	318,360
29/02/2016	187,925	27/02/2015	119,030	28/02/2014	185,335	28/02/2013	215,000	29/02/2012	320,000
29/01/2016	155,435	30/01/2015	130,435	31/01/2014	195,825	31/01/2013	205,000	31/01/2012	372,220

Monthly CDS spread between junior and senior

30/12/2016	181,115	31/12/2015	68,415	31/12/2014	58,340	31/12/2013	97,035	31/12/2012	N.A.
30/11/2016	197,150	30/11/2015	74,830	28/11/2014	79,395	29/11/2013	94,510	30/11/2012	N.A.
31/10/2016	201,995	30/10/2015	101,825	31/10/2014	81,770	31/10/2013	155,895	31/10/2012	N.A.
30/09/2016	212,575	30/09/2105	120,365	30/09/2014	84,825	30/09/2013	151,100	28/09/2012	N.A.
31/08/2016	149,550	31/08/2015	104,395	29/08/2014	76,450	30/08/2013	25,995	31/08/2012	N.A.
29/07/2016	171,635	31/07/2015	93,775	31/07/2014	84,380	31/07/2013	155,620	31/07/2012	N.A.
30/06/2016	193,990	30/06/2015	95,660	30/06/2014	82,585	28/06/2013	139,145	29/06/2012	N.A.
31/05/2016	70,155	29/05/2015	87,235	30/05/2014	85,945	31/05/2013	170,005	31/05/2012	N.A.
29/04/2016	75,595	30/04/2015	69,780	30/04/2014	76,235	30/04/2013	N.A.	30/04/2012	N.A.
31/03/2016	81,805	31/03/2015	68,380	31/03/2014	105,460	29/03/2013	N.A.	30/03/2012	N.A.
29/02/2016	92,410	27/02/2015	62,000	28/02/2014	104,015	28/02/2013	N.A.	29/02/2012	N.A.
29/01/2016	76,425	30/01/2015	67,900	31/01/2014	109,865	31/01/2013	N.A.	31/01/2012	N.A.

Caixa Bank

Monthly CDS price on senior unsecured debt

30/12/2016	133,615	31/12/2015	131,630	31/12/2014	100,430
30/11/2016	145,000	30/11/2015	120,500	28/11/2014	91,010
31/10/2016	136,760	30/10/2015	124,500	31/10/2014	94,100
30/09/2016	141,000	30/09/2105	160,000	30/09/2014	89,480
31/08/2016	131,620	31/08/2015	139,510	29/08/2014	85,015
29/07/2016	155,000	31/07/2015	115,000	31/07/2014	100,010
30/06/2016	193,000	30/06/2015	125,000	30/06/2014	87,010
31/05/2016	149,180	29/05/2015	117,000	30/05/2014	95,000
29/04/2016	146,000	30/04/2015	100,670	30/04/2014	114,500
31/03/2016	160,625	31/03/2015	106,000	31/03/2014	135,000
29/02/2016	175,755	27/02/2015	115,010	28/02/2014	150,000
29/01/2016	170,635	30/01/2015	108,040	31/01/2014	150,000

Monthly CDS price on junior unsecured debt

30/12/2016	329,160	31/12/2015	N.A.	31/12/2014	N.A.
30/11/2016	352,000	30/11/2015	N.A.	28/11/2014	N.A.
31/10/2016	325,860	30/10/2015	N.A.	31/10/2014	N.A.
30/09/2016	324,965	30/09/2105	N.A.	30/09/2014	N.A.
31/08/2016	299,335	31/08/2015	N.A.	29/08/2014	N.A.
29/07/2016	N.A.	31/07/2015	N.A.	31/07/2014	N.A.
30/06/2016	N.A.	30/06/2015	N.A.	30/06/2014	N.A.
31/05/2016	N.A.	29/05/2015	N.A.	30/05/2014	N.A.
29/04/2016	N.A.	30/04/2015	N.A.	30/04/2014	N.A.
31/03/2016	N.A.	31/03/2015	N.A.	31/03/2014	N.A.
29/02/2016	N.A.	27/02/2015	N.A.	28/02/2014	N.A.
29/01/2016	N.A.	30/01/2015	N.A.	31/01/2014	N.A.

Monthly CDS spread between junior and senior

30/12/2016	195,545	31/12/2015	N.A.	31/12/2014	N.A.
30/11/2016	207,000	30/11/2015	N.A.	28/11/2014	N.A.
31/10/2016	189,100	30/10/2015	N.A.	31/10/2014	N.A.
30/09/2016	183,965	30/09/2105	N.A.	30/09/2014	N.A.
31/08/2016	167,715	31/08/2015	N.A.	29/08/2014	N.A.
29/07/2016	N.A.	31/07/2015	N.A.	31/07/2014	N.A.
30/06/2016	N.A.	30/06/2015	N.A.	30/06/2014	N.A.
31/05/2016	N.A.	29/05/2015	N.A.	30/05/2014	N.A.
29/04/2016	N.A.	30/04/2015	N.A.	30/04/2014	N.A.
31/03/2016	N.A.	31/03/2015	N.A.	31/03/2014	N.A.
29/02/2016	N.A.	27/02/2015	N.A.	28/02/2014	N.A.
29/01/2016	N.A.	30/01/2015	N.A.	31/01/2014	N.A.

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Monthly CDS price on senior unsecured debt

30/12/2016	53,000	31/12/2015	48,360	31/12/2014	65,040	31/12/2013	113,850	31/12/2012	175,000
30/11/2016	60,000	30/11/2015	44,500	28/11/2014	62,050	29/11/2013	121,270	30/11/2012	214,515
31/10/2016	57,355	30/10/2015	51,745	31/10/2014	72,410	31/10/2013	135,000	31/10/2012	235,810
30/09/2016	62,470	30/09/2105	74,165	30/09/2014	67,010	30/09/2013	149,325	28/09/2012	285,520
31/08/2016	62,000	31/08/2015	69,270	29/08/2014	70,010	30/08/2013	165,000	31/08/2012	307,000
29/07/2016	62,000	31/07/2015	65,000	31/07/2014	90,010	31/07/2013	170,000	31/07/2012	330,000
30/06/2016	67,920	30/06/2015	73,000	30/06/2014	82,010	28/06/2013	174,180	29/06/2012	331,710
31/05/2016	56,110	29/05/2015	62,680	30/05/2014	88,780	31/05/2013	160,000	31/05/2012	380,780
29/04/2016	55,990	30/04/2015	60,270	30/04/2014	90,900	30/04/2013	148,640	30/04/2012	337,000
31/03/2016	53,000	31/03/2015	46,500	31/03/2014	110,000	29/03/2013	174,590	30/03/2012	327,255
29/02/2016	55,700	27/02/2015	48,510	28/02/2014	115,000	28/02/2013	166,040	29/02/2012	312,850
29/01/2016	59,800	30/01/2015	54,500	31/01/2014	115,000	31/01/2013	167,500	31/01/2012	361,000

Monthly CDS price on junior unsecured debt

30/12/2016	125,515	31/12/2015	95,745	31/12/2014	160,070	31/12/2013	176,250	31/12/2012	317,300
30/11/2016	144,865	30/11/2015	90,000	28/11/2014	151,950	29/11/2013	179,550	30/11/2012	379,675
31/10/2016	125,000	30/10/2015	92,000	31/10/2014	173,465	31/10/2013	185,000	31/10/2012	399,905
30/09/2016	112,820	30/09/2105	135,000	30/09/2014	210,030	30/09/2013	224,000	28/09/2012	475,035
31/08/2016	104,000	31/08/2015	139,560	29/08/2014	130,030	30/08/2013	225,000	31/08/2012	574,635
29/07/2016	109,960	31/07/2015	151,870	31/07/2014	150,030	31/07/2013	230,000	31/07/2012	574,680
30/06/2016	99,465	30/06/2015	165,000	30/06/2014	140,030	28/06/2013	227,100	29/06/2012	600,525
31/05/2016	102,390	29/05/2015	142,000	30/05/2014	135,000	31/05/2013	227,225	31/05/2012	629,945
29/04/2016	106,315	30/04/2015	135,010	30/04/2014	152,500	30/04/2013	242,185	30/04/2012	629,975
31/03/2016	104,010	31/03/2015	114,010	31/03/2014	160,000	29/03/2013	262,075	30/03/2012	580,815
29/02/2016	96,000	27/02/2015	120,960	28/02/2014	170,000	28/02/2013	277,210	29/02/2012	600,000
29/01/2016	99,375	30/01/2015	145,030	31/01/2014	165,000	31/01/2013	286,935	31/01/2012	799,985

Monthly CDS spread between junior and senior

30/12/2016	72,515	31/12/2015	47,385	31/12/2014	95,030	31/12/2013	62,400	31/12/2012	142,300
30/11/2016	84,865	30/11/2015	45,500	28/11/2014	89,900	29/11/2013	58,280	30/11/2012	165,160
31/10/2016	67,645	30/10/2015	40,255	31/10/2014	101,055	31/10/2013	50,000	31/10/2012	164,095
30/09/2016	50,350	30/09/2105	60,835	30/09/2014	143,020	30/09/2013	74,675	28/09/2012	189,515
31/08/2016	42,000	31/08/2015	70,290	29/08/2014	60,020	30/08/2013	60,000	31/08/2012	267,635
29/07/2016	47,960	31/07/2015	86,870	31/07/2014	60,020	31/07/2013	60,000	31/07/2012	244,680
30/06/2016	31,545	30/06/2015	92,000	30/06/2014	58,020	28/06/2013	52,920	29/06/2012	268,815
31/05/2016	46,280	29/05/2015	79,320	30/05/2014	46,220	31/05/2013	67,225	31/05/2012	249,165
29/04/2016	50,325	30/04/2015	74,740	30/04/2014	61,600	30/04/2013	93,545	30/04/2012	292,975
31/03/2016	51,010	31/03/2015	67,510	31/03/2014	50,000	29/03/2013	87,485	30/03/2012	253,560
29/02/2016	40,300	27/02/2015	72,450	28/02/2014	55,000	28/02/2013	111,170	29/02/2012	287,150
29/01/2016	39,575	30/01/2015	90,530	31/01/2014	50,000	31/01/2013	119,435	31/01/2012	438,985

