# German Landesbanks
# in the post-guarantee reality


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# Contents

The following abbreviations are used in this work:

| | |
|---|---|
| Asset-backed commercial paper | ABCP |
| Asset-backed security | ABS |
| Basis points | bps |
| Bayerische Landesbank | BayernLB |
| Deutscher Sparkassen- und Giroverband | DSGV |
| Hypo Group Alpe Adria | HGAA |
| Kreditanstalt für Wiederaufbau | KfW |
| Landesbank Baden-Württemberg | LBBW |
| Landesbank Berlin | LB Berlin |
| Landesbank Hessen-Thüringen | Helaba |
| Landesbank Rheinland-Pfalz | LRP |
| Landesbank Sachen | SachsenLB |
| Mergers and Acquisitoins | M&A |
| Mortgage-backed security | MBS |
| Norddeutsche Landesbank | Nord/LB |
| Structured Investment Vehicle | SIV |
| Westdeutsche Landesbank | WestLB |
| Yield to maturity | YTM |

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## Executive Summary (English)

This paper investigates the topic of guaranteed debt of German Landesbanks during the phase-out of state guarantees in the last two decades.

I use evidence from literature, as well as interviews with members of the management of Landesbanks and the European Central Bank to trace the historical origins of the guarantees, their benefits, and the reason for their cancellation. The core of the first part of the work lies in the analysis of effects of the transition period between 2001 and 2005, during which Landesbanks continued to issue guaranteed debt. I claim that a failed policy design has led Landesbanks to a hazardous strategy of taking on excessive leverage without implementing sustainable business plan changes. The excess funds raised during the transition period led Landesbanks to finance M&A expansion, venture into investing in mortgage derivatives, and induced risky lending behavior. Therefore, the transition period was the root of the vulnerability of Landesbanks to the global financial crisis. Furthermore, an analysis of the bailout packages for Landesbanks during the 2008-2009 financial crisis demonstrates that the lifeline from the state owners to Landesbanks did not end with the end of the transition period in 2005.

In my thesis, I suggest an alternative design of the transition period. According to this design, the volume of unsecured liabilities maturing in each year of the transition period would limit the issuance of state-guaranteed debt. Such a constraint would prevent Landesbanks from excessive issuance of guaranteed debt and avert some of the issues related to irresponsible deployment of excess funds.

In the second part of the thesis, I use historical bond prices to construct yield spreads of Landesbanks' unsecured debt above German government bonds and observe these spreads as they change over time. The analysis reveals that investors have required higher yield on Landesbank

debt after the cancellation of guarantees, but spreads have remained lower for the bonds of Landesbanks with large state ownership relative to the bonds of Landesbanks without state owners. Investors seem to ascribe value to the implicit support of a state owner, even once explicit guarantees are not in place.

## Executive Summary (German)

Diese Arbeit untersucht das Thema von garantierten Schulden der deutschen Landesbanken in den letzten zwei Jahrzehnten.

Ich benutze Hinweise aus der Literatur, sowie Interviews mit Mitgliedern des Managements der Landesbanken und der Europäischen Zentralbank, um die historischen Ursprünge der Garantien, ihre Vorteile und die Gründe für ihre Abschaffung zu verfolgen. Der Kern des ersten Teils der Abschlussarbeit liegt in der Analyse der Auswirkungen der Übergangsphase zwischen 2001 und 2005, während der die Landesbanken weiterhin garantierte Schulden ausgeben durften. Ich behaupte, dass die Übergangsphase die Landesbanken zu einer gefährlichen Strategie der übermäßigen Verschuldung ohne eine Umsetzung von nachhaltigen Geschäftsplanänderungen geführt hat. Die während der Übergangsphase angehäuften Finanzmittel wurden zur Finanzierung von fraglicher M&A Aktivität und spekulativen Investitionen in Hypothekenderivate verwendet. Darüber hinaus führte die Übergangsphase zu riskanter Kreditvergabe ohne adäquate Preisbildung. Daher war die Übergangsphase die Ursache der Verletzlichkeit der Landesbanken vor der globalen Finanzkrise. Zusätzlich hat eine Analyse der Rettungspakete für die Landesbanken während der Finanzkrise 2008-2009 gezeigt, dass die Landesbanken sich immer noch auf die Unterstützung ihrer staatlichen Eigentümer verlassen können.

In meiner Arbeit schlage ich eine alternative Gestaltung der Übergangsperiode vor, in der in jedem Jahr der Übergangsphase die Emissionsvolumina von staatlich garantierten Schulden auf Fälligkeiten der unbesicherten Verbindlichkeiten begrenzt wären. Solch eine Konstruktion würde einer übermäßigen Ausgabe von garantierten Schuldverschreibungen vorbeugen und sie könnte den unverantwortlichen Einsatz von überschüssigen liquiden Mitteln verhindern.

Im zweiten Teil der Arbeit benutze ich historische Preiskurse von Anleihen, um die Renditenspanne von unbesicherten Schulden der Landesbanken über Bundesanleihen aufzubauen. Ich betrachte, wie sich diese Spreads im Laufe der Zeit ändern. Die Analyse zeigt, dass die Anleger eine höhere Rendite auf Landesbankenschulden nach der Abschaffung von Garantien verlangen. Dennoch blieben die Spreads für die Anleihen der Landesbanken mit großen staatlichen Eigentumsanteilen niedriger als die der Anleihen der Landesbanken ohne Bundeslandeigentümer. Die Anleger scheinen der impliziten Unterstützung durch einen staatlichen Eigentümer einen Wert zuzuschreiben, auch wenn explizite Garantien nicht mehr vorhanden sind.

## Introduction

December 31, 2015, may seem like just another end of a fiscal year for many businesses. But Landesbanks - German state-owned wholesale banks - will record this moment as a historic threshold in their chronicles. At the end of 2015, the last €120 billion[1] of guaranteed Landesbank debt will mature, and Landesbanks will be left "on their own" in the harsh world of international debt markets. For almost half a century,[2] German public banks have relied on the backing of their owners, German states (Bundesländer) and local savings banks, in any crisis. They were spared the existential fear that the rest of the banking sector experiences during regular economic cycle downturns. However, since the 2001 Brussels Accord, Landesbanks have known that their lifeline to the state money would be cut off. A five-year grace period allowed Landesbanks to adapt to the new reality. Landesbanks' managers could not have known that in the coming years they would face not only political challenges, but also one of the fiercest financial crises in history.

Landesbanks have earned negative publicity as the potential weak link in the German banking system ahead of the stress tests conducted by European Central Bank (Ross, 2014). Greek, Italian, Portuguese and Spanish banks were thought to be in fragile condition because of depressed economic conditions in each of these countries. However, German economy has recovered faster than the rest of the Eurozone and its GDP powered past the pre-crisis level as soon as 2011,[3] so there was little apprehension that German banks might fail their stress tests. However, Landesbanks have always been a special case. They are distinct from the rest of the German

[1] Source: Bloomberg.
[2] Most of the Landesbanks were founded in the 1950's, with the exception of Landesbanks formed in former East Germany after the fall of the Berlin Wall.
[3] Source: World Bank.

banking sector by legal entity, business model, and approach to strategic expansion and/or innovation decisions.

Why are German Landesbanks relevant at all? Even today, after turbulent years following the collapse of Lehman Brothers and a 40% decline in size of the balance sheets in most Landesbanks,[4] these state-owned financial institutions employ over 30,000 people and account for approximately 20% of corporate lending in Germany (Ross, 2014). Any external shocks to Landesbanks threaten to propagate through the largest economy in the Eurozone, as evidenced by the financial crisis in 2008. Puri (2011) has proven how shocks in the US housing market spread through Landesbanks and resulted in reduced retail lending by German savings banks. Study of Landesbanks in their transition to a post-guarantee reality is therefore of systemic significance.

This paper investigates the topic of guaranteed Landesbank debt. I claim that as an unintended consequence of the phaseout period design, Landesbanks were incentivized to take on excessive leverage without implementing sustainable business plan changes. The transition period was therefore the root of the vulnerability of Landesbanks to the global financial crisis. I trace the historical origins of the guarantees, their benefits, and the reason for their cancellation. The core of the first part of the work lies in the analysis of the effects of the transition periods between 2001 and 2005, during which Landesbanks continued to issue guaranteed debt.

In the second part of the paper, I use historical bond prices to construct yield spreads of Landesbank unsecured debt over paired German government bonds and observe these spreads as they change over time. In this way, I directly compare the cost of guaranteed debt with the non-guaranteed issues. The analysis shows that the yields on non-guaranteed unsecured Landesbank debt increased

[4] Source: CapitalIQ (See Appendix section 6.3 for details).

after the cancellation of the state guarantees. Additionally, lower spreads on debt of Landesbanks with large state ownership (relative to debt of the Landesbanks without state owners) indicate that investors price in an implicit state support in the bond yields.

The first chapter of this paper introduces the guarantees in German banking system and discusses their economic benefits. I focus on the transition period and the attempts by Landesbanks to change their business models in Chapter 2. At the end of Chapter 2, I introduce an alternative design to the transition period, which would discourage Landesbanks from an excessive issuance of debt. The following chapter delineates the effect of the 2008-2009 financial crisis on Landesbanks and the reintroduction of state and federal guarantees that saved Landesbanks from collapse. Chapter 4 describes the yield spread analysis that shows how unsecured debt financing has become more expensive for Landesbanks. Finally, Chapter 5 summarizes the findings of this paper, suggests an alternative design of the transition period, and speculates about the future of the Landesbank sector.

# 1. State guarantees

## 1.1 Anstaltslast and Gewährträgerhaftung

The history of the German state banking sector itself reveals the reasoning behind state guarantees for Landesbanks. Please refer to Chapter 6 in the Appendix for a detailed analysis of the German banking sector and the role of Landesbanks as wholesale banks in the state banking sector. Since the founding of savings banks in the 19$^{th}$ century, the principal objective of the German public banking sector has not been profit maximization (Brunner et al., 2004). The public service nature of the state banking sector is widely claimed to lie in providing financial services to the underserved classes of society, as well as the German Mittelstand enterprises (Brämer et al., 2010). Savings banks, and Landesbanks as their capital markets arm, are supposed to contribute to regional development. Furthermore, individual states are large customers of their respective Landesbanks in areas including the distribution of public funds, borrowing, and solving other financing issues (Döring, 2006). States therefore had a direct interest in avoiding distress in the state banking sector. To compensate the creditors for the lower returns resulting from their communal role, savings banks, as well as Landesbanks enjoyed two guarantee mechanisms, Anstaltslast and Gewährträgerhaftung.

Anstaltslast, or "maintenance obligation", requires the state owner to fund the banks so that they can continue their operations. This is effectively a bailout guarantee because the guarantor must inject additional equity whenever necessary. Even if a public owner decided to shut down an unprofitable bank, the second mechanism, Gewährträgerhaftung (guarantor liability) ensured that the creditors were repaid in full. Effectively, any liability that a savings bank or Landesbank could not fulfill was transferred to the owner. Combined, these two mechanisms reduced the default risk

on obligations issued by state banks to the default risk of the guarantor. As Körner and Schnabel (2013) argue, the default risk of municipalities and states is extremely low due to the budgetary support commitments from the German federal government to individual states.

Bundesländer have lived up to their maintenance obligation multiple times in recent history: Helaba was rescued by the State of Hessen during the crisis in the mid-1970s (Interview I). LBBW, HSH Nordbank, and BayernLB all received an equity injection from their state owners during the 2008-2009 financial crisis.[5] The winding down of WestLB after the financial crisis is a major example of guarantor liability employed in practice.[6]

## 1.2 Landesbanks' unfair advantage

Landesbanks are widely believed to be the paramount beneficiaries of the guarantee system (see for example Fischer et al., 2014). In the banking industry, opponents have loudly protested that guarantees for Landesbanks distort competition (Fairlamb, 1999). The principal argument of the commercial banks was that the backing of Landesbanks by the state owners maintained Landesbanks' corporate credit ratings at levels above those justified by their financial strength and profitability, and thus gave them an unfair advantage in the credit markets (Körner and Schnabel, 2012). A higher credit rating typically leads to a higher investor confidence in company's obligations, which is justified mainly by confidence in the guarantor. This translates into a lower effective cost of debt than the Landesbank's creditworthiness would justify. Landesbanks whose ratings were significantly propped up by the state guarantees could issue liabilities in international as well as domestic markets at extremely favorable pricing compared to their actual profitability

[5] See for example Full Rating Report on HSH Norbank by Fitch from August 17, 2010.
[6] Portigon Financial Services company website (Portigon is one of the successors of WestLB), WestLB Archive – Chronology describes the details of the government-controlled wind down of West LB.
http://www.portigon.com/cm/content/portigon/i/en/portigon-ag/westlb-archiv/chronologie.html

and capital strength (Fairlamb, 1999). Because Landesbanks finance their balance sheets heavily in international debt markets, the refinancing benefit from the state guarantees for the Landesbanks translated into a clear operational advantage.

With debt issued at bargain prices, Landesbanks could profitably fund carry trades - borrowing at a subsidized rate to hold higher-yielding securities. Gubitz (2013) describes this strategy as investment in fixed-income securities of high ratings, with a slightly higher return than the yield of Landesbanks' own debt. Landesbanks could, for example, buy triple-A rated French government debt, which yielded a couple of basis points above the Landesbank debt for most of the late 1990s.[7] Although such an investment delivered poor return, Landesbanks did not have shareholders that ranked profitability as their highest priority (Brämer et al., 2010).

The low cost of funding in the debt markets enabled Landesbanks to undercut commercial banks on loans to businesses, increase their market share in corporate lending, and gradually crowd out commercial banks from moderate-risk lending to large German businesses and municipalities (Fairlamb, 1999).

Furthermore, Landesbanks could venture into areas that commercial banks considered too risky because they had the certainty of support of their public owners (Döring, 2006). Frequently, the guarantees became a blank check written by the federal states that the Landesbanks used to expand globally (Gubitz, 2013). An interview with a Helaba representative confirms that the guarantees encouraged the Landesbanks to venture from the traditional central banking and clearing function to areas such as securities trading and investment in ABS (Interview I).

[7] Source: Bloomberg.

Körner and Schnabel use a framework of franchise value to analyze the effect of guarantees on the risk-taking and reach a different conclusion. They maintain that under the state guarantees, Landesbanks were able to extract monopoly returns and maintain high margins, therefore maintaining high banking charter values. According to the charter hypothesis, high charter value deters risk-taking (Körner and Schnabel, 2012). Körner and Schnabel claim that the prospect of loss of the guarantee led to the risky activities. However, this theory is not consistent with historically weak financial performance of Landesbanks 2001.

Much more likely, the concept of moral hazard, as described in Cordella and Yeyati (2013), played a role in Landesbanks' risky behavior. Moral hazard occurs when the benefits and downsides are asymmetrically distributed among stakeholders of an economic undertaking. In this case, while Landesbanks were the major potential beneficiaries of operational and geographic expansion, their state guarantors carried most of the risk.

Another distinguishing feature of Anstaltslast and Gewährträgerhaftung, the fact that they were free, reinforces the moral hazard. Landesbanks and savings banks did not pay any insurance premiums for them, unlike a standard deposit insurance scheme. A 2010 OECD paper on government guarantees in the banking sector warns that free guarantees likely increase the risk of hazardous behavior (Schich, 2010). Simply put, without the risk of going bankrupt, the management of Landesbanks only needed to focus on the upside of any business undertaking. Under strict market discipline, investors would punish risk-taking by requiring higher yields on bank's debt and equity, which puts a price tag on such behavior.

Last, but not least, bank bonds with the guarantee of high-rated governments manipulate the demand for and thus pricing of other securities not benefiting from such support. Therefore, the

access of other lower-rated sovereign entities or business entities to capital may be unnaturally tight (Schich, 2010). Overall, Landesbanks enjoyed an unfair advantage in the debt markets while the guarantees encouraged risky behavior, a situation which would culminate during the transition period between 2001 and 2005.

## 1.3 Cancellation of guarantees

Mounting protests against state guarantees for the German public banking sector resulted in the filing of an official complaint by the European Banking Federation[8] against the Federal Republic of Germany at the European Commission in December 1999. The European Banking Federation maintained that Germany unfairly supported the domestic savings banks and that the guarantees were not compliant with the free-competition article of the European Treaty (Körner and Schnabel, 2012). Free guarantees as they stood seemed untenable.[9] A May 2001 response by the European Commission to the German government held that the state guarantees were not compliant with the EC Treaty and that they should be abolished. Furthermore, the EC expected the Landesbanks to return to their regional function and scale back the expansion in international markets. (Gubitz, 2013). The speed of the decision of EC caught the German public banking sector off guard (Fischer, 2014). Nevertheless, German public banks were able to negotiate a transition period before the definitive cancellation of the guarantees.

On July 18, 2001, the government of the Federal Republic of Germany and the European Commission agreed on the so-called Brussels Accord. The agreement expected immediate abolishment of Anstaltslast for public owners of savings banks and Landesbanks.

[8] European Banking Federation is a lobby group of European commercial banks.
[9] See Schich, 2010 on the hazards of costless guarantees.

Gewährträgerhaftung was to be fully abolished by July 18, 2005. All obligations issued by Landesbanks before July 18, 2001 remained under the guarantor liability. Furthermore, according to the grandfathering clause of the agreement, any liabilities issued by the savings banks and the Landesbanks between July 2001 and July 2005 would still benefit from Gewährträgerhaftung, as long as their maturity did not extend beyond December 31, 2015 (European Commission Press Release IP/02/343, 2002). The grandfathering provisions, as well as the transition period, were negotiated by the German public banks in order to smoothen the transition to the post-guarantee environment. The intent was to give the Landesbanks time to adopt new business models and funding strategies. European authorities, although they were keen to level the playing field in European banking industry as soon as possible, agreed. None of the political entities in the negotiation likely wanted to introduce additional shocks into the already shaky German economy. Landesbanks provided a substantial part of corporate lending in Germany and a dramatic shock could have potentially reduced the access of German businesses to financing (Noonan, 2013).

# 2. Effects of the cancellation of state guarantees on Landesbanks

The previous chapter explained the character of state guarantees for Landesbanks and the path to their cancellation. While the effect of cancellation on German savings banks was expected to be rather limited, Landesbanks finance their balance sheet heavily in the debt markets, and the increase in cost of debt was likely to have dramatic consequences for them (Strüder, 2006). The transition period gave Landesbanks time to adjust to the new conditions that they would face in the post-guarantee debt markets. However, the design of the policy had unintended consequences: the transition incentivized Landesbanks to issue excessive debt without actionable restructuring plans and take on unwarranted risk. Many of the effects of the transition period described in this chapter resulted in a high vulnerability of Landesbanks to the coming financial crisis. At the end of the chapter, I lay out an alternative design of the transition period, which would eliminate excessive debt issuance in the Landesbank sector.

## 2.1 Change in credit ratings

A downgrade of Landesbanks by the rating agencies was the first logical result of the Brussels Accord. Without state backing, Landesbanks' ratings adjusted to reflect the true profitability and balance sheet strength of individual banks. However, due to the continued support of the state owners during the transition period, the downgrade occurred with a lag. In July 2004, one year before the end of the transition period, Fitch Ratings downgraded all affected Landesbanks by 4 to 7 notches (Körner and Schnabel, 2012).

***Table 1*** *Overview of Landesbank downgrades following the cancellation of state guarantees. Source: Körner and Schnabel, 2012.*

| Landesbank | Original Issuer Rating | New Rating | Notches downgraded |
|---|---|---|---|
| LBBW | AAA | A+ | 4 |
| BayernLB | AAA | A+ | 4 |
| Bremer Landesbank | AAA | A | 5 |
| Helaba | AAA | A | 5 |

| | | | |
|---|---|---|---|
| Nord/LB | AAA | A | 5 |
| SaarLB | AAA | A | 5 |
| HSH Nordbank | AAA | A | 5 |
| WestLB | AAA | A- | 6 |
| SachsenLB | AAA | A- | 6 |
| LRP | AAA | A- | 7 |
| Landesbank Berlin[10] | n.a. | BBB+ | n.a. |

All existing Landesbanks at the time recorded a sharp downgrade to the level adequate for the strength of their balance sheet and earnings power (see *Table 1*). It is remarkable that the three Landesbanks with most sizeable downgrade by Fitch did not survive the crisis of 2008-2009. WestLB collapsed completely; SachsenLB and LRP were taken over by LBBW. Rating agencies in 2004 could naturally not foresee the disastrous crisis five years ahead but they already hinted at the unsustainability of Landesbanks' existing business models. Downgrades by rating agencies were the most tangible sign of the financial challenges ahead for the Landesbanks. Investors, foreign investors particularly, relied on ratings to determine required return on Landesbank debt (Interview I).

## 2.2 Risk-taking

In a widely cited study, Fischer, Hainz, Rocholl, and Steffen (2014) examined the effects of the removal of state guarantees on risk-taking of Landesbanks. Analyzing a dataset of loans from the four-year transition period, they concluded that the lending behavior of Landesbanks shifted towards riskier loans without Landesbanks being compensated by sufficiently high interest rates. Fischer et al. maintain that the expected loss in funding advantage (and thus loss of competitiveness

[10] At the time of the rating changes, Landesbank Berlin was undergoing a change in ownership which made the state guarantees non-applicable. See section 4.4 for details.

in traditional business lines) led Landesbanks to take on higher risk. (Fischer, Hainz, Rocholl and Steffen, 2014).

Market discipline feedback normally prevents banks from making risky loans that are underpriced. As soon as the investors recognized higher risk in the balance sheet, they would require higher returns on the debt issued by Landesbanks. Since a higher effective interest rate translates into higher costs, the profitability of riskier businesses typically suffers. However, Landesbanks were insulated from market discipline by state guarantees – investors priced the Landesbank liabilities according to the guarantor's rating. Therefore, the competition effect on increased risk taking dominated in the transition period (Fischer, Hainz, Rocholl and Steffen, 2014).

## 2.3 Debt issuance

Perhaps the most visible effect of the phasing-out of guarantees for German Landesbanks was the increased debt issuance during the transition period. The interview with a member of Helaba management confirmed the aggressive approach of Landesbanks to borrowing during the transition period. Between 2001 and 2005, Landesbank had the last opportunity to issue paper at artificially low prices, and demand for their high-rated paper was enormous. As a result, almost every debt issuance by Landesbanks during the transition period was oversubscribed. Investors were naturally attracted to securities that possessed the credit rating of the German government and yielded slightly higher yields. Even though Landesbanks did not have a clear strategy for a business model transformation, they took on huge volumes of debt to "load the boat" and prepare for worse times ahead. According to the Landesbank strategist, a number of Landesbanks even bought new guaranteed bonds of other Landesbanks because of the high rating, relatively attractive return, and

low risk weighting of such assets in the Basel framework (Interview I). Overall, the leverage ratio of all Landesbanks notably increased between 2001 and 2005.[11]

*Figure 1* demonstrates how the issuance of liabilities increased during the transition period. The issuance of debt significantly increased between 2003 and 2005. In particular, 2005, the last years during which Landesbanks could issue guaranteed debt, saw a sizeable activity among Landesbanks: over €95 billion of debt hit the markets. "Load the boat" strategy was confirmed in the interview with a Landesbank representative (Interview I) and scholars generally support the claim, too.[12]

**Debt issuance in the Landesbank sector**

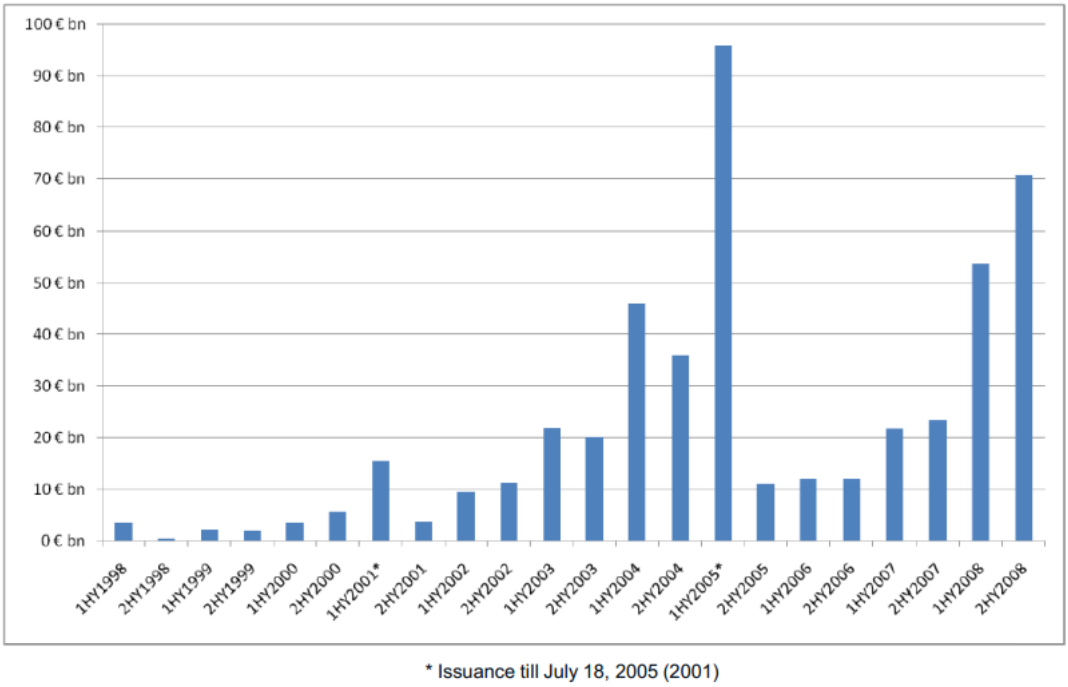



***Figure 1.*** *Debt Issuance in the Landesbank Sector. Source: Fischer, Hainz, Rocholl, and Steffen, 2014.*

[11] Source: CapitalIQ data.
[12] See for example Fischer, Hainz, Rocholl, Steffen, 2014.

Logically, today's maturity profile still shows signs of the excessive debt issuance during the transition period. *Figure 2* below reveals huge imbalances in the debt maturity profile of the largest Landesbanks. Each column represents debt principal coming due in future years for the four largest Landesbanks – LBBW, Helaba, BayernLB, and Nord/LB. The distribution is notably skewed toward liabilities coming due in 2015, which represented a large portion of total debt outstanding. Helaba shows perhaps the best maturity distribution over time, LBBW perhaps the worst. LBBW has 40 billion Euros of debt principal coming due by the end of 2015, which represents about 30% of its overall outstanding liabilities.[13] The reason behind the skewed distribution is apparent: Debt issued during the transition period before 2005 with a maturity before the end of December 2015 was still eligible for the state guarantee. Landesbank debt from the same period with a longer maturity or debt issued later did not qualify for a state guarantee. As follows from the "load the boat" tactic, Landesbanks issued large amounts of debt at the very end of the transition period to keep their runway into the post-guarantee debt markets as long as possible.

