

Eberl, Jakob; Weber, Christopher

**Working Paper**

## ECB Collateral Criteria: A Narrative Database 2001–2013

ifo Working Paper, No. 174

**Provided in Cooperation with:**

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

*Suggested Citation:* Eberl, Jakob; Weber, Christopher (2014) : ECB Collateral Criteria: A Narrative Database 2001–2013, ifo Working Paper, No. 174, ifo Institute - Leibniz Institute for Economic Research at the University of Munich, Munich

This Version is available at:

<https://hdl.handle.net/10419/96662>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# **ifo** Working Papers

## ECB Collateral Criteria: A Narrative Database 2001–2013

Jakob Eberl  
Christopher Weber

Ifo Working Paper No. 174

February 2014

An electronic version of the paper may be downloaded from the Ifo website  
[www.cesifo-group.de](http://www.cesifo-group.de).

## ECB Collateral Criteria: A Narrative Database 2001–2013\*

### Abstract

This paper offers an encompassing analysis of the ECB's collateral criteria between 2001 and 2013. A comprehensive database of changes to collateral criteria is compiled and structured by asset classes. The main findings can be summarized in three stylized facts: (1) Since the outbreak of the financial crisis, the ECB has been six times more active in collateral policy making than in the seven years before. Thereby, the ECB broadened the eligible collateral pool both (2) at the extensive margin, increasing the quantity of eligible asset types by a factor of 36 and (3) at the intensive margin, by lowering and partially suspending the minimum credit rating requirements. This led to an additional increase in the number of eligible asset types by a factor of 110. The paper tracks these developments using a narrative approach.

JEL Code: E58, F33, G01, H12.

Keywords: European Central Bank, collateral, European debt crisis, reserve transaction, segmental pooling.

Jakob Eberl  
Center for Economic Studies (CES)  
University of Munich  
Schackstr. 4  
80539 Munich, Germany  
Phone: +49(0)89/2180-3105  
jakob.eberl@lmu.de

Christopher Weber  
Center for Economic Studies (CES)  
University of Munich  
Schackstr. 4  
80539 Munich, Germany  
Phone: +49(0)89/2180-2203  
weber.christopher@lmu.de

\*We especially thank Volker Meier, Hans-Werner Sinn and Christoph Trebesch for their advice and guidance as well the participants of the CESifo Group Seminar and the ifo & CES Prep Conference for helpful comments and suggestions. Also, the authors thank the ECB's Eligible Assets Team for providing useful information.

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Collateral and ECB monetary policy</b>	<b>3</b>
<b>3</b>	<b>The ECB's collateral framework</b>	<b>6</b>
3.1	Two frameworks of collateral policy . . . . .	6
3.2	The initial General Framework: Tier 1- and tier 2-eligibility . . . . .	7
3.3	A comprehensive collateral framework: The Single List . . . . .	9
3.4	General principles of the collateral framework . . . . .	10
3.4.1	Close links . . . . .	10
3.4.2	Risk control within the collateral pool . . . . .	11
3.4.3	Valuation principles . . . . .	13
3.4.4	The Eurosystem Credit Assessment Framework (ECAAF) . . . . .	14
3.4.5	Segmental pooling . . . . .	16
<b>4</b>	<b>The development of eligibility criteria</b>	<b>18</b>
4.1	General changes to the eligibility of assets . . . . .	19
4.1.1	Standardizing the collateral framework (2001-2007) . . . . .	19
4.1.2	Modifying the collateral framework in response to the crisis (since 2008)	21
4.2	Changes to the eligibility of debt instruments issued or guaranteed by govern- ments . . . . .	24
4.3	Changes to the eligibility of debt instruments traded on non-regulated markets	28
4.4	Changes to the eligibility of bank bonds . . . . .	31
4.4.1	Initial eligibility criteria . . . . .	31
4.4.2	Changes to the eligibility of bank bonds . . . . .	33
4.4.3	Eligibility of bank bonds with close links . . . . .	34
4.5	Changes to the eligibility of ABSs . . . . .	36
4.5.1	Tightening the eligibility of ABSs (2006-2011) . . . . .	37
4.5.2	Loosening the eligibility of ABSs (2011-2013) . . . . .	38
4.5.3	Tightening the monitoring of eligible ABSs (since January 2013) . . .	39
4.5.4	Eligibility of ABSs with close links . . . . .	39
4.6	Changes to the eligibility of corporate bonds . . . . .	40
<b>5</b>	<b>Summary and conclusion</b>	<b>40</b>
	<b>References</b>	<b>45</b>
	<b>Appendix</b>	<b>46</b>

# 1 Introduction

Collateral policy has played a crucial role in central banks' crisis management since the financial market turmoil of 2008 and throughout the European debt crisis. For the ECB's liquidity provision to be effective, it was necessary to ensure that banks possess the means to collateralize the refinancing credit they drew on from the respective national central bank (NCB). Collateral criteria therefore played a key role during the crisis (see Drechsler et al., 2013). Despite this, the literature still lacks a comprehensive overview of ECB collateral criteria and their evolution, in particular for the period 2008-2013. This paper provides an in-depth analysis of the ECB's collateral policy and compiles a narrative database on ECB collateral criteria eliciting information from all related legal documents released by the ECB comprising 664 pages.<sup>1</sup> Also, the development of eligibility criteria is analyzed by asset classes. The findings of the paper can be subsumed in three main stylized facts:

1. The ECB has been very active in collateral policy making, especially after the collapse of Lehman and the consequent turmoil in interbank markets. The changes to collateral criteria are numerous and patchy, comprising 44 legal documents since the collateral framework was introduced in 2001. 38 of these documents were originated after the outbreak of the crisis—a more than sixfold increase. Overall, the number of changes increased from 25 before to 71 after the Lehman event. As a result, the eligibility criteria for collateral are opaque and convoluted, having changed frequently over time.
2. At the extensive margin, the ECB broadened the pool of eligible collateral quantitatively by accepting more types of assets of the same credit quality. Thereby, the broadness of the eligible collateral pool increased by a factor of 36 between 2001 and 2013 (keeping the intensive margin fixed).
3. At the intensive margin, the ECB broadened the pool of eligible collateral qualitatively by lowering the requirements to the minimum credit quality of assets in the pool. At the time of writing (December 2013), assets of all credit ratings are eligible. This led to an increase of the broadness of the eligible collateral pool by an additional factor of 110.

---

<sup>1</sup>Although not always explicitly indicated, most of the information this analysis is based on comes from official documents of the ECB. In particular, this includes official documents of the General and Temporary Framework, cf. <http://www.ecb.europa.eu/ecb/legal/1002/1014/html/index-tabs.en.html>, information from the ECB's press releases, cf. <https://www.ecb.europa.eu/press/pr/date/2014/html/index.en.html>. Additionally, some of the information was provided by the ECB Eligible Assets Team in bilateral communication with the authors. For the description of the role of collateral for ECB monetary policy in Section 2, see also ECB (2011), esp. Chapter 4; Chaudron (2008); Bundesbank (2013), esp. Chapter V.

The importance of collateral policy as such manifests in three main aspects. Firstly, in times of market distress, the central bank can oppose a threatening scarcity of collateral by reshaping the market’s perception of what high-quality assets are by making more assets eligible as collateral, cf. e.g. Levels and Capel (2012) or Bank of International Settlements (BIS) Committee on the Global Financial System (2013). Singh (2013) defines the post-Lehman time as a “new collateral space”, in which additional participants impact collateral availability, including central banks outright purchasing high-quality collateral. The ECB’s measures to broaden the eligible collateral pool, that are described throughout this paper, certainly counteract such scarcity. This leads to a second aspect revealing the importance of collateral policy. Central bank lending (as any lending) includes significant risks, that are ultimately borne by the public purse, and should therefore be mitigated by lending only against “good collateral” (in terms of Bagehot; see Tucker, 2009). Given the preceding discussion of collateral scarcity, one can argue that the risk a central bank should consider is predominantly credit risk. Hence, central banks could extend eligible collateral to less liquid assets. However, this implies a trade-off between credit and liquidity risk which could tie up parts of a central bank’s balance sheet and hence, restrict its flexibility.<sup>2</sup> Thirdly, when interest rates approach the zero lower bound and central banks assign unlimited liquidity, the eligible collateral certainly plays a distinctive role in determining the scope of expansionary monetary policy.