**Banco Sabadell**

Monthly CDS price on senior unsecured debt

30/12/2016	139,775	31/12/2015	172,875	31/12/2014	131,520	31/12/2013	185,000	31/12/2012	372,730
30/11/2016	165,000	30/11/2015	155,000	28/11/2014	116,010	29/11/2013	200,520	30/11/2012	430,000
31/10/2016	155,810	30/10/2015	150,875	31/10/2014	123,820	31/10/2013	255,000	31/10/2012	503,975
30/09/2016	162,415	30/09/2105	185,000	30/09/2014	140,040	30/09/2013	315,000	28/09/2012	577,775
31/08/2016	139,365	31/08/2015	169,140	29/08/2014	115,040	30/08/2013	425,960	31/08/2012	727,040
29/07/2016	147,000	31/07/2015	147,000	31/07/2014	152,520	31/07/2013	465,000	31/07/2012	755,000
30/06/2016	178,000	30/06/2015	157,000	30/06/2014	140,010	28/06/2013	465,000	29/06/2012	830,000
31/05/2016	151,420	29/05/2015	147,810	30/05/2014	131,040	31/05/2013	387,740	31/05/2012	722,110
29/04/2016	168,000	30/04/2015	132,665	30/04/2014	141,800	30/04/2013	420,000	30/04/2012	672,120
31/03/2016	199,170	31/03/2015	134,010	31/03/2014	166,670	29/03/2013	468,965	30/03/2012	560,000
29/02/2016	213,080	27/02/2015	130,610	28/02/2014	176,595	28/02/2013	399,810	29/02/2012	371,260
29/01/2016	194,550	30/01/2015	143,010	31/01/2014	192,500	31/01/2013	415,000	31/01/2012	500,070

Monthly CDS price on junior unsecured debt

30/12/2016	277,580	31/12/2015	303,875	31/12/2014	255,070	31/12/2013	284,960	31/12/2012	645,210
30/11/2016	336,000	30/11/2015	270,500	28/11/2014	246,030	29/11/2013	300,000	30/11/2012	767,850
31/10/2016	321,200	30/10/2015	285,245	31/10/2014	305,785	31/10/2013	397,080	31/10/2012	914,605
30/09/2016	313,265	30/09/2105	336,655	30/09/2014	357,075	30/09/2013	455,000	28/09/2012	1127,800
31/08/2016	295,080	31/08/2015	304,115	29/08/2014	165,030	30/08/2013	650,000	31/08/2012	1374,445
29/07/2016	320,000	31/07/2015	295,610	31/07/2014	215,070	31/07/2013	695,000	31/07/2012	1536,625
30/06/2016	355,000	30/06/2015	290,000	30/06/2014	185,030	28/06/2013	699,130	29/06/2012	1446,480
31/05/2016	299,500	29/05/2015	248,880	30/05/2014	170,620	31/05/2013	574,480	31/05/2012	1025,500
29/04/2016	312,500	30/04/2015	234,000	30/04/2014	189,000	30/04/2013	675,000	30/04/2012	892,435
31/03/2016	348,565	31/03/2015	240,030	31/03/2014	235,000	29/03/2013	715,565	30/03/2012	816,650
29/02/2016	408,625	27/02/2015	256,840	28/02/2014	263,160	28/02/2013	631,805	29/02/2012	634,995
29/01/2016	361,320	30/01/2015	335,125	31/01/2014	295,000	31/01/2013	645,000	31/01/2012	914,985

Monthly CDS spread between junior and senior

30/12/2016	137,805	31/12/2015	131,000	31/12/2014	123,550	31/12/2013	99,960	31/12/2012	272,480
30/11/2016	171,000	30/11/2015	115,500	28/11/2014	130,020	29/11/2013	99,480	30/11/2012	337,850
31/10/2016	165,390	30/10/2015	134,370	31/10/2014	181,965	31/10/2013	142,080	31/10/2012	410,630
30/09/2016	150,850	30/09/2105	151,655	30/09/2014	217,035	30/09/2013	140,000	28/09/2012	550,025
31/08/2016	155,715	31/08/2015	134,975	29/08/2014	49,990	30/08/2013	224,040	31/08/2012	647,405
29/07/2016	173,000	31/07/2015	148,610	31/07/2014	62,550	31/07/2013	230,000	31/07/2012	781,625
30/06/2016	177,000	30/06/2015	133,000	30/06/2014	45,020	28/06/2013	234,130	29/06/2012	616,480
31/05/2016	148,080	29/05/2015	101,070	30/05/2014	39,580	31/05/2013	186,740	31/05/2012	303,390
29/04/2016	144,500	30/04/2015	101,335	30/04/2014	47,200	30/04/2013	255,000	30/04/2012	220,315
31/03/2016	149,395	31/03/2015	106,020	31/03/2014	68,330	29/03/2013	246,600	30/03/2012	256,650
29/02/2016	195,545	27/02/2015	126,230	28/02/2014	86,565	28/02/2013	231,995	29/02/2012	263,735
29/01/2016	166,770	30/01/2015	192,115	31/01/2014	102,500	31/01/2013	230,000	31/01/2012	414,915

**Erste Group**

Monthly CDS price on senior unsecured debt

30/12/2016	128,000	31/12/2015	123,530	31/12/2014	160,040	31/12/2013	117,055	31/12/2012	150,000
30/11/2016	121,500	30/11/2015	120,000	28/11/2014	115,625	29/11/2013	100,000	30/11/2012	175,000
31/10/2016	122,200	30/10/2015	130,740	31/10/2014	114,090	31/10/2013	137,500	31/10/2012	180,000
30/09/2016	127,750	30/09/2105	164,145	30/09/2014	130,040	30/09/2013	155,000	28/09/2012	217,400
31/08/2016	124,500	31/08/2015	156,545	29/08/2014	132,520	30/08/2013	160,000	31/08/2012	230,000
29/07/2016	142,500	31/07/2015	154,495	31/07/2014	155,040	31/07/2013	150,000	31/07/2012	240,500
30/06/2016	164,500	30/06/2015	166,000	30/06/2014	110,520	28/06/2013	156,780	29/06/2012	244,995
31/05/2016	125,535	29/05/2015	154,105	30/05/2014	113,000	31/05/2013	145,000	31/05/2012	285,000
29/04/2016	128,870	30/04/2015	134,440	30/04/2014	115,265	30/04/2013	145,000	30/04/2012	269,190
31/03/2016	150,000	31/03/2015	148,010	31/03/2014	122,500	29/03/2013	177,095	30/03/2012	249,315
29/02/2016	163,820	27/02/2015	130,645	28/02/2014	130,000	28/02/2013	155,000	29/02/2012	235,260
29/01/2016	141,045	30/01/2015	190,040	31/01/2014	127,000	31/01/2013	150,160	31/01/2012	310,640

Monthly CDS price on junior unsecured debt

30/12/2016	283,000	31/12/2015	247,055	31/12/2014	380,130	31/12/2013	200,330	31/12/2012	310,000
30/11/2016	285,000	30/11/2015	244,000	28/11/2014	344,985	29/11/2013	187,565	30/11/2012	344,995
31/10/2016	280,425	30/10/2015	243,905	31/10/2014	282,995	31/10/2013	240,000	31/10/2012	350,005
30/09/2016	296,590	30/09/2105	350,150	30/09/2014	350,205	30/09/2013	256,910	28/09/2012	394,975
31/08/2016	288,000	31/08/2015	390,675	29/08/2014	275,095	30/08/2013	265,000	31/08/2012	400,000
29/07/2016	320,000	31/07/2015	391,225	31/07/2014	255,070	31/07/2013	258,135	31/07/2012	452,835
30/06/2016	355,000	30/06/2015	440,000	30/06/2014	195,030	28/06/2013	257,500	29/06/2012	422,565
31/05/2016	257,770	29/05/2015	400,480	30/05/2014	175,000	31/05/2013	235,000	31/05/2012	480,465
29/04/2016	255,000	30/04/2015	335,395	30/04/2014	181,955	30/04/2013	290,000	30/04/2012	400,000
31/03/2016	280,000	31/03/2015	390,130	31/03/2014	205,000	29/03/2013	305,025	30/03/2012	391,035
29/02/2016	332,390	27/02/2015	352,400	28/02/2014	205,000	28/02/2013	290,920	29/02/2012	502,465
29/01/2016	308,325	30/01/2015	500,200	31/01/2014	195,000	31/01/2013	298,330	31/01/2012	550,000