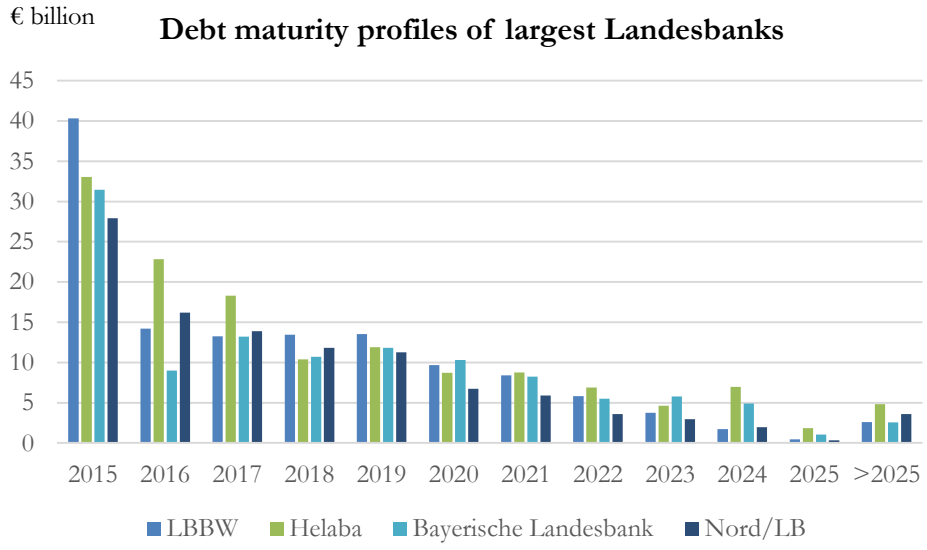



***Figure 2*** *Debt maturity profiles of significant Landesbanks. Source: Bloomberg.*

[13] Source: Bloomberg.

Given the ever-increasing capital requirements which prevent banks from repaying large amounts of debt using cash, such a maturity profile presents a challenge for the Landesbanks because they will have to refinance a third of their liabilities at one time. To a certain degree, Landesbanks are lucky to tackle this challenge in an environment of historically low interest rates (Huber, 2013). Thanks to the credit market environment, raising large amounts of debt to refinance the liabilities that are due at the end of 2015 should not be overly difficult (Moody's, 2014).

## 2.4 Change in business models of Landesbanks

At the end of 2005, the vast amount of cash that the Landesbanks raised between 2001 and 2005 had to be "put to work" because banks still had to pay (no matter how unnaturally low) interest on the borrowed money. Effectively, the business model shift, for which the Landesbanks gained time thanks to the transition period, had to happen on a much bigger scale than originally thought. Since their business model was typically not fit to shift towards purely local lending on the original scale, let alone with a rapidly growing balance sheet, management chose to park the excess liquidity in funding arbitrage vehicles. Additionally, Landesbanks had to try to improve profitability and credit metrics to diminish the shock in cost of debt once the guarantees expire. To achieve such dramatic improvement, Landesbanks had to undergo risks.

One way to mitigate the shock in the debt markets was to find funding solutions elsewhere. Traditionally, retail deposits represent a major source of funding for banks, but Landesbanks as wholesale banks did not have any access to a retail base. Bayerische Landesbank was perhaps the only exception, its DKB retail subsidiary had over 150,000 clients in 2004 and was expanding rapidly.[14] Two Landesbanks decided to acquire retail banks in their home regions to tackle the

[14] Source: Company IFRS Annual Reports.

problem head-on. LBBW acquired BW Bank in January 2002 (Gubitz, 2013). In 2013, BW had over €27 billion in deposits.[15] Helaba took over Frankfurter Sparkasse in 2005 in a deal that gave the bank access to a large retail deposit base. In 2013, Frankfurter Sparkasse was the fourth largest savings bank in Germany, with more than 400,000 retail customers and over €14.5 billion in retail deposits.[16] However, these acquisitions were an exception. The remaining Landesbanks stayed highly dependent on the domestic and international debt markets (Huber, 2013).

Another approach adopted by Landesbanks was to expand into international markets. BayernLB had already started an expansion to Central and Eastern Europe in 1996 with the purchase of Hungarian MKB. As a next step, BayernLB attempted to acquire an Austrian bank BAWAG, but lost the bidding process to the American hedge fund, Cerberus. As a consolation prize, BayernLB targeted an Austrian bank, Hypo Group Alpe Adria (HGAA), with significant activities in the Balkan region. BayernLB completed the acquisition in the fall of 2007. Nord/LB launched a joint venture DnB Nord – a bank operating in Latvia, Estonia, and Poland (Gubitz, 2013). The expansion strategy was in direct conflict with the future that the European Commission envisioned for Landesbanks. However, the Landesbanks were in desperate search of profitable future business lines, and an international acquisition in the newly accepted EU-members was an appealing way to deploy the flood of funds raised between 2001 and 2005.

Nord/LB revisited its core business and moved heavily into private banking, project financing, and airplane and ship leasing. Loans to the shipping industry remained the focus of HSH Nordbank, which emerged after a merger of LB Kiel (the Landesbank of the state of Schleswig-Holstein) and

[15] See the Annual report for year 2013 on BW Bank website: http://www.bw-bank.de/media/de/bwbank_1/pdf_1/berichte/BW_Jahresbericht_2013.pdf Accessed 05/18/2015
[16] For detailed financial data see Sparkassenrangliste 2013 at the website of Deutscher Sparkassen und Giroverband http://www.dsgv.de/_download_gallery/statistik/Sparkassenrangliste_2013.pdf

Hamburger Landesbank. HSH Nordbank was also the first Landesbank to become partially owned by a private entity and the first Landesbank to have a foreign stakeholder. J.C. Flowers, an American private equity investor entered with a $1.25 billion investment in 2006 under a promise by HSH Nordbank to float part of its equity by the end of the decade (Noonan, 2013).

Landesbanks had a choice of resorting to funding arbitrage, too, which had formed a substantial source of income in the past (Gubitz, 2013). Funding arbitrage (also commonly known as a carry trade) included borrowing at a cheap rate (thanks to the state guarantee), investing in safe instruments with a higher yield or lending the funds out at a slightly higher rate and raking in the difference (Noonan, 2013). Such business was generally not very profitable and it was unsustainable after the cancellation of guarantees. However, an attractive opportunity appeared in the latest innovative investment vehicles. The rapidly growing market in asset-backed securities (ABS), especially mortgage-backed securities from the booming US housing market, offered a miraculous investment profile. The senior tranches of ABS boasted high credit ratings by the leading rating agencies, which implied low risk. At the same time, they offered an attractive return compared to the traditional government bonds. Landesbanks could invest immense funds in such securities and quietly rake in profits without worrying about risk.

Similar to large international investment banks, Landesbanks created off-balance sheet structured investment vehicles (SIVs). Besides the funding from "mother" Landesbanks, SIVs used short-term asset-backed commercial paper (ABCP) and invested heavily in ABS, including mortgage-backed securities (MBS) and collateralized debt obligations (CDO). Hagen and Rocholl (2007, p. 4) state that "*Given the relatively small size of this market segment, many observers were surprised by the high level of exposure among Germany's publicly-owned institutions.*" Gradually, SIVs mushroomed to formidable sizes and ABCP exposure grew to worrisome proportions.

Through their respective SIVs, West LB amassed over €34 billion of ABCP exposure, Sachsen LB over €25 billion, and Bayern LB almost €16 billion. These exposures were dangerous in proportion to the aggregate size of the balance sheet, with Sachsen LB's exposure reaching 37% of aggregate balance sheet size (Acharya, Schnabl, and Suarez, 2010). According to Fischer (2014), Landesbanks had a combined exposure to ABCP conduits and SIVs of €97 billion at the end of 2006, which represented more than 8% of the total market with ABCP. The scope of these initiatives seemed to lack any rationale in both the fundamental charter for Landesbanken and their field of expertise. However, due to the state guarantees in place, rating agencies did not see this as a threat to the Landesbanks (Fischer et al., 2014).

The European Commission granted Landesbanks the transition period to smooth out their switch to a post-guarantee reality and adjust their business plans. Meanwhile, Landesbanks used the grace period to hoard a buffer of cheap debt for the coming years, expand internationally, and position themselves in the innovative segment of securities investment. The transition period led to expansion, rather than shrinking back to a regional scale, and assumption of structural risk in the ABCP funding, rather than focus on core lending activities.

## 2.5 Alternatives to the transition period design

A different design of the transition could have prevented the Landesbanks from taking on excessive amount of debt. Instead of allowing Landesbanks to issue unlimited quantity of unsecured debt, the state guarantee should have been granted only to the debt that was *refinanced* during each year of the transition period. Every year between 2001 and 2005, the amount of guaranteed issuances of Landesbank debt should have been limited by the amount of unsecured bond maturities in that year. Any additional debt would be ineligible for the state guarantee. Such

a policy design would discourage Landesbanks from "loading the boat". The advantage of cheap debt would not extend beyond the original unsecured borrowing base. Funding an expansionary policy with excessive debt issuances would thus become more expensive because investors would require higher rate of return on the non-guaranteed securities.

Furthermore, in each year, the maturity of refinanced guaranteed debt should have been fixed to the same number of years, for example 5. Any debt with longer maturity would not be eligible for the state guarantee. A fixed maturity of the guaranteed refinanced debt would ensure that the maturity profile individual banks remains flat. As a result, asymmetric refinancing risk at hard deadlines, such as the one coming up in December 2015, would be avoided.

# 3. Crises, bailouts, and reestablishment of guarantees

The decision to abolish state guarantees for Landesbanks targeted the unfair advantage that these banks allegedly enjoyed. The previous chapter discussed the actions of Landesbanks following the cancellation of guarantees. Bailout packages of 2008/2009 questioned the validity of the Eurozone's free-competition policy. The German government intervened during the financial crisis and established special purpose vehicles and bailout funds for the whole banking sector, including Landesbanks. States also jumped in to help and demonstrated that Landesbanks could still rely on the support of their state owners.

## 3.1 Berlin real estate prelude

Before the major crisis in the US destroyed the dreams of Landesbanks about capital market activities as a sustainable source of profits, Landesbank Berlin was caught in the whirlwind of a real estate crisis. A €2 billion equity injection by the State of Berlin in August 2001 saved it from a complete collapse. However, the European Commission conditioned the LBB bailout by the State of Berlin working towards divesting its 81% stake in the Landesbank (Gubitz, 2013). Eventually, after a lengthy restructuring, Landesbank Berlin shed all of its non-core operations including international business and the Deutscher Sparkassen und Giroverband took over the Berlin's stake in 2007.[17] To a great degree, the transformation into a large saving bank saved Berliner Landesbank from the turmoil of the financial crisis. Landesbank Berlin became the first Landesbank without any state ownership, the significance of which is explored in Chapter 6. As

[17] See official website of Landesbank Berlin Holding section Finanzberichte.
http://www.lbb.de/landesbank/de/10_Veroeffentlichungen/10_finanzberichte/025_Offenlegungsmeldungen/index.html

of 2015, DSGV has fully wound down the wholesale and capital market operations of Landesbank Berlin and renamed the remaining savings bank business to Berliner Sparkasse (Neuhaus, 2014).

## 3.2 Not-so-riskless arbitrage

By definition, an arbitrage trade yields a riskless profit. The funding arbitrage of investing in AAA-rated MBS, however, proved to bear far more risk than expected. The high agency ranking of mortgage-backed securities did not reflect the structural risk of the housing market, and a downward spiral of the U.S. subprime crisis started to hit Landesbanks' financials as early as 2007 (Gubitz, 2013). WestLB lost €1.6 billion due to a €1.3 billion write-down of its structured investments, and Sachsen LB sunk deep into liquidity crisis due to the support for its ABS-focused SIV in Ireland. Losses of LBBW from the subprime-related investments were estimated to surpass €2 billion, and HSH Nordbank published a 2.8 billion Euro loss for 2008 due to an estimated 1.1 billion Euro loss in funding arbitrage trades (Gubitz, 2013). The off-balance sheet SIVs, the jewels of Landesbanks' dynamic transformation to globally relevant banks, threatened to take under their own sponsors (Hagen and Rocholl, 2007).

## 3.3 Other losses and state support

BayernLB did not incur life-threatening losses in financial derivatives but suffered from a failed expansion policy. A pompous expansion turned sour when the financial crisis crushed the loan portfolio of HGAA in the Balkans. By the end of 2009, the troubled acquisition could be saved from a crash only by the Austrian government taking over HGAA for symbolic 1 Euro (Spiegel Online, 2009). BayernLB wrote off its whole investment, which resulted in a billion-euro loss. A few months later BayernLB sued the Austrian government for alleged unfulfilled liabilities. Until today, the open litigation over the bailout of HGAA remains a tombstone of Landesbanks' failed

M&A efforts (Spiegel Online, 2009). LBBW, too, had a less than lucky hand in acquisition choice. In August 2007, it acquired the stake of the State of Saxony in the sinking SachsenLB. Losses from SachsenLB's SIVs wreaked havoc in the LBBW financials only a couple of months later (Shinde, 2010). BayernLB, as well as LBBW both had substantial ABS positions leading to the necessity of capital injections and the failed HypoAlpe and SachsenLB acquisitions just emphasized the problem even further.

In the course of the crisis, state owners invested billions of euros in the bailouts of Landesbanks. *Table 2* details the state support of individual state governments to their Landesbanks. Savings banks, the second group of owners of Landesbanks, were not ready to pay billions in support of their central banks and suffered dilution of their stakes (Gubitz, 2013). Savings banks' inactivity also drew criticism from the European Commission, which required that all owners participate in the capital injections (Gubitz, 2013). The European Commission was much more lenient on the state support for Landesbanks during the financial crisis due to the severity of the turmoil in the finance industry. However, it still required major restructuring of LBBW and BayernLB, the two major recipients of state aid (Inverardi, 2012). WestLB was completely wound down through a bad bank set up by the German government and ceased to exist as of 2012. Its savings banks segment was taken over by Helaba (Shinde, 2010).

Helaba and Nord/LB were the only banks that were not significantly hurt by the financial crisis. Helaba did not receive any support from its state owner nor from the federal Financial Market Stabilization Fund (Fitch, 2010). The leadership of Helaba prides itself on conservative risk management and claims that the experience with the real estate crisis in the 1970s prevented the bank from engaging in activities where Helaba had little or no expertise, including ABS investments (Interview I).

## 3.4 Involvement of German federal government

The German government reacted to the collapse of Lehman Brothers with a Financial Market Stabilization Law (Finanzmarktstabilisierungsgesetz) enacted on October 17, 2008. The government designed the Financial Market Stabilization Fund (SoFFin) totaling €480 billion to help banks borrow liquidity during the credit market freeze and maintain capital levels incurred due to large write-offs of toxic assets. Up to €80 billion was available for equity injection and €400 billion stood available for banks to use as a line of credit. (Gubitz, 2013). Additionally, the SoFFin offered German banks guarantees on newly issued debt for a fee of 0.5% and 2% p.a.[18] Landesbanks were one of the large recipients of both equity injections and silent participation investments through the SoFFin (see *Table 2* for details).

[18] See the website of Financial Market Stabilization Fund, section *Guarantees* on http://www.fmsa.de/en/fmsa/soffin/ for detailed description of guarantee measures.

| | HSH Nordbank | Bayern LB | LBBW | West LB |
|---|---|---|---|---|
| **Bailout measures received from the Respective state owners** | €3bn equity injection €10bn 2nd-loss asset guarantee (€3.2bn first loss borne by HSH) | EUR7bn equity injection €3bn silent participation €4.8bn 2nd- loss asset guarantee (€1.2bn borne by BayernLB) | €5bn equity injection €12.7bn 2nd-loss asset guarantee | Federal bad bank scheme implemented (€77bn total assets in total transferred) |
| **Drawn SoFFin funding guarantee** | EUR17bn (cut from EUR30bn in Q409) | EUR5bn (cut from EUR15bn in Q409) | None | None |
| **Planned asset shrinkage (%)[19]** | 50 | 35 | 40 | 50 |
| **Achieved shrinkage as of 12/2013 [20]** | 48 | 56 | 39 | NA |
| **Key shrinkage measures** | Internal restructuring unit, termination of non-core businesses and sale of subsidiaries/participations | Internal restructuring unit, sale of HGAA, LB(Swiss) and majority share in SaarLB | Sale of participations; termination of non-core businesses | Spin-off of non-core and impaired assets to federal government sponsored runoff institution; sale of WestImmo and other assets |
| **Change of control (CoC) required by the EC** | Fitch expects a medium-term exit deadline | Fitch expects a medium-term exit deadline | No CoC required | Binding implementation was successfully completed by 2011 |

***Table 2*** *Comparison of support received by Landesbanks from their state-owners during the crisis*
*Source: Fitch Ratings Report, HSH Nordbank. 17 August 2010.*

Hassel and Lütz (2012) describe the intervention of the state in banking as a return to the post-war strict banking regulation. Besides the significance of the government bailouts from the political point of view, the event is a confirmation of unrelenting support of the state owners for the Landesbank sector.

## 3.5 HSH Nordbank as the precedent for re-establishment of state guarantee

[19] In % of total assets at end - 2008, excepted WestLB (reference date is end - 2007) and BayernLB (target is expressed as % of RWA).
[20] Own calculations based on CapitalIQ data.

The situation in HSH Nordbank was peculiar because of the stake held by J.C.Flowers, which had entered with a $1.25 billion investment in 2006 and with plans to exit by public issuance of the bank's equity. However, the large losses that HSH Nordbank incurred in its shipping lending eliminated the possibility of an early IPO. J.C. Flowers stays locked in the investment as of April 2015.

By 2011, HSH Nordbank had paid down 3 billion euros of government guarantees since 2009. Noonan (2013, 2) states that the management was obsessed with telling a positive story and repaid much more than it could afford to release from the balance sheet. Nordbank's financials slipped back into red territory in 2011 due to a sustained downturn in the shipping industry. Consequently, in 2012, the State of Schleswig-Holstein and the State of Hamburg had to increase guarantees back to 10 billion euros (Magnusson, 2012). The European Commission tenatitvely gave a green light to the lifeline under conditions of €120m annual guarantee payments (EC Press Release IP-13-589, 2013). The final ECB approval will likely hinge on a further shrinkage of balance sheet and the creation of a bad bank for HSH Nordbank's underperforming loans.

The repayment and later reestablishment of a state guarantee for HSH Nordbank marks an important precedent: After the harsh financial crisis in 2008/2009, the European Commission seems to be quite lenient on allowing additional support from the state owners to Landesbanks. Although completely free guarantees are never going to return, investors still assume implicit support for Landesbanks from their state owners and price unsecured debt of Landesbanks accordingly. The following chapter studies the effects of the cancellation guarantee on yield spreads of unsecured bonds of individual Landesbanks.

# 4. Refinancing costs – Yield spread analysis

In the first part of this thesis, I have shown how the transition period has led Landesbanks to a hazardous strategy of taking on excessive leverage without implementing sustainable changes in their business plans. During the subsequent financial crisis, state owners and the federal government had to step in to save Landesbanks even at the cost of reestablishing official state support. This chapter uses the pricing data on Landesbank unsecured debt to construct yield spreads over German government bonds. Observing these spreads over time reveals that investors have required higher yield on Landesbank debt after the cancellation of guarantees, but an implicit guarantee likely remains priced in the bonds of Landesbanks with large state ownership.

The lower cost of borrowing was central to the claims by the commercial banks that Landesbanks enjoyed an unfair operational advantage (Fischer et al., 2014). The lower cost of funding, after all, allowed Landesbanks to participate in the funding arbitrage investments described in Chapter 4, as well as risky ventures that other banks could not afford (Döring, 2006). Multiple scholars investigating the transformation of the German state banking sector made the claim that the cancellation of guarantees would lead to an increase in costs for Landesbanks (for example, Körner and Schnabel, 2013).

"*For a Landesbank refinancing in national and international capital markets, explicit government guarantees are reflected immediately in lower bond rates. … a comparison of interest rates on Landesbank bonds gives some indication of the actual increase in funding costs. Based on issues of BayernLB and HSH Nordbank in February 2007, industry analysts estimate that interest rates rose by 10 (senior unsecured debt) to 20 basis points (subordinated debt) due to the abolition of guarantees*" (Körner and Schnabel, 2013, pp.2, 10)

Körner and Schnabel use interest expense over total assets, as well as interest expense over liabilities as a proxy for cost of funding for savings banks. However, checking and time deposits dominate the liability side of a savings bank's balance sheets, which will understate the real increase in cost of financing after the cancellation of guarantees. Deposits are interest-bearing liabilities but the rates that depositors require are generally lower than the interest on bonds (Krozsner, 2013). Furthermore, the customers in geographies where savings banks operate likely did not react to the cancellation in guarantees in the same way as bondholders. For Landesbanks, interest expense over assets has some significance. However, the mix of liabilities on Landesbanks' balance sheets includes secured debt,[21] unsecured debt, and short-term deposits of savings banks. A change in the debt funding mix complicates the observation of the effect of cancellation of guarantees.

My empirical analysis draws on Kroszner's paper "A Review of Bank Funding Cost Differentials" (2013), whichoutlines multiple methods of measuring funding costs. Kroszner's work outlines multiple methods of measuring funding costs among global banks that are relevant to Landesbanks, too: Bond yields (either implied by price at issuance or based on historical trading quotes) and CDS spreads. In my analysis of the funding cost of German Landesbanks, I focus on the spread of yield to maturity (YTM) of unsecured bonds issued by Landesbanks over the YTM of German government bonds of the same maturity.

At the beginning of 2015, there were multiple liquid liabilities of German Landesbanks traded in the market[22] from both guarantee and post-guarantee periods. The time distance from the Brussels Accord allows us to look at the evidence in historical bond prices of both guaranteed and post-

[21] For example Pfandbriefe.
[22] The majority of the unsecured bonds are traded over-the-counter, not on an official bond exchange.

guarantee liabilities and assess whether indeed there has been any significant change in the cost of debt financing for Landesbanks.

## 4.1 Method

To construct the yield spread, I first identify non-callable unsecured bonds of six major Landesbanks (BayernLB, Landesbank Berlin[23], LBBW, HSH Nordbank, Helaba, and Nord/LB. These institutions are much larger than Landesbank Saar in terms of balance sheet size,[24] and their significance earned them a slot in the European Central Bank stress test of 2015. Although this paper neglects Landesbank Saar due to its size, the pricing data of their unsecured bonds generally supports the claims that follow. Furthermore, I use YTM spreads on bonds of commercial banks, Commerzbank and Deutsche Bank, as control observations. Deutsche Bank and Commerzbank are first and second largest German commercial banks by assets. [25]

Why unsecured bonds? Unsecured corporate bonds are sensitive to the financial health of the issuer, because there is no collateral securing the claims of creditors. Owners of unsecured bonds rely solely on the future cash flow generated by the issuer and the interest rates charged on unsecured debt should therefore reflect the issuer's financial health. This is of course not the case when the debt has a state guarantee, in which case an unsecured claim suddenly enjoys the creditworthiness of its guarantor. Unsecured bonds are therefore an ideal tool for the analysis set forth by this thesis. Furthermore, unsecured bonds historically comprise about a third of the liabilities of German Landesbanks; therefore, an increase in the cost of unsecured debt funding has implications for Landesbanks' financing cost overall (Strüder, 2006).

[23] Landesbank Berlin is included in the analysis, although as of 2015, it has fully transformed into a savings bank.
[24] Source of data: CapitalIQ, as of February 2015.
[25] Source: CapitalIQ, as of Q3 2014.

Second, I identify a benchmark security with maturity and coupon profile that match the unsecured Landesbank issuances. The benchmark security that I use is the government bond of the Federal Republic of Germany, because yields on these bonds are widely accepted as a risk-free rate in the European economic space. German bonds are an especially good base rate for the German Landesbanks because German states, the (partial) owners of Landesbanks, have a funding profile closely linked to the federal government. Additionally, all government debt is unsecured and therefore corresponds to the seniority/collateralization level of unsecured Landesbanks debt. I identify a matching German government bond based on two criteria: identical coupon type (fixed vs. floating) and matching maturity. Where exact Landesbank debt month of maturity could not be matched with a corresponding government bond, I used the nearest-maturity German bond. All pairs of securities used for YTM spreads are included in the Appendix, section 8.2.

Below is an example of two securities used in the construction of a spread:

- BayernLB 10-year unsecured bond with fixed coupon, issued in August 2004 and maturing in December 2015
- German 10-year government bond with fixed coupon, issued in November 2005 and maturing in January 2016.

I use these two securities for the construction of a spread from November 2005 onwards, based on the assumption that bonds with a similar maturity date display similar term structure of interest rates. Furthermore, it is important to match a fixed-coupon Landesbank bond with a fixed-coupon German government bond because floating-coupon bonds have fundamentally different YTM characteristics.

Next, I convert the bond prices of both securities to yield to maturity using YTM function on Bloomberg terminal. Yield to maturity is a practical tool to measure required return across

securities with different coupon rates. At any point in time, it reflects the required return of investors who would hold a security to maturity.[26]

Finally, I define the spread of YTM of a Landesbank bond above the YTM of a corresponding German government bond and observe the development of this spread over time. Intuitively, the higher the credit risk of an issuer, the higher return investors require, which manifests itself in higher yield spreads on safer or risk-free security (Hu, 2005).[27] Therefore, YTM spread provides a useful proxy for the cost of funding for Landesbanks.

There are multiple complications associated with comparing the development of refinancing cost based on a spread above German government bonds:

First, unsecured debt may benefit from an implicit on conjectural guarantee. Since the impact of the cancellation of state guarantees on unsecured debt of Landesbanks is visible even despite this complication, my analysis neglects the effects of conjectural guarantee. Second, the spread tends to decrease in the final months as the bonds near maturity - this is consistent with the results of the study by Diaz and Navarro (2002) who found that the yields decline towards maturity due to liquidity premiums, not because default event becomes less likely (Diaz and Navarro, 2002). Third, the spread may widen in highly distressed periods in the markets, when German bonds are in high demand due to their liquidity. The liquidity premium would prop up the prices of German government bonds and decrease YTM, thereby increasing the spread defined above. Last, YTM may not be as accurate a proxy for measuring funding costs as spreads at issuance, because the issuer continues to make stable coupon payments independent of the changing price of the bond.

[26] See, for example, the Investopedia article on YTM at http://www.investopedia.com/terms/y/yieldtomaturity.asp
[27] Additionally, see, for example, Investopedia.com article for a definition of simple yield spread. http://www.investopedia.com/terms/y/yieldspread.asp

Unfortunately, historical data on spreads at issuance is not readily available for Landesbanks' unsecured debt. However, I assume that continuous YTM spread quotes are indicative of the spreads at issuance experienced by Landesbanks during the period of observation.

## 4.2 Hypothesis

I suggest that there are two major effects of the guarantee cancellation observable on the YTM spreads.

H1. The spread has increased (shifted upwards) for the liabilities issued after the guarantee cancellation.
H2. Investors assign higher premiums to Landesbanks with no state ownership.

To gather data for the analysis, I identify Landesbank unsecured bonds issued at the following times:

a. Before the transition period (before July 18, 2001)
b. During the transition period (between July 18, 2001, and July 18, 2005)
c. After the final cancellation of guarantee (i.e., from July 18, 2005, onwards)

Where available, YTM data from these three periods will allow us to directly compare the funding costs faced by Landesbanks. The yields on securities issued pre-transition and during the transition should not show large differences because the guarantee still applied. However, the pre-transition securities may show the effect of the announcement of the Brussels Accord on yield spread. Especially interesting are the distress periods in 2008-2009 during which many German Landesbanks were on the verge of collapse, saved from bankruptcy only by state and federal assistance (see Chapter 3 for detail on state support to Landesbanks). Similarly, one would expect that spreads to widen during the European debt crisis of 2011. A direct comparison of guaranteed

and non-guaranteed Landesbank bonds from this period promises to shed light on the increase in funding costs.

The following pages provide the result of the yield spread analysis in a graphic output.