The paper relates to two strands of literature. First, it contributes to research on the lender of last resort (LOLR) role of central banks—an idea that goes back to Thornton (1802) and Bagehot (1873). Drechsler et al. (2013) is only a recent example of many, investigating the impact of LOLR measures on markets and explaining the occupation of the LOLR by banks. Yet, the present paper focuses exclusively on the collateral framework *underlying* the liquidity providing measures of the ECB, for which far less analyses are available. Second, it adds to the body of work comparing collateral criteria of different central banks. Chailloux et al. (2008a) reviews early policy responses of major central banks to the current crisis including a discussion of the collateral policies accompanying other measures taken to calm markets.

---

<sup>2</sup>Chailloux et al. (2008b) specifically discuss this and other reasons for why central banks should and do take collateral.

Chailloux et al. (2008b) and Cheun et al. (2009) provide surveys of principles shaping the collateral frameworks designed by central banks and explain their adaptations during the first years of the crisis together with their differences. More recent comparative studies are provided by ECB (2013a) or BIS Markets Committee (2013), which draw a comparison between 16 central banks around the world. One major reason why collateral policy responses of central banks differed is recognized by Gros et al. (2012): The first stage of the financial crisis (2007-09) was similar on both sides of the Atlantic, and hence, also the responses resembled. The second stage of the crisis is, however, unique to the euro area. Owing to this, the ECB collateral criteria have been amended extensively as described in the following; see Hofmann (2011), ECB (2013b) and Sinn (2014) for a first overview.

The analysis at hand is different for three reasons: (1) It investigates all relevant changes from 2001 to 2013; (2) it focuses on the ECB's collateral framework, and provides detailed information on the chronological sequence of changes, with the aim to present it in a comprehensible way and structured by asset classes; (3) it attempts to measure the dimension of quantitative and qualitative broadening of the ECB's eligible collateral pool.

The remainder of the paper is structured as follows. The next section explains the instruments and practice of the ECB's monetary policy and works out the underlying importance of collateral policy. Subsequently, the ECB's collateral framework is described, revealing its structure and general principles within. The main part of this paper is contained in Section 4, which analyzes the development of the eligibility criteria for collateral. It offers a depiction of general eligibility criteria and then specifies by distinct asset classes: Debt instruments issued or guaranteed by governments, debt instruments traded on non-regulated markets, bank bonds (both covered and uncovered), asset-backed securities (ABSs) and corporate bonds. Section 5 gives a summary of the most important amendments to collateral criteria and quantifies the dimension of quantitative as well as qualitative broadening.

## **2 Collateral and ECB monetary policy**

The ECB possesses three main monetary policy instruments: Open market operations, the minimum reserve system and standing facilities. It uses them to steer short-term money

market rates and ensure the functioning of the money market through the provision of liquidity to banks. The practical execution of monetary policy operations takes place between national central banks and eligible counterparties. Eligible counterparties have to obey the minimum reserve system and be supervised by an European Economic Area (EEA) national authority as well as “financially sound”.<sup>3</sup> In contrast to other central banks, such as the Fed which mainly interacts with a very small number of primary dealers, the ECB pursues a decentralized implementation of its monetary policy, i.e. an interaction with many counterparties through the NCBs.

Article 18.1 of the Statute of the European System of Central Banks (ESCB) allows the ECB and NCBs to operate in financial markets but requires all Eurosystem credit operations to be based on adequate collateral. The concept of adequate collateral has two dimensions. First, it implies that the ECB should be protected from potential losses in monetary policy operations. Second, it requires that sufficient collateral is available to a broad set of counterparties. The ECB’s understanding of adequacy will be extensively discussed throughout this paper. In the following, a short general description of the involvement of collateral in the ECB’s main monetary policy operations is given.<sup>4</sup>

*OMOs* comprise most importantly main refinancing operations (MROs) and longer-term refinancing operations (LTROs). MROs are the regular liquidity-providing transactions, conducted weekly and usually have a maturity of one week. LTROs are conducted monthly and usually have a maturity of three months. For both, the ECB announces whether it wants to distribute a certain volume of liquidity through a fixed or a variable rate tender. In the former, banks only state the amount of money they would like to lend at the predefined interest rate, while in the latter they state both the desired rate and amount.

However, the outbreak of the financial crisis significantly altered the execution of *OMOs*. Until October 2008, provision of liquidity was limited by variable rate tenders without full allotment.<sup>5</sup> Since October 2008, the ECB has been conducting its liquidity provision via fixed

---

<sup>3</sup>Exceptions are possible, e.g. for branches of non-EEA banks within the euro area. Also, operational criteria by the respective NCB have to be met.

<sup>4</sup>Obviously, of the three monetary policy tools, *the minimum reserve system* does not involve a collateralization requirement, as banks just have to hold minimum reserves in accordance to size and composition of their balance sheets at the central bank in cash. Also, the following text focuses on liquidity-providing operations of the ECB (in opposition to liquidity-absorbing operations).

<sup>5</sup>The ECB had only used fixed rate tenders (without full allotment) since the very beginning of the third stage of the EMU (January 1999 to June 2000), see Catalão-Lopes (2010).



rate tenders with full allotment. Hence, the ECB determines the interest rate and eligible counterparties can borrow unlimitedly at the given interest rate. Also, the ECB extended maturities for LTROs twice: In June 2009, it extended the maturity from three months to one year and even prolonged it to three years in December 2011. Hence, in order to calm financial markets during and since the financial crisis, the ECB fully allots liquidity with maturity of up to three years. In addition to MROs and LTROs, the ECB's OMOs toolkit contains fine tuning operations (FTOs) and structural operations as non-standardized and non-regular instruments. This last type of monetary policy operation is used to adjust the amount of liquidity in the market over the longer term.

The third monetary policy tool is the overnight and unlimited liquidity providing marginal lending facility. Conditions of this *standing facility* are determined by the ECB and the counterparties can access the facility whenever and to the extent they desire and are able to collateralize.

The actual transaction behind a liquidity-providing monetary policy operation as described above is usually a *reverse transaction*.<sup>6</sup> Firstly, a reverse transaction can be a repurchase agreement, where central bank and counterparty agree on two transfers at two points in time. Initially, the central bank buys an asset from the counterparty and at some predefined time later, the counterparty buys the asset back from the central bank. In this case, the ownership of the asset is transferred to the central bank and back. The interest rate that shall be applied to the monetary policy operation is implemented in the difference between purchase price and repurchase price. A second possible way the reverse transaction can be realized through is a collateralized loan. Here, the central bank makes a loan to the counterparty, that is secured by an asset. The asset is retained by the counterparty, but the ownership would be transferred to the central bank in case of non-fulfillment of the debt obligation. In practice, the assets pledged as collateral have to be stored at a safe custody account of the responsible NCB at a clearing and depositary institution. To collateralize a loan, the counterparty can choose to either use the earmarking system, where each asset pledged is earmarked just for one specific transactions, or a pooling system, where the collateral is considered in total. The

---

<sup>6</sup>Only for FTOs foreign exchange swaps and for structural operations outright asset purchases are possible additionally.