Monthly CDS spread between junior and senior

30/12/2016	155,000	31/12/2015	123,525	31/12/2014	220,090	31/12/2013	83,275	31/12/2012	160,000
30/11/2016	163,500	30/11/2015	124,000	28/11/2014	229,360	29/11/2013	87,565	30/11/2012	169,995
31/10/2016	158,225	30/10/2015	113,165	31/10/2014	168,905	31/10/2013	102,500	31/10/2012	170,005
30/09/2016	168,840	30/09/2105	186,005	30/09/2014	220,165	30/09/2013	101,910	28/09/2012	177,575
31/08/2016	163,500	31/08/2015	234,130	29/08/2014	142,575	30/08/2013	105,000	31/08/2012	170,000
29/07/2016	177,500	31/07/2015	236,730	31/07/2014	100,030	31/07/2013	108,135	31/07/2012	212,335
30/06/2016	190,500	30/06/2015	274,000	30/06/2014	84,510	28/06/2013	100,720	29/06/2012	177,570
31/05/2016	132,235	29/05/2015	246,375	30/05/2014	62,000	31/05/2013	90,000	31/05/2012	195,465
29/04/2016	126,130	30/04/2015	200,955	30/04/2014	66,690	30/04/2013	145,000	30/04/2012	130,810
31/03/2016	130,000	31/03/2015	242,120	31/03/2014	82,500	29/03/2013	127,930	30/03/2012	141,720
29/02/2016	168,570	27/02/2015	221,755	28/02/2014	75,000	28/02/2013	135,920	29/02/2012	267,205
29/01/2016	167,280	30/01/2015	310,160	31/01/2014	68,000	31/01/2013	148,170	31/01/2012	239,360

**Bankia**

Monthly CDS price on senior unsecured debt

30/12/2016	139,780	31/12/2015	151,985	31/12/2014	91,590	31/12/2013	225,000	31/12/2012	827,250
30/11/2016	163,000	30/11/2015	145,500	28/11/2014	75,320	29/11/2013	220,000	30/11/2012	991,760
31/10/2016	150,140	30/10/2015	148,750	31/10/2014	105,490	31/10/2013	315,000	31/10/2012	1031,605
30/09/2016	162,980	30/09/2105	181,130	30/09/2014	115,010	30/09/2013	395,000	28/09/2012	1088,030
31/08/2016	148,205	31/08/2015	153,600	29/08/2014	115,040	30/08/2013	520,000	31/08/2012	1202,930
29/07/2016	158,000	31/07/2015	136,880	31/07/2014	149,320	31/07/2013	630,000	31/07/2012	1441,275
30/06/2016	198,000	30/06/2015	155,000	30/06/2014	127,010	28/06/2013	630,000	29/06/2012	1011,850
31/05/2016	172,960	29/05/2015	145,290	30/05/2014	128,000	31/05/2013	853,355	31/05/2012	800,000
29/04/2016	173,000	30/04/2015	128,910	30/04/2014	151,800	30/04/2013	890,710	30/04/2012	695,000
31/03/2016	198,160	31/03/2015	103,010	31/03/2014	173,340	29/03/2013	791,265	30/03/2012	575,000
29/02/2016	209,055	27/02/2015	101,850	28/02/2014	198,560	28/02/2013	740,805	29/02/2012	409,995
29/01/2016	195,105	30/01/2015	115,010	31/01/2014	210,000	31/01/2013	740,010	31/01/2012	485,000

Monthly CDS price on junior unsecured debt

30/12/2016	319,990	31/12/2015	288,210	31/12/2014	269,080	31/12/2013	320,015	31/12/2012	1103,510
30/11/2016	430,000	30/11/2015	265,000	28/11/2014	266,070	29/11/2013	310,000	30/11/2012	1075,610
31/10/2016	337,815	30/10/2015	260,500	31/10/2014	279,630	31/10/2013	379,440	31/10/2012	1470,900
30/09/2016	374,045	30/09/2105	379,000	30/09/2014	325,125	30/09/2013	501,130	28/09/2012	1552,315
31/08/2016	325,470	31/08/2015	344,150	29/08/2014	170,070	30/08/2013	610,080	31/08/2012	1776,820
29/07/2016	365,000	31/07/2015	312,890	31/07/2014	224,870	31/07/2013	665,275	31/07/2012	2033,220
30/06/2016	445,000	30/06/2015	325,000	30/06/2014	178,010	28/06/2013	679,865	29/06/2012	1467,830
31/05/2016	431,385	29/05/2015	304,145	30/05/2014	175,000	31/05/2013	886,315	31/05/2012	1024,780
29/04/2016	450,000	30/04/2015	277,810	30/04/2014	200,000	30/04/2013	883,200	30/04/2012	799,220
31/03/2016	355,000	31/03/2015	280,550	31/03/2014	215,000	29/03/2013	908,045	30/03/2012	628,550
29/02/2016	467,160	27/02/2015	284,015	28/02/2014	260,000	28/02/2013	902,055	29/02/2012	509,090
29/01/2016	386,185	30/01/2015	285,035	31/01/2014	270,000	31/01/2013	881,750	31/01/2012	558,680

Monthly CDS spread between junior and senior

30/12/2016	180,210	31/12/2015	136,225	31/12/2014	177,490	31/12/2013	95,015	31/12/2012	276,260
30/11/2016	267,000	30/11/2015	119,500	28/11/2014	190,750	29/11/2013	90,000	30/11/2012	83,850
31/10/2016	187,675	30/10/2015	111,750	31/10/2014	174,140	31/10/2013	64,440	31/10/2012	439,295
30/09/2016	211,065	30/09/2105	197,870	30/09/2014	210,115	30/09/2013	106,130	28/09/2012	464,285
31/08/2016	177,265	31/08/2015	190,550	29/08/2014	55,030	30/08/2013	90,080	31/08/2012	573,890
29/07/2016	207,000	31/07/2015	176,010	31/07/2014	75,550	31/07/2013	35,275	31/07/2012	591,945
30/06/2016	247,000	30/06/2015	170,000	30/06/2014	51,000	28/06/2013	49,865	29/06/2012	455,980
31/05/2016	258,425	29/05/2015	158,855	30/05/2014	47,000	31/05/2013	32,960	31/05/2012	224,780
29/04/2016	277,000	30/04/2015	148,900	30/04/2014	48,200	30/04/2013	-7,510	30/04/2012	104,220
31/03/2016	156,840	31/03/2015	177,540	31/03/2014	41,660	29/03/2013	116,780	30/03/2012	53,550
29/02/2016	258,105	27/02/2015	182,165	28/02/2014	61,440	28/02/2013	161,250	29/02/2012	99,095
29/01/2016	191,080	30/01/2015	170,025	31/01/2014	60,000	31/01/2013	141,740	31/01/2012	73,680

**Bank of Ireland**

Monthly CDS price on senior unsecured debt

30/12/2016	161,065	31/12/2015	116,440	31/12/2014	170,040	31/12/2013	219,560	31/12/2012	371,295
30/11/2016	175,075	30/11/2015	155,000	28/11/2014	166,040	29/11/2013	214,860	30/11/2012	413,435
31/10/2016	160,000	30/10/2015	139,965	31/10/2014	159,320	31/10/2013	240,000	31/10/2012	500,210
30/09/2016	160,045	30/09/2105	156,000	30/09/2014	165,195	30/09/2013	308,745	28/09/2012	624,370
31/08/2016	155,000	31/08/2015	144,480	29/08/2014	170,040	30/08/2013	335,000	31/08/2012	711,915
29/07/2016	155,000	31/07/2015	154,460	31/07/2014	195,040	31/07/2013	355,000	31/07/2012	757,015
30/06/2016	165,000	30/06/2015	164,000	30/06/2014	185,040	28/06/2013	397,570	29/06/2012	708,475
31/05/2016	150,000	29/05/2015	151,020	30/05/2014	170,000	31/05/2013	333,140	31/05/2012	847,040
29/04/2016	174,000	30/04/2015	136,915	30/04/2014	152,740	30/04/2013	335,000	30/04/2012	754,640
31/03/2016	175,000	31/03/2015	130,010	31/03/2014	155,000	29/03/2013	401,730	30/03/2012	773,670
29/02/2016	175,805	27/02/2015	160,040	28/02/2014	170,000	28/02/2013	391,390	29/02/2012	722,185
29/01/2016	148,245	30/01/2015	105,010	31/01/2014	190,000	31/01/2013	397,535	31/01/2012	842,540

Monthly CDS price on junior unsecured debt

30/12/2016	312,030	31/12/2015	232,880	31/12/2014	330,070	31/12/2013	415,000	31/12/2012	N.A.
30/11/2016	338,875	30/11/2015	280,000	28/11/2014	331,070	29/11/2013	450,000	30/11/2012	N.A.
31/10/2016	309,970	30/10/2015	273,995	31/10/2014	298,715	31/10/2013	475,000	31/10/2012	N.A.
30/09/2016	310,415	30/09/2105	299,000	30/09/2014	350,370	30/09/2013	527,885	28/09/2012	N.A.
31/08/2016	310,000	31/08/2015	269,000	29/08/2014	225,070	30/08/2013	575,000	31/08/2012	N.A.
29/07/2016	301,310	31/07/2015	311,020	31/07/2014	250,125	31/07/2013	595,000	31/07/2012	N.A.
30/06/2016	292,825	30/06/2015	337,500	30/06/2014	265,125	28/06/2013	N.A.	29/06/2012	N.A.
31/05/2016	290,000	29/05/2015	301,630	30/05/2014	240,000	31/05/2013	N.A.	31/05/2012	N.A.
29/04/2016	325,000	30/04/2015	275,030	30/04/2014	234,910	30/04/2013	N.A.	30/04/2012	N.A.
31/03/2016	325,000	31/03/2015	245,070	31/03/2014	260,000	29/03/2013	N.A.	30/03/2012	N.A.
29/02/2016	328,015	27/02/2015	283,690	28/02/2014	285,000	28/02/2013	N.A.	29/02/2012	N.A.
29/01/2016	304,200	30/01/2015	365,595	31/01/2014	335,000	31/01/2013	N.A.	31/01/2012	N.A.