## Spread analysis of HSH Nordbank bonds

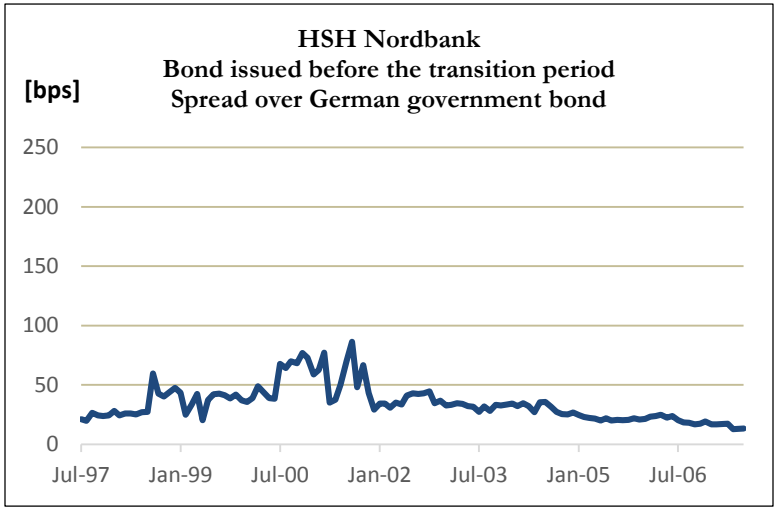



*Figure 3 HSH Nordbank pre-transition bond*

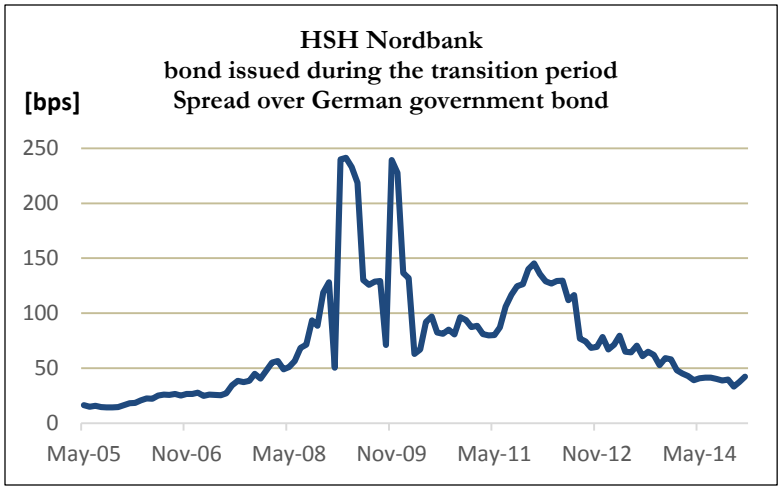



*Figure 4 HSH Nordbank transition bond*

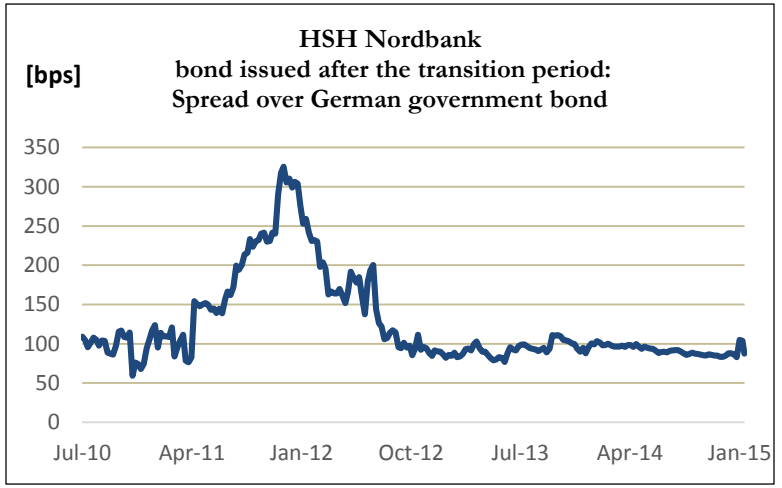



*Figure 5 HSH Nordbank post-transition bond*

Pricing data of HSH Nordbank reaches to the time before the Brussels Accord in 2001 and allows us to assess their immediate impact. *Figure 3* shows a notable period of elevated spreads during the months leading up to the EC decision. Spreads are approximately 50 bps higher than normal until the end of 2001, when they fall back to levels below 50 bps.

A comparison between *Figure 4* and *Figure 5* shows that the spread is around 30 bps lower for guaranteed debt in the regular periods and over 100 bps lower in distressed phases such as the second half of 2011 (the period of the Euro debt crisis).

## Spread analysis of Helaba bonds

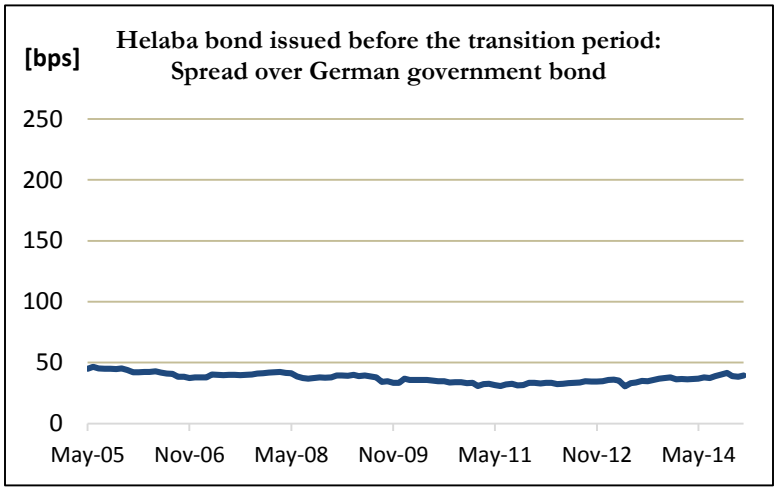



*Figure 6 Helaba pre-transition bond*

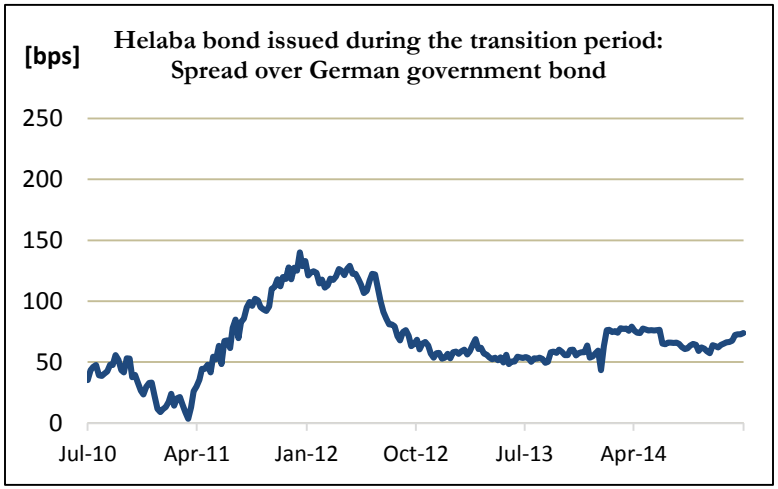



*Figure 7 Helaba transition bond*

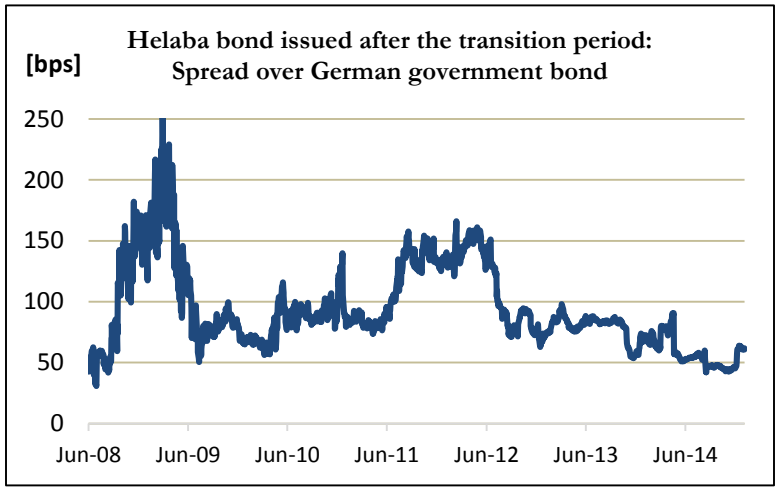



*Figure 8 Helaba post-transition bond*

Pricing history on Helaba unsecured bonds issued before 2001 is unfortunately only available from 2005 onwards. However, it is apparent that guaranteed bonds are extremely stable. They trade at a yield just some 40 bps above the German government bond even during the worst turmoil of the 2008/2009 crisis.

Comparison of *Figure 7 and Figure 8* reveals that the spread is slightly (30 bps) lower for guaranteed debt in the regular period and this difference does not widen even during the distressed period in the market in the second half of 2011.

## Spread analysis of BayernLB bonds

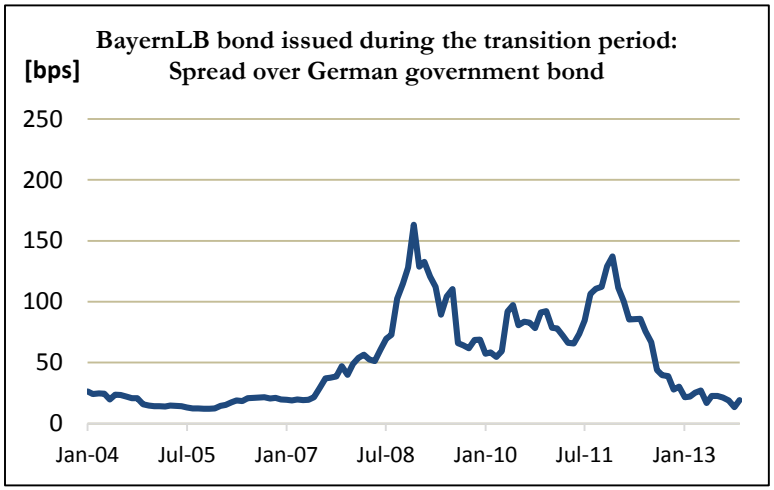



*Figure 9 BayernLB transition bond*


*Figure 10 BayernLB post-transition bond*

Only the younger bonds of BayernLB offer sufficient data to construct YTM spreads. However, even these bonds reveal a significant increase in spread for non-guaranteed debt.

In the standard environment before 2007 and after 2011, BayernLB's guaranteed debt yield spread is firmly below 50 bps. The yield spread on non-guaranteed debt is approximately 50 bps higher and experiences significant volatility. During distressed periods in 2008/2009, as well as in late 2011, the non-guaranteed debt spread rises to 250 bps, over 100bps higher than the guaranteed issuances.

## Spread analysis of Nord/LB bonds

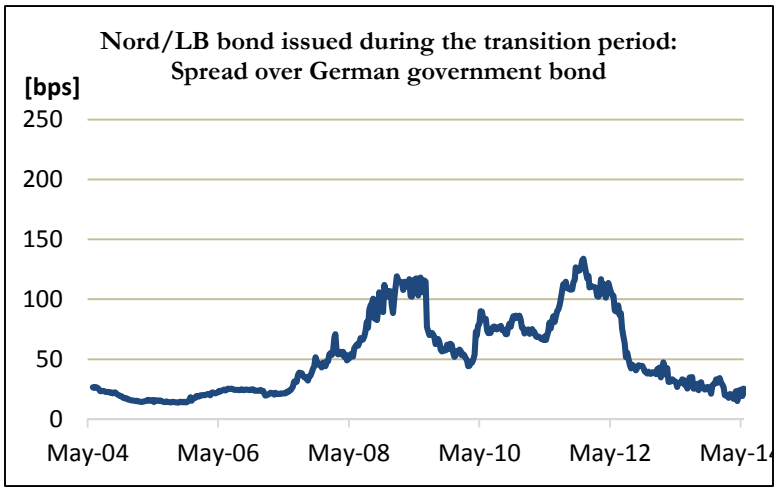



*Figure 11 Nord/LB transition bond*


*Figure 12 Nord/LB post-transition bond*

Multiple Nord/LB bonds issued before the end of the transition period offer sufficient data to construct YTM spreads. The case displayed in *Figure 11* confirms that yields spreads on bonds issued between 2001 and 2005 are less volatile and overall lower.

A comparison of *Figure 11* and *Figure 12* reveals that the spread is around 30 bps lower for guaranteed debt in the regular environment. This difference persists even during the distressed period in the market in the second half of 2011.

## Spread analysis of LBBW bonds

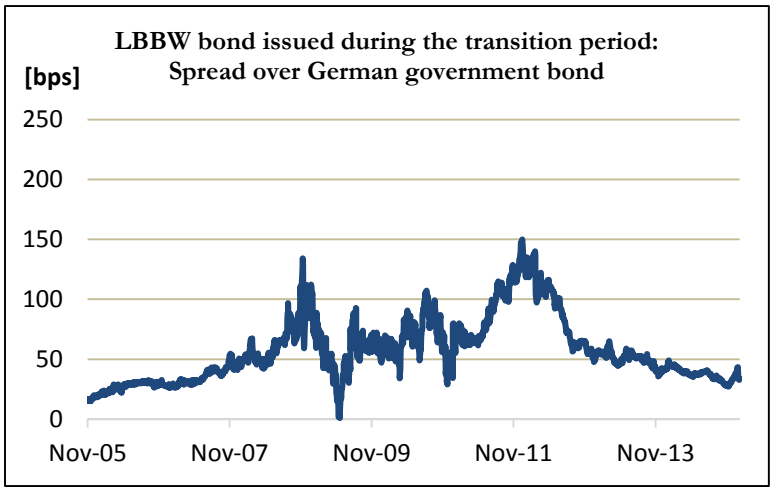



*Figure 13 LBBW transition bond*

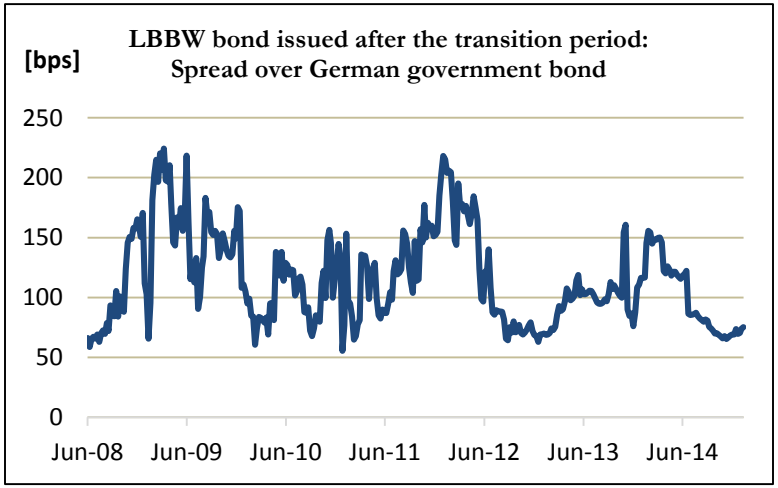



*Figure 14 LBBW post-transition bond*

Yield spreads of LBBW unsecured bonds paint a picture similar to that of the rest of the Landesbanks. Overall, the non-guaranteed bond yield spread is approximately 50 bps higher than the guaranteed one.

The guaranteed debt spreads fluctuate between 25 bps and 75 bps in the regular market environment and increase up to 150 bps in distress periods. By contrast, non-guaranteed debt shows an elevated spread for most of the time between 2008 and 2014. Crisis periods in 2008/2009 and late 2011 propel the spread to highs of around 200 bps.

## Spread analysis of Landesbank Berlin bonds

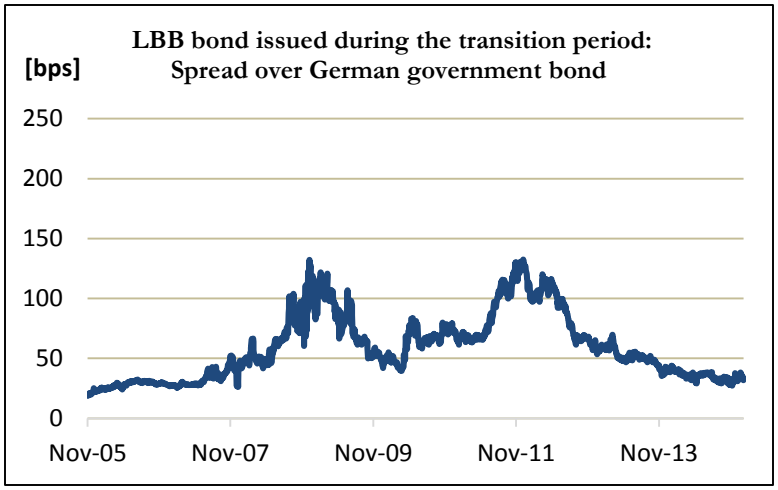



*Figure 15 LBB transition bond*

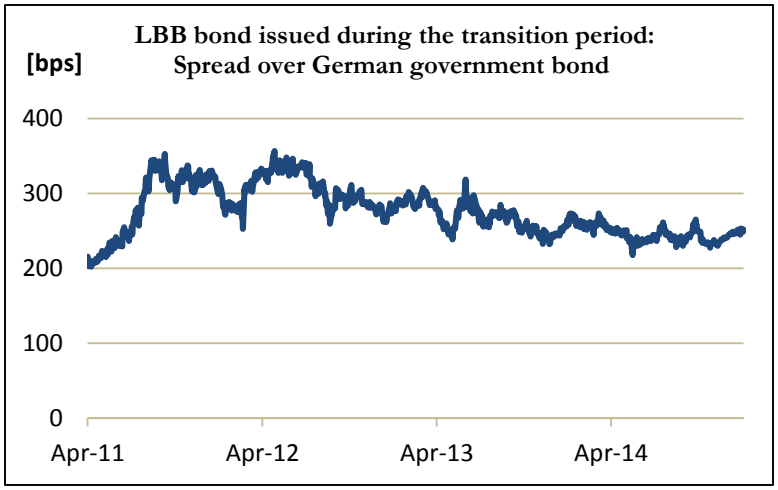



*Figure 16 LBB post-transition bond*

YTM spreads of Landesbank Berlin bonds issued during the transition period look very similar to the YTM spreads of other Landesbanks. The regular spread is generally contained below 50 bps and grows up to 120 bps in the crises of 2008/2009 and late 2011.

However, there is a notably higher yield spread for the post-guarantee unsecured debt of Landesbank Berlin. Even after the Euro debt crisis abated, the spreads of Landesbank Berlin remained permanently elevated above 200 bps.

## Spread analysis of Commerzbank and Deutsche Bank bonds

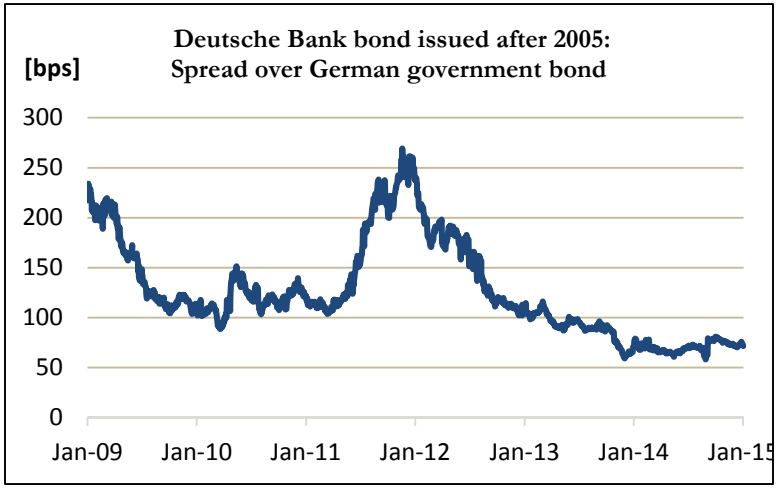



*Figure 17 Deutsche Bank bond issued after 2005*

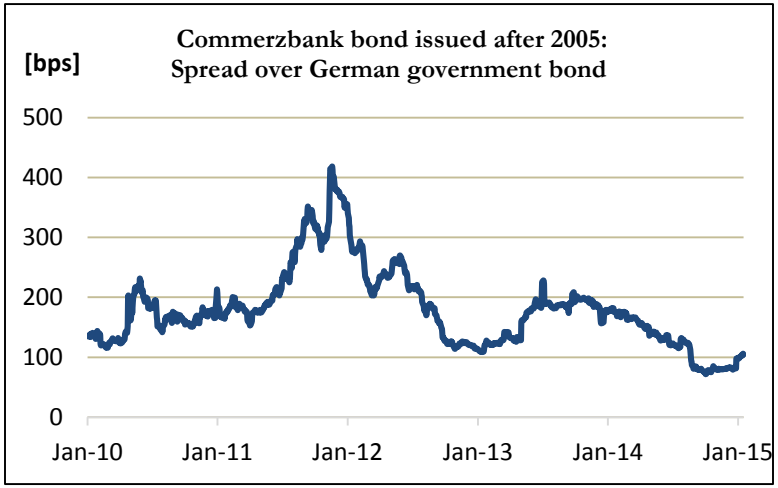



*Figure 18 Commerzbank bond issued after 2005*

Deutsche Bank is the largest German commercial bank and the largest German bank overall. The spread of its unsecured bonds yield above the German government bond yield grows in the Euro debt crisis of late 2011 but then declines to levels below 100bps.

Commerzbank is the second largest German commercial bank and its spread above the German government bond shows similarities to those of German Landesbanks. As the distress of late 2011 subsides, the spread returns to the normal level of around 100 bps.