NCB credits the collateral account of the counterparty (at the NCB) with the corresponding value and the counterparty can participate in monetary policy operations to this extent. In the specific case where the collateral consists of credit claims, it is pledged by assignment for security, such that the NCB becomes the new creditor by law, but normally, the counterparty remains the visible contact for the debtor in terms of repayments. In case of a default of the counterparty, the NCB can use the collateral to settle its claims of principal and interest as well as administrative costs. If it generates higher proceeds, these belong to the counterparty. If only a part of the claim can be met, the rest remains outstanding. The assets provided as collateral have to be of an adjusted market value that exceeds the volume of the liquidity provision over the whole period of the reverse transaction.<sup>7</sup> To calculate the adjusted market value of the collateral, a haircut is deducted from the market value.<sup>8</sup> There is not a default form for reverse transactions. The individual NCB decides whether a repurchase agreement or a collateralized loan will be conducted or leaves the choice with the counterparty.

### **3 The ECB's collateral framework**

As discussed above, Article 18.1 of the Statute of the ESCB allows the ECB and NCBs to operate in financial markets. But when doing so, it also calls for all Eurosystem credit operations to be based on adequate collateral. Adequate collateral is ensured by the ECB's criteria for eligible assets. The distinction between general and temporary eligibility rules, the initial general framework, the "Single List" of eligible assets as well as some basic principles of the ECB's collateral policy are examined within this section.

#### **3.1 Two frameworks of collateral policy**

Criteria for assets to be eligible as collateral are specified within two parallel frameworks set out by the ECB: (1) The General Framework, and (2) the Temporary Framework. Whenever assets fulfill the eligibility requirements defined by the ECB, NCBs are obliged to accept assets as collateral and grant refinancing credits to the pledging counterparty within a monetary

---

<sup>7</sup>Depending on the system used, earmarking or pooling, this has to be ensured for each individual transaction or in total.

<sup>8</sup>The haircut reflects inter alia liquidity and remaining maturity of the security and is defined according to the provisions of the risk control measures of the ECB, see Subsection 3.4.2.

policy operation.

The general eligibility requirements in terms of the General Framework are laid down in the “General Documentation”. This General Documentation came into force in January 2001 and has been amended several times until 2011. All these amendments were incorporated in the recast of the General Documentation which came into force on 1 January 2012 and has been amended three times since then until this writing.

But besides the general eligibility for collateral, the Temporary Framework complements the General Framework and lays down additional temporary measures on collateral eligibility. Temporary measures became necessary since the turmoil on financial markets and the implementation of fixed rate tenders with full allotment called for additional collateral. With liquidity becoming scarce, eligible counterparties made extensive use of the option to unlimitedly borrow against collateral from the ECB, cf. Drechsler et al. (2013). With the financial crisis being considered as a temporary phenomenon, the ECB reacted to the increased demand for collateral by setting up the Temporary Framework which should define temporary eligibility criteria in October 2008. It was initially thought to be set up until the end of 2009. But as liquidity demand grew further rather than returning to normal, the ECB decided to maintain the complementing framework.

As a result, what was initially thought to be a “crisis framework” for a limited period of time, aiming at the availableness of additional collateral which became necessary to make the high liquidity provision possible, is still in force today. Important eligibility criteria which were said to be temporary were carried over to the General Framework or are in force without expiration date. General and Temporary Framework both set out the eligibility criteria for collateral, thus constitute the ECB’s collateral framework which will therefore be investigated in toto throughout the remainder of the paper.

### **3.2 The initial General Framework: Tier 1- and tier 2-eligibility**

The ECB had distinguished since 2001 between two categories of eligible assets: tier 1- and tier 2-assets. Within these two asset categories, various types of marketable and non-marketable

assets were initially eligible or became eligible over time.<sup>9</sup> In particular, the type of asset, the type and residence of the issuer / debtor / guarantor, the place of issuance, the credit quality of the asset and its denomination are crucial elements for determining the eligibility of assets and have therefore been main facilities for alteration.

The distinction between tier 1- and tier 2-assets was necessary as at that time, economic integration across the Eurosystem was at its beginning and differences in financial structures of countries were still substantial. Therefore, NCBs were given the right to consider eligible as tier 2 certain assets which were regarded as particularly important for national financial markets and banking systems, while only to tier 1 the ECB applied uniform eligibility criteria.

These uniform eligibility criteria specified by the ECB permitted two types of assets: Debt certificates issued by the ECB or NCBs prior to the adoption of the euro and debt instruments issued or guaranteed by entities established in the EEA which were admitted to trading on regulated and non-regulated markets (see also Subsection 4.3).<sup>10</sup> Moreover, eligible tier 1-assets had to meet “high credit standards” to ensure financial soundness of the pledging counterparty. However, these standards were not specified further in the beginning. Also, debt instruments had to be denominated in euro in order to be eligible. The ECB prohibited NCBs to accept as collateral “own-use debt instruments”, i.e. debt instruments which are pledged by the issuing counterparty itself. The ineligibility of debt instruments with close links to the pledging counterparty has been modified several times and its development is discussed in Subsection 3.4.1.

Furthermore, as indicated above, marketable and non-marketable assets which were regarded as particularly important for national financial markets and banking systems could be

---

<sup>9</sup>Marketable assets are assets for which active markets exist and which may be liquidated within a short time, e.g. bank bonds, corporate bonds and ABSs. Hence, a market value exists for those assets. The set of eligible marketable assets today comprises ECB debt certificates, central government debt instruments, debt instruments issued by central banks, local and regional government debt instruments, supranational debt instruments, covered bank bonds, credit institutions debt instruments, debt instruments issued by corporate and other issuers and asset-backed securities. The ECB publishes an asset-by-asset list of eligible marketable assets on a daily basis. Non-marketable assets are, by contrast, not traded on a regular market but instead are dealt in private transactions or are held by the owner until maturity. As a consequence, non-marketable assets generally lack a market value. The set of eligible non-marketable assets currently consists of credit claims, residential mortgage-backed debt instruments (RMBDs) and fixed-term deposits. Credit claims are defined as debt obligations of a debtor vis-à-vis a Eurosystem counterparty and also referred to as bank loans. RMBDs are debt instruments (promissory notes or bills of exchange) that are secured by a pool of residential mortgages but fall short of full securization. Only Irish mortgage-backed promissory notes have been labeled as such so far. Due to the non-marketability, neither the ECB nor the NCBs are able to provide information on the amount of eligible non-marketable assets.

<sup>10</sup>These entities included Eurosystem, public sector and private sector entities from EEA countries as well as international and supranational institutions.

made eligible as tier 2-assets. Unlike tier 1-assets, the eligibility criteria for these assets were not established by the ECB but idiosyncratically by the NCBs, though subject to approval by the ECB council. Tier 2-assets had to be either debt instruments (both marketable and non-marketable) or equities traded on regulated markets.<sup>11</sup> Like for tier 1, tier 2-assets had to be denominated in euro and were ineligible if they were own-use.