Monthly CDS spread between junior and senior

30/12/2016	150,965	31/12/2015	116,440	31/12/2014	160,030	31/12/2013	195,440	31/12/2012	N.A.
30/11/2016	163,800	30/11/2015	125,000	28/11/2014	165,030	29/11/2013	235,140	30/11/2012	N.A.
31/10/2016	149,970	30/10/2015	134,030	31/10/2014	139,395	31/10/2013	235,000	31/10/2012	N.A.
30/09/2016	150,370	30/09/2105	143,000	30/09/2014	185,175	30/09/2013	219,140	28/09/2012	N.A.
31/08/2016	155,000	31/08/2015	124,520	29/08/2014	55,030	30/08/2013	240,000	31/08/2012	N.A.
29/07/2016	146,310	31/07/2015	156,560	31/07/2014	55,085	31/07/2013	240,000	31/07/2012	N.A.
30/06/2016	127,825	30/06/2015	173,500	30/06/2014	80,085	28/06/2013	N.A.	29/06/2012	N.A.
31/05/2016	140,000	29/05/2015	150,610	30/05/2014	70,000	31/05/2013	N.A.	31/05/2012	N.A.
29/04/2016	151,000	30/04/2015	138,115	30/04/2014	82,170	30/04/2013	N.A.	30/04/2012	N.A.
31/03/2016	150,000	31/03/2015	115,060	31/03/2014	105,000	29/03/2013	N.A.	30/03/2012	N.A.
29/02/2016	152,210	27/02/2015	123,650	28/02/2014	115,000	28/02/2013	N.A.	29/02/2012	N.A.
29/01/2016	155,955	30/01/2015	260,585	31/01/2014	145,000	31/01/2013	N.A.	31/01/2012	N.A.

**UBI**

Monthly CDS price on senior unsecured debt

30/12/2016	203,825	31/12/2015	177,205	31/12/2014	105,010	31/12/2013	145,000	31/12/2012	278,235
30/11/2016	225,000	30/11/2015	170,000	28/11/2014	94,010	29/11/2013	150,000	30/11/2012	284,280
31/10/2016	200,430	30/10/2015	175,500	31/10/2014	110,265	31/10/2013	200,000	31/10/2012	295,000
30/09/2016	208,255	30/09/2105	187,450	30/09/2014	120,040	30/09/2013	260,000	28/09/2012	365,690
31/08/2016	184,440	31/08/2015	148,495	29/08/2014	95,040	30/08/2013	280,000	31/08/2012	407,380
29/07/2016	196,000	31/07/2015	140,000	31/07/2014	120,270	31/07/2013	280,000	31/07/2012	475,000
30/06/2016	226,060	30/06/2015	145,000	30/06/2014	102,010	28/06/2013	275,000	29/06/2012	460,000
31/05/2016	185,430	29/05/2015	124,530	30/05/2014	100,000	31/05/2013	237,465	31/05/2012	566,000
29/04/2016	174,000	30/04/2015	121,010	30/04/2014	107,000	30/04/2013	240,000	30/04/2012	410,000
31/03/2016	240,000	31/03/2015	125,400	31/03/2014	138,000	29/03/2013	349,080	30/03/2012	342,465
29/02/2016	256,000	27/02/2015	115,955	28/02/2014	143,000	28/02/2013	299,590	29/02/2012	298,020
29/01/2016	232,000	30/01/2015	115,010	31/01/2014	145,000	31/01/2013	295,000	31/01/2012	438,610

Monthly CDS price on junior unsecured debt

30/12/2016	442,935	31/12/2015	334,175	31/12/2014	255,070	31/12/2013	220,000	31/12/2012	420,000
30/11/2016	470,000	30/11/2015	300,000	28/11/2014	236,070	29/11/2013	225,000	30/11/2012	460,000
31/10/2016	425,830	30/10/2015	293,200	31/10/2014	300,855	31/10/2013	300,000	31/10/2012	495,000
30/09/2016	451,770	30/09/2105	325,000	30/09/2014	305,125	30/09/2013	390,000	28/09/2012	624,990
31/08/2016	416,340	31/08/2015	256,430	29/08/2014	170,070	30/08/2013	420,000	31/08/2012	700,000
29/07/2016	416,080	31/07/2015	265,580	31/07/2014	185,520	31/07/2013	430,000	31/07/2012	775,000
30/06/2016	440,870	30/06/2015	260,000	30/06/2014	153,030	28/06/2013	405,000	29/06/2012	765,000
31/05/2016	412,025	29/05/2015	208,480	30/05/2014	142,000	31/05/2013	375,000	31/05/2012	895,000
29/04/2016	389,500	30/04/2015	246,070	30/04/2014	147,305	30/04/2013	430,000	30/04/2012	643,530
31/03/2016	463,055	31/03/2015	195,030	31/03/2014	188,000	29/03/2013	540,000	30/03/2012	565,000
29/02/2016	511,130	27/02/2015	212,500	28/02/2014	195,000	28/02/2013	454,745	29/02/2012	550,000
29/01/2016	455,815	30/01/2015	245,030	31/01/2014	220,000	31/01/2013	420,000	31/01/2012	691,955

Monthly CDS spread between junior and senior

30/12/2016	239,110	31/12/2015	156,970	31/12/2014	150,060	31/12/2013	75,000	31/12/2012	141,765
30/11/2016	245,000	30/11/2015	130,000	28/11/2014	142,060	29/11/2013	75,000	30/11/2012	175,720
31/10/2016	225,400	30/10/2015	117,700	31/10/2014	190,590	31/10/2013	100,000	31/10/2012	200,000
30/09/2016	243,515	30/09/2105	137,550	30/09/2014	185,085	30/09/2013	130,000	28/09/2012	259,300
31/08/2016	231,900	31/08/2015	107,935	29/08/2014	75,030	30/08/2013	140,000	31/08/2012	292,620
29/07/2016	220,080	31/07/2015	125,580	31/07/2014	65,250	31/07/2013	150,000	31/07/2012	300,000
30/06/2016	214,810	30/06/2015	115,000	30/06/2014	51,020	28/06/2013	130,000	29/06/2012	305,000
31/05/2016	226,595	29/05/2015	83,950	30/05/2014	42,000	31/05/2013	137,535	31/05/2012	329,000
29/04/2016	215,500	30/04/2015	125,060	30/04/2014	40,305	30/04/2013	190,000	30/04/2012	233,530
31/03/2016	223,055	31/03/2015	69,630	31/03/2014	50,000	29/03/2013	190,920	30/03/2012	222,535
29/02/2016	255,130	27/02/2015	96,545	28/02/2014	52,000	28/02/2013	155,155	29/02/2012	251,980
29/01/2016	223,815	30/01/2015	130,020	31/01/2014	75,000	31/01/2013	125,000	31/01/2012	253,345

**Raiffeisen**

Monthly CDS price on senior unsecured debt

30/12/2016	143,000	31/12/2015	212,635	31/12/2014	242,040	31/12/2013	126,785	31/12/2012	160,000
30/11/2016	136,000	30/11/2015	190,000	28/11/2014	165,810	29/11/2013	117,180	30/11/2012	185,000
31/10/2016	143,750	30/10/2015	216,495	31/10/2014	152,005	31/10/2013	137,500	31/10/2012	180,430
30/09/2016	158,490	30/09/2105	251,640	30/09/2014	180,175	30/09/2013	155,000	28/09/2012	202,970
31/08/2016	178,000	31/08/2015	234,240	29/08/2014	137,520	30/08/2013	160,000	31/08/2012	241,565
29/07/2016	200,000	31/07/2015	243,655	31/07/2014	170,040	31/07/2013	150,000	31/07/2012	255,000
30/06/2016	237,000	30/06/2015	284,000	30/06/2014	128,010	28/06/2013	155,000	29/06/2012	257,645
31/05/2016	192,375	29/05/2015	268,305	30/05/2014	125,000	31/05/2013	144,745	31/05/2012	305,000
29/04/2016	229,060	30/04/2015	235,200	30/04/2014	140,445	30/04/2013	145,000	30/04/2012	280,000
31/03/2016	300,000	31/03/2015	278,790	31/03/2014	150,000	29/03/2013	172,000	30/03/2012	258,975
29/02/2016	330,000	27/02/2015	282,040	28/02/2014	139,570	28/02/2013	165,000	29/02/2012	251,090
29/01/2016	310,000	30/01/2015	336,085	31/01/2014	127,000	31/01/2013	158,530	31/01/2012	325,000

Monthly CDS price on junior unsecured debt

30/12/2016	422,000	31/12/2015	653,345	31/12/2014	685,195	31/12/2013	220,040	31/12/2012	310,000
30/11/2016	424,000	30/11/2015	594,005	28/11/2014	538,560	29/11/2013	210,860	30/11/2012	340,790
31/10/2016	481,840	30/10/2015	694,655	31/10/2014	469,700	31/10/2013	240,000	31/10/2012	334,895
30/09/2016	522,635	30/09/2105	776,310	30/09/2014	525,800	30/09/2013	262,340	28/09/2012	368,975
31/08/2016	544,000	31/08/2015	744,005	29/08/2014	284,635	30/08/2013	265,000	31/08/2012	388,495
29/07/2016	564,000	31/07/2015	699,360	31/07/2014	275,070	31/07/2013	261,860	31/07/2012	499,970
30/06/2016	674,000	30/06/2015	780,955	30/06/2014	205,030	28/06/2013	257,880	29/06/2012	499,970
31/05/2016	625,155	29/05/2015	786,790	30/05/2014	200,000	31/05/2013	235,000	31/05/2012	450,030
29/04/2016	697,405	30/04/2015	751,415	30/04/2014	223,335	30/04/2013	290,000	30/04/2012	450,030
31/03/2016	818,770	31/03/2015	824,855	31/03/2014	240,000	29/03/2013	304,970	30/03/2012	450,000
29/02/2016	836,245	27/02/2015	926,540	28/02/2014	215,000	28/02/2013	287,290	29/02/2012	549,975
29/01/2016	822,070	30/01/2015	1585,130	31/01/2014	195,000	31/01/2013	298,330	31/01/2012	590,000