## Comparison of recent spreads of individual Landesbanks and commercial banks

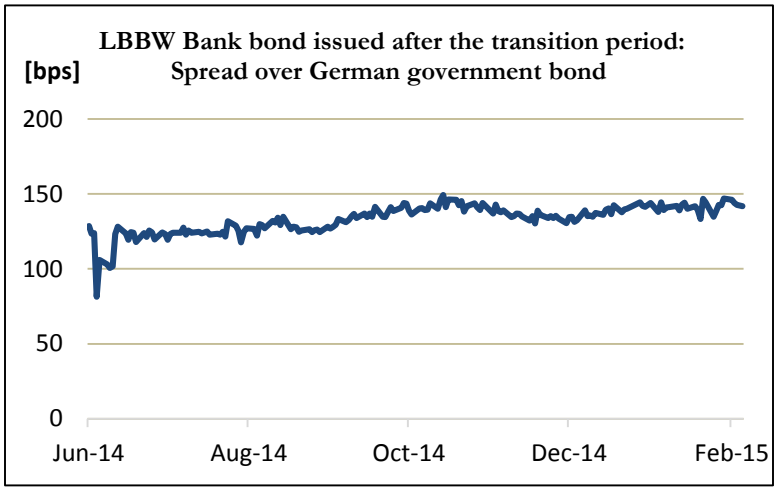



*Figure 19 LBBW recent spread*

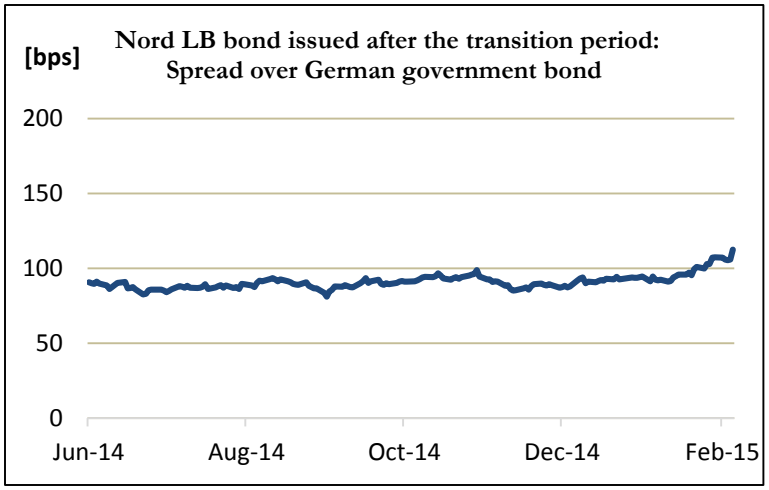



*Figure 20 Nord/LB recent spread*

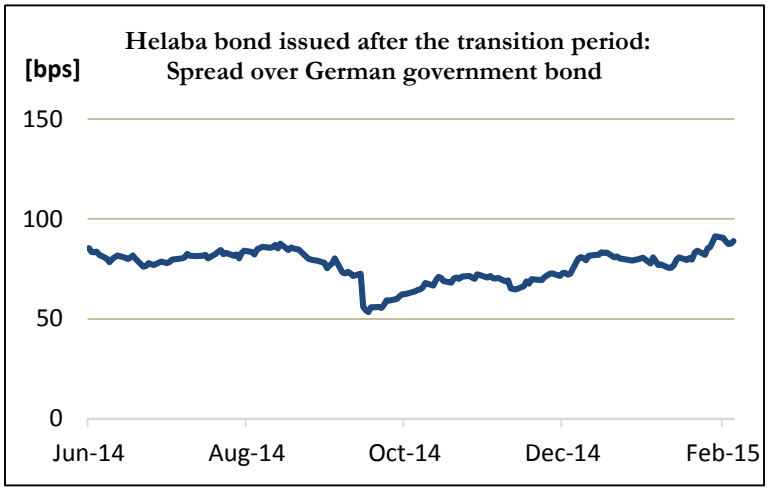



*Figure 21 Helaba recent spread*

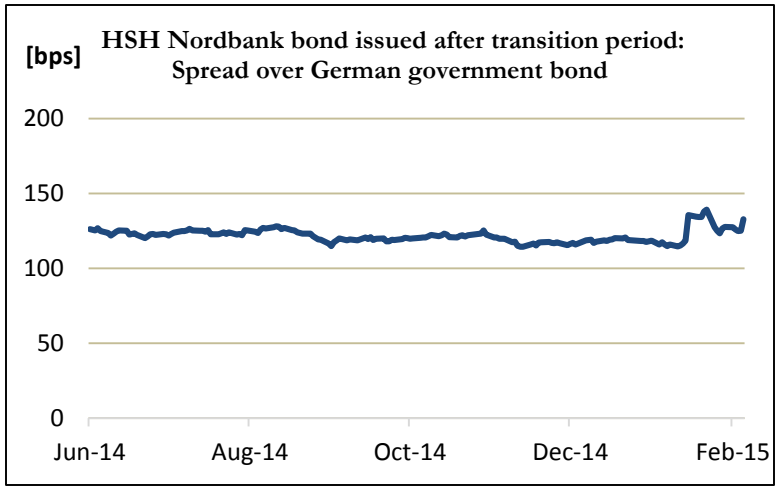



*Figure 22 HSH Nordbank recent spread*

## Comparison of recent spreads of individual Landesbanks and commercial banks (continued)

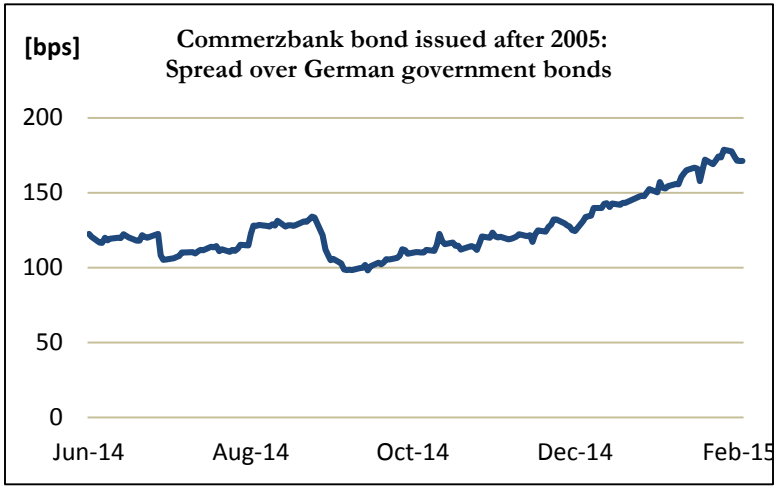



*Figure 23 Commerzbank recent spread*

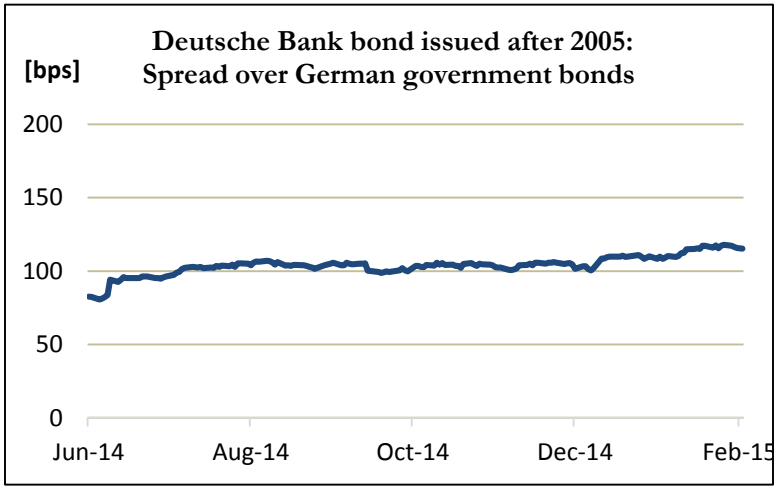



*Figure 24 Deutsche Bank recent spread*

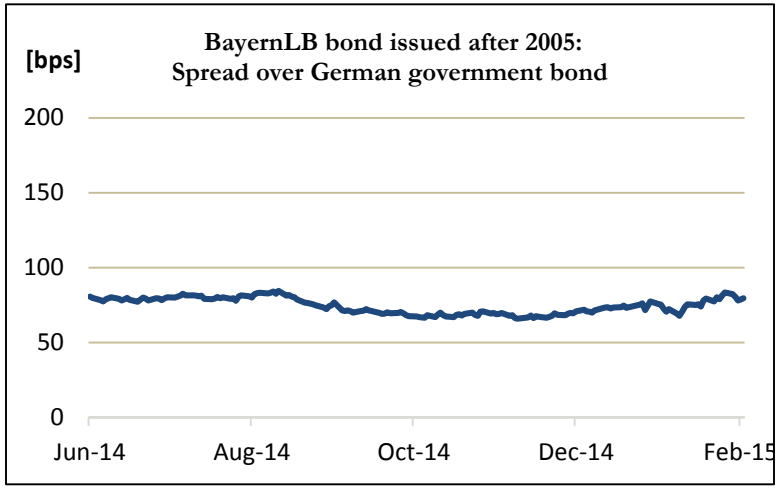



*Figure 25 BayernLB recent spread*

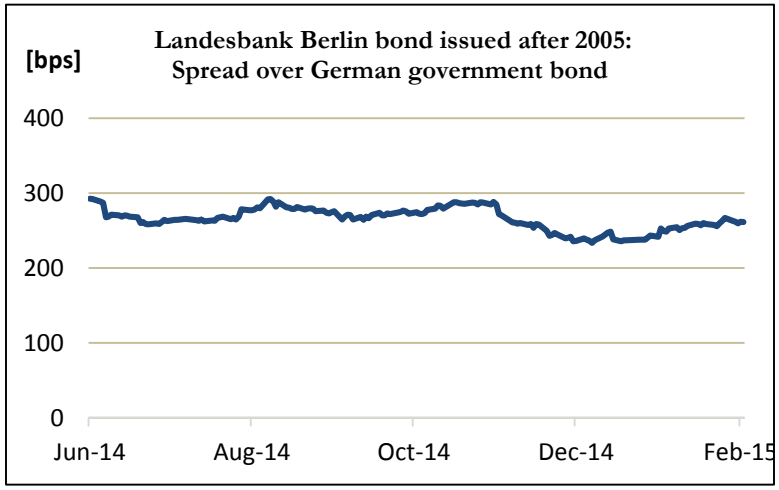



*Figure 26 LBB recent spread*

## 4.3 Results

The previous pages display the comparison of spreads for individual Landesbanks, as well as Commerzbank and Deutsche Bank.

The first hypothesis states that the spreads have increased dramatically for all Landesbanks after the cancellation of state guarantees. The yield spreads for guaranteed debt are below 50 bps in the low-volatility periods, which is consistent with the historical credit spreads on single-A-rated securities (Gentry, Reilly, and Wright, 2009). By comparing these spreads with the ones of bonds issued after the transition period (when the state guarantee still applied) and after 2005, we observe an apparent shift upwards in the spread values. By contrast, the yield spreads of control banks (Commerzbank and Deutsche) show no significant difference between debt issued pre- and post-2005.

For all Landesbanks, the yield spread is approximately 30-50bps higher for the non-guaranteed debt in a moderate-volatility environment. During increased volatility in the market, the spreads tend to rise to levels up to 100 bps higher. This shift upwards becomes especially notable during the distressed periods of 2008/2009 and in late 2011, i.e., during the financial crisis following the fall of Lehman Brothers and during the Euro debt crisis, respectively.

Higher spreads indicate that investors required a premium on bonds that did not carry the guarantee. Yield spread data therefore supports Hypothesis 1. The higher difference between spreads in the distressed environment seems to be a result of two effects. In 2008/2009, the uncertainty around the financial health of the Landesbanks indeed could have caused a spike in spreads. However, since German government bonds are among the safest assets classes in

European securities, the so-called flight to quality (or safe haven assets) may account for the majority of the spike in spreads.

The second hypothesis claims that among the non-guaranteed issues, Landesbanks without state ownership display higher YTM spreads than those with significant state ownership. Since the DSGV bailout in 2007, Landesbank Berlin has been the only Landesbank without any state ownership.[28] Based on the data presented, Landesbank Berlin's YTM spread is approximately 100 bps above the spreads of all remaining Landesbanks, including the accident-prone HSH Nordbank.

The first potential explanation lies in the changing business model of Landebank Berlin, which shrunk its balance sheet to a third in a restructuring that transformed the bank into a large savings bank (Neuhaus, 2014). On the other hand, the retail banking business is generally considered more stable than market operations and German savings banks have long basked in the sun of investor favor. The mere restructuring of the Landesbank is therefore unlikely to account for such a drastic increase in financing costs.

Could the higher YTM spreads on Landesbank Berlin's unsecured bonds be due to a lower credit rating? All Landesbanks suffered a sharp downgrade ahead of the abolition of state guarantees (see Chapter 2). Some banks suffered further downgrades in the following years. Moody's Issuer Rating of BayernLB, for example, fell from A1 to Baa1 in 2011, Norddeutsche Landesbank fell three ranks in Moody's Issuer Rating since 2006. However, Landesbank Berlin's Fitch Issuer Rating increased from BBB+ in 2004 to A+ in 2011. Fitch changed LBB to NR in 2014, but the Landesbank of the German capital remains A1 on Moody's issuer scale, which ranks it comfortably above BayernLB, Nord/LB, and Commerzbank.[29] Either the credit ratings do not

[28] DSGV took over the bank in 2007. See Chapter 5 for details on the Landesbank Berlin crisis.
[29] Ratings data source: Bloomberg, as of February 2015.

reflect the real risk of investment in LBB bonds or the ownership structure of a Landesbanks weighs in on the YTM spread investors require.

A brief look into the financials of LBB (see section 8.1 Supporting Financial Analysis, in Appendix) shows that the bank indeed sustained net loss in three of the last five years. While HSH wrote the bottom line numbers in red ink in four of the last five years, it benefited from a re-established guarantee. However, BayernLB's financials are not much better than LBB's. BayernLB recorded annual profits above €500 million only twice since devastating multi-billion Euro losses of 2008 and 2009.[30] Based on return on assets and return on equity metrics in 2013, the 15% achieved by LBB by far outperformed the whole Landesbank sector, as well as the two largest German commercial banks. Despite this fact, the spreads on LBB bonds are significantly higher. This applies even to the most recent unsecured bonds (see *Figure 26*).

Because the maturity profile of LBB does not differ from that of other major Landesbanks (see debt maturity profiles in section 8.1), the hypothesis that state ownership plays a role in the YTM spreads seems viable. Historically, state owners have been much more generous in bailing out Landesbanks than savings banks unions (Gubitz, 2013). Therefore, investors seem to ascribe value to the implicit support of a state owner, even once explicit guarantees are not in place.

A more interesting increase in spreads of the remaining Landesbanks should come after the end of 2015. Up to the present, the state owners carry a large implicit liability should any Landesbank default and it is in their interest to avert a default by injecting equity. Such implicit support helps other unsecured bondholders whose claims are not guaranteed. Due to the skewed maturity profile of all major Landesbanks, state owners have a strong incentive to support the financial strength of

[30] Source: CapitalIQ.

their respective Landesbanks until December 2015 when the last tranches of guaranteed debt mature. It is reasonable to assume that such implicit support affects the current spreads. If this hypothesis is correct, it would not be surprising to see spreads increase early in 2016. Other things equal this implies the Landesbanks will face a higher cost of funds in 2016. This effect, however, may be swamped by the impact of Quantitative Easing on the overall level of interest rates.

# 5. The future of the Landesbank sector

The previous chapter used Bloomberg data to create yields spreads on unsecured bonds issued by German Landesbanks. The analysis showed a significant increase in cost of funding for German Landesbanks through such bonds. This result confirms the assumptions of scholars including Körner and Schnabel (2013). Furthermore, the analysis highlighted the history of elevated spreads for Landesbank Berlin, the single Landesbank without state ownership. This chapter summarizes the results of the thesis and discusses the future of the Landesbank sector.

Landesbanks developed as central banks for the savings banks in their respective regions, as well as a state's tools of regional economic development. In the course of six decades, Landesbanks grew into wholesale banks with balance sheets in several cases of one hundred-billion euros or more. In many arenas they compete directly with the largest German commercial banks. Their privileged status as partially state-owned enterprises with the ability to issue guaranteed liabilities drew the attention of the European Commission at the turn of the millennium. The EC found that state subsidies distorted competition and ordered that the guarantees be wound down. The Landesbanks were given until 2015 to adopt another business model that did not rely on guaranteed debt for its sustainability.

The first half of this thesis analyzed Landesbanks' role in the German banking landscape, the benefits of state guarantees and the path towards their phaseout. I have shown how the four-year grace period after the Brussels Accord, during which Landesbanks could issue guaranteed debt, incentivized Landesbanks to take on excessive leverage, underprice loans and venture into dubious M&A activities. Arguably, a simple rule of extending the guarantee only to the debt that was *refinanced* during the grace period would avert the incentives to take on leverage. Moreover, they compounded their problems by deploying much of their liquidity in debt issued by SIVs. Last, I

show that then end of explicit guarantees does not ensure that competitive distortions have ended. The market took note of the fact that the German states and German federal government stepped in to save Landesbanks from the subprime mortgage crisis and the resulting financial meltdown, and re-established the guarantee for HSH Nordbank.

To provide empirical support for these hypotheses, I used financial data to construct spreads of unsecured Landesbank bonds and prove that there is an observable increase in financing cost for Landesbanks. Additionally, there is a significant discrepancy between the yield spreads of Landesbank Berlin and the remaining Landesbanks that is not justified by independent evaluations of the creditworthiness of these institutions. I claim that an implicit guarantee due to state ownership explains at least part of this discrepancy.

December 31, 2015, will mark an important milestone in the history of the Landesbank sector when the last liabilities issued during the transition period will mature. Are Landesbanks ready to fight for survival in the new post-guarantee reality? The Eurozone stress test conducted by the European Central Bank in 2015 scrutinized the soundness of the balance sheets of major European banks, among them six Landesbanks. According to the Bank's representative, there was a broad public expectation that at least one German bank would fail the test (Interview II). BayernLB, Landesbank Berlin, LBBW, HSH Nordbank, and Nord/LB passed the tests in both baseline and adverse scenarios.[31] The strong position of German Landesbanks is not surprising, All Landesbanks (except for Nord/LB) gradually built up Tier1 capital ratios from 5% to approximately 15% between 2000 and 2014 (see section 8.1, Supporting Financial Analysis).

[31] Source: 2014 EU-wide stress tests results published by European Banking authority. Available online at http://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2014/results. Accessed in January 2015.

The financials in section 8.1 reveal that the profitability of all Landesbanks with the exception of HSH Nordbank has gone back to normal, even if this normal is disappointing by industry standards. Return on equity is far below the target of 15% that Landesbanks set for themselves before the 2001-2005 transition period (Gubitz, 2013). In fact, Landesbanks have rarely surpassed a 5% return on equity in the last two decades.

The overall shrinkage in the size of Landesbank balance sheets is one of the most noticeable changes in the sector. Landesbanks continued to grow even after the end of the transition period, but since 2008, the total value of assets of all Landesbanks dropped sharply. At least one of the goals of the EC Commission seems to have been achieved.

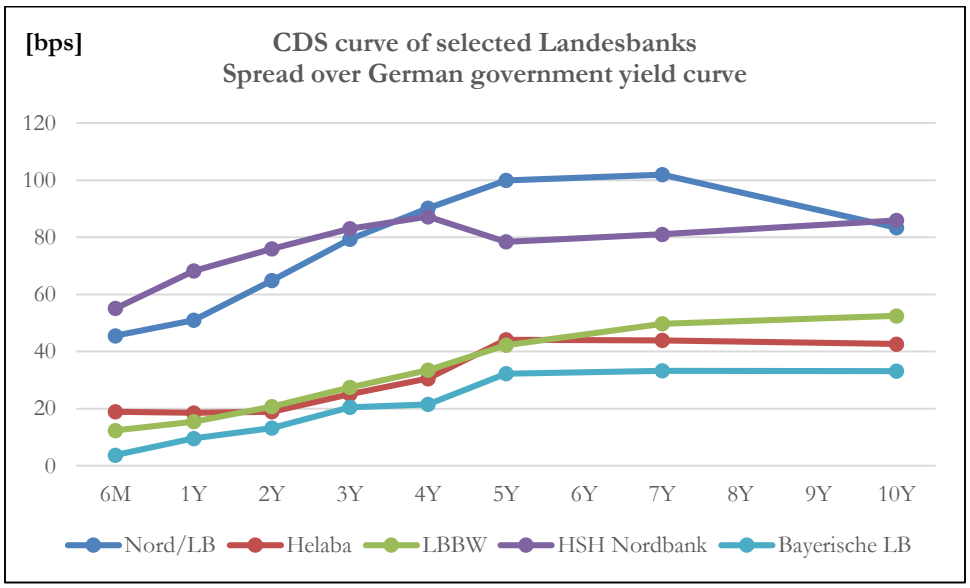



*Figure 27 CDS curve of selected Landesbanks. Source: Bloomberg.*

The credit default swap curve of the major German Landesbanks[32] indicates that the market does not appear to be concerned that any of the Landesbanks is in imminent danger of bankruptcy. The Landesbank CDS spreads are comparable to those of other major European banks. CDS' use as

[32] Data as of February 2015. Source: Bloomberg.

evidence of credit quality of Landesbanks may be inaccurate because Landesbank CDS markets are not very liquid (see, for example, Annaert, 2013). Nevertheless, CDS seem to recognize the weaknesses of individual Landesbanks, Higher CDS reflect both Nord/LB's weak capital position and HSH Nordbank's continued operational struggles. Indeed, if one bank were to face trouble during the European Central Bank stress tests, HSH Nordbank would be the first candidate (Hennersdorf, 2014). HSH Nordbank still grapples with the consequences of the shipping industry crisis; it has generated large net losses with only one exception since 2009 (see supporting financials for HSH Nordbank in section 6.3). The renewed support of its state owner has raised eyebrows in the banking industry. Investors are likely going to take this as a precedent of state owners not letting their banking children go down easily.

Inability to source top management (Gubitz, 2013), as well as inactivity and unwillingness to change its own business model during the crisis (Noonan, 2013), continue to plague the sector years after the transition period ended. Regulators, scholars, as well as management seek the solutions to Landesbanks' persistent stagnation (see for example Hilert, Krahnen, Merl and Siekmann, 2011).

Although there is pressure on Landesbanks to consolidate (Laterza, 2010), further mergers within the Landesbank sector are unthinkable (Noonan, 2013). Complete privatization never appeared to be a viable exit option for Landesbanks, either. Politicians in individual states were reluctant to give up their control over Landesbanks (Gubitz, 2013). Besides bringing in revenue in the state budget (as long as they were profitable), their management seats served as a comfortable destination for political allies (Gubitz, 2013). The first attempt to generate value by a partial sale of an underperforming and mismanaged state bank targeted HSH Nordbank. Today, its private equity co-owner J.C.Flowers is unlikely to profit from his investment. HSH Nordbank is far from

profitable and the private equity owner suffered dilution of ownership in 2009 when it declined to participate in the bailout (Gubitz, 2013). The pioneering involvement of a foreign private investor in the Landesbank sector is unlikely to encourage others to follow.

In the regulators' eyes, the future of Landesbanks lies in significant balance-sheet shrinkage, a return to local lending, and refocusing of activities on closer cooperation with savings banks (Interview II). Both Helaba and Nord/LB, which are considered to be the strongest Landesbanks oveall (Interview I), maintain a considerably high proportion of net loans as a percentage of total assets. They also have a close connection to their local savings banks, which have become a direct channel for Landesbanks' products (Gubitz, 2013). In fact, besides strict conservatism, the management attributes the success of Helaba to the close integration of savings banks in its business model (Interview I). Helaba created a common risk management platform for the savings banks in its region, including a combined financial reporting and reciprocal liability system for savings banks through a regional reserve fund.[33]Nord/LB established similar cooperation. Helaba also diminished its dependence on debt markets by gaining a stable deposit base of acquired Frankfurter Sparkasse (Interview I). In a similar manner, Bayerische Landesbank is vigorously pushing forward the expansion of DKB to decrease its dependence on the wholesale funding. Mainly thanks to a successful online platform, DKB grew to serve over 3 million customers in 2014 with a balance sheet of €71 billion.[34]

A study by Hilert, Krahnen, Merl and Siekmann (2011) lays out a potential sustainable model for the Landesbank sector. According to the authors, the reorganization of Landesbanks should split their activities into three groups – services to savings banks should be concentrated in a single

[33] Source: Helaba website, section S-Group Model.
[34] Source: Bayerische Landesbank Annual Reports.

bank of federal scope (analogous to the DZ Bank). Each Landesbank should spin off non-core assets including development banks and concentrate on lending to businesses, as well as real estate lending.

It is clear that in order to succeed in the long term, Landesbanks need to transition from a politics-driven institutions with a civil servant mentality and excellent employee benefits to a more competitive working environment. Landesbanks also need to further reduce the wholesale funding dependency and exposure to municipalities and states. Those Landesbanks managing above mentioned challenges best will be in a good position to compete with private commercial banks going forward. At the moment, regulators have their hands full with the containment of larger Eurozone-wide issues. Perhaps private banks need renew efforts to press for reform of the German state banking sector. For now, Landesbanks seem to be limping on without an intention to change.

# 6. Appendix

## 6.1 German Banking System

The first part of the Appendix outlines the German banking landscape as a three-pillar system. The origin of the state guarantees, which are the focus of this paper, stems from Landesbanks' position in the public savings banks pillar.

### 6.1.1 Overview

The fundamental business of banks revolves around maturity and risk transformation of deposits and loans. German banks benefited from very favorable economic conditions, with access to ample household savings and strong loan demand. The private household savings rate in Germany has never dipped below 9% of income since the German reunification in 1990.[35] Furthermore, booming export markets fueled the demand for loans. Despite these seemingly favorable conditions, the German banks have been lagging behind the European peers in terms of profitability (Brunner et al., 2004). Brunner (2004) asserts that the fragmented nature of the German banking sector depresses its financial performance. Municipality- and state-owned banks are arguably contributing to the overcapacity in the German banking space. As of 2014, only two institutions boast a balance sheet bigger than one trillion Euros - Deutsche Bank, and KfW.[36] State-controlled entities are already represented in these top two financial institutions. KfW is a German government-owned development bank based in Frankfurt, in part known for its active role in

[35] Source: German Bundesbank, accessed at http://www.tradingeconomics.com/germany/personal-savings on January 20th, 2015.
[36] Source: CapitalIQ.

financing of the Energiewende, the shift in energy policy away from fossil fuels to renewable resources (see for example Taiwan Green Finance Summit, 2014).

The so-called three-pillar banking system in Germany refers to three major categories of credit institutions: commercial banks, cooperative banks, and savings banks (Koetter, 2006). In most business activities, the three types of banks are in direct competition with each other. Unlike in the rest of Europe, municipal-, state-, and government-owned credit institution play a central role in Germany's banking industry (Brunner et al., 2004). The following paragraphs describe the aggregate balance sheet size of individual types of German banks.

According to data gathered by German Bundesbank, the aggregate size of the balance sheets of German financial institutions reached €8.55 trillion at the end of 2013 (compare with €9.34 trillion in 2012). Commercial banks accounted for €3.67 trillion of assets, cooperative banks for €1.033 trillion of assets and the savings banks for €2.328 trillion (including €1.23 trillion on the books of Landesbanks). The remaining assets were split between mortgage banks (€483 billion at the end of 2013) and special purpose banks (€1.04 trillion). See *Figure 28* for details of the asset breakdown by bank type.

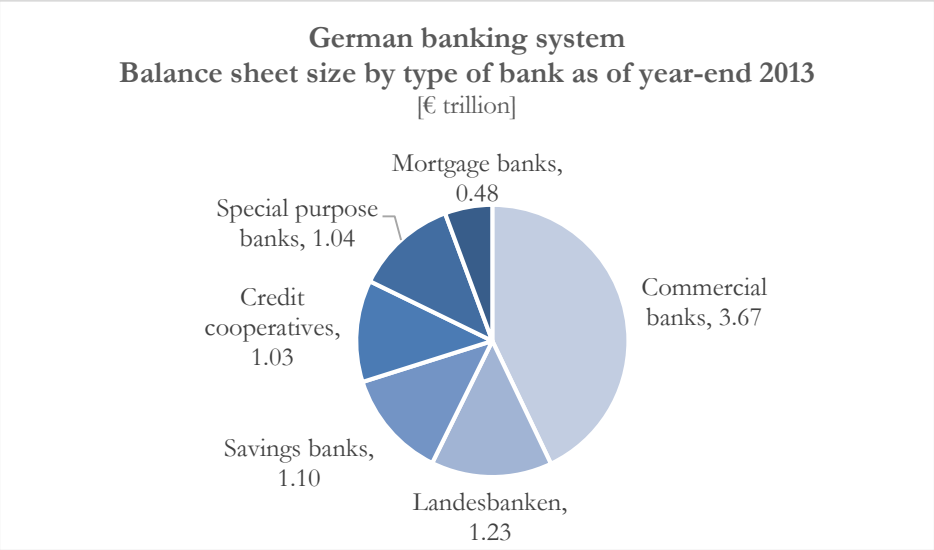



***Figure 28*** *Breakdown of total assets in German banking system by bank type. Source: Deutsche Bundesbank.*

The number of banks in Germany decreased by 7.5% between 2008 and 2013 and has shrunk by a third since the beginning of the millennium.[37] The process of consolidation is especially visible in the cooperatives category, where the number of institutions declined from 2,761 in 1993 to 1,078 at the end of 2013, and savings banks, which saw a decline from 703 to 417 in the same period.[38] Still, all three pillars play a critical role in the German banking landscape.

### 6.1.2 Commercial banks

Commercial banks are privately owned business entities. They are typically organized as an incorporated stock company (Aktiengesellschaft, or AG*)*, or private limited liability company *(*Gesellschaft mit beschränkter Haftung or GmbH*)*. Large commercial banks[39] include pure

[37] German Bundesbank online dataset on the number of reporting institutions. Available at: http://www.bundesbank.de/Navigation/EN/Statistics/Time_series_databases/Macro_economic_time_series/its_details_value_node.html;jsessionid=0000g55i8Spx4BMLhGgK6V0HFUf:-1?tsId=BBK01.OU0331&listId=www_s100_mb2425_1_01
[38] Source: German Bundesbank.
[39] According to the German Bundesbank classification, large commercial banks category consists of Deutsche Bank AG, Dresdner Bank AG (up to Nov. 2009), Commerzbank AG, UniCredit Bank AG (formerly Bayerische Hypo- und Vereinsbank AG) and Deutsche Postbank AG.

German banks such as Commerzbank AG and Deutsche Bank AG, as well as foreign-owned banks such as HypoVereinsbank (owned by the Italian banking giant UniCredit Bank) and ING-Di-Ba (owned by the Dutch ING Groep). Overall, the German Bundesbank registered 4 large commercial banks and 295 smaller commercial banks (including branches of foreign banks) as of December 2013. German commercial banks are universal banks with focus on retail customers, and businesses, as well as market activities and investment banking. Commercial banks are active throughout Germany. Large German banks operate globally, their shares are traded on German, and global stock exchanges (Commerzbank, Deutsche Bank). Regional commercial banks, by contrast, often focus on niche activities in urban areas, such as services to high net worth individuals or real estate financing (Koetter, 2013).

As of July 2014, commercial banks in Germany had an aggregate balance sheet of €2.912 trillion, which was less than 38% of the total assets in the German banking system. (German Bundesbank, 2014). Such a low percentage is unique in the context of developed economies. For many years, German retail banking was an exclusive domain of domestic commercial banks and savings banks, but the increased competition in the European banking sector has translated into the entry of many competitors.

### 6.1.3 Cooperative banks

Cooperative banks form the smallest part of the German banking system with the aggregate balance sheet size of approximately 1 trillion Euros as of year-end 2013 (Bundesbank, 2014). The cooperative banks are most visible under the Raiffeisenbank and Volksbank brands. Their roots trace back to the second half of the 19$^{th}$ century: Cooperative banks came into existence as a collective effort of workers to gain access to basic financial services (Junghans, 2004). Each client

has the option to become a member of the cooperative and buy shares of a local Volksbank or Raiffeisenbank. The cooperative principle translates into each member having one vote in the annual shareholder meeting. Many depositors are therefore also owners. Altogether, out of 30 million clients of German cooperative banks, over 17 million own shares in them (BVR press release, 2012). Similar to the savings banks structure, cooperative banks are governed by a principle of regionalism and individual banks do not expand beyond their county or metropolitan area. Another parallel to the savings banks that can be drawn is the hierarchical system of regional associations and national association of cooperative banks, which represent the interests of cooperative banks in the political and regulatory field. The cooperative central bank DZ Bank, Germany's fourth largest bank by assets in 2013 (DZ Annual Report, 2013), provides clearing services, as well as investment and structured products for the 900 cooperative banks in the association. The role of DZ bank is similar to the one of Landesbanks in the public savings banks pillar.

Cooperative banks are in direct competition with the commercial banks, as well as savings banks – they clash in retail banking and lending to private customers and small businesses. The limited size of individual institutions disqualifies the cooperative banks as contenders in syndicated lending, which is dominated by commercial banks and Landesbanks (Wilson and Wiessman, 2010).