### **3.3 A comprehensive collateral framework: The Single List**

As economic and financial integration proceeded over time, the ECB repealed the possibility of idiosyncratic acceptance of assets by introducing the Single List, a comprehensive framework for eligible assets in January 2007. The two tier system was phased out gradually until 31 May 2007 with tier 2-assets not qualifying for the Single List remaining eligible until 31 May 2007.<sup>12</sup> Instead, the Single List has been drawing a distinction between marketable and non-marketable assets. While marketable assets consist of former tier 1-assets, two types of assets were initially summarized as non-marketables: Credit claims, i.e. bank loans, and retail mortgage-backed debt instruments (RMBDs). The ECB thereby harmonized the former idiosyncratic eligibility criteria for tier 2-assets, with the exception of credit claims for which some idiosyncratic acceptance criteria remained.<sup>13</sup>

---

<sup>11</sup>However, exceptions could be authorized by the ECB. In particular, NCBs could be allowed to include any other assets, e.g. debt instruments issued by credit institutions not complying with Article 22(4) of Directive 88/220/EEC amending Directive 85/611/EEC (hereafter referred to as “UCITS Directive”). According to the ECB, a credit institution is any institution that is either (i) an undertaking whose business is to receive deposits or other repayable funds from the public and to grant credit for its own account, or (ii) an undertaking or any other legal person, other than those under (i), which issues means of payment in the form of electronic money. For the sake of simplicity, credit institutions are hereafter referred to as banks. Article 22(4) specifies the following criteria for a covered bond to comply with the Directive for Undertakings for Collective Investment in Transferable Securities (UCITS): (i) The issuer of the bond must be a credit institution; (ii) issuance has to be governed by a special legal framework; (iii) issuing institutions must be subject to special prudential public supervision; (iv) the set of eligible assets to cover the bond must be defined by law; (v) the cover asset pool must provide sufficient collateral to cover bondholder claims throughout the whole lifetime of the covered bond; (vi) bondholders must have priority claim on the cover asset pool in case of default of the issuer. Covered bonds that comply with those requirements are considered particular safe. Debt instruments fulfilling the criteria set out in this directive will be denoted as “UCITS-compliant covered bank bonds” or simply as “covered bank bonds” in the remainder of the paper.

<sup>12</sup>Phasing out was subject to the exception of units of French fonds communs de créances (FCCs; French securization funds) which were formerly eligible as tier 1. These units remained eligible until 31 December 2008.

<sup>13</sup>The Single List allowed for idiosyncratic criteria regarding only size and handling fee until December 2011. Thereafter, NCBs were allowed to idiosyncratically accept credit claims within the “additional credit claims framework”, see Subsection 4.1.2.

### 3.4 General principles of the collateral framework

In this subsection, five general principles within the ECB’s collateral framework will be discussed: (1) Close links between counterparties, (2) measures to control the risk within the collateral pool, (3) the valuation of assets eligible as collateral, (4) the European Credit Assessment Framework within which the ECB evaluates the credit quality of eligible assets, and finally (5) a principle which we particularize as “segmental pooling”.

#### 3.4.1 Close links

The ineligibility of assets with close links was already part of the initial General Framework as of 1 January 2001. Accordingly, assets were ineligible if issued or guaranteed by the counterparty submitting the asset. The most extreme case of close links is the own use of assets, i.e. a situation in which the asset is issued and pledged by the same party. Close links were initially defined according to Directive *2000/12/EC* of the European Commission (EC) focusing on links in participation or control.<sup>14</sup> But four exceptions were made: (1) close links between the pledging counterparty and public authorities of EEA countries; (2) close links in trade bills, i.e. trade bills for which at least one entity (other than a credit institution) was liable in addition to the pledging counterparty; (3) close links in UCITS-compliant covered bank bonds, and (4) cases in which debt instruments were protected by specific legal safeguards comparable to (3), which were, however, not specified further.

This definition and the general application of the ineligibility of assets with close links was successively altered as depicted in Table 1.<sup>15</sup> In May 2005, the ECB deviated from the Commission’s rather general definition of close links, making the definition more closely related to its collateral policy.<sup>16</sup> The definition was again slightly changed in January 2007 when not

---

<sup>14</sup>According to Directive *2000/12/EC*, the ECB defined close links as situations in which two or more entities were linked by (1) *participation* which meant “the ownership, direct or by way of control, of 20% or more of the voting rights or capital of an undertaking”, or (2) *control*, which meant “the relationship between a parent undertaking and a subsidiary, in all the cases referred to in Article 1 (1) and (2) of *Directive 83/349/EEC*, or a similar relationship between any natural or legal person and an undertaking; any subsidiary undertaking of a subsidiary undertaking shall also be considered a subsidiary of the parent undertaking which is at the head of those undertakings.” Also, a situation in which two or more entities were “permanently linked to one and the same person by a control relationship shall also be regarded as constituting a close link between such persons.” This definition, as the EC emphasizes, laid down only minimum criteria for the close links-provision.

<sup>15</sup>The table includes also assets-specific developments. For the description of these specific applications of close links to the asset classes, see the respective subsections below.

<sup>16</sup>As of May 2005, the ECB defined close links as cases in which (1) “the counterparty owns 20% or more of the capital of the issuer, or one or more undertakings in which the counterparty owns the majority of the capital own 20% or more of the capital of the issuer, or the counterparty and one or more undertakings in which the

only issuers were incorporated in the definition, but also debtors and guarantors. At the same time, trade bills with close links became ineligible. A significant change was undertaken by the ECB in February 2009.<sup>17</sup> As government guarantees gained importance during and since the financial crisis, the ECB declared government-guaranteed debt instruments with close links eligible. Since February 2009, all marketable and non-marketable debt instruments with close links have been eligible (even if they were own-use) provided that they were guaranteed by a government of an EEA country and complied with the general eligibility criteria. Also, RMBDs with close links became eligible.

### 3.4.2 Risk control within the collateral pool

When implementing monetary policy operations, the ECB is exposed to risks such as counterparty default as well as to the market and liquidity risks associated with the collateral. In order to mitigate such risks, the ECB has been applying various risk control measures to marketable and non-marketable assets, most prominently “variation margins” and “valuation haircuts” as of March 2004.<sup>18</sup> “Valuation haircuts” imply that when calculating the value of eligible collateral (i.e. the underlying assets) for which refinancing credits are granted, a certain percentage (“haircut”) of the market or some theoretical value assigned to the security is deducted. As haircuts reflect the perceived riskiness and illiquidity associated with the assets pledged as collateral, they vary substantially among and within marketable and non-marketable assets.<sup>19</sup> Specifically, haircut values were differentiated by asset class, according to coupon structure and by residual maturity, see also Subsection 3.4.4. “Variation margins” stipulate that counterparties have to maintain a haircut-adjusted value of the underlying assets over time.

The ECB returned to applying its complete set of risk control measures in October 2010,

---

counterparty owns the majority of the capital together own 20% or more of the capital of the issuer;” or (2) “the issuer owns 20% or more of the capital of the counterparty, or one or more undertakings in which the issuer owns the majority of the capital own 20% or more of the capital of the counterparty, or the issuer and one or more undertakings in which the issuer owns the majority of the capital together own 20% or more of the capital of the counterparty;” or (3) “a third party owns both the majority of the capital of the counterparty and the majority of the capital of the issuer, either directly or indirectly, through one or more undertakings in which that third party owns the majority of the capital.”

<sup>17</sup>See Subsection 4.2 for a closer investigation.

<sup>18</sup>The other risk control measures are “initial margins”, “limits in relation to issuers / debtors or guarantors”, “additional guarantees”, and “exclusion”. These measures were not applied by the ECB between March 2004 and October 2010.

<sup>19</sup>The changes in valuation haircuts were substantial and can be interpreted as the ECB’s attempt to factor in asset and markets-specific risks. The precise development of the haircut values is not subject of this analysis.

**Table 1:** Development of the eligibility of assets with close links

This table depicts the evolution of the general and asset-specific eligibility criteria applied to collateral with close links. The most extreme case of close links is the own use of assets, i.e. a situation in which the asset is issued and pledged by the same party. Initial criteria were broadly defined and changes until the outbreak of the financial crisis were rare, then amendments became more frequent and specifically related to assets classes (esp. bank bonds).