Monthly CDS spread between junior and senior

30/12/2016	279,000	31/12/2015	440,710	31/12/2014	443,155	31/12/2013	93,255	31/12/2012	150,000
30/11/2016	288,000	30/11/2015	404,005	28/11/2014	372,750	29/11/2013	93,680	30/11/2012	155,790
31/10/2016	338,090	30/10/2015	478,160	31/10/2014	317,695	31/10/2013	102,500	31/10/2012	154,465
30/09/2016	364,145	30/09/2105	524,670	30/09/2014	345,625	30/09/2013	107,340	28/09/2012	166,005
31/08/2016	366,000	31/08/2015	509,765	29/08/2014	147,115	30/08/2013	105,000	31/08/2012	146,930
29/07/2016	364,000	31/07/2015	455,705	31/07/2014	105,030	31/07/2013	111,860	31/07/2012	244,970
30/06/2016	437,000	30/06/2015	496,955	30/06/2014	77,020	28/06/2013	102,880	29/06/2012	242,325
31/05/2016	432,780	29/05/2015	518,485	30/05/2014	75,000	31/05/2013	90,255	31/05/2012	145,030
29/04/2016	468,345	30/04/2015	516,215	30/04/2014	82,890	30/04/2013	145,000	30/04/2012	170,030
31/03/2016	518,770	31/03/2015	546,065	31/03/2014	90,000	29/03/2013	132,970	30/03/2012	191,025
29/02/2016	506,245	27/02/2015	644,500	28/02/2014	75,430	28/02/2013	122,290	29/02/2012	298,885
29/01/2016	512,070	30/01/2015	1249,045	31/01/2014	68,000	31/01/2013	139,800	31/01/2012	265,000

**Allied Irish Banks**

Monthly CDS price on senior unsecured debt

30/12/2016	127,715	31/12/2015	123,575	31/12/2014	167,105
30/11/2016	123,805	30/11/2015	123,055	28/11/2014	150,960
31/10/2016	125,815	30/10/2015	129,070	31/10/2014	166,950
30/09/2016	124,435	30/09/2105	144,505	30/09/2014	168,320
31/08/2016	134,185	31/08/2015	142,775	29/08/2014	171,510
29/07/2016	139,800	31/07/2015	151,935	31/07/2014	136,495
30/06/2016	152,535	30/06/2015	139,115	30/06/2014	195,040
31/05/2016	119,420	29/05/2015	141,870	30/05/2014	175,000
29/04/2016	132,550	30/04/2015	127,040	30/04/2014	150,000
31/03/2016	140,505	31/03/2015	126,040	31/03/2014	N.A.
29/02/2016	158,935	27/02/2015	120,040	28/02/2014	N.A.
29/01/2016	156,870	30/01/2015	132,795	31/01/2014	N.A.

Monthly CDS price on junior unsecured debt

30/12/2016	251,365	31/12/2015	273,145	31/12/2014	273,350
30/11/2016	243,615	30/11/2015	272,950	28/11/2014	273,435
31/10/2016	247,865	30/10/2015	273,095	31/10/2014	270,230
30/09/2016	243,455	30/09/2105	273,060	30/09/2014	270,175
31/08/2016	263,845	31/08/2015	273,215	29/08/2014	270,305
29/07/2016	280,535	31/07/2015	273,275	31/07/2014	270,305
30/06/2016	301,695	30/06/2015	273,065	30/06/2014	275,195
31/05/2016	235,640	29/05/2015	273,205	30/05/2014	245,000
29/04/2016	272,665	30/04/2015	273,525	30/04/2014	N.A.
31/03/2016	272,545	31/03/2015	273,420	31/03/2014	N.A.
29/02/2016	272,615	27/02/2015	273,440	28/02/2014	N.A.
29/01/2016	272,905	30/01/2015	273,445	31/01/2014	N.A.

Monthly CDS spread between junior and senior

30/12/2016	123,650	31/12/2015	149,570	31/12/2014	106,245
30/11/2016	119,810	30/11/2015	149,895	28/11/2014	122,475
31/10/2016	122,050	30/10/2015	144,025	31/10/2014	103,280
30/09/2016	119,020	30/09/2105	128,555	30/09/2014	101,855
31/08/2016	129,660	31/08/2015	130,440	29/08/2014	98,795
29/07/2016	140,735	31/07/2015	121,340	31/07/2014	133,810
30/06/2016	149,160	30/06/2015	133,950	30/06/2014	80,155
31/05/2016	116,220	29/05/2015	131,335	30/05/2014	70,000
29/04/2016	140,115	30/04/2015	146,485	30/04/2014	N.A.
31/03/2016	132,040	31/03/2015	147,380	31/03/2014	N.A.
29/02/2016	113,680	27/02/2015	153,400	28/02/2014	N.A.
29/01/2016	116,035	30/01/2015	140,650	31/01/2014	N.A.

**Mediobanca**

Monthly CDS price on senior unsecured debt

30/12/2016	189,909	31/12/2015	127,316	31/12/2014	101,124	31/12/2013	157,894	31/12/2012	260,410
30/11/2016	206,794	30/11/2015	122,578	28/11/2014	93,428	29/11/2013	166,951	30/11/2012	291,249
31/10/2016	184,691	30/10/2015	132,813	31/10/2014	98,637	31/10/2013	190,334	31/10/2012	297,165
30/09/2016	190,161	30/09/2015	145,403	30/09/2014	84,973	30/09/2013	207,219	28/09/2012	328,954
31/08/2016	184,711	31/08/2015	144,502	29/08/2014	96,236	30/08/2013	209,485	31/08/2012	416,896
29/07/2016	196,250	31/07/2015	138,896	31/07/2014	93,940	31/07/2013	225,584	31/07/2012	453,095
30/06/2016	195,961	30/06/2015	133,905	30/06/2014	87,074	28/06/2013	224,385	29/06/2012	436,694
31/05/2016	177,675	29/05/2015	128,435	30/05/2014	98,185	31/05/2013	203,646	31/05/2012	421,656
29/04/2016	172,815	30/04/2015	124,071	30/04/2014	112,541	30/04/2013	253,919	30/04/2012	356,369
31/03/2016	170,898	31/03/2015	108,030	31/03/2014	126,304	29/03/2013	254,256	30/03/2012	299,404
29/02/2016	220,913	27/02/2015	104,514	28/02/2014	132,406	28/02/2013	247,347	29/02/2012	332,608
29/01/2016	153,303	30/01/2015	104,425	31/01/2014	133,911	31/01/2013	230,899	31/01/2012	467,771

Monthly CDS price on junior unsecured debt

30/12/2016	417,117	31/12/2015	245,542	31/12/2014	N.A.	31/12/2013	N.A.	31/12/2012	415,520
30/11/2016	439,030	30/11/2015	231,307	28/11/2014	N.A.	29/11/2013	N.A.	30/11/2012	465,895
31/10/2016	389,176	30/10/2015	244,046	31/10/2014	N.A.	31/10/2013	N.A.	31/10/2012	487,100
30/09/2016	N.A.	30/09/2015	256,320	30/09/2014	N.A.	30/09/2013	N.A.	28/09/2012	553,458
31/08/2016	N.A.	31/08/2015	257,452	29/08/2014	N.A.	30/08/2013	N.A.	31/08/2012	644,249
29/07/2016	N.A.	31/07/2015	245,137	31/07/2014	N.A.	31/07/2013	N.A.	31/07/2012	720,067
30/06/2016	352,877	30/06/2015	254,812	30/06/2014	N.A.	28/06/2013	N.A.	29/06/2012	851,109
31/05/2016	359,545	29/05/2015	244,964	30/05/2014	N.A.	31/05/2013	327,731	31/05/2012	778,419
29/04/2016	348,572	30/04/2015	230,427	30/04/2014	N.A.	30/04/2013	398,166	30/04/2012	604,574
31/03/2016	356,013	31/03/2015	263,082	31/03/2014	N.A.	29/03/2013	400,955	30/03/2012	510,410
29/02/2016	449,124	27/02/2015	N.A.	28/02/2014	N.A.	28/02/2013	384,016	29/02/2012	647,459
29/01/2016	298,106	30/01/2015	N.A.	31/01/2014	N.A.	31/01/2013	354,295	31/01/2012	796,248

Monthly CDS spread between junior and senior

30/12/2016	227,208	31/12/2015	118,226	31/12/2014	N.A.	31/12/2013	N.A.	31/12/2012	155,110
30/11/2016	232,236	30/11/2015	108,729	28/11/2014	N.A.	29/11/2013	N.A.	30/11/2012	174,646
31/10/2016	204,486	30/10/2015	111,232	31/10/2014	N.A.	31/10/2013	N.A.	31/10/2012	189,936
30/09/2016	N.A.	30/09/2015	110,918	30/09/2014	N.A.	30/09/2013	N.A.	28/09/2012	224,505
31/08/2016	N.A.	31/08/2015	112,949	29/08/2014	N.A.	30/08/2013	N.A.	31/08/2012	227,353
29/07/2016	N.A.	31/07/2015	106,241	31/07/2014	N.A.	31/07/2013	N.A.	31/07/2012	266,972
30/06/2016	156,916	30/06/2015	120,908	30/06/2014	N.A.	28/06/2013	N.A.	29/06/2012	414,415
31/05/2016	181,870	29/05/2015	116,529	30/05/2014	N.A.	31/05/2013	124,085	31/05/2012	356,763
29/04/2016	175,757	30/04/2015	106,356	30/04/2014	N.A.	30/04/2013	144,246	30/04/2012	248,205
31/03/2016	185,115	31/03/2015	155,052	31/03/2014	N.A.	29/03/2013	146,699	30/03/2012	211,006
29/02/2016	228,211	27/02/2015	N.A.	28/02/2014	N.A.	28/02/2013	136,669	29/02/2012	314,851
29/01/2016	144,803	30/01/2015	N.A.	31/01/2014	N.A.	31/01/2013	123,396	31/01/2012	328,478