### 6.1.4 Public savings banks

The German public banking sector includes three types of financial institution: small savings banks (Sparkassen), regional wholesale banks (Landesbanks), and a development bank KfW, a central asset manager DekaBank and a home loan bank Landesbausparkasse.

Small savings banks (Sparkassen) are municipality-owned universal banks that cater to retail clients, and households, as well as local businesses and institutions. The origin of Sparkassen dates back to the 18th century.[40] In the 19th century, hundreds of savings banks emerged to serve the poorest population; the effort of the public authorities mirrored those of the cooperatives. The working class demanded safe and long-term savings accounts but could not afford the services of private banks. Savings banks arose as a solution put together by municipal governments (Deutscher Sparkassen- und Giroverband, 2010). Germany, Austria and Switzerland are three countries with a significant network of both smaller and larger savings banks. However, even large multinational banks in the rest of Europe, such as Sberbank Russia, were founded as a savings bank for the financially underserved population.[41] Just like the cooperative banks, whose primary founding principle was not profit maximization but service for its co-operative members, savings banks were founded with the goal of support of the savings community (Brunner et al., 2004).

A principle of geographic division governs the operation of savings banks. According to the savings banks law, each savings bank's business activity is restricted to the geographic region of the municipality (Schepers, 2003). In urban areas, this "business space" typically consists of a city or town and its broader suburbs, in rural areas, savings banks cover an equivalent of a district/county. Because of such restriction, practically all savings bank are small institutions with little leverage against the state, regulators, unions, or other stakeholders in the industry. Therefore, savings banks form associations, which increase their influence in the political and collective bargaining arenas. As of 2013, savings banks in Germany were organized in 12 regional

[40] The first savings bank was founded in Hamburg in 1778 (Wandel, 1998). Interestingly, Hamburger Sparkasse is the largest savings bank today, with over 1.4 million customers and €41 billion in assets as of July 2014. Source: Haspa website, About section. http://www.haspa.de/Haspa/Microsite/Englisch/AboutUs/WirUeberUns.html
[41] Source: Sberbank website. http://www.sberbank.ru/en/about/about_sberbank/history_achievements/

associations (*Sparkassenverbände*), which belong under an umbrella organization, *Deutscher Sparkassen- und Giroverband*. Furthermore, regional associations of individual savings banks, together with states (*Bundesländer*), own stakes in Landesbanks. The following chapter discussed Landesbanks including their ownership structure in detail.

German savings banks clearly are in direct competition with the cooperative banks, as well as commercial banks. They compete not only for retail clients, but also in the field of corporate lending, capital markets products (mostly supplied by Landesbanks), and asset management (primarily facilitated through DekaBank for most savings banks).[42]

## 6.2 Landesbanks in the German banking system

The previous section outlined the three-pillar German banking system. Chapter 2 puts the role of Landesbanks in this context and provides an overview of the Landesbanks today. The position of Landesbanks in the German banking system is critical to the understanding of the state guarantees that I analyze in detail in Chapter 3.

### 6.2.1 Overview

Landesbanks are an important link in the German banking sector. They were originally set up as regional central banks for the savings banks after the World War II, with responsibilities mainly in liquidity management and payment processing for the Sparkassen (*The Economist*, 2015). Originally, each state in West Germany partnered with a union of savings banks to found a Landesbank. Altogether, the group comprised 10 institutes and Sparkasse of West Berlin (Gubitz, 2013). Following the reunification of Germany, Landesbank Sachsen joined the team of

[42] Source: DekaBank website, "Company"section. https://www.dekabank.de/db/en/

Landesbanks; other savings banks were taken under the umbrella of one of the existing institutions. For example, the savings banks from Saxony-Anhalt and Mecklenburg-Western Pomerania joined the structure of Norddeutsche Landesbank (Nord/LB), and savings banks of Thuringia partnered with the Hessische Landesbank (Helaba) (Gubitz, 2013). Following the consolidation during the crisis and changes in ownership structure (see Chapter 3), the Landesbank sector today consists of only 6 independent institutions. *Table 2* below presents an overview of the current Landesbanks.

As of Q3 of 2014, LBBW and BayernLB are the most sizeable institutions with balance sheets above 200 billion Euros. LBBW placed among the top 5 largest banks in Germany.[43] Nord/LB and Helaba are both rather large institutions – even the third largest commercial bank, ING-Di-Ba, does not get close to their balance sheet size.[44] HSH Nordbank is considerably smaller but still relatively important in the German financial system. The smallest Landesbanks --Landesbank Saar and Bremer Landesbank[45] -- are of negligible size and will be largely omitted from the analyses in this paper.

[43] Based on total assets as of September 2014, the top five banks in Germany included Deutsche, Commerzbank, KfW, DZ bank, and LBBW.
[44] Source: Ing DieBa website. https://www.ing-diba.de/ueber-uns/unternehmen/
[45] Bremer Landesbank is an integrated subsidiary of Nord/LB. However, according to the Nord/LB 2014 Annual Report, the bank is managed independently on all critical dimensions. Therefore, this paper lists Bremer Landesbank separately.

***Table 2*** *Overview of Landesbank sector as of April 2015. Source: Annual Reports of individual Landesbanks.*

| **Landesbank Name** | **Landesbank Baden Wurttemberg (LBBW)** | **Landesbank Bayern (Bayern LB)** | **Norddeutsche Landesbank (Nord/LB)** | **Landesbank Hessen-Thuringen (Helaba)** | **HSH Nordbank** | **Bremer Landesbank** [46] | **Landesbank Saar** |
|---|---|---|---|---|---|---|---|
| **Areas of savings banks coverage** | Baden Wurttemberg, Rheinland-Pfalz | Bayern | Niedersachsen, Sachsen-Anhalt, Mecklenburg-Vorpommern | Hessen, Thuringen, Brandenburg, Nordrhein-Westphalen | Hamburg, Schleswig- Holstein | Bremen | Saarland |
| **Ownership (as of year-end 2014, rounded)** | **40.5%** Savings bank Association of Baden-Wuerttemberg (SVBW)<br><br>**25.0%** State of Baden-Wuerttemberg<br><br>**19.0%** City of Stuttgart<br><br>**13.5%** Landesbeteiligungen Baden-Württemberg GmbH<br><br>**2.0%** Landeskreditbank Baden-Württemberg | **25%** Association of Bavarian Savings Banks<br><br>**75%** Free State of Bavaria[47] | **59.1%** State of Niedersachsen<br><br>**26.7%** Savings Bank Association of Niedersachsen<br><br>**5.6%** State of Sachsen-Anhalt<br><br>**5.28%** Savings Bank Association of Sachsen-Anahlt<br><br>**3.66%** Special Purpose Holding Association of the Mecklenburg-Vorpommern Savings Banks | **68.9%** Savings Banks and Giro Association Hesse-Thuringia<br><br>**8.1%** State of Hessen<br><br>**4.05%** State of Thuringia<br><br>**4.75%** Savings Banks Association Westphalia-Lippe<br><br>**4.75%** Rhenish Savings Banks and Giro Association<br><br>**9.5%** German Savings Banks Association (DSGV) | **65.0%** Joint entity of the City State of Hamburg and the State of Schleswig-Holstein<br><br>**10.8%** City State of Hamburg<br><br>**9.6%** State of Schleswig-Holstein<br><br>**5.3%** Savings Banks Association of Schleswig-Holstein<br><br>**9.3%** J.C. Flowers & Co | **54.8%** Nord/LB<br><br>**41.2%** State of Bremen<br><br>**4.0%** Lower Saxony Association of Savings Banks | **74.9%** State of Saarland<br><br>**25.1%** Savings Bank Association of Saarland |
| **Employees (as of June 2014)** [48] | 11,308 | 3,418 | 7,590 | 6,282 | 3,389 | 1,084 | 520 |
| **Total Assets (as of Q3 2014, €million)** | 292,373 | 244,656 | 197,304 | 176,508 | 110,726 | 31,555 | 15,967 |

[46] Bremer Landesbank is a subsidiary of Nord/LB. It is listed separately in the above analysis because it operates independently on most dimensions.
[47] Ownership is updated as of June 2013, when the Bavarian savings banks completed the conversion of their silent capital contributions into BayernLB equity.
[48] Source: Financial Times, 2014.

### 6.2.2 Business model

An interview with Alan Noble from Helaba confirms a substantial change in business model of the Landesbanks postwar period. Landesbanks initially operated as central Giro institutions and central banks for the savings bank pillar of the German financial system. Additionally, Landesbanks facilitated a cashless payment process for clients of individual savings banks. As German businesses grew in size and increasingly turned to export during the 1960s and 1970s, regional savings banks became too small to provide sufficient services. Landesbanks were able to step in and provide export financing, loan syndication, and large corporate lending to the businesses that were too big to be serviced by local savings banks. Additionally, Landesbanks added real estate financing to their palette of products (Interview I; on expansion of Landesbank activities see for example Gubitz, 2013).

Landesbanks expanded internationally, too, even though it seems odd that banks with extremely strong regional anchoring (from both an ownership and client perspective) would pursue international expansion. Nonetheless, Landesbanks argued that they simply followed their customers, i.e. large German industrial companies, that grew in size and focused on export markets (Interview I). As a result, Landesbanks have ventured into number of foreign locations: LBBW, for example, boasts more than 20 offices abroad including Dubai, Mexico City, Beijing, or Sao Paulo.[49] Chapter 3 explains why state guarantees may have been one of the reasons for the international expansion of Landesbanks.

[49] See LBBW website, section About Us.
http://www.lbbw.de/en/filialen_und_standorte/standorte/filialen_und_standorte.jsp

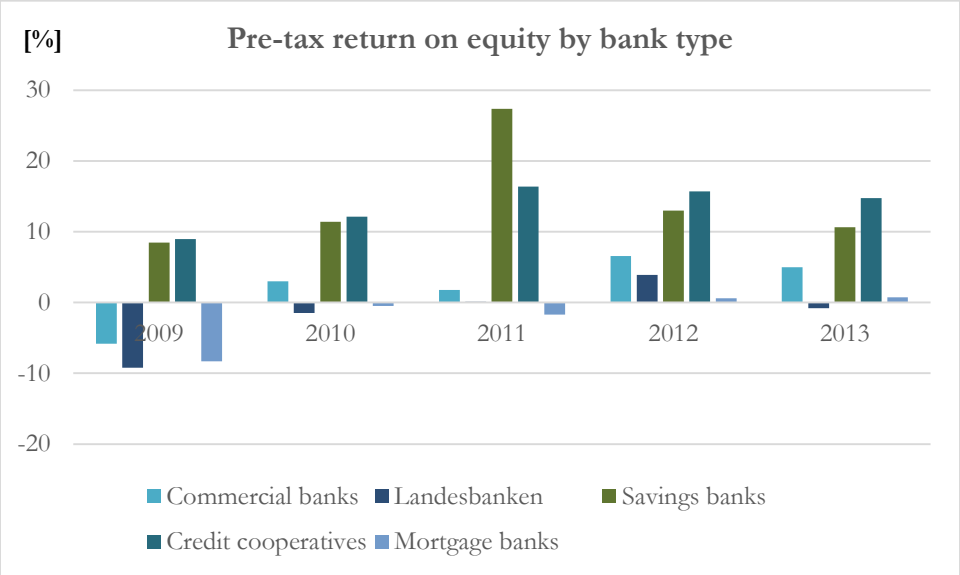



***Figure 29*** *Performance of German financial institutions by bank type. Source: Deutsche Bundesbank.*

The left side of the balance sheet of Landesbanks is relatively straightforward: it includes loans to businesses, loans to real estate projects, and short-term lending to savings banks, as well as German state and federal government debt and other investment securities. The right side of the Landesbank balance sheet differs from that of typical universal banks. Landesbanks typically do not have retail banking operations and therefore they lack the access to retail deposits (Die Bank, 2014). Instead, they primarily use debt markets – covered bonds (Pfandbriefe), unsecured bonds, and loans from savings banks (Strüder, 2006)

Despite a diversified business portfolio, Landesbanks have underperformed the rest of the German banking sector in recent years, as shown in *Figure 29*, a fact that has not escaped the attention of journalists (see for example Wilson and Wiesmann, 2010 or *The Economist*, 2015) and scholars (Gubitz, 2013). Some blame the guarantees and public service orientation for the underperformance (Gubitz, 2013). Chapter 1 provides the overview of state guarantees, their origin, and the reasons for cancellation by the European Commission.

## 6.3 Supporting Financial Analysis[50]

### Debt maturity profiles of major Landesbanks

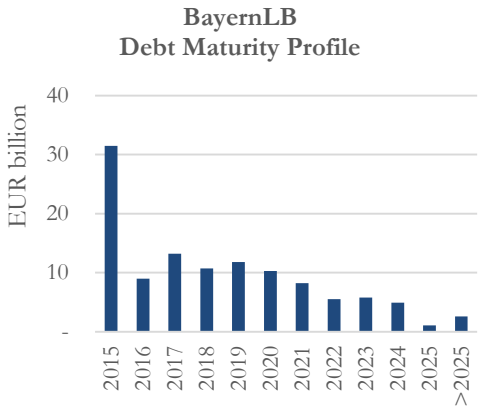



*Figure 30 BayernLB maturity profile*

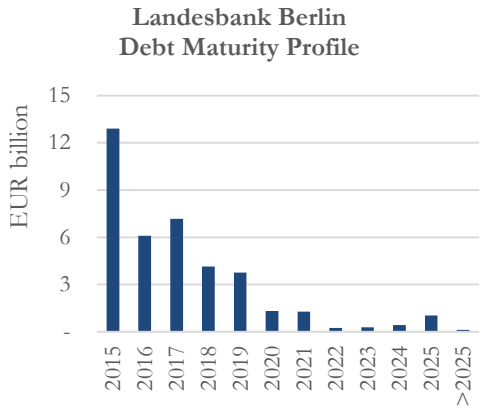



*Figure 31 LBB maturity profile*

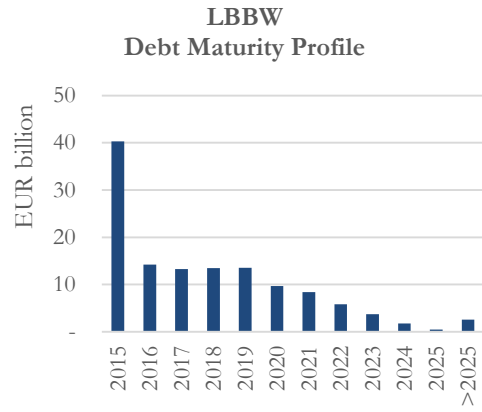



*Figure 32 LBBW maturity profile*

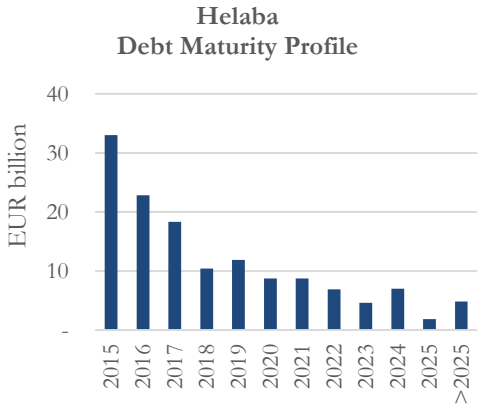



*Figure 33 Helaba maturity profile*

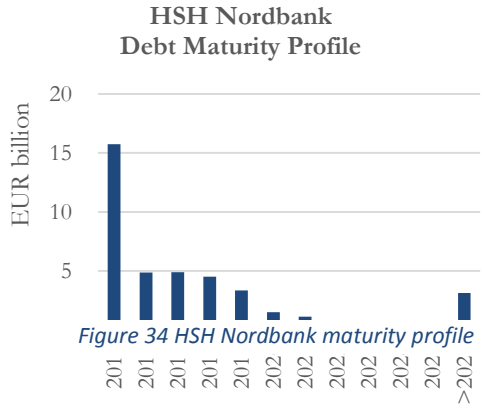



*Figure 34 HSH Nordbank maturity profile*

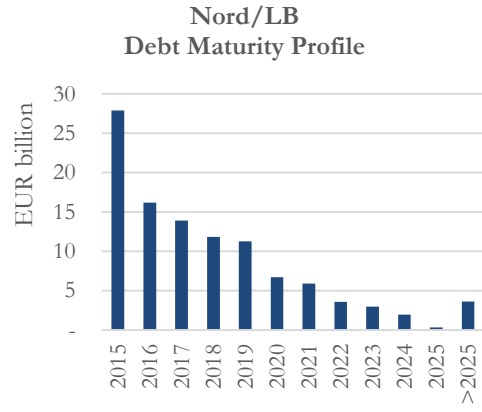
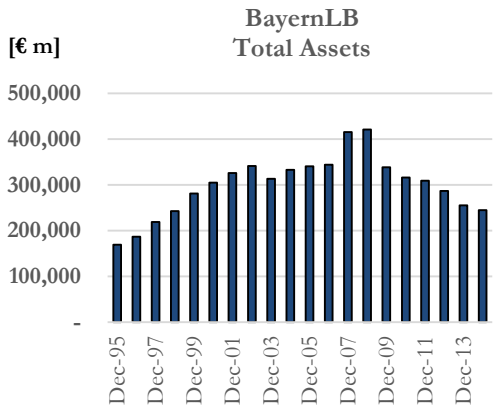
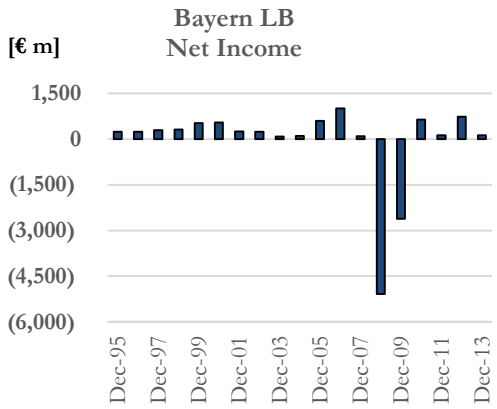


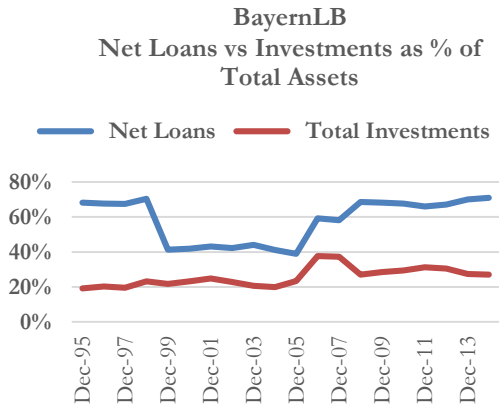

*Figure 35 Nord/LB maturity profile*

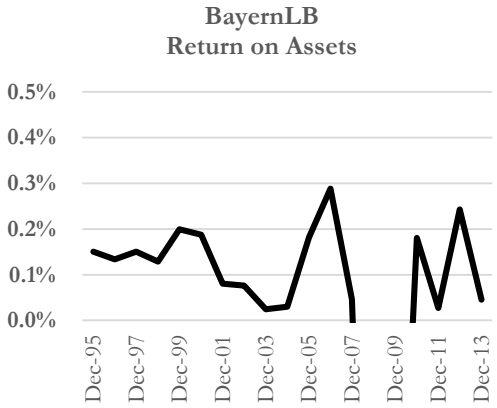
[50] Data Source for all presented figures: CapitalIQ, downloaded February 2015

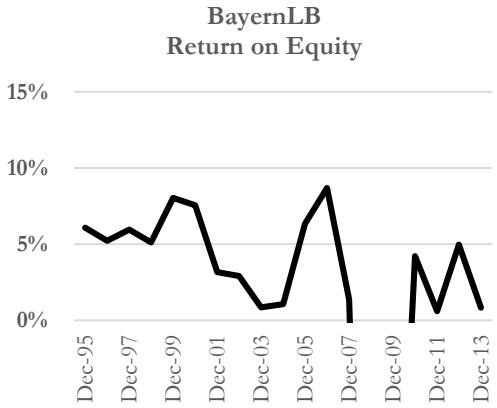
## Bayern LB supporting financials

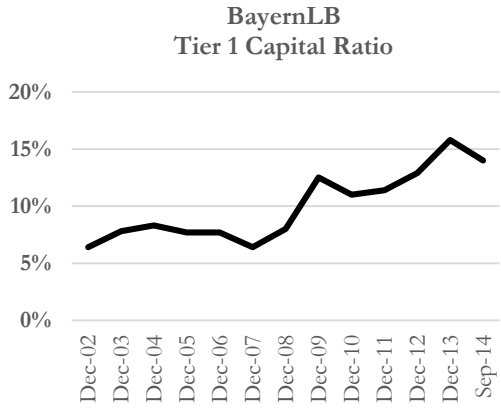


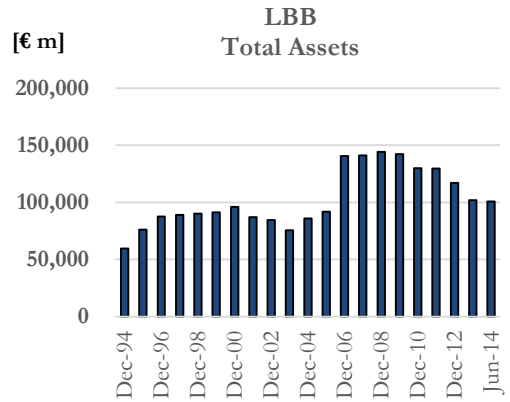



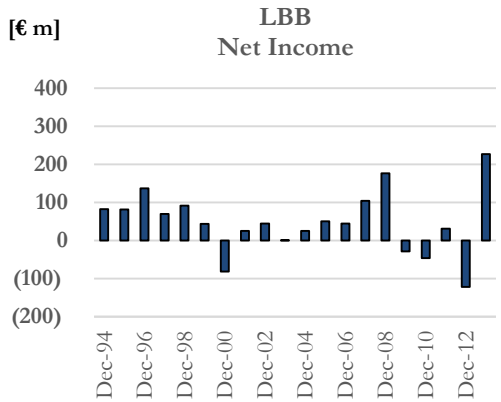



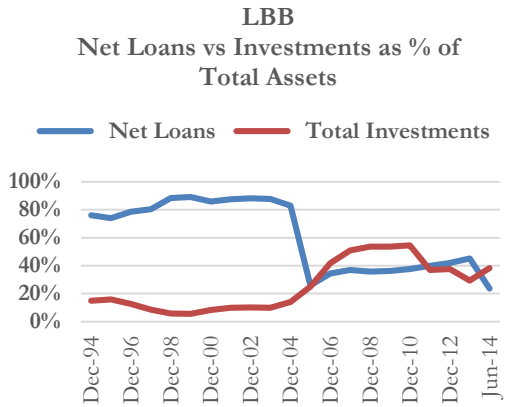



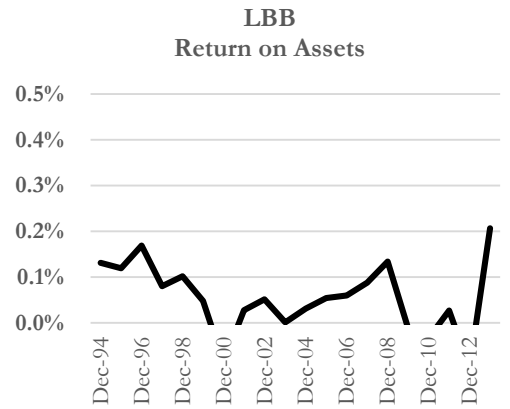



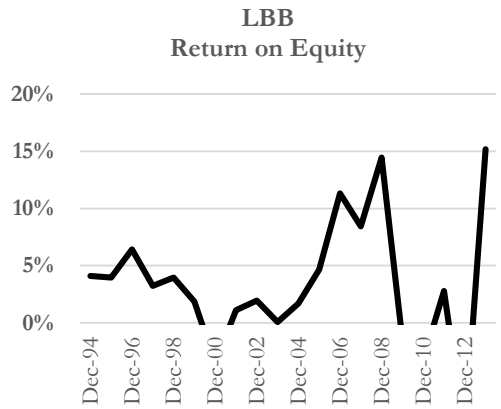
## Landesbank Berlin supporting financials