Date	Action	Affected collateral
1 January 2001	Ineligibility of debt instruments with close links (with exceptions); definition of close links according to Directive 2000/12/EC (ECB/2000/7)	all
30 May 2005	Modification of the definition of close links beyond Directive 2000/12/EC (ECB/2005/2)	all
1 January 2007	Ineligibility of trade bills with close links (ECB/2006/12)	trade bills
1 February 2009	Eligibility of government-guaranteed debt instruments and of RMBDs with close links; ineligibility of ABSs with close links within a currency hedge (ECB/2008/13)	all, RMBDs, ABSs
10 October 2010	Eligibility of residential real estate loan-backed structured covered bank bonds with close links (ECB/2010/13)	covered bank bonds (ABSs)
1 February 2011	Eligibility of commercial mortgage loan-backed structured covered bank bonds with close links (ECB/2010/30)	covered bank bonds (ABSs)
19 December 2011	Ineligibility of ABSs with close links within an interest rate hedge (ECB/2011/25, ECB/2012/11, ECB/2012/17, ECB/2012/18, ECB/2013/4)	ABSs
3 July 2012 - 2 May 2013	Limitation of use of government-guaranteed bank bonds with close links (ECB/2012/12, ECB/2011/25, ECB/2012/17, ECB/2012/18)	bank bonds
3 January 2013	Eligibility of further non-UCITS-compliant covered bank bonds with close links (ECB/2012/25)	covered bank bonds
3 May 2013 - 28 February 2015	Release of NCBs obligation to accept eligible government-guaranteed uncovered bank bonds with close links where the guarantor is a country under an EU/IMF program and whose credit assessment does not meet high credit standards; limitation of the use of government-guaranteed uncovered bank bonds with close links (ECB/2013/4)	uncovered bank bonds
1 March 2015	Ineligibility of government-guaranteed uncovered bank bonds with close links (ECB/2013/6)	uncovered bank bonds

Source: Authors' compilation.



see Footnote 18. Furthermore, it even broadened the set by including the “application of supplementary haircuts” and “limits in relation to the use of unsecured debt instruments” as additional measures to its risk control framework.<sup>20</sup> The ECB returned to applying its complete set of risk control measures in October 2010, see Footnote 18. Furthermore, it even broadened the set by including the “application of supplementary haircuts” and “limits in relation to the use of unsecured debt instruments” as additional measures to its risk control framework.<sup>21</sup>

### 3.4.3 Valuation principles

Closely linked to the risk involved in the collateral pool and its control are the valuation principles applied to both marketable and non-marketable assets. Valuation principles lay down rules how to assess assets that are pledged as collateral. These principles are of crucial importance as based on the valuation, risk control measures are applied and refinancing credits are granted. Valuation principles were already broadly specified in the initial General Framework. Like the whole framework, the principles were successively altered over time. Currently, the Eurosystem calculates the value of marketable assets on the basis of a representative price on the business day preceding the valuation date. If more than one price is quoted, the lowest of these prices is used. In the absence of such a price on the preceding business day, the last trading price is used. But if the last available price is older than (or has not moved for at least) five days, the Eurosystem assigns a theoretical value to the asset. For non-marketable assets, a theoretical value or simply the outstanding amount is always used. Additional valuation haircuts are deducted if the value is not supported by a market price for covered and uncovered bank bonds as well as ABSs.<sup>22</sup> For credit claims, this additional

---

<sup>20</sup>The latter measure has been quantitatively limiting the use of unsecured debt instruments with close links as collateral and was based upon the action taken by the ECB in March 2009, see Subsection 4.4. As of March 2009, uncovered bank bonds of the same issuer group (i.e. identical issuer or closely linked issuers) could only be pledged to the extent that the haircut-adjusted value of these bonds had not been exceeding 10% (later 5%) of the total value of the collateral submitted by the counterparty. This limitation was generalized to unsecured debt instruments with close links in October 2010 and added to the risk control framework as described here.

<sup>21</sup>The latter measure has been quantitatively limiting the use of unsecured debt instruments with close links as collateral and was based upon the action taken by the ECB in March 2009, see Subsection 4.4. As of March 2009, uncovered bank bonds of the same issuer group (i.e. identical issuer or closely linked issuers) could only be pledged to the extent that the haircut-adjusted value of these bonds had not been exceeding 10% (later 5%) of the total value of the collateral submitted by the counterparty. This limitation was generalized to unsecured debt instruments with close links in October 2010 and added to the risk control framework as described here.

<sup>22</sup>These haircuts are directly applied at the level of valuation in the form of a valuation markdown.

haircut is even higher, if the outstanding amount is drawn on for valuation means.

Hence, the ECB has implemented general principles regarding the valuation of eligible collateral but the potential of valuation errors remains. This is the case for both marketable and non-marketable assets and particularly relevant for own-use collateral, i.e. securities pledged by the issuing counterparty itself, as such assets are never traded. Hence, no market price exists and the assets have to be theoretically valued.

A valuation error in theoretical pricing may involve risks. Firstly, the refinancing credits granted for such an overvalued asset would be too high. In addition, the risk control measures applied to a misvalued asset would not capture the true underlying risk. In case of default, the pledged security might then not be sufficient to cover the default loss.<sup>23</sup>

#### 3.4.4 The Eurosystem Credit Assessment Framework (ECAF)

Since January 2007, the ECB has been ensuring that all eligible assets comply with uniform credit rating standards by setting up the Eurosystem Credit Assessment Framework (ECAF). The ECAF was introduced to assess the creditworthiness of collateral based on several credit assessment sources.<sup>24</sup> The ECB has always been stipulating since the initial General Framework that at least one credit assessment from an eligible ECAI for the *security issued* had to comply with high credit standards. In January 2007, the ECB specified that in absence of a rating for the security issued, the creditworthiness of the *issuer* would be decisive. In case of a guaranteed issue, the creditworthiness of the *guarantor* was just considered in third place. Thereby, the ECB had established a clear pecking order of credit ratings: (1) Issue, (2) issuer, and (3) guarantor. The respectively next credit rating was only used in case the precedent

---

<sup>23</sup>This can best be illustrated by an example. Imagine that the true value of an asset which a bank pledges with the ECB in order to receive refinancing credits is 80 but unknown to the ECB, which in addition cannot consult the market price, e.g. because the asset is non-marketable. Due to this lack of information, the ECB may overvalue the asset by assigning a theoretical value of e.g. 100. Then, for every valuation haircut smaller than 20%, the ECB would grant refinancing credits in an amount which is not entirely collateralized by the underlying asset. For instance, for a haircut of 10%, the ECB would be left with a loss of 10 in case of a bank default.

<sup>24</sup>More specifically, the ECAF relies on four sources of credit assessment: External credit assessment institutions (ECAIs), NCBs' in-house credit assessment systems (ICASs), counterparties' internal ratings-based (IRB) systems, and third-party providers' rating tools (RTs). As ECAIs cover all eligible issuers / debtors / guarantors from EEA or non-EEA G10 countries, external credit assessment plays the most important role. ICASs and RTs cover only country-specific non-financial corporations while the use of IRB systems has to be permitted by the NCBs and is also subject to a performance monitoring process. Thus, credit rating requirements are generally defined in terms of rating requirements from ECAIs.

rating was not available.<sup>25</sup> However, the ECB defined down the pecking order in September 2013. Although the credit rating of the issuer or guarantor, respectively, still becomes relevant only in absence of an issue rating, the ECB has effectively equated (2) and (3) of the pecking order as it has since then only been considering the better rating. Hence, in case of a missing issue rating, a first-best rule has been applied if issuer and guarantor ratings differ. This first-best rule has already been applied since January 2007 to the issue ratings of all assets except ABSs, when these ratings from eligible ECAIs differ.<sup>26</sup>

In January 2011, the ECB undertook a major step towards making ratings from different ECAIs comparable and introduced its “harmonized rating scale”.<sup>27</sup> As all eligible ECAIs assess credit risk according to different rating scales, the harmonized rating scale is aimed at standardizing these divergent credit rating scales.<sup>28</sup> The ECB defines three credit quality steps (CQSs) for both short-term and long-term credit assessment. The three CQSs are comparatively arranged in Table 2.<sup>29</sup> Since October 2013, the ECB distinguishes short-term assets (i.e. assets with a original maturity of up to 390 days) from long-term assets (i.e. assets with a original maturity of more than 390 days). For the former, both short-term and long-term ratings are accepted, on a first-best rule basis. For the latter, only long-term ratings are considered.