**Bankinter**

Monthly CDS price on senior unsecured debt

30/12/2016	125,330	31/12/2015	123,525	31/12/2014	89,010	31/12/2013	140,000	31/12/2012	316,185
30/11/2016	133,000	30/11/2015	115,500	28/11/2014	84,010	29/11/2013	148,535	30/11/2012	360,000
31/10/2016	127,470	30/10/2015	118,000	31/10/2014	97,610	31/10/2013	205,000	31/10/2012	382,950
30/09/2016	133,490	30/09/2015	146,135	30/09/2014	115,010	30/09/2013	270,000	28/09/2012	473,090
31/08/2016	123,430	31/08/2015	125,550	29/08/2014	85,010	30/08/2013	326,080	31/08/2012	621,095
29/07/2016	129,000	31/07/2015	116,315	31/07/2014	110,180	31/07/2013	330,000	31/07/2012	629,995
30/06/2016	155,000	30/06/2015	127,000	30/06/2014	105,010	28/06/2013	332,825	29/06/2012	680,840
31/05/2016	126,830	29/05/2015	113,070	30/05/2014	113,000	31/05/2013	285,000	31/05/2012	600,000
29/04/2016	133,000	30/04/2015	100,380	30/04/2014	131,000	30/04/2013	321,530	30/04/2012	537,355
31/03/2016	147,450	31/03/2015	95,760	31/03/2014	147,500	29/03/2013	359,275	30/03/2012	450,000
29/02/2016	171,270	27/02/2015	96,595	28/02/2014	155,000	28/02/2013	321,260	29/02/2012	332,640
29/01/2016	152,740	30/01/2015	103,010	31/01/2014	162,500	31/01/2013	310,000	31/01/2012	482,650

Monthly CDS price on junior unsecured debt

30/12/2016	263,790	31/12/2015	225,790	31/12/2014	185,030	31/12/2013	185,015	31/12/2012	600,165
30/11/2016	278,000	30/11/2015	205,000	28/11/2014	163,520	29/11/2013	190,000	30/11/2012	630,000
31/10/2016	268,910	30/10/2015	216,360	31/10/2014	194,270	31/10/2013	290,000	31/10/2012	670,000
30/09/2016	288,495	30/09/2015	265,000	30/09/2014	210,030	30/09/2013	395,000	28/09/2012	828,680
31/08/2016	252,790	31/08/2015	237,190	29/08/2014	140,070	30/08/2013	464,990	31/08/2012	1054,430
29/07/2016	280,000	31/07/2015	218,920	31/07/2014	172,420	31/07/2013	470,000	31/07/2012	1086,765
30/06/2016	325,000	30/06/2015	225,000	30/06/2014	148,010	28/06/2013	473,025	29/06/2012	1024,985
31/05/2016	285,000	29/05/2015	212,120	30/05/2014	170,000	31/05/2013	428,240	31/05/2012	870,990
29/04/2016	283,000	30/04/2015	195,655	30/04/2014	163,600	30/04/2013	486,100	30/04/2012	789,990
31/03/2016	270,000	31/03/2015	190,010	31/03/2014	182,670	29/03/2013	539,975	30/03/2012	705,000
29/02/2016	341,850	27/02/2015	186,525	28/02/2014	195,000	28/02/2013	518,205	29/02/2012	580,000
29/01/2016	300,890	30/01/2015	200,130	31/01/2014	210,000	31/01/2013	500,000	31/01/2012	802,060

Monthly CDS spread between junior and senior

30/12/2016	138,460	31/12/2015	102,265	31/12/2014	96,020	31/12/2013	45,015	31/12/2012	283,980
30/11/2016	145,000	30/11/2015	89,500	28/11/2014	79,510	29/11/2013	41,465	30/11/2012	270,000
31/10/2016	141,440	30/10/2015	98,360	31/10/2014	96,660	31/10/2013	85,000	31/10/2012	287,050
30/09/2016	155,005	30/09/2015	118,865	30/09/2014	95,020	30/09/2013	125,000	28/09/2012	355,590
31/08/2016	129,360	31/08/2015	111,640	29/08/2014	55,060	30/08/2013	138,910	31/08/2012	433,335
29/07/2016	151,000	31/07/2015	102,605	31/07/2014	62,240	31/07/2013	140,000	31/07/2012	456,770
30/06/2016	170,000	30/06/2015	98,000	30/06/2014	43,000	28/06/2013	140,200	29/06/2012	344,145
31/05/2016	158,170	29/05/2015	99,050	30/05/2014	57,000	31/05/2013	143,240	31/05/2012	270,990
29/04/2016	150,000	30/04/2015	95,275	30/04/2014	32,600	30/04/2013	164,570	30/04/2012	252,635
31/03/2016	122,550	31/03/2015	94,250	31/03/2014	35,170	29/03/2013	180,700	30/03/2012	255,000
29/02/2016	170,580	27/02/2015	89,930	28/02/2014	40,000	28/02/2013	196,945	29/02/2012	247,360
29/01/2016	148,150	30/01/2015	97,120	31/01/2014	47,500	31/01/2013	190,000	31/01/2012	319,410

The following tables collect the average monthly price of the CDS senior, junior and CDS spread for all the banks included in the sample

### CDS on senior unsecured debt

Maturity: 5 years

Average monthly price	2012	2013	2014	2015	2016
BNP Paribas	211,560	123,793	68,440	67,806	82,193
Deutsche Bank	160,630	102,119	75,694	82,393	194,799
Credit Agricole	254,704	157,314	75,533	71,369	79,651
Société Generale	267,907	157,579	83,761	80,257	81,582
Banco Santander	346,260	236,198	93,732	102,862	139,185
UniCredit	413,255	291,231	118,748	122,611	184,089
ING Group	186,723	122,331	62,633	62,537	68,642
Banco Bilbao Vyzcaya Argentaria	364,791	248,936	95,925	102,471	134,668
Intesa Sanpaolo	383,979	270,999	98,954	92,179	136,165
Natixis	228,869	158,969	68,319	66,845	80,967
Commerzbank	233,864	151,591	91,257	86,903	120,070
ABN Amro	N.A.	108,615	67,810	64,307	75,942
Caixa Bank	N.A.	N.A.	107,630	121,905	153,183
KBC Group	299,870	153,783	85,685	58,208	58,779
Banco Sabadell	585,173	366,916	143,964	152,083	167,799
Erste Group	232,275	145,716	127,137	147,725	136,685
Bankia	879,975	579,262	136,707	138,910	172,365
Bank of Ireland Group	668,899	327,461	170,705	142,778	162,853
Unione di banche italiane	385,057	250,928	114,970	145,463	210,953
Raiffeisen	241,890	148,895	154,801	252,757	213,140
Allied Irish Banks	N.A.	N.A.	164,598	133,485	136,381
Mediobanca	363,522	214,327	104,896	126,241	187,007
Bankinter	488,900	279,125	116,237	115,070	138,168
<b>Sample average per year</b>	<b>359,905</b>	<b>218,861</b>	<b>105,571</b>	<b>110,311</b>	<b>135,446</b>



**CDS on junior unsecured debt**

Maturity: 5 years

Average monthly price	2012	2013	2014	2015	2016
BNP Paribas	378,258	200,558	110,811	137,396	175,667
Deutsche Bank	272,331	174,239	130,074	173,102	400,920
Credit Agricole	489,607	264,038	121,044	151,156	174,179
Société Generale	469,428	263,517	140,226	177,613	189,974
Banco Santander	537,487	332,927	144,931	201,341	281,891
UniCredit	672,388	447,516	183,281	258,357	389,738
ING Group	301,192	197,056	111,519	134,996	153,211
Banco Bilbao Vyzcaya Argentaria	610,631	352,427	148,061	198,470	276,081
Intesa Sanpaolo	599,546	391,155	154,174	182,541	283,332
Natixis	432,573	263,125	120,602	137,109	174,097
Commerzbank	591,417	358,555	184,863	198,999	285,713
ABN Amro	302,738	231,148	153,582	148,853	217,975
Caixa Bank	N.A.	N.A.	N.A.	N.A.	326,264
KBC Group	546,873	228,544	158,175	127,182	110,810
Banco Sabadell	1008,132	560,252	240,156	283,406	329,053
Erste Group	416,612	257,060	253,789	357,135	295,125
Bankia	1166,710	660,598	236,071	300,525	390,588
Bank of Ireland Group	N.A.	506,314	283,788	289,534	312,303
Unione di banche italiane	632,123	384,145	208,170	261,791	441,279
Raiffeisen	436,094	261,131	338,110	818,114	619,343
Allied Irish Banks	N.A.	N.A.	268,499	273,237	263,229
Mediobanca	622,876	373,033	N.A.	247,309	378,840
Bankinter	803,589	411,713	177,885	214,808	286,477
Sample average per year	<b>564,530</b>	<b>339,002</b>	<b>184,182</b>	<b>239,681</b>	<b>293,743</b>