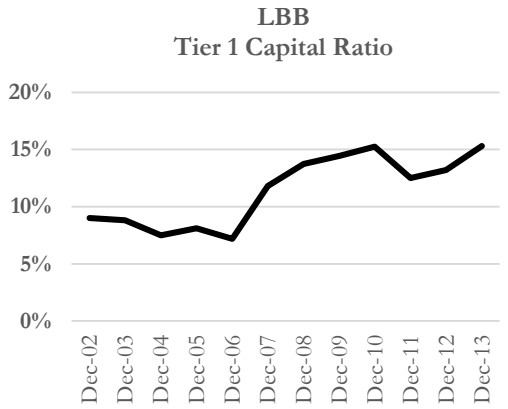


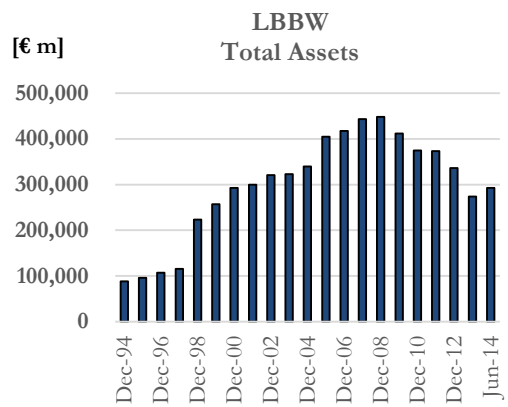



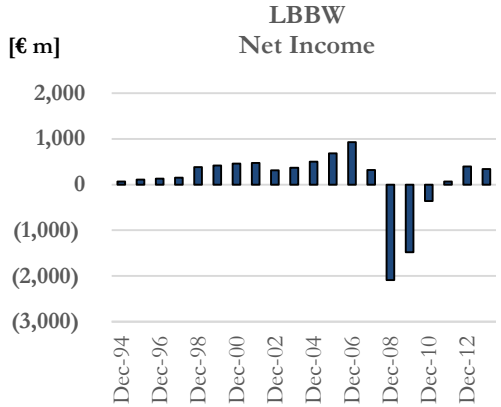



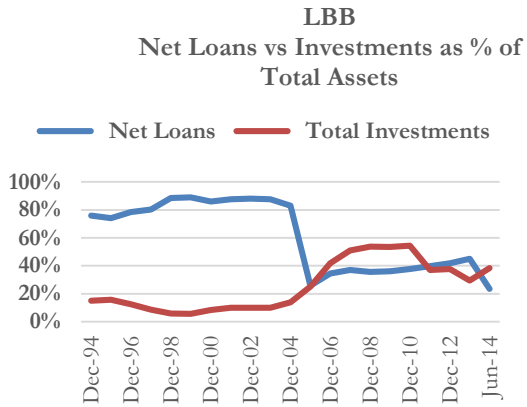



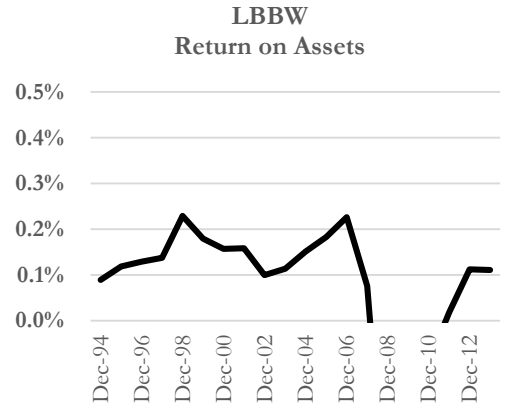



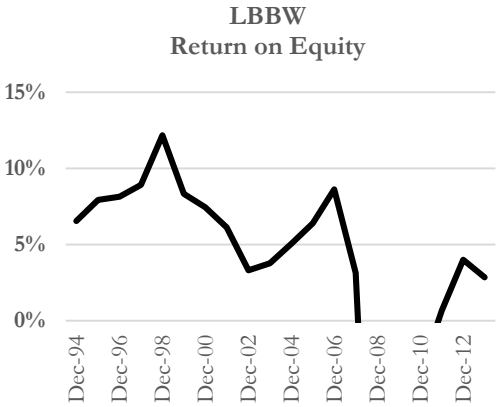
## LBBW supporting financials



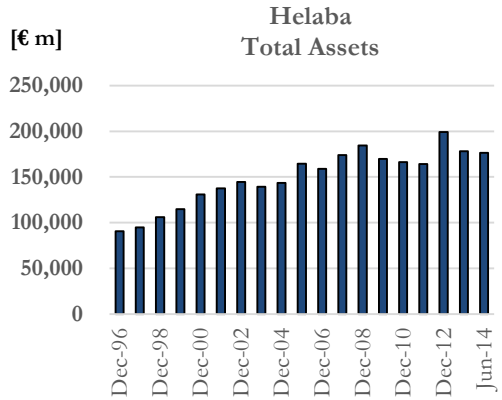



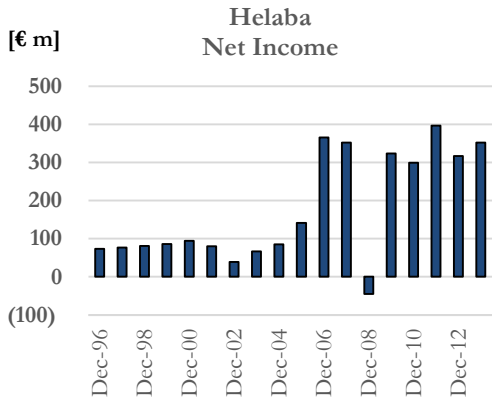



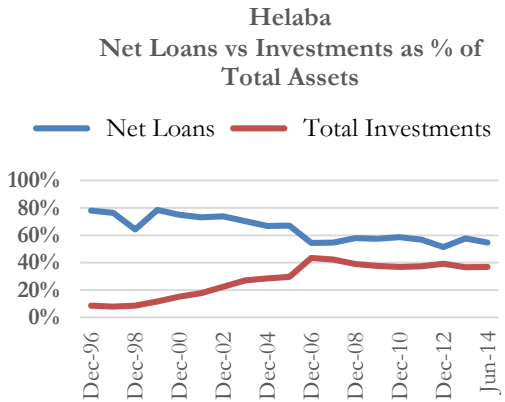



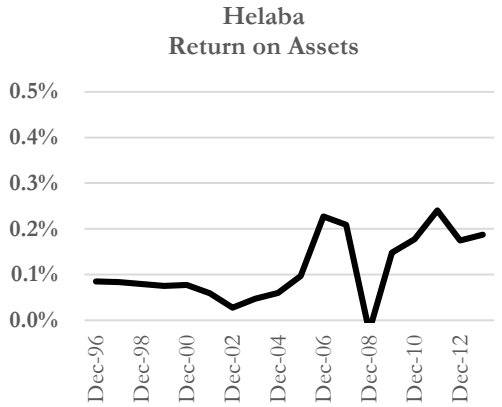



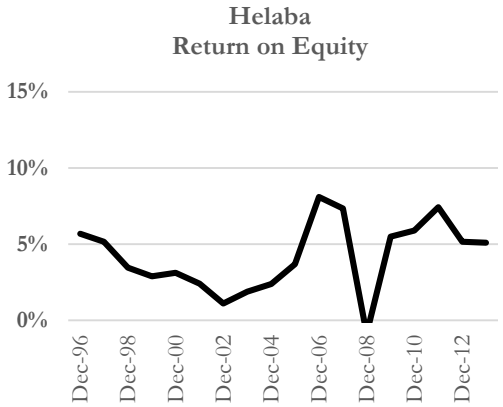

## Helaba supporting financials

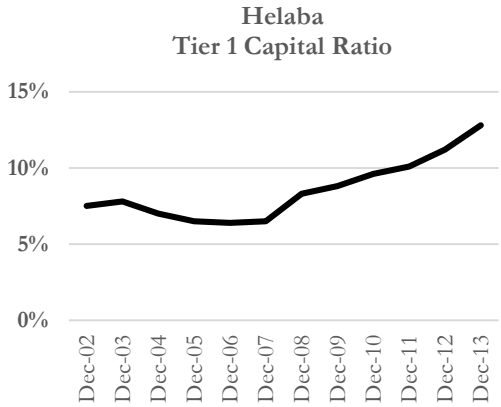


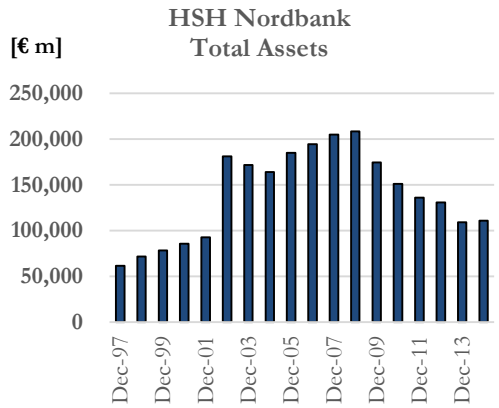



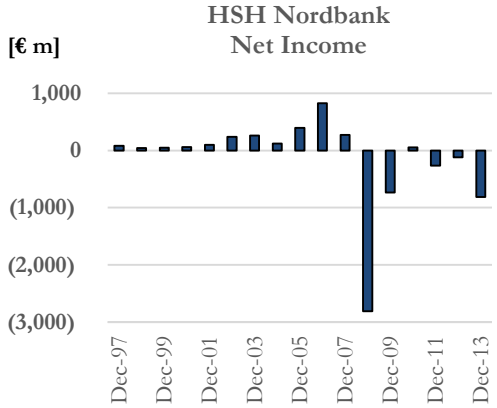



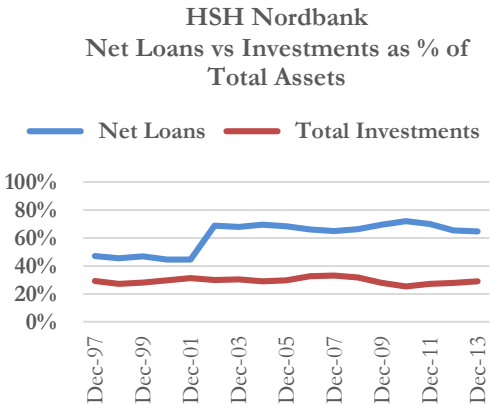



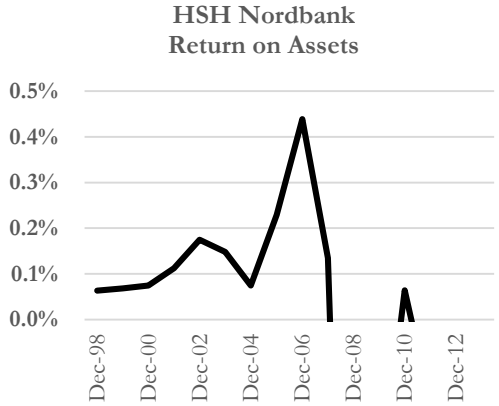



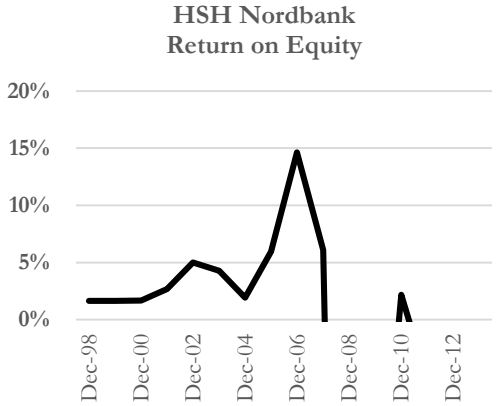
## HSH Nordbank supporting financials

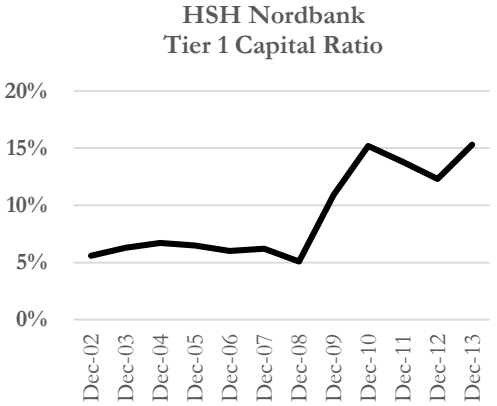


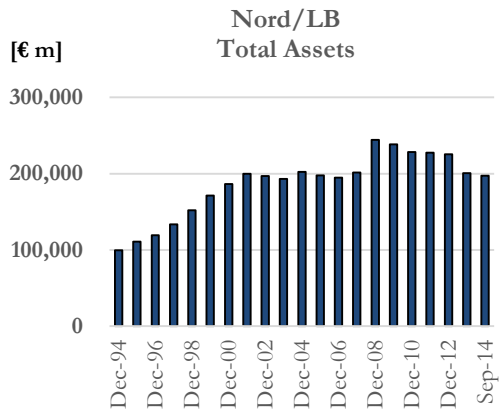



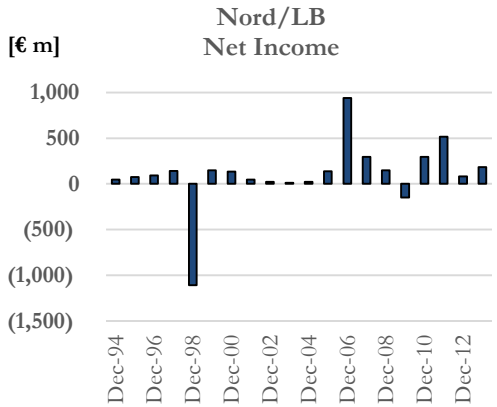



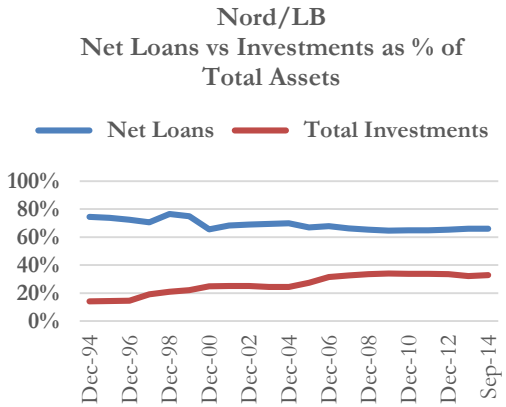



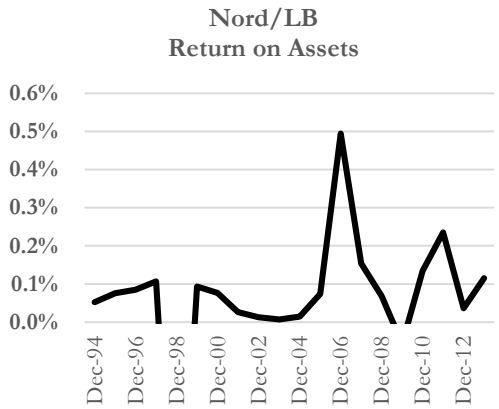



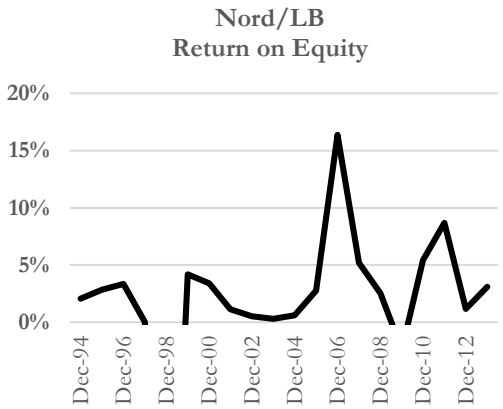
## Nord/LBsupporting financials

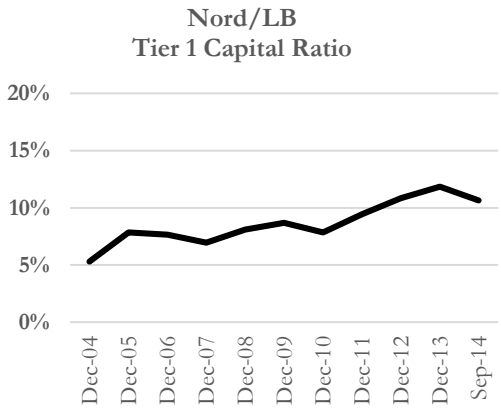


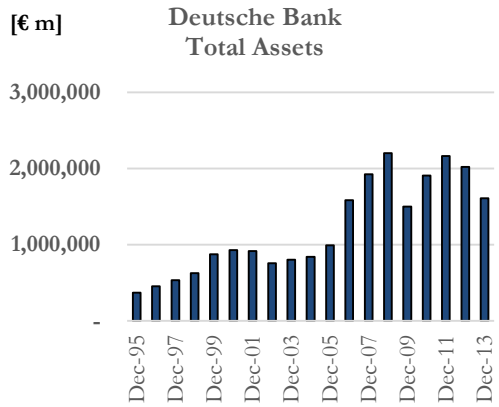



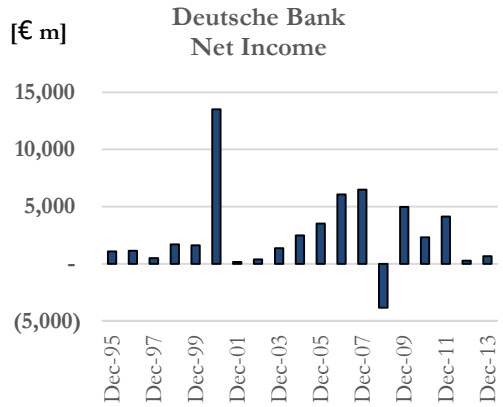



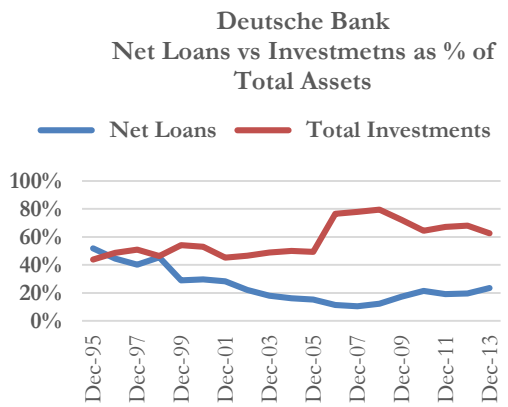



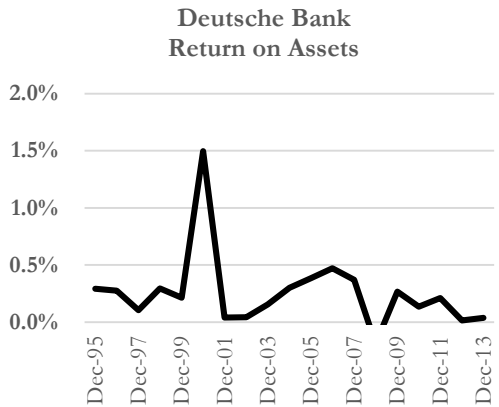



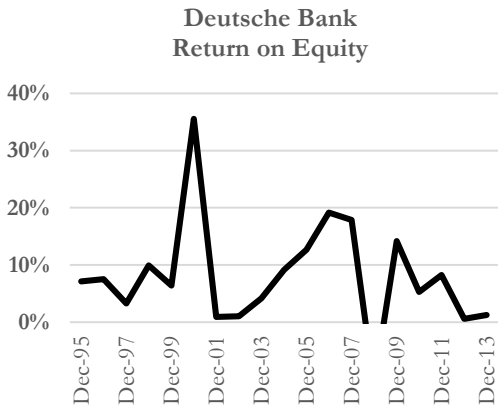
## Deutsche Bank supporting financials

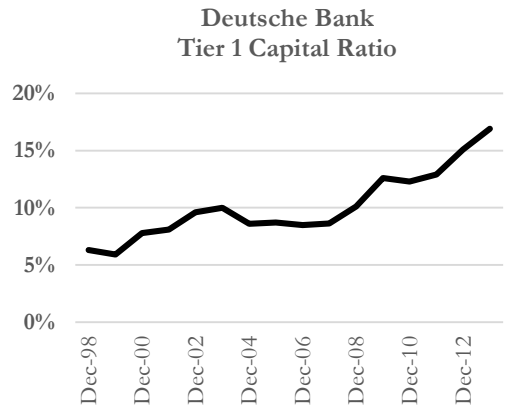


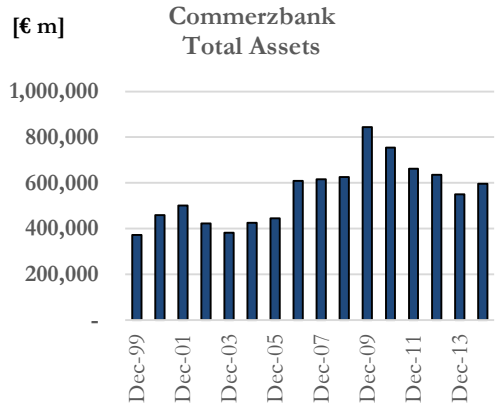



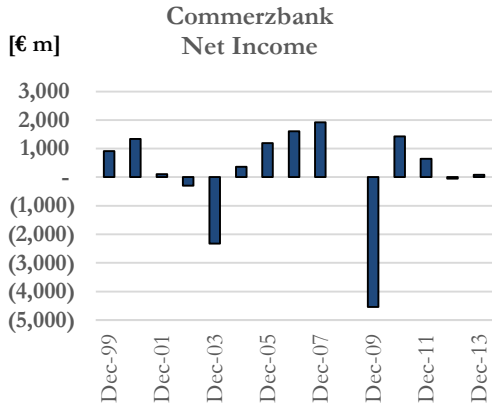



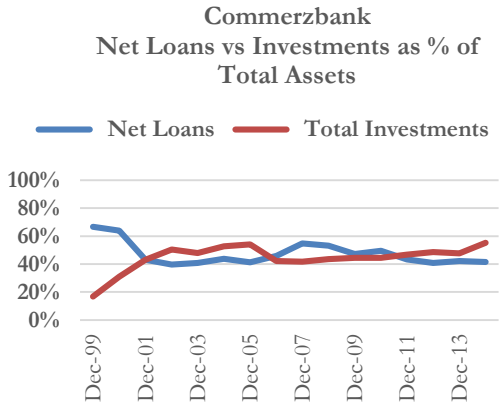



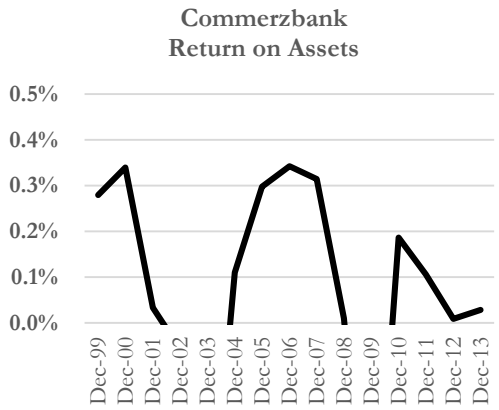



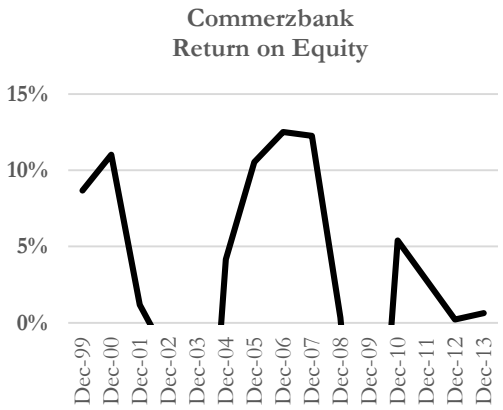
## Commerzbank supporting financials

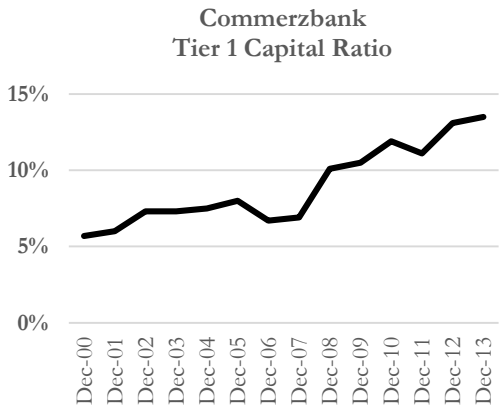


## 6.4 Securities used in spread construction

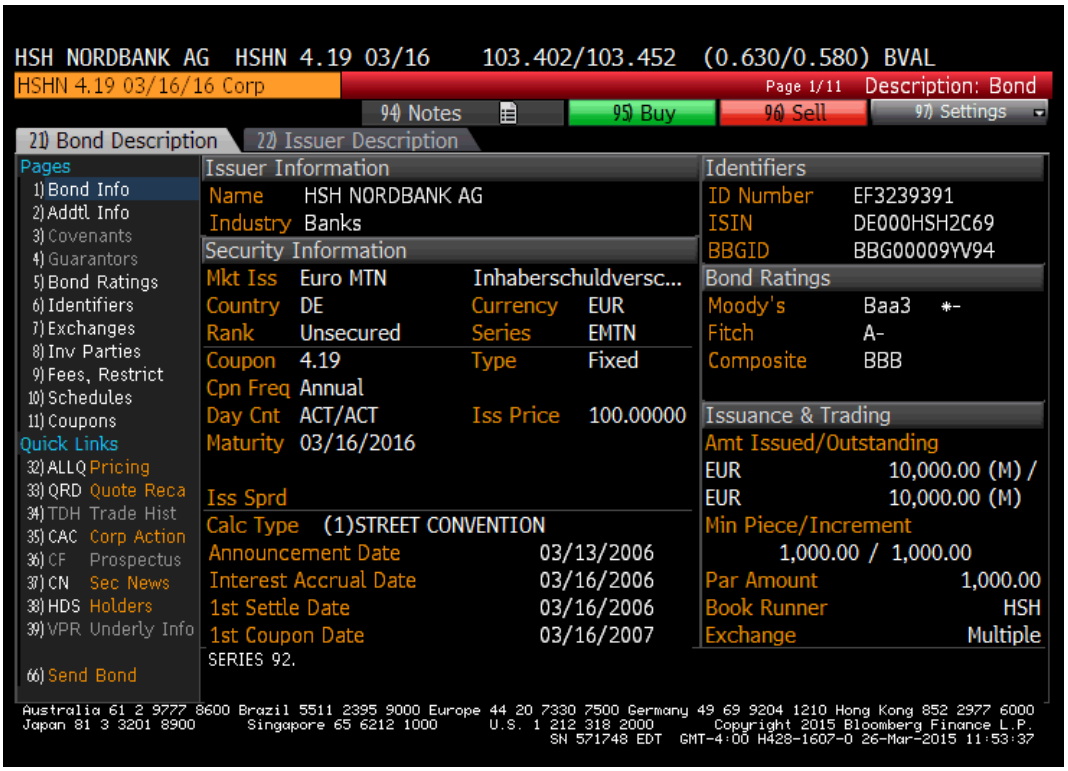
*Pre-transition HSH Nordbank bond*


*Corresponding German government bond*

*Transition HSH Nordbank bond*


*Corresponding German government bond*

*Post-transition HSH Nordbank bond*

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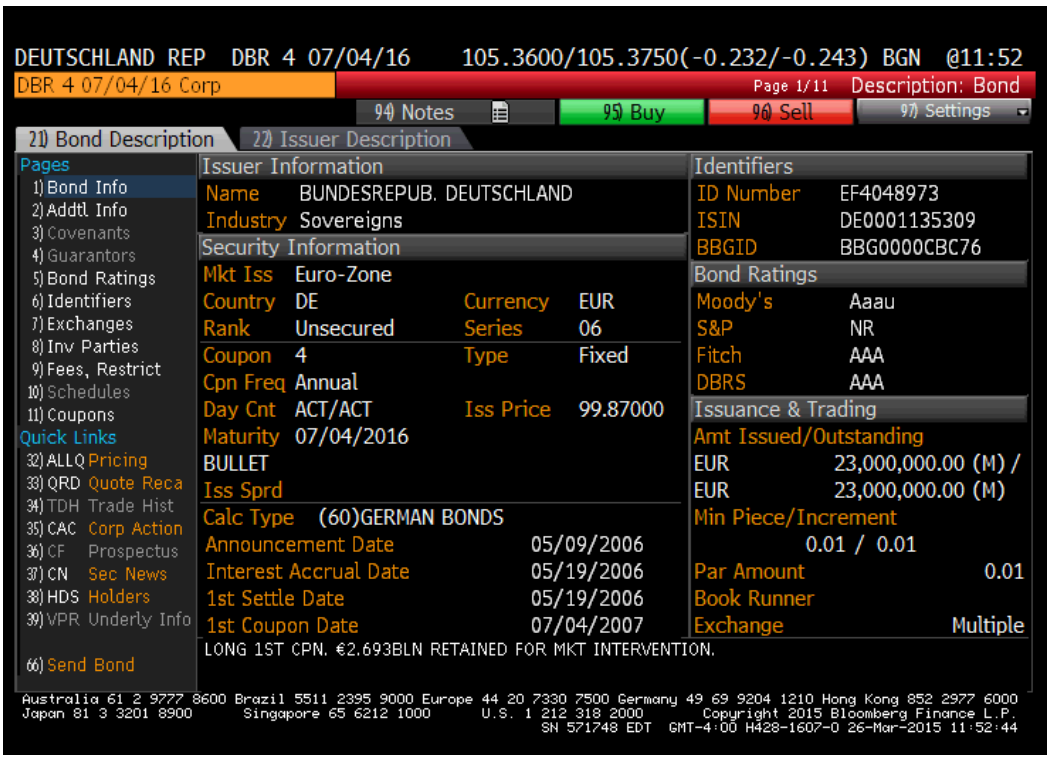
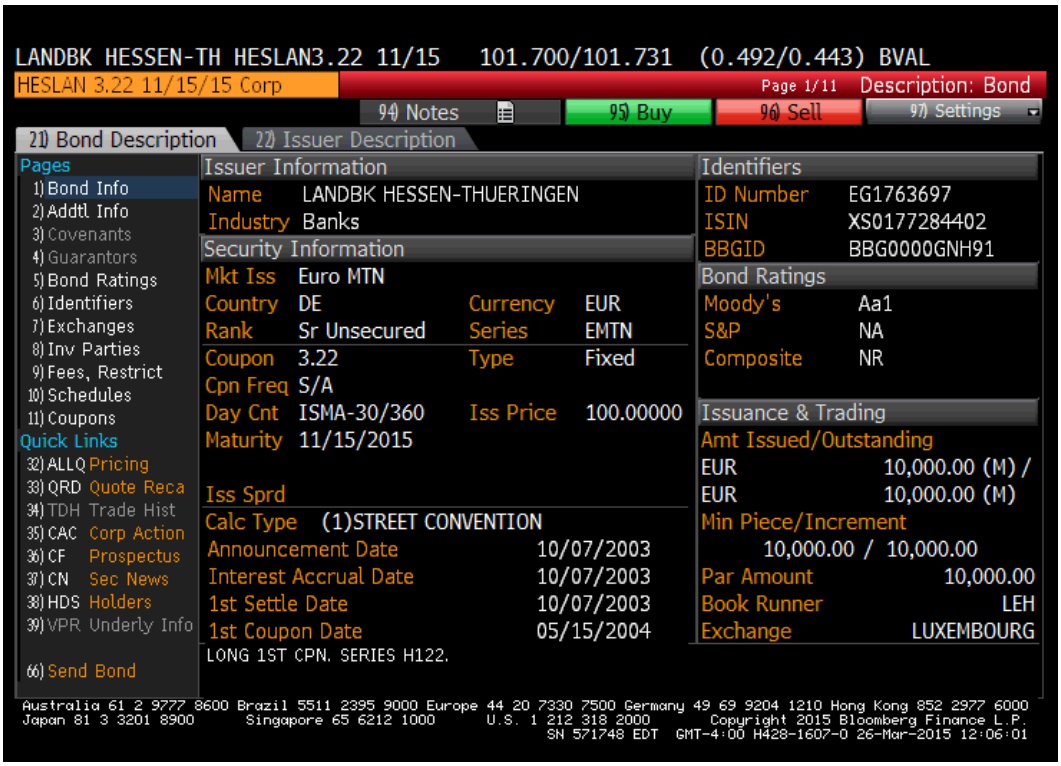