The harmonization of credit rating scales is exemplified for the rating scale of S&P in Figure 1. The four credit rating notches from “AAA” to “AA-” are summarized in CQS 1, the three subsequent notches from “A+” to “A-” are collected in CQS 2 and finally, the last three notches above non-investment grade, “BBB+” to “BBB-”, are aggregated in CQS 3. To sum up, the ECB pools information on asset qualities by arranging all eligible assets into only

<sup>25</sup>Nevertheless, some NCBs had obviously neglected this pecking order, see Brendel and Jost (2013), “EZB leistet sich gefährliche Regelverstöße,” *Die Welt*, 7 April 2013.

<sup>26</sup>For ABSs, the ECB set up the second-best rule in October 2010 according to which also the second-best available credit rating had to comply with the minimum rating threshold for ABSs.

<sup>27</sup>Today, the ECB takes into account credit ratings from four agencies: Standard & Poor’s (S&P), Moody’s, Fitch and DBRS; see also below.

<sup>28</sup>The S&P long-term rating scale comprises 22 credit rating notches from AAA to D, the scale of Moody’s comprises 21 (Aaa to C), the scale of Fitch only 20 (AAA to D) and DBRS differentiates between 26 notches (AAA to D).

<sup>29</sup>According to Table 2, the three CQSs are defined as follows: CQS 1 ranges from a rating of “triple A” (ECB’s notation) which equals to “Aaa” from Moody’s and “AAA” from Fitch, S&P and DBRS to a rating of “Aa3” from Moody’s and “AA-” from Fitch and S&P as well as “AA(low)” from DBRS. CQS 2 equals to at least “single A” (ECB) which means a rating of “A-” by Fitch or S&P, “A3” by Moody’s or “A(low)” from DBRS, and is equivalent to a probability of default (PD) over a one-year horizon of 0.1%. Finally, CQS 3 corresponds to a credit rating of at least “triple B” (ECB) which equals to “BBB-” from Fitch or S&P, “Baa3” from Moody’s and “BBB” from DBRS. CQS 3 is equivalent to a PD over a one-year horizon of 0.4%. For convenience, the ECB’s notation shall be used in this paper, if possible.

three CQSs. This pooling naturally leaves some information behind.

**Table 2:** The ECB’s harmonized rating scale

**This table displays the standardization of the different rating scales of the four accepted external credit assessment institutions (i.e. DBRS, Fitch, Moody’s and S&P) which was officially introduced with the harmonized rating scale in January 2011.**

		Credit quality step (CQS)		
		1	2	3
Short-term	DBRS	R-1H	R-1M, R-1L	R-2H, R-2M
	Fitch	F1+	F1	F2
	Moody’s		P-1	P-2
	S&P’s	A-1+	A-1	A-2
Long-term	DBRS	AAA - AA(low)	A(high) - A(low)	BBB(high) - BBB
	Fitch	AAA - AA-	A+ - A-	BBB+ - BBB-
	Moody’s	Aaa - Aa3	A1 - A3	Baa1 - Baa3
	S&P’s	AAA - AA-	A+ - A-	BBB+ - BBB-

Source: ECB.

Moreover, as Figure 1 reveals, this is not the only pooling of credit ratings by the ECB. The next subsection describes, how the ECB further clusters available information on the different asset quality. Building on this observation, this approach is defined as the principle of “segmental pooling”.

### 3.4.5 Segmental pooling

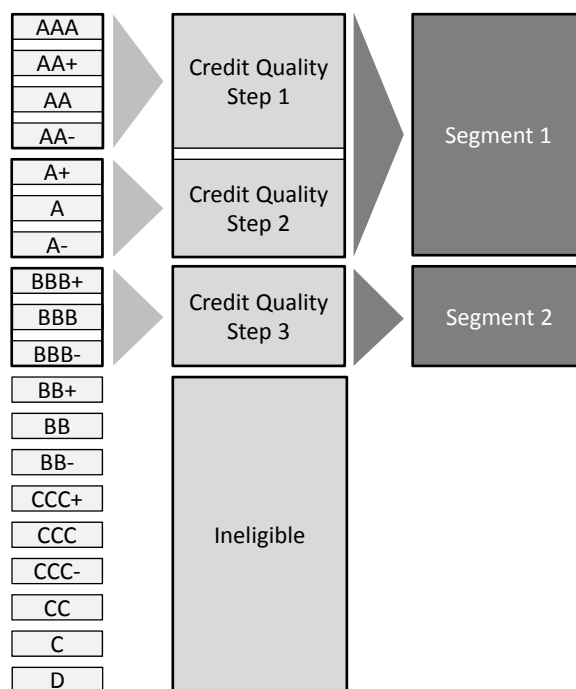
In order to mitigate the risk from granting refinancing credits, the ECB uses its risk control measures, which most prominently contain “valuation haircuts” (see Subsection 3.4.2). These haircuts are however not increasing with lower credit ratings, but differentiated by coupon structure and residual maturity. In addition, they differ between the liquidity categories assets are categorized into.<sup>30</sup> Only for assets in CQS3, higher haircuts have been applied since the extension of eligibility to CQS3.

Thus, the ECB effectively pools assets of seven and three credit rating notches (for the example of the S&P-scale) into just two quality segments (compare Figure 1). Thereby, the grades of credit risk are scaled down to two. In addition to the pooling into CQSs described above, further information on the credit risk of collateral is hence left behind through the application of identical haircuts to distinct assets.

<sup>30</sup>The classification of the different asset classes into liquidity categories will be referred to in more detail in Subsection 4.1.1.

**Figure 1:** Segmental pooling, exemplified for the rating scale of S&P

This figure illustrates how distinct credit ratings are pooled into three CQSs for the example of S&P’s rating scale. Eligibility is deemed in terms of CQSs. Since October 2008, all credit qualities of at least “investment grade” (i.e. AAA to BBB- on the S&P-scale) have been eligible. As higher haircuts have only been applied to assets within CQS 3, refinancing conditions effectively do not differ regarding assets in CQS 1 and 2. Hence, the pooling technique is continued to two quality segments.



Source: Authors’ compilation.

For instance, the value of an eligible covered bank bond with fixed coupon and residual maturity of ten months, which has been rated “triple A” and thus according to S&P features an “extremely strong capacity to meet financial commitments”, is deducted by the same valuation haircut as a covered bank bond with fixed coupon and ten months residual maturity that exhibits a credit rating of only “single A” and according to this is “susceptible to adverse economic conditions and changes in circumstances” (S&P).

From the pure risk mitigation perspective, this would not be worrisome if always the haircut corresponding to the risk profile of the lowest rated asset within each segment would be applied. Drechsler et al. (2013) indicate, however, that the ECB’s haircut policy subsidizes some assets more than others compared to the private market. In particular, they state that haircut subsidies are small (or zero) for very safe collateral but large for riskier. This suggests that the pooled haircut value corresponds to the risk profile of a rather safe asset and not of the lowest rated asset within each segment.

One might conclude from this observation, that through segmentally pooled haircuts and the relative discrimination (subsidization) of high (low) quality bonds within each segment, a general goal for the design of conditions for refinancing credits reveals. This implication can be drawn even without comparing haircut values applied by the ECB to those on the private market. A subsidization of low-rated eligible collateral regarding the conditions for refinancing credits would in any case be a possible explanation for an incentive of counterparties to increasingly use assets as collateral for the ECB's refinancing credits—from the ECB collateral data it is evident that they do so.<sup>31</sup>

The argument can be fostered for assets, that are for any reason theoretically valued as then the conditions for refinancing credits are not only affected through a pooled haircut, but possibly also through the theoretical valuation. In principle, this could lead to a perfect pooling, i.e. equation of refinancing conditions for an entire segment. This is particularly relevant for all non-marketable assets as well as own-use collateral, which has been created by the counterparty itself and never been valued on the market.