**CDS spread between Junior and Senior**

Maturity: 5 years

Average monthly price	2012	2013	2014	2015	2016
BNP Paribas	166,699	76,765	42,372	69,590	93,474
Deutsche Bank	111,701	72,120	54,380	90,709	206,121
Credit Agricole	234,903	106,724	45,510	79,786	94,527
Société Generale	201,520	105,938	56,465	97,356	108,393
Banco Santander	191,227	96,729	51,199	98,479	142,706
UniCredit	259,133	156,286	64,534	135,746	205,649
ING Group	114,469	74,725	48,887	72,460	84,569
Banco Bilbao Vyzcaya Argentaria	245,839	103,491	52,136	95,999	141,413
Intesa Sanpaolo	215,567	120,156	55,219	90,362	147,167
Natixis	203,705	104,157	52,283	70,265	93,130
Commerzbank	357,553	206,964	93,606	112,096	165,643
ABN Amro	N.A.	122,533	85,772	84,547	142,033
Caixa Bank	N.A.	N.A.	N.A.	N.A.	173,082
KBC Group	247,003	74,761	72,490	68,974	52,031
Banco Sabadell	422,958	193,335	96,192	131,323	161,254
Erste Group	184,337	111,344	126,652	209,410	158,440
Bankia	286,736	81,335	99,365	161,616	218,222
Bank of Ireland Group	N.A.	178,853	113,083	146,756	149,450
Unione di banche italiane	247,066	133,218	93,200	116,328	230,326
Raiffeisen	194,205	112,236	183,309	565,357	406,204
Allied Irish Banks	N.A.	N.A.	103,902	139,752	126,848
Mediobanca	259,353	158,706	N.A.	121,068	191,833
Bankinter	314,689	132,587	61,648	99,738	148,310
Sample average per year	<b>234,666</b>	<b>120,141</b>	<b>78,676</b>	<b>129,896</b>	<b>158,297</b>

Comprehensive table of the results obtained each year for each bank of the sample

2016	BNP Paribas	Deutsche Bank	Credit Agricole	Société Generale	Banco Santander	UniCredit	ING Group	BBVA	Intesa Sanpaolo	Natixis	Commerzbank	ABN Amro
% Loss on Tier 1 Base case	63,93%	100,00%	100,00%	76,93%	0,00%	63,19%	25,65%	0,00%	12,02%	100,00%	24,25%	59,69%
% Loss on Tier 1 Exceptional case	27,89%	11,58%	0,00%	10,47%	20,24%	97,81%	24,27%	44,60%	18,92%	13,82%	31,44%	10,24%
Benefit score	7	10	10	9	4	4	6	3	5	10	5	8
MOODY'S	A1	A3	A1	A2	Baa2	Baa1	Baa1	Baa1	Baa1	A2	A2	A1
Numeric equivalent	5	7	5	6	9	8	8	8	8	6	6	5
CDS Senior 5y	82,193	194,799	79,651	81,582	139,185	184,089	68,642	134,668	136,165	80,967	120,070	75,942
ΔCDS 5y	93,474	206,121	94,527	108,393	142,706	205,649	84,569	141,413	147,167	93,130	165,643	142,033
<b>2015</b>												
% Loss on Tier 1 Base case	66,95%	98,41%	100,00%	81,21%	0,77%	24,64%	60,48%	0,58%	4,18%	100,00%	36,92%	74,61%
% Loss on Tier 1 Exceptional case	34,65%	20,36%	0,00%	18,01%	25,01%	54,84%	33,95%	51,43%	21,09%	15,73%	34,29%	22,04%
Benefit score	7	9	10	9	4	4	7	3	5	10	6	8
MOODY'S	A1	A3	A2	A2	Baa2	Baa1	Baa1	Withdrawn	Baa1	A2	Baa1	A2
Numeric equivalent	5	7	6	6	9	8	8		8	6	8	6
CDS Senior 5y	67,806	82,393	71,369	80,257	102,862	122,611	62,537	102,471	92,179	66,845	86,903	64,307
ΔCDS 5y	69,590	90,709	79,786	97,356	98,479	135,746	72,460	95,999	90,362	70,265	112,096	84,547
<b>2014</b>												
% Loss on Tier 1 Base case	92,35%	90,17%	100,00%	92,08%	6,16%	23,02%	37,64%	0,00%	7,97%	100%	61,58%	93,10%
% Loss on Tier 1 Exceptional case	42,99%	9,56%	7,07%	27,95%	38,18%	63,76%	1,76%	44,24%	23,26%	20,90%	63,70%	44,12%
Benefit score	8	10	10	9	4	3	7	3	5	9	5	8
MOODY'S	A1	A3	A2	A2	Baa1	Baa2	A3	Baa2	Baa2	A2	Baa1	A2
Numeric equivalent	5	7	6	6	8	9	7	9	9	6	8	6
CDS Senior 5y	68,440	75,694	75,533	83,761	93,732	118,748	62,633	95,925	98,954	68,319	91,257	67,810
ΔCDS 5y	42,372	54,380	45,510	56,465	51,199	64,534	48,887	52,136	55,219	52,283	93,606	85,772
<b>2013</b>												
% Loss on Tier 1 Base case	63,90%	100,00%	100,00%	96,49%	5,26%	28,11%	76,01%	0,00%	3,74%	100,00%	57,90%	90,48%
% Loss on Tier 1 Exceptional case	28,75%	29,70%	36,77%	36,39%	29,66%	81,18%	8,66%	50,17%	30,13%	17,26%	43,51%	49,31%
Benefit score	7	9	9	9	4	3	9	3	4	10	6	8
MOODY'S	A2	A2	A2	A2		Baa2	A3	Baa3	Baa2	A2	Baa1	A2
Numeric equivalent	6	6	6	6		9	7	10	9	6	8	6
CDS Senior 5y	123,793	102,119	157,314	157,579	236,198	291,231	122,331	248,936	270,999	158,969	151,591	108,615
ΔCDS 5y	76,765	72,120	106,724	105,938	96,729	156,286	74,725	103,491	120,156	104,157	206,964	122,533
<b>2012</b>												
% Loss on Tier 1 Base case	68,23%	100,00%	100,00%	100,00%	22,16%	4,86%	84,18%	6,71%	0,00%	100,00%	82,70%	100,00%
% Loss on Tier 1 Exceptional case	21,86%	24,72%	35,59%	27,82%	48,42%	38,82%	1,55%	62,07%	26,45%	33,86%	56,44%	72,73%
Benefit score	8	9	9	9	4	4	10	3	4	9	7	7
MOODY'S	A2	A2	A2	A2		Baa2	A3	Baa3	Baa2	A2	A3	A2
Numeric equivalent	6	6	6	6		9	7	10	9	6	7	6
CDS Senior 5y	211,560	160,630	254,704	267,907	346,260	413,255	186,723	364,791	383,979	228,869	233,864	N.A.
ΔCDS 5y	166,699	111,701	234,903	201,520	191,227	259,133	114,469	245,839	215,567	203,705	357,553	N.A.

  Downgrade

  Upgrade

	Caixa Bank	KBC Group	Banco Sabadell	Erste Group	Bankia	Bank of Ireland	UBI	Raiffeisen	Allied Irish Banks	Mediobanca	Bankinter
<b>2016</b>											
% Loss on Tier 1 Base case	13,46%	21,14%	27,79%	0,00%	11,63%	0,00%	0,00%	0,00%	0,00%	0,00%	25,88%
% Loss on Tier 1 Exceptional case	19,21%	0,12%	39,98%	30,33%	22,22%	0,00%	41,51%	33,34%	0,00%	20,73%	56,03%
Benefit score	5	7	5	4	5	6	3	4	6	4	4
MOODY'S	Baa2	Baa1	Baa3	Baa1	Baa3	Baa2	Baa3	Baa2	Baa3		Baa2
Numeric equivalent	9	8	10	8	13	9	10	9	10		9
CDS Senior 5y	153,183	58,779	167,799	136,685	172,365	162,853	210,953	213,140	136,381	187,007	138,168
ΔCDS 5y	173,082	52,031	161,254	158,440	218,222	149,450	230,326	406,204	126,848	191,833	148,310
<b>2015</b>											
% Loss on Tier 1 Base case	1,73%	21,25%	28,42%	0,00%	25,21%	8,04%	0,00%	0,00%	0,00%	0,00%	18,43%
% Loss on Tier 1 Exceptional case	18,71%	13,67%	48,84%	43,25%	31,58%	0,00%	23,64%	54,14%	0,00%	26,17%	51,45%
Benefit score	5	6	4	3	5	6	4	3	6	4	4
MOODY'S	Baa2	Withdrawn	Ba1	Baa2	B1	Ba1	Baa2	Baa2	Ba1		Baa2
Numeric equivalent	9		11	9	14	11	9	9	11		9
CDS Senior 5y	121,905	58,208	152,083	147,725	138,910	142,778	145,463	252,757	133,485	126,241	115,070
ΔCDS 5y	N.A.	68,974	131,323	209,410	161,616	146,756	116,328	565,357	139,752	121,068	99,738
<b>2014</b>											
% Loss on Tier 1 Base case	0,00%	12,24%	10,97%	11,15%	50,04%	14,62%	0,00%	11,93%	0,00%	0,00%	19,23%
% Loss on Tier 1 Exceptional case	15,00%	11,92%	42,14%	65,24%	50,27%	24,54%	26,18%	74,78%	2,58%	40,92%	44,23%
Benefit score	5	6	4	3	5	5	4	2	5	3	4
MOODY'S	Baa3	A3	Ba2	Baa2	B1	Ba1	Baa3	Baa1	Ba3		Baa3
Numeric equivalent	10	7	12	9	14	11	10	8	13		10
CDS Senior 5y	107,630	85,685	143,964	127,137	136,707	170,705	114,970	154,801	164,598	104,896	116,237
ΔCDS 5y	N.A.	72,490	96,192	126,652	99,365	113,083	93,200	183,309	103,902	N.A.	61,648
<b>2013</b>											
% Loss on Tier 1 Base case	7,56%	29,20%	23,50%	0,36%	76,36%	30,45%	0,00%	0,00%	0,00%	0,00%	25,69%
% Loss on Tier 1 Exceptional case	36,33%	31,84%	50,01%	41,48%	80,90%	45,53%	12,73%	62,62%	22,24%	56,60%	45,64%
Benefit score	4	5	4	3	5	5	5	2	4	3	5
MOODY'S	Baa3	Baa1	Ba1	A3	B1	Ba3	Baa3	A2	B1		Ba1
Numeric equivalent	10	8	11	7	14	13	10	6	14		11
CDS Senior 5y	N.A.	153,783	366,916	145,716	579,262	327,461	250,928	148,895	N.A.	214,327	279,125
ΔCDS 5y	N.A.	74,761	193,335	111,344	81,335	178,853	133,218	112,236	N.A.	158,706	132,587
<b>2012</b>											
% Loss on Tier 1 Base case	18,90%	23,56%	37,25%	0,00%	100,00%	31,16%	0,00%	0,00%	0,00%	0,00%	42,50%
% Loss on Tier 1 Exceptional case	53,98%	31,78%	73,96%	38,67%	100,00%	32,83%	57,37%	61,34%	27,00%	55,40%	67,71%
Benefit score	4	5	4	4	6	5	3	2	4	3	4
MOODY'S	Baa3	Baa1	Ba1	A3	Ba2	Ba2	Baa2	A2	Ba3		Ba1
Numeric equivalent	10	8	11	7	12	12	9	6	13		11
CDS Senior 5y	N.A.	299,870	585,173	232,275	879,975	668,899	385,057	241,890	N.A.	363,522	488,900
ΔCDS 5y	N.A.	247,003	422,958	184,337	286,736	N.A.	247,066	194,205	N.A.	259,353	314,689