*Pre-transition Helaba bond*

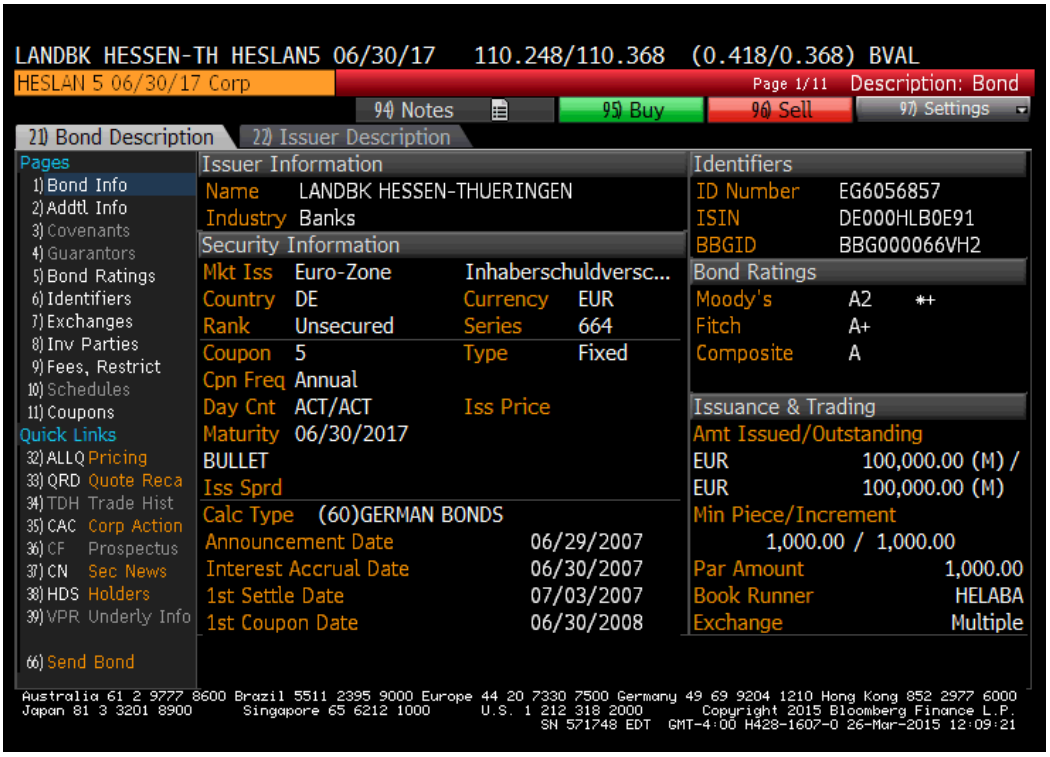

*Corresponding German government bond*

*Transition HSH Nordbank bond*



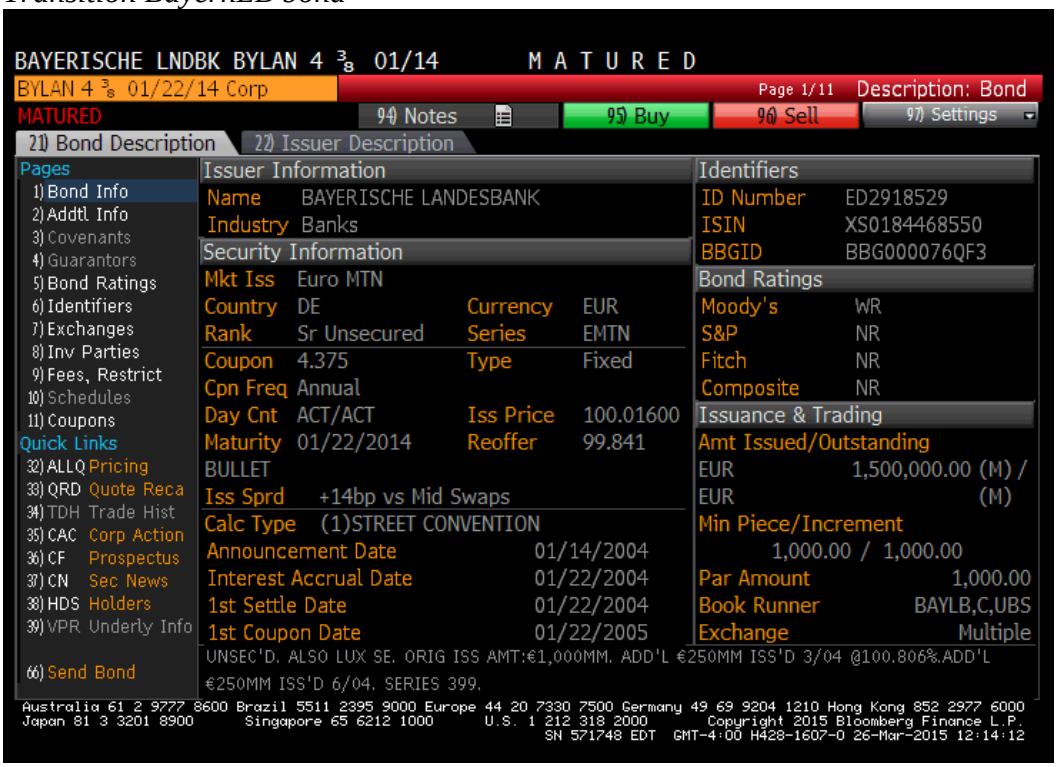

*Corresponding German government bond*

*Post-transition HSH Nordbank bond*




*Corresponding German government bond*

*Transition BayernLB bond*

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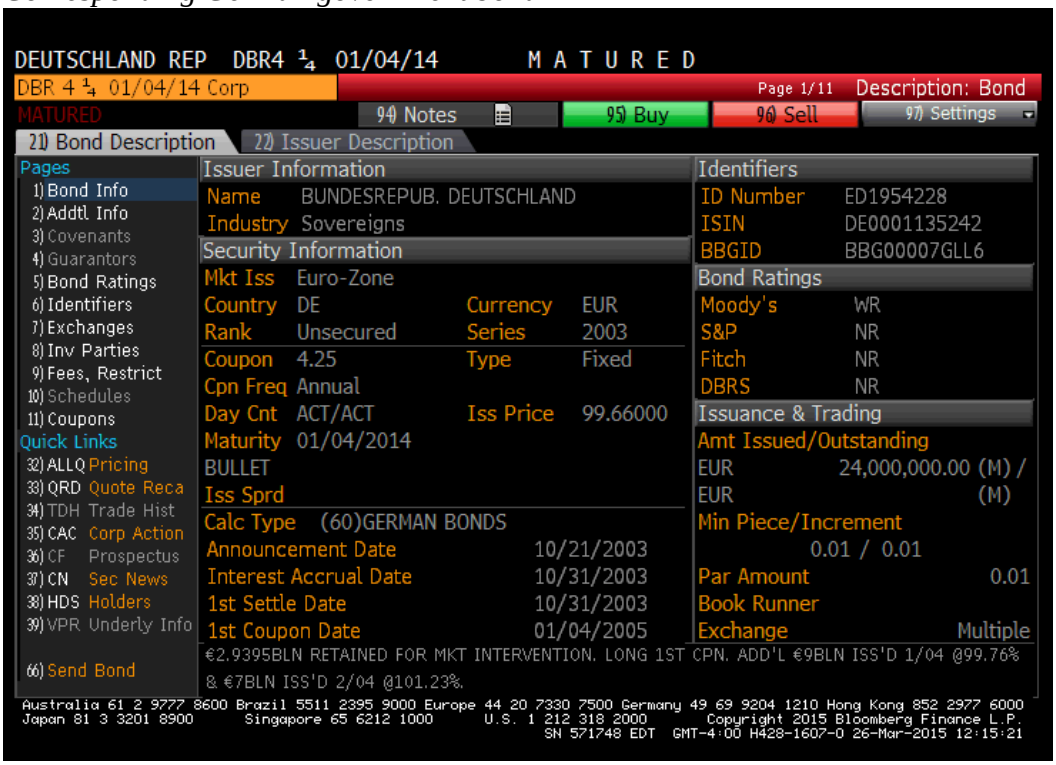

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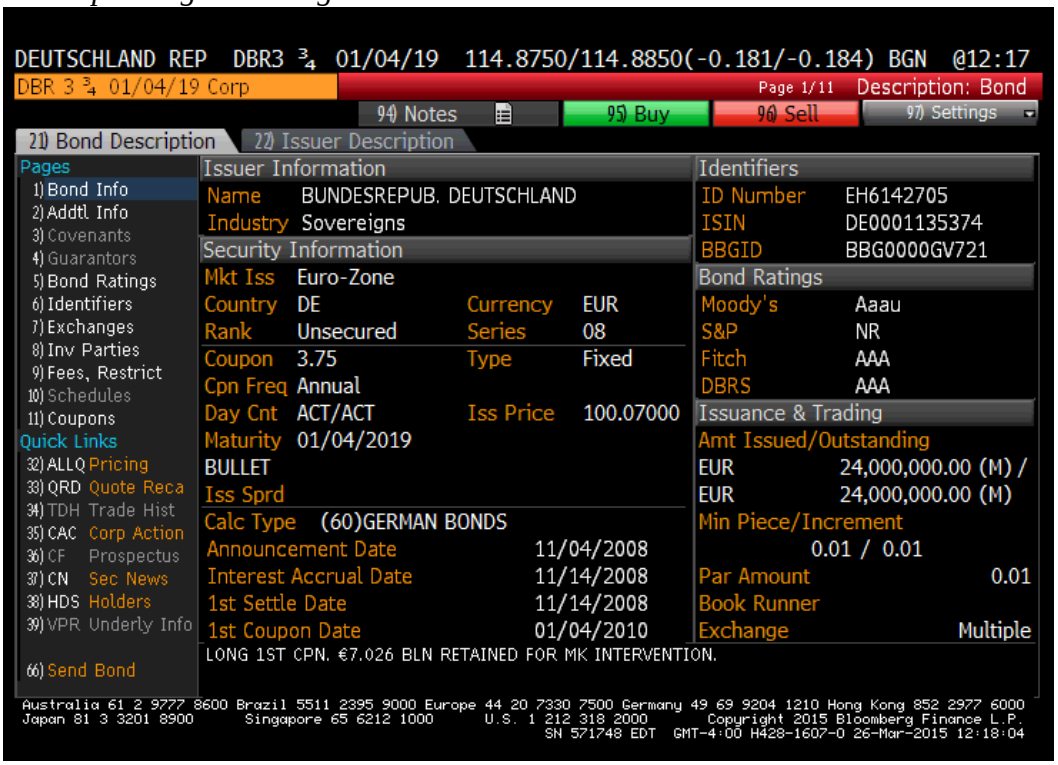
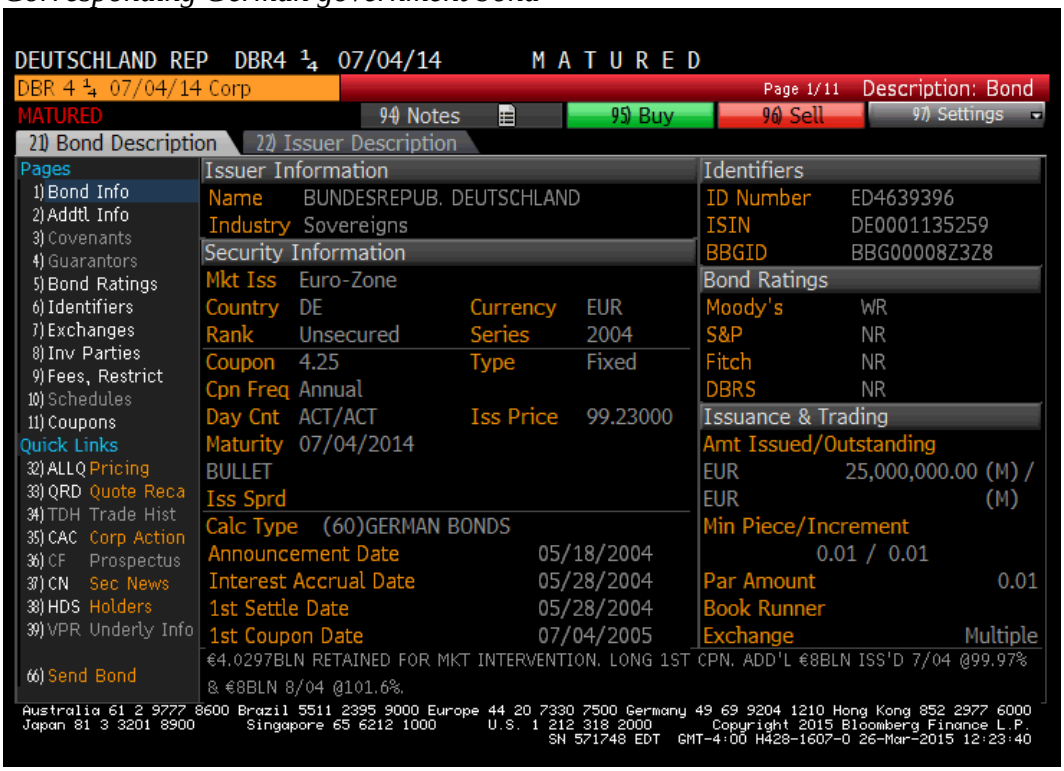
*Corresponding German government bond*



*Transition Nord/LB bond*


*Corresponding German government bond*



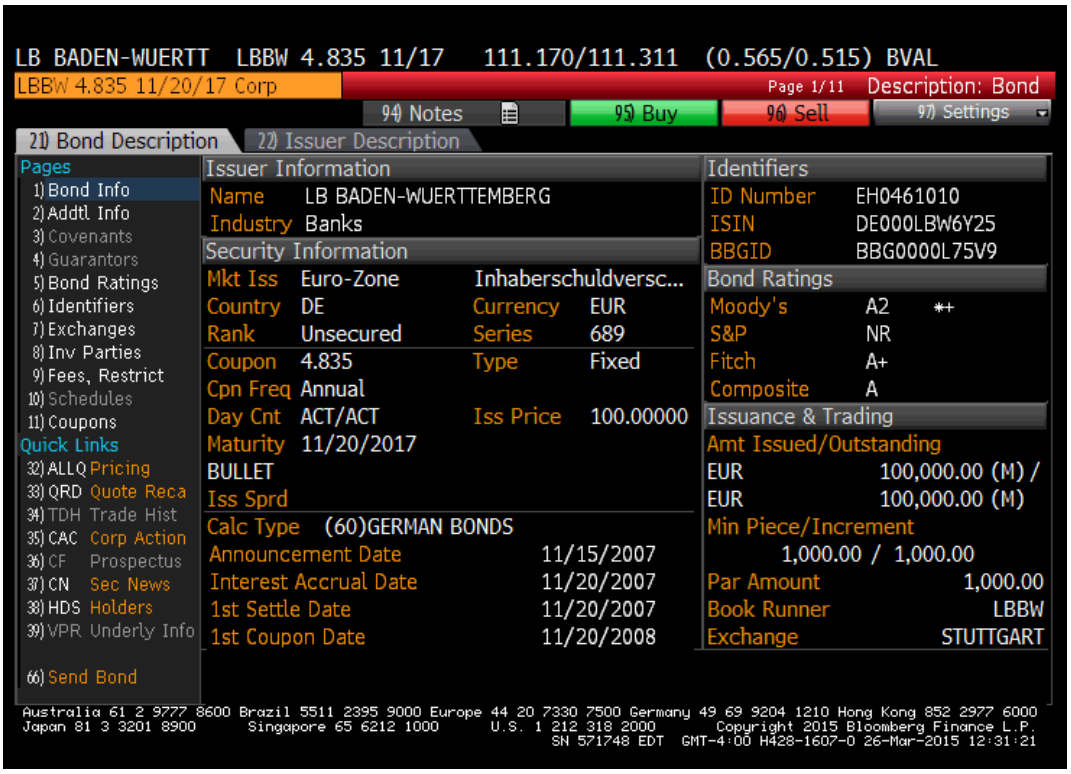
*Post-transition Nord/LB bond*


*Corresponding German government bond*

*Transition LBBW bond*

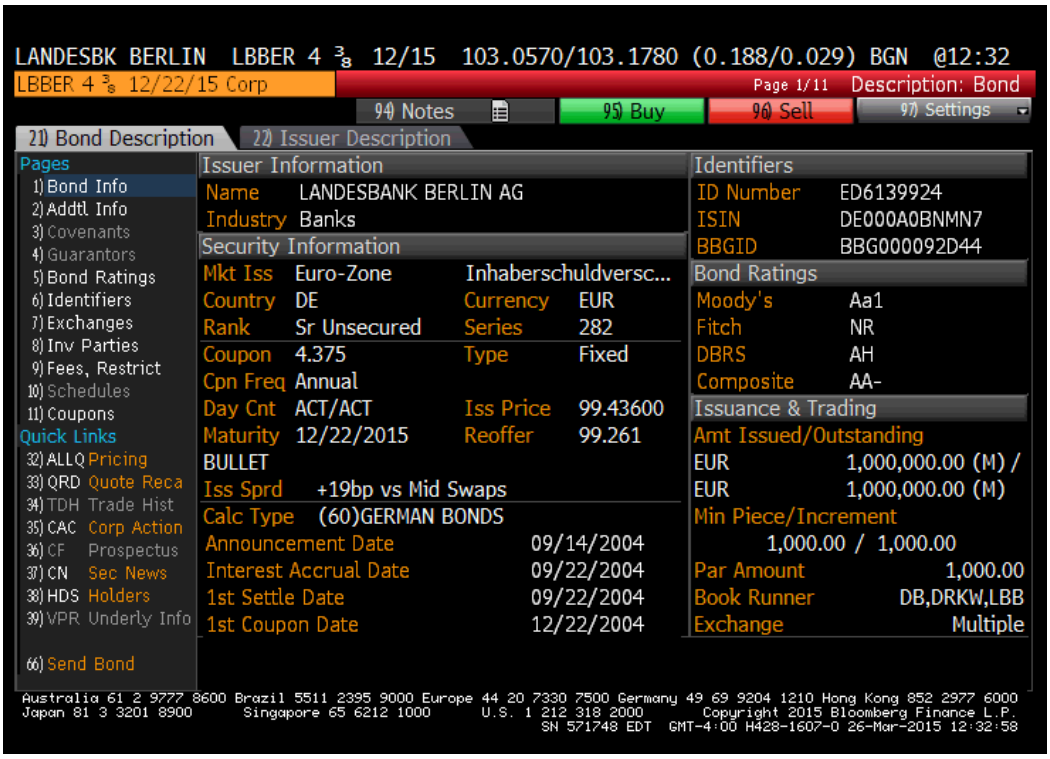

*Corresponding German government bond*

*Post-transition LBBW bond*



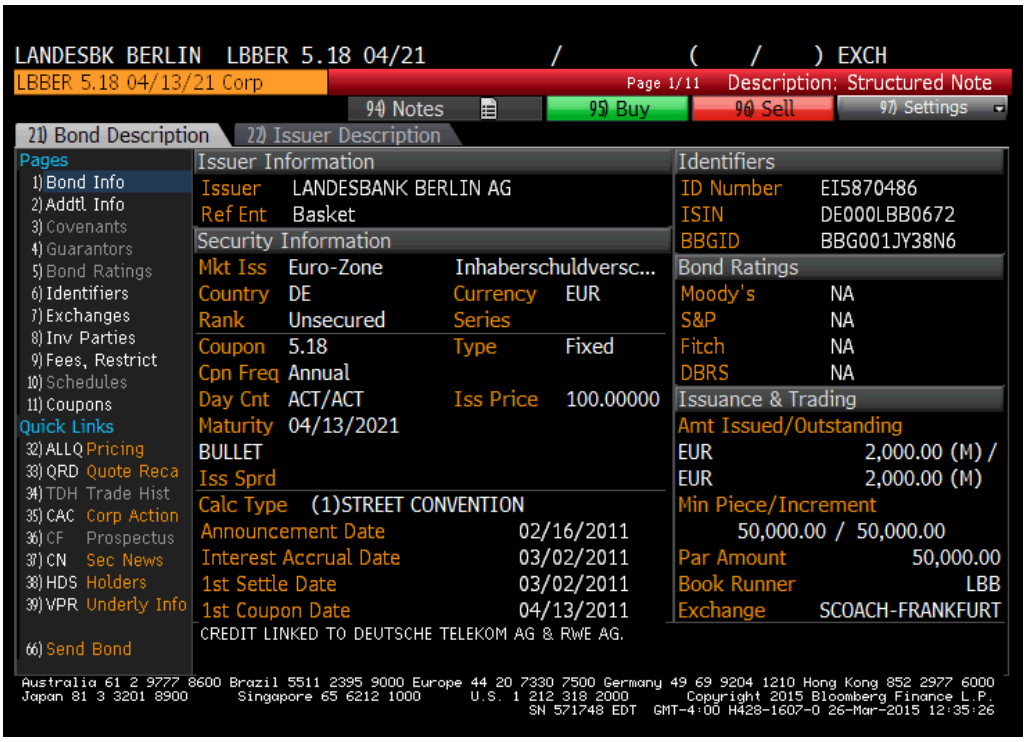

*Corresponding German government bond*

*Transition Landesbank Berlin bond*




*Corresponding German government bond*

*Post-transition Landesbank Berlin bond*




*Corresponding German government bond*

*Commerzbank bond issued after 2005*


*Corresponding German government bond*

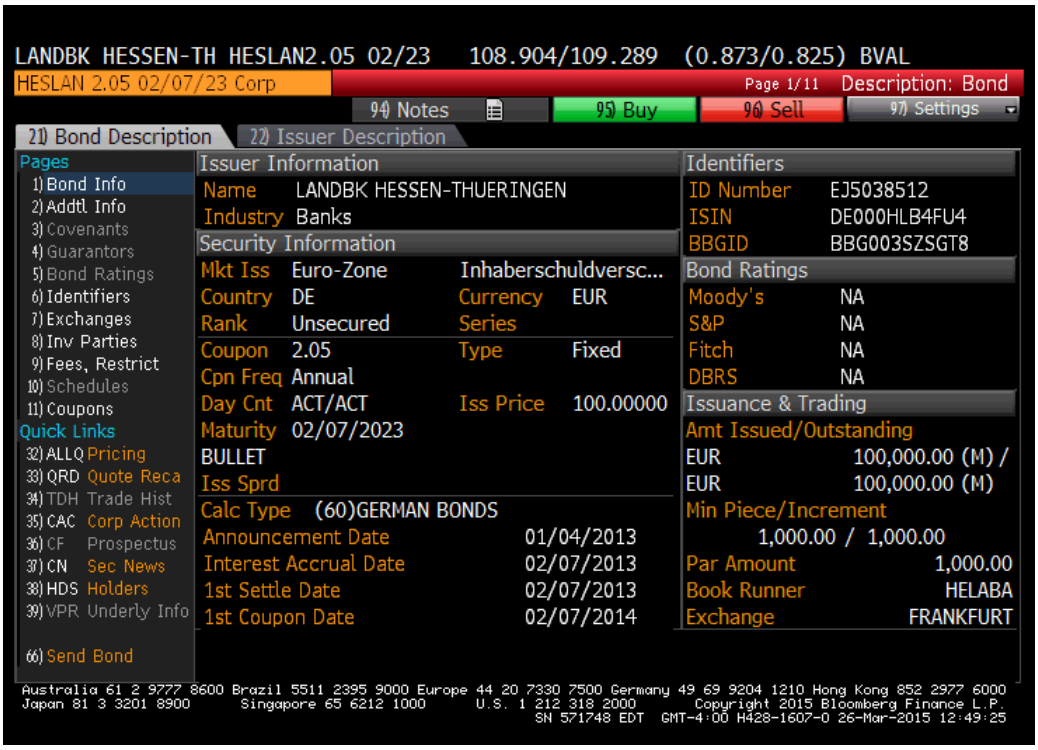
*Deutsche Bank bond issued after 2005*


*Corresponding German government bond*

*Recent HSH Nordbank Bond*


*Corresponding German government bond*

*Recent Helaba Bond*

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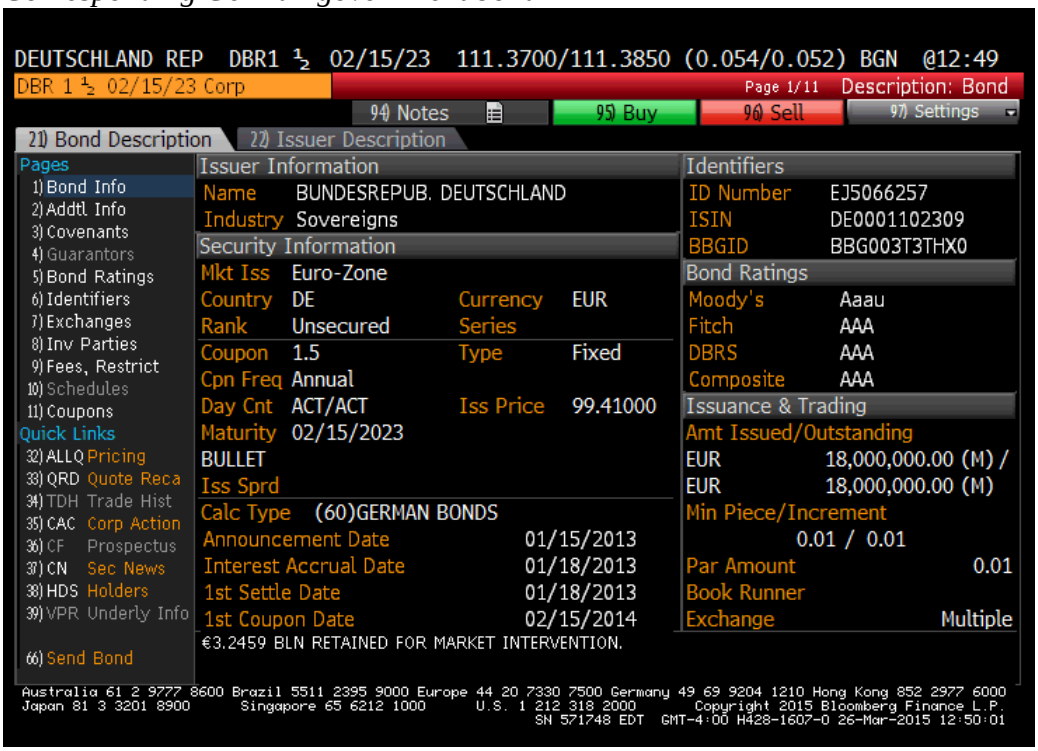
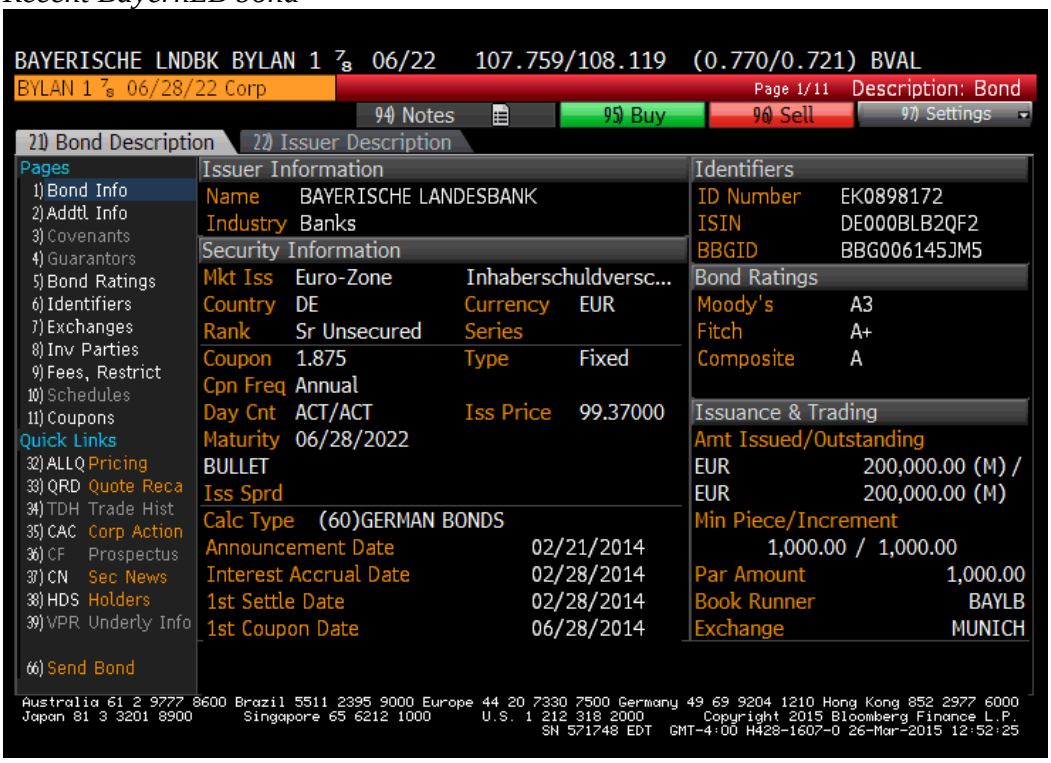