## 4 The development of eligibility criteria

Having described the collateral framework and some general principles within the ECB's collateral policy making, this section will focus the analysis on the development of the framework. It will become clear from the description that the development has had two major effects. On the one hand, the ECB met its quantitative goal to increase the amount of available collateral. But on the other hand, it led to a deterioration in quality of the ECB's eligible collateral pool, i.e. the pool of assets eligible as collateral for refinancing credits. To elaborate on these two consequences, first the general changes affecting the eligibility of all assets (both marketable and non-marketable) will be discussed. Second, a description of the amendments to the eligibility of bonds issued or guaranteed by governments follows. After that, the specific development of the eligibility of debt instruments traded on non-regulated markets will be

---

<sup>31</sup>Cf. collateral data as published by the ECB, [http://www.ecb.europa.eu/paym/pdf/collateral/collateral\\_data.pdf](http://www.ecb.europa.eu/paym/pdf/collateral/collateral_data.pdf). In a subsequent article built on the insights from the descriptive analysis in this paper, the authors use the principle of segmentally pooled conditions for refinancing credits to show that the ECB thereby receives relatively low-quality assets within each segment as collateral. Insofar, it would have significantly increased the risk in the pool of pledged collateral.

examined. Then, changes to the eligibility of three asset classes will be investigated: Bank bonds, ABSs and corporate bonds.

#### **4.1 General changes to the eligibility of assets**

Modifications to and the development of general eligibility criteria applied to all marketable and non-marketable assets were manifold and are clearly arranged in Figure 2. The timeline shows that the ECB's activity in modifying the general eligibility criteria changed over time: In the first years after setting up its collateral framework (2001-2007), the ECB made only few modifications aimed at standardizing and harmonizing the Eurosystem's collateral framework. The individual collateral policy making by NCBs was abolished and no amendments were made as responses to market developments. But since the outbreak of the financial crisis in 2008, the ECB intensified collateral policy making tending to alleviate distortions in financial markets. This behavior was justified along the lines of the central bank as the LOLR. The developments within these two periods are described in the remainder of this subsection.

##### **4.1.1 Standardizing the collateral framework (2001-2007)**

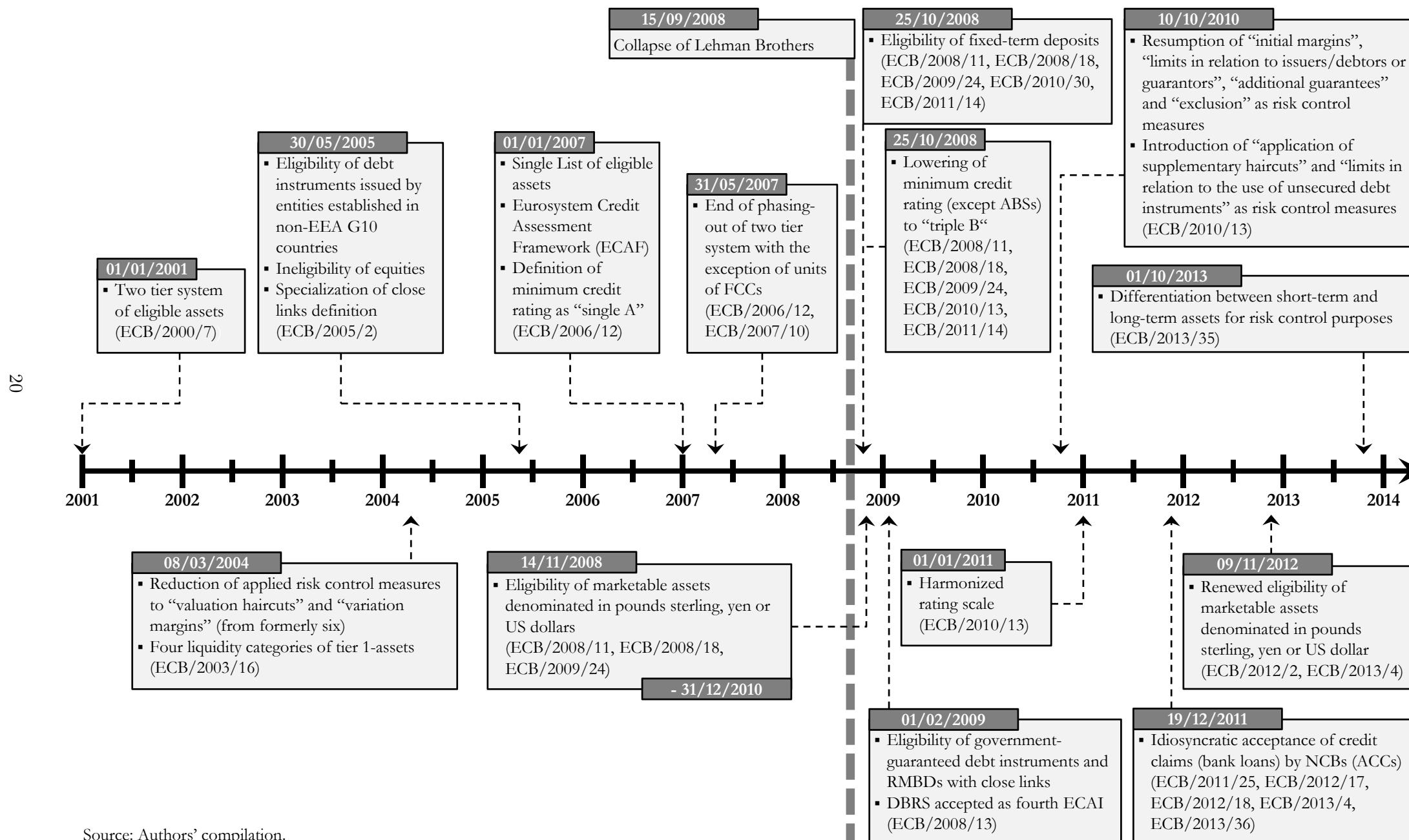
First changes to the collateral framework were made in March 2004 when the ECB divided marketable assets into four categories of decreasing liquidity and hence, increasing haircut values applied.<sup>32</sup> Also, it restricted its set of applied risk control measures to "variation margins" and "valuation haircuts" and specified further the nature of a guarantee for eligible tier 1- and tier 2-assets.<sup>33</sup>

Euro-denominated debt instruments issued by entities established in countries being part of the G10 but not the EEA, i.e. the US, Canada, Japan and Switzerland, became eligible in May 2005. In contrast to this broadening of eligible assets, equities were deemed generally ineligible (they could be accepted by NCBs before). At the same time, the ECB also made first

<sup>32</sup>Central government debt instruments and debt instruments issued by central banks were subsumed in liquidity category 1. Local and regional government debt instruments as well as jumbo Pfandbrief-style debt instruments, agency debt instruments and supranational debt instruments were summarized as category 2. All traditional Pfandbrief-style debt instruments, credit institution debt instruments and debt instruments issued by corporate and other issuers were marked as liquidity category 3 while all eligible ABSs were classified as category 4.

<sup>33</sup>From then on, a guarantee has been accepted if the guarantor had unconditionally and irrevocably guaranteed the obligation with respect to the payment of principal, interest and any other amounts. The guarantee was to be payable on first demand but not necessarily in the case in which the guarantor was a government. Moreover, the obligations of the guarantor had to rank at least equally with all other unsecured obligations of the guarantor.

**Figure 2: General changes to the eligibility of assets**





efforts towards the Single List by announcing to phase out the two tier system gradually and to replace it with a uniform framework of marketable and non-marketable assets. The Single List was then introduced in January 2007 as the most substantial step towards standardizing the collateral framework across the Eurosystem; see Subsection 3.3.