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## 9. References

Acharya V., Drechsler I. & Schnable P (2011). *A Pyrrhic Victory Bank Bail-outs and Sovereign Credit Risk.*, NBER Working Paper.

Avgouleas, E., & Goodhart, C. A. (2014). *A critical evaluation of bail-in as a bank recapitalisation mechanism.* CEPR.

Barlaam R. (2017). *Atlante: non ci sono le condizioni per altri investimenti in banche venete*, Il Sole 24 Ore.

Available at: <http://www.ilsole24ore.com/art/finanza-e-mercati/2017-05-30/atlante-non-ci-sono-condizioni-altri-investimenti-banche-venete-180758.shtml?uuid=AEd9PnVB>

Bulow, J. I., & Klemperer, P. (2013). *Market-based bank capital regulation.*

Collins M. (2015). *The Big Bank Bailout.* Forbes.

Available at: <https://www.forbes.com/sites/mikecollins/2015/07/14/the-big-bank-bail-out/#37ad8fbf2d83>

Council on foreign relations (2015). *The Credit Rating Controversy.*

Available at: <https://www.cfr.org/background/credit-rating-controversy>

Deloitte white paper (May 2017). *Asset management in Italy: a snapshot in an evolutive context*, pp 10-11.

Financial Sector Advisory Center (2017). *Understanding Bank recovery and resolution in the EU: A Guidebook to the BRRD.* World Bank Group

Financial Times (2014). *Fear over Banco Espírito Santo trigger stock sell-off*

Available at: <https://www.ft.com/content/4b0ce5ce-0815-11e4-9afc-00144feab7de>

Franceschi A. (2016). *Focus su Deutsche Bank e banche austriache*, Il Sole 24 Ore.

Available at: <http://www.ilsole24ore.com/art/finanza-e-mercati/2016-07-24/focus-deutsche-bank-e-banche-austriache--161355.shtml?uuid=AD2KZ5w>

Giugliano F. (2017). *Here's What the Banco Popular Post-Mortem Shows*, Bloomberg view.

Available at: <https://www.bloomberg.com/view/articles/2017-06-14/here-s-what-the-banco-popular-post-mortem-shows>

Honohan, P. (2017). *Management and resolution of banking crises: Lessons from recent european experience*. Peterson Institute for International Economics.

Hull J. C. (2015). *Futures, Options and Other Derivatives*. Pearson, ninth edition. Page 573.

Hüser, A. (2017). *The systemic implications of bail-in*. European Central Bank.

Il sole 24 Ore (February 2013). *L'Olanda nazionalizza la banca Sns Reaal con un esborso di 3,7 miliardi. Ha fatto crac sul mattone*.

Available at: [http://www.ilsole24ore.com/art/finanza-e-mercati/2013-02-01/olanda-nazionalizza-banca-reaal-091506\\_PRV.shtml?uuid=AbcLBCQH](http://www.ilsole24ore.com/art/finanza-e-mercati/2013-02-01/olanda-nazionalizza-banca-reaal-091506_PRV.shtml?uuid=AbcLBCQH)

Ivry B., Keoun B. & Kuntz P. (2011). *Secret Fed Loans Gave Banks \$13 Billion Undisclosed to Congress*, Bloomberg Markets.

Available at: <https://www.bloomberg.com/news/articles/2011-11-28/secret-fed-loans-undisclosed-to-congress-gave-banks-13-billion-in-income>

Kremer W. (2013). *Laiki Bank: The Cyprus bank staff hit worst of all*, BBC World Service.

Available at: <http://www.bbc.com/news/magazine-22042727>

LaBrosse, J. R., Olivares-Caminal, R., & Singh, D. (2011). *Managing risk in the financial system*. Cheltenham, Gloucestershire.

Lecchi S. (2017). *The PIR: a Very Interesting Opportunity for Any Italian Saver*, Pragma International.

Available at: <http://pragma.international/article/the-pir-a-very-interesting-opportunity-for-any-italian-saver>

Lintner P. & Lincoln J. (2017). *Bank resolution and bail-in in the EU: selected case studies pre and post BRRD*, World Bank Group, pp 18-60.

- Micossi S., Bruzzone G. & Cassella M. (2016). *Fine-tuning the use of bail-in to promote a stronger EU financial system*, CEPS Special Report No. 136.
- Miyashiro A. K. (2017). *Supervisory Bodies in the Italian Banking System*, Seven Pillars Institute.
- Morgenson G. (2017). *Lessons from the collapse of Banco Popular*, NY Times.  
Available at: <https://www.nytimes.com/2017/06/23/business/lessons-from-the-collapse-of-banco-popular.html>
- Ozyasar H. (2016). *Market capitalization vs. total assets*, The Nest.  
Available at: <https://budgeting.thenest.com/market-capitalization-vs-total-assets-21419.html>
- Philippon, T. (2017). *Bail-ins and bank resolution in Europe*. Geneva: ICMB, International Center for Monetary and Banking Studies.
- Press release of the European Central Bank (June 2017). *ECB Deemed Veneto Banca and Banca Popolare di Vicenza failing or Likely to Fail*.
- Press release of the European Commission (November 2012). *State aid: Commission approves restructuring plans of Spanish banks BFA/Bankia, NCG Banco, Catalunya Banc and Banco de Valencia*.
- Raymond J., Karia P. & Knepper L. (2017). *Banco Popular: Resolution, Santander, ATI loss*. CreditSights.
- Reinhart C. M. & Rogoff K. S. (2014). *Recovery from Financial Crises: Evidence from 100 Episodes*.
- Sackey-Addo L., Adamson S., Karia P., Knepper L., Raymond J., Picagne P. & Raymond T. (2017). *Euro financial movers: Bail-in, Italian style*. CreditSights.
- Sanderson R. (2016). *Once-thriving Veneto Becomes Heart of Italy's Bank Crisis*, Financial Times.  
Available at: <https://www.ft.com/content/04869eca-b15e-11e6-9c37-5787335499a0>



Schäfer A., Schnabel I. & Weder di Mauro B. (2016). *Bail-in expectations for European banks*, CEPR.

Schoenmaker, D., & Veron, N. (2017). A "twin peaks" vision for Europe. Bruegel Policy Contribution Issue.

Sirletti S. & Weber A. (2017). *Italy Commits \$19 Billion for Veneto Banks in Biggest Rescue*, Bloomberg news.

Available at: <https://www.bloomberg.com/news/articles/2017-06-25/italy-mobilizes-up-to-19-billion-to-keep-veneto-banks-afloat>

The Economist (2017). *Is Europe's framework for resolving banks broken*.

Available at: <https://www.economist.com/news/leaders/21724394-liquidation-two-italian-banks-raises-awkward-questions-criticism-overdone>

The Economist Intelligence Unit (2011). *Amagerbanken's collapse is first test of resolution scheme*.

Available at:

[http://country.eiu.com/article.aspx?articleid=1527866337&Country=Denmark&topic=Economy&subtopic=C\\_7](http://country.eiu.com/article.aspx?articleid=1527866337&Country=Denmark&topic=Economy&subtopic=C_7)

Todescan G. (2016). *Timeline: un anno di crisi di Banca Popolare di Vicenza*, Veneto Economia.

Available at: <http://www.venetoeconomia.it/2016/03/timeline-crisi-banca-popolare-di-vicenza/>

Uymaz B. (2017). *Current debates in public finance, public administration and environmental studies*, pp 20-28, IJOPEC publication.

Van Malleghem J. & Colla B (2015). *The Bank Recovery and Resolution Directive*.

Wiley S., Pogrel R., Greig J., Heuer D. & Baierlein D. (2017). *Recent Developments in Bank Resolution – Can Bridge Banks be Resolved?*, White & Case.

Available at: <https://www.whitecase.com/publications/alert/recent-developments-bank-resolution-can-bridge-banks-be-resolved>

Zenti R. (2017). *2017, un anno nel segno dei PIR*, AdviseOnly.

Available at: <https://www.adviseonly.com/blog/investire/piani-individuali-di-risparmio/2017-un-anno-nel-segno-dei-pir/>