*Recent BayernLB bond*

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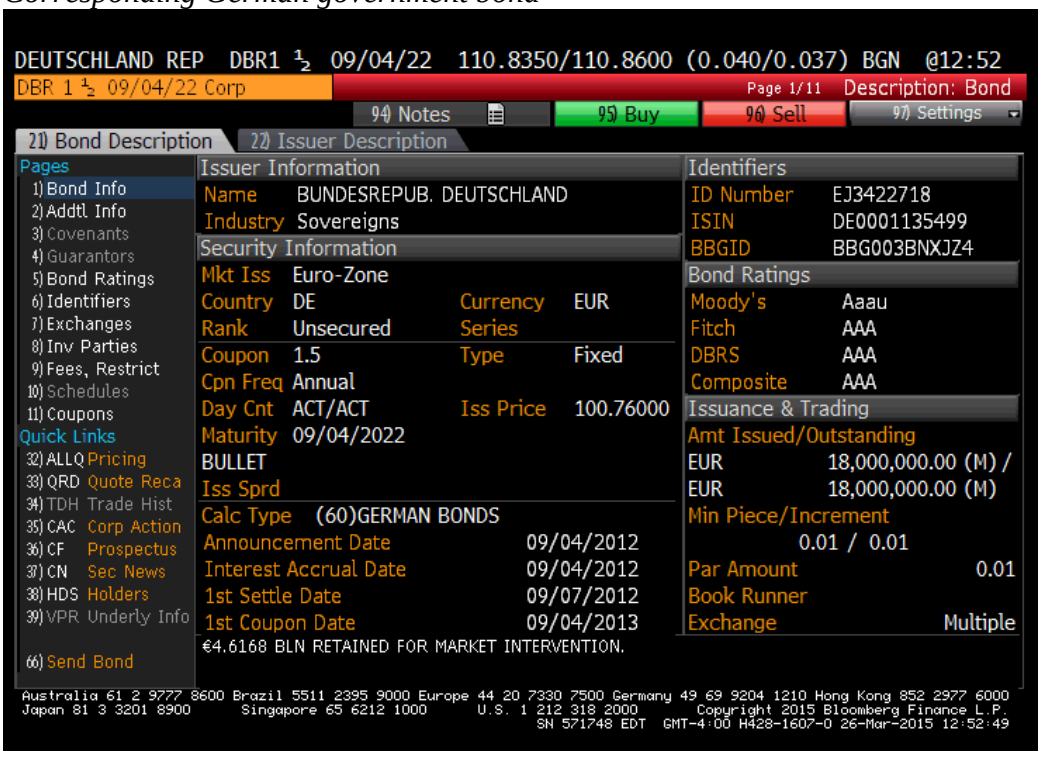
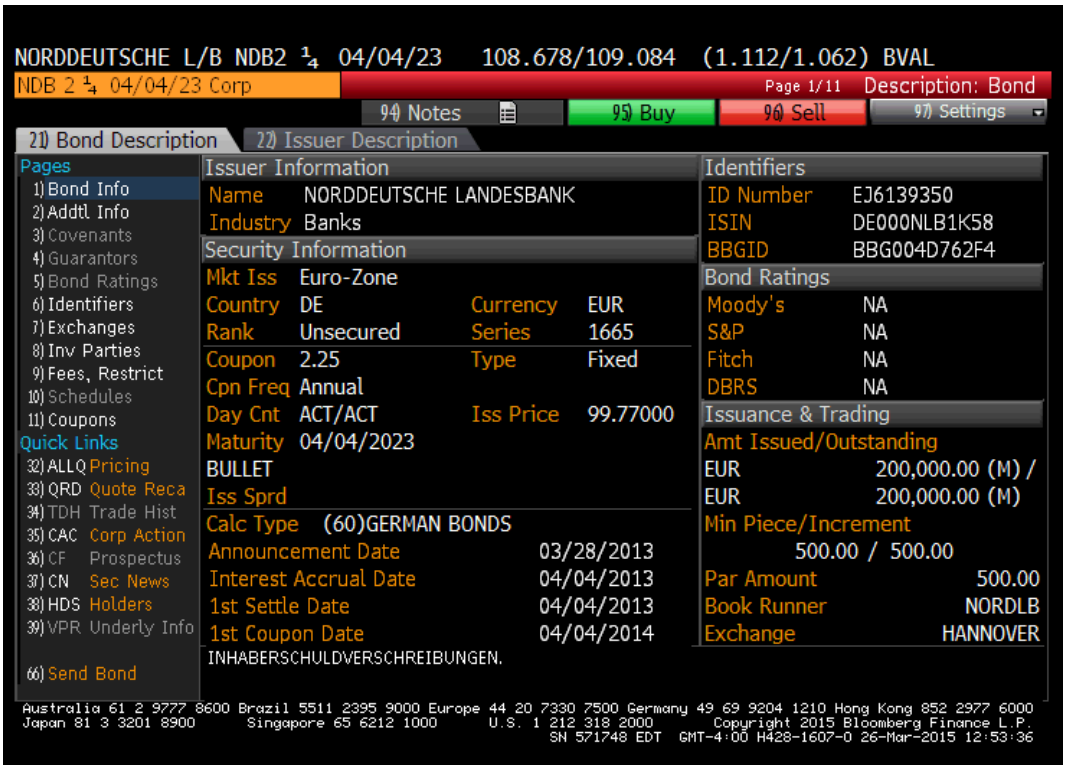
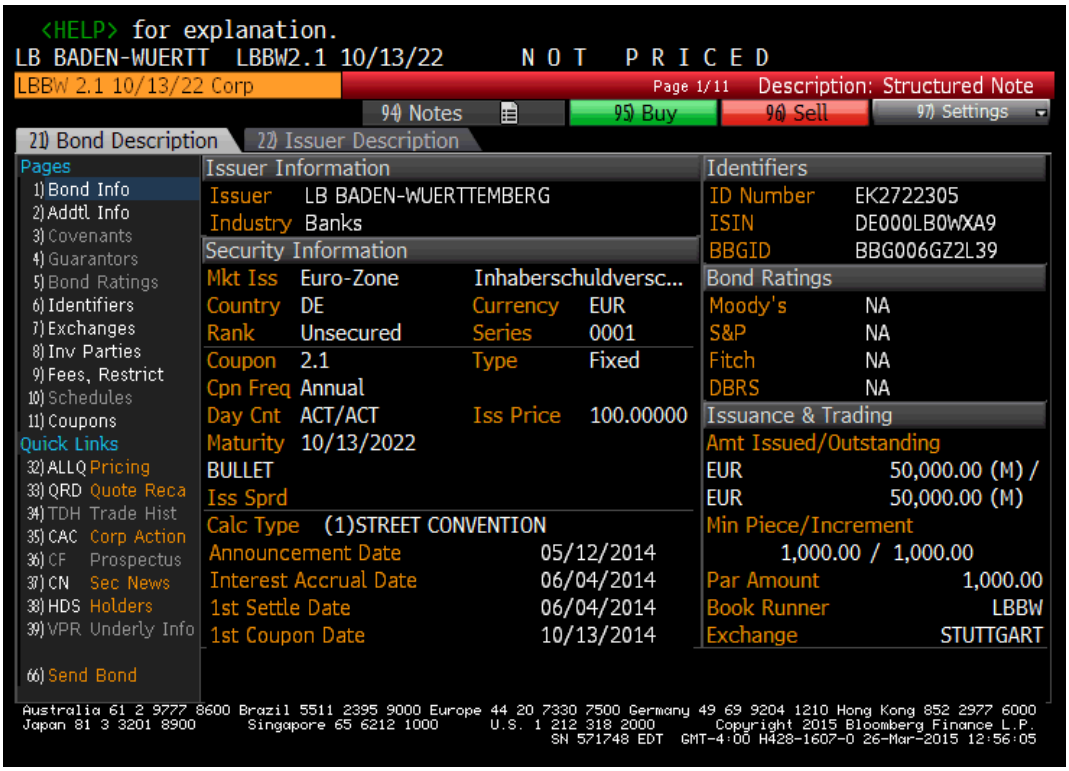


*Recent Nord/LB bon*




*Corresponding German government bond*

*Recent LBBW bond*

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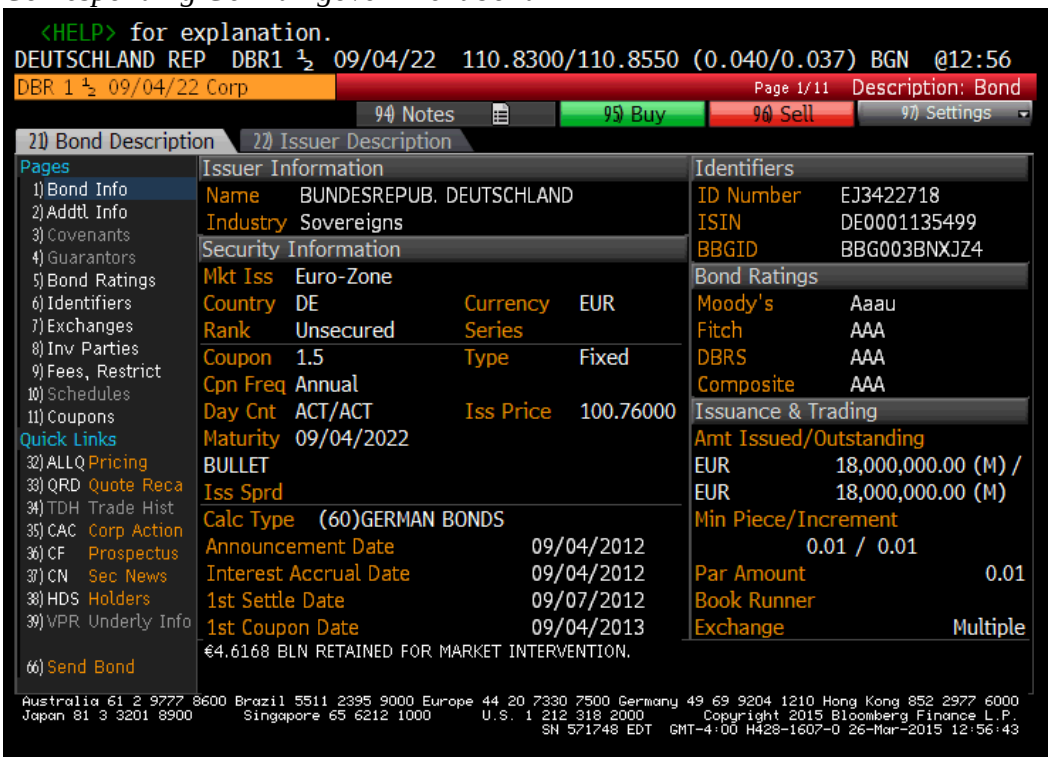
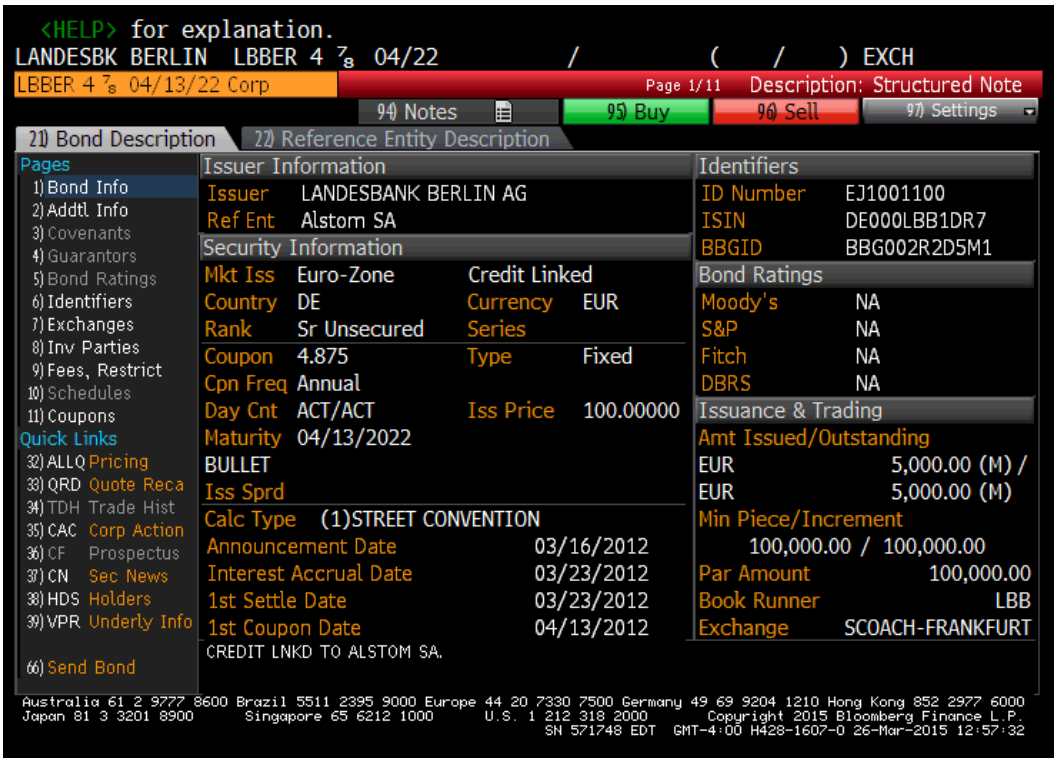
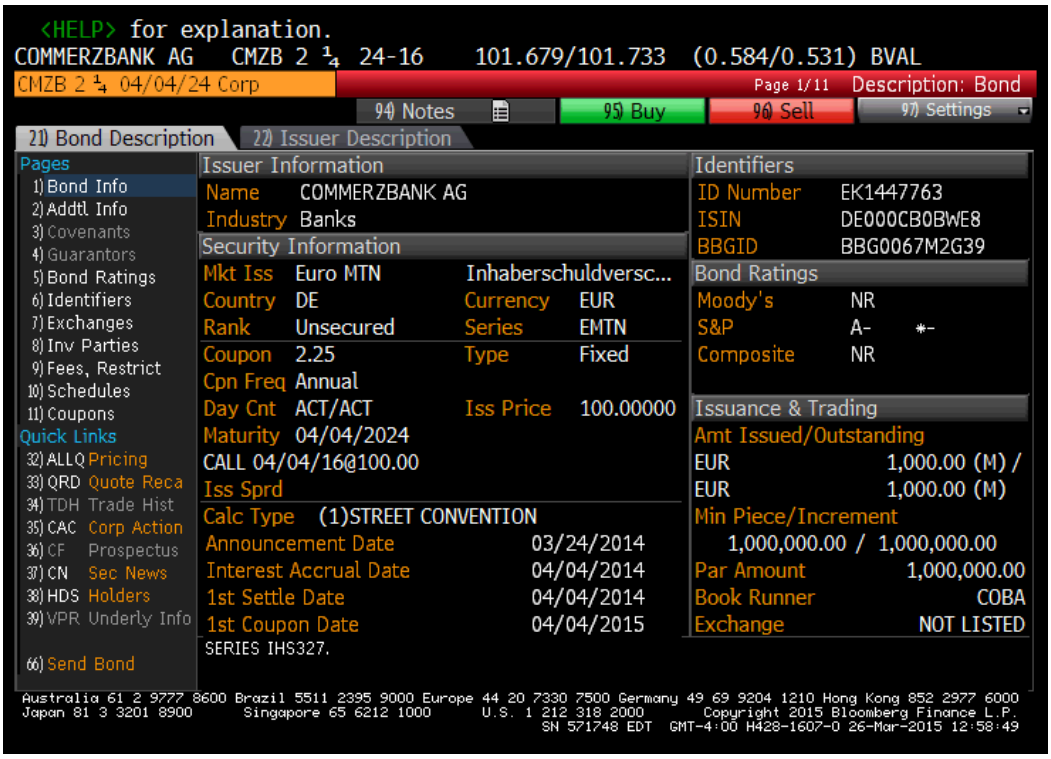


*Recent Landesbank Berlin bond*




*Corresponding German government bond*

*Recent Commerzbank bond*

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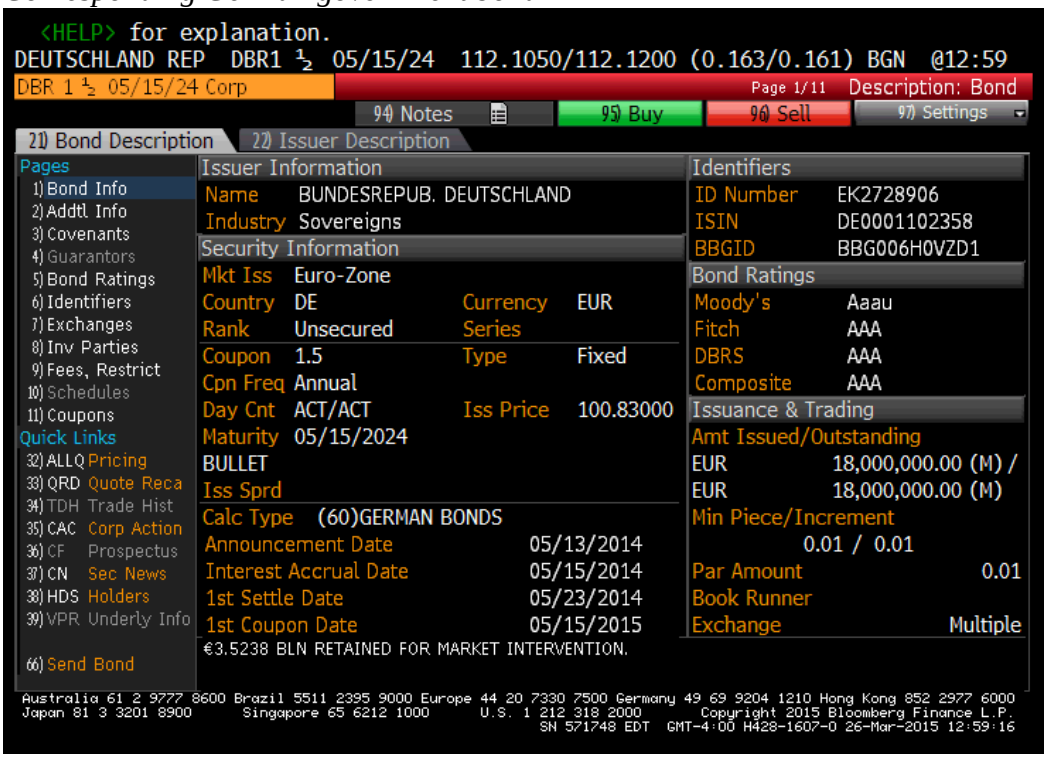
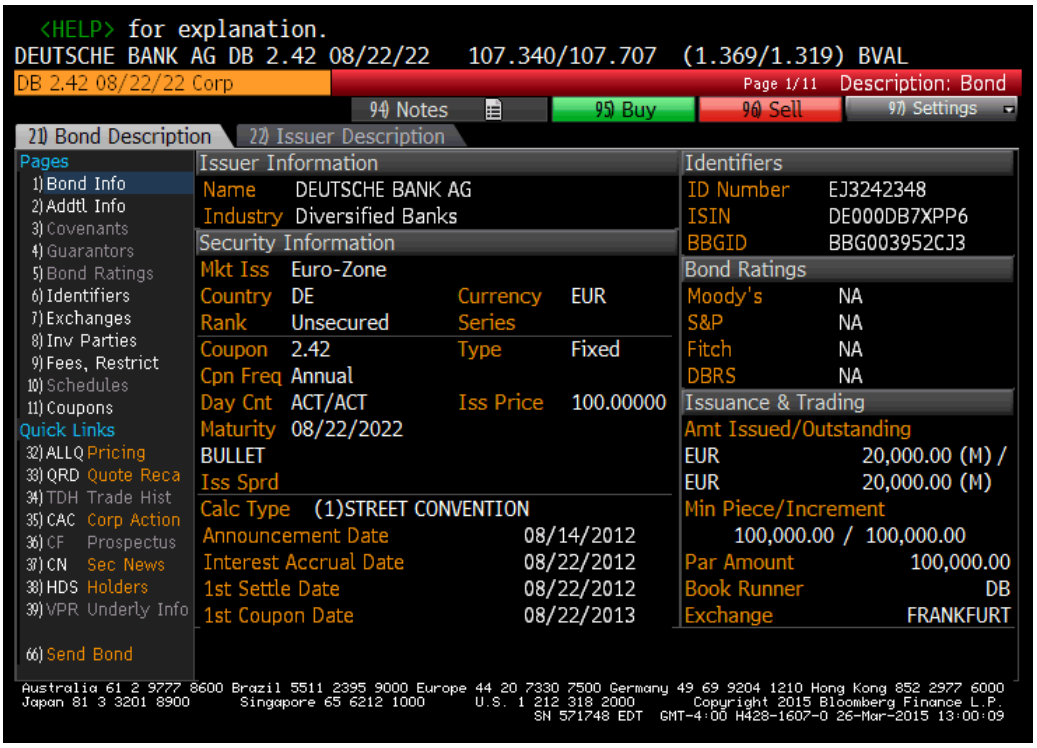


*Recent Deutsche Bank bond*

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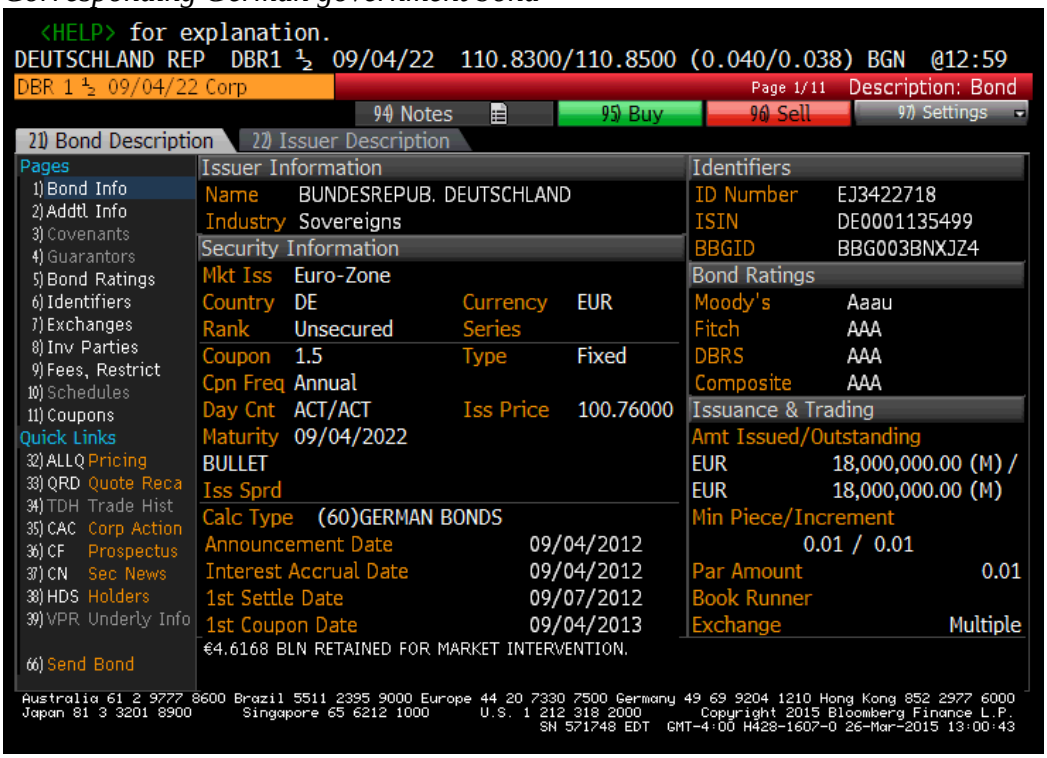

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## Interviews

Interview I. Michel Stubbe. Head of Financial Operations Services Division, European Central Bank. Interview conducted in person in Frankfurt am Main on January 13, 2015.

Interview II. Alan Noble. Vice President Liability Management and Funding, Landesbank Hessen-Thüringen. Interview conducted in person in Frankfurt am Main on January 13, 2015.

## Data sources

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S&P CapitalIQ