#### **4.1.2 Modifying the collateral framework in response to the crisis (since 2008)**

The ECB's endeavor to create a coherent collateral framework was stopped dead by the collapse of Lehman Brothers in September 2008. As a prompt response, the ECB made one of the most fundamental changes to its collateral framework in October 2008: It lowered the minimum credit rating threshold for eligible assets (except ABSs) from "single A" to "triple B", i.e. the last rating notch above junk status. In order to capture additional risk involved in the acceptance of such low-rated assets, the ECB applied a uniform add-on haircut to all eligible assets with a rating lower than "single A".<sup>34</sup> The lowering was at first said to be temporary but prolonged by several legal acts until January 2011, when the lowering of the minimum credit rating threshold was adopted in the General Framework and hence is now in force without expiration date.<sup>35</sup>

Eligibility was at first also implemented only temporary for fixed-term deposits. Initially, the ECB collected fixed-term deposits for fine-tuning purposes only, i.e. in order to absorb excess liquidity in the market. Such liquidity absorption became particularly relevant after the ECB started its outright purchases in June 2009. Nevertheless, the ECB has been allowing eligible counterparties to place fixed-term deposits as collateral with the NCBs already since October 2008. As this eligibility was only temporarily valid, it had to be prolonged two times (December 2008 and January 2010). Since January 2011, fixed-term deposits have been included in the General Framework as a third class of eligible non-marketable assets, not being subject to any valuation haircut.

As a next response to the outbreak of the financial crisis and hence, as another move

---

<sup>34</sup>This decision has led to differentiated haircut values applied to assets of CQSs 1 / 2 and CQS 3 as of January 2011; see Subsection 3.4.5.

<sup>35</sup>The initial legal act came into force on 25 October 2008 and expired on 30 November 2008. The first prolongation lasted from 1 December 2008 until 31 December 2009. The follow-up prolongation was valid between 1 January 2010 and 31 December 2010. In the General Framework, the minimum credit rating requirement for RMBDs was defined in terms of credit quality step two, or a long-term "single A"-rating, respectively, as of 1 January 2011.

towards a significant broadening of eligible collateral, the ECB declared debt instruments denominated in pounds sterling, yen or US dollars temporarily eligible in November 2008. This was done with the provision that these foreign currency debt instruments were issued and settled in the euro area, and the issuer was established in the EEA. Also, an add-on haircut was applied to all eligible assets denominated in these currencies. The temporary acceptance was again repeatedly prolonged until December 2010, and then reintroduced in November 2012, still being operative today.<sup>36</sup>

In February 2009, the ECB undertook another amendment, which seems minor but is of high importance in practice. The list of accepted ECAIs was expanded by a fourth agency: Dominion Bond Rating Service (DBRS).<sup>37</sup> Compared to the “big three” rating agencies, i.e. S&P, Moody’s and Fitch, which unite a market share of about 95%, DBRS is a small Canada based agency. As a consequence of the financial crisis, it had to close down all its European branches. On the one hand, the inclusion of another ECAI should be positive as more information can be taken into account when the quality of collateral is assessed. On the other hand however, the first-best rule is applied to eligible assets other than ABSs in case of differing assessments; see Subsection 3.4.4. Hence, each ECAI has the power to be pivotal for an asset’s relevant credit rating. With each additionally accepted ECAI, the competition among rating agencies to provide the highest and thus, pivotal rating might increase.

A rather small rating agency thus received the power to substantially influence the refinancing conditions of European banks. DBRS (of course also the other three rating agencies) has discretion to assess the quality of an eligible asset and hence, influence whether collateral is deducted by the lower valuation haircuts applied within segment 1 or by the higher haircuts within segment 2. As haircuts substantially differ among the two segments, the potential consequences of this discretion are enormous. Figures 3 to 5 show the development of long-term credit ratings of Ireland, Italy and Spain from the four ECAIs. From this, it becomes clear that the ratings of DBRS have actually been pivotal.

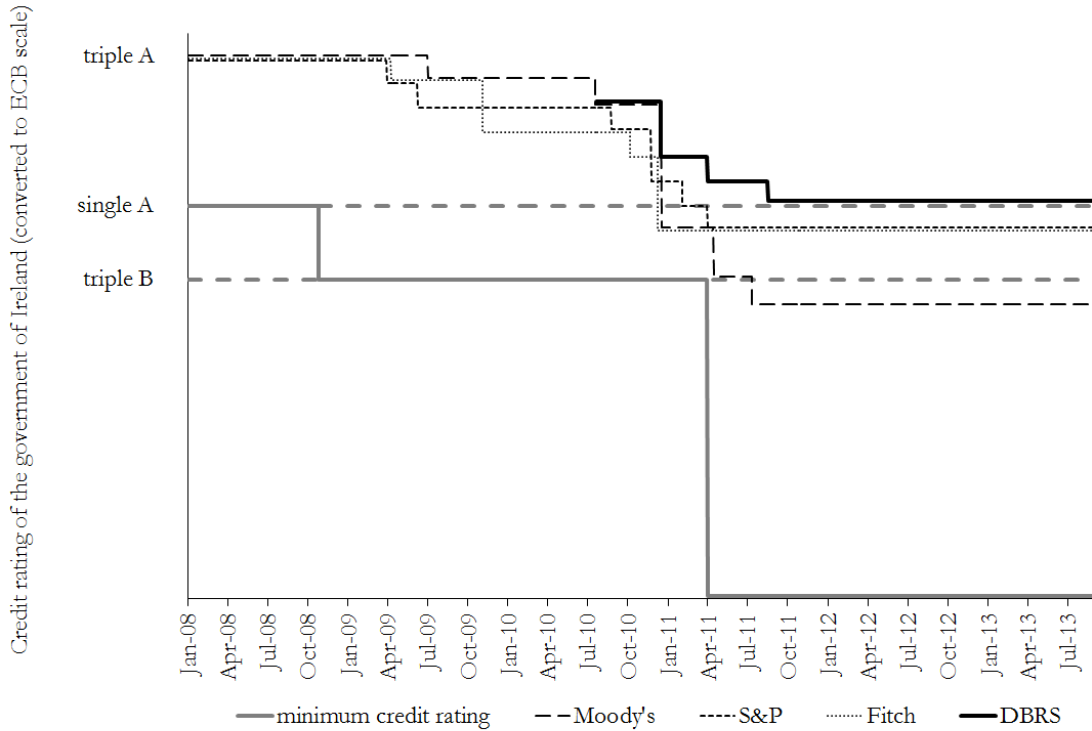
---

<sup>36</sup>Prolongations were made in December 2008 and January 2010.

<sup>37</sup>DBRS itself states that it has been accepted as an ECAI since 1 January 2008. However, DBRS appeared as accepted ECAI for the first time in a Guideline of October 2008 (*ECB/2008/13*) which came into force on 1 February 2009.

**Figure 3:** Long-term credit rating for the government of Ireland

This figure depicts the evolution of the long-term credit rating for the government of Ireland, translated to the ECB’s credit rating notation. Also, the minimum credit rating for collateral issued or guaranteed by the government of Ireland is mapped by the solid gray line. While the minimum credit rating was lowered from “single A” to “triple B” in October 2008, the threshold for CQS 1 / 2 remained at “single A” (which corresponds to the upper dotted gray line). The lower dotted gray line shows the threshold for CQS 3, i.e. “triple B”. Since April 2011, the minimum credit rating has been suspended (see Subsection 4.2). DBRS started providing credit ratings for the government of Ireland in July 2010. Since then, it has always provided the best rating, which is pivotal due to the first-best rule. Since March 2011, DBRS has been the only ECAI rating the creditworthiness of the government of Ireland within CQS 1 / 2.



Source: ECB, Moody's, S&P, Fitch, DBRS, and authors' compilation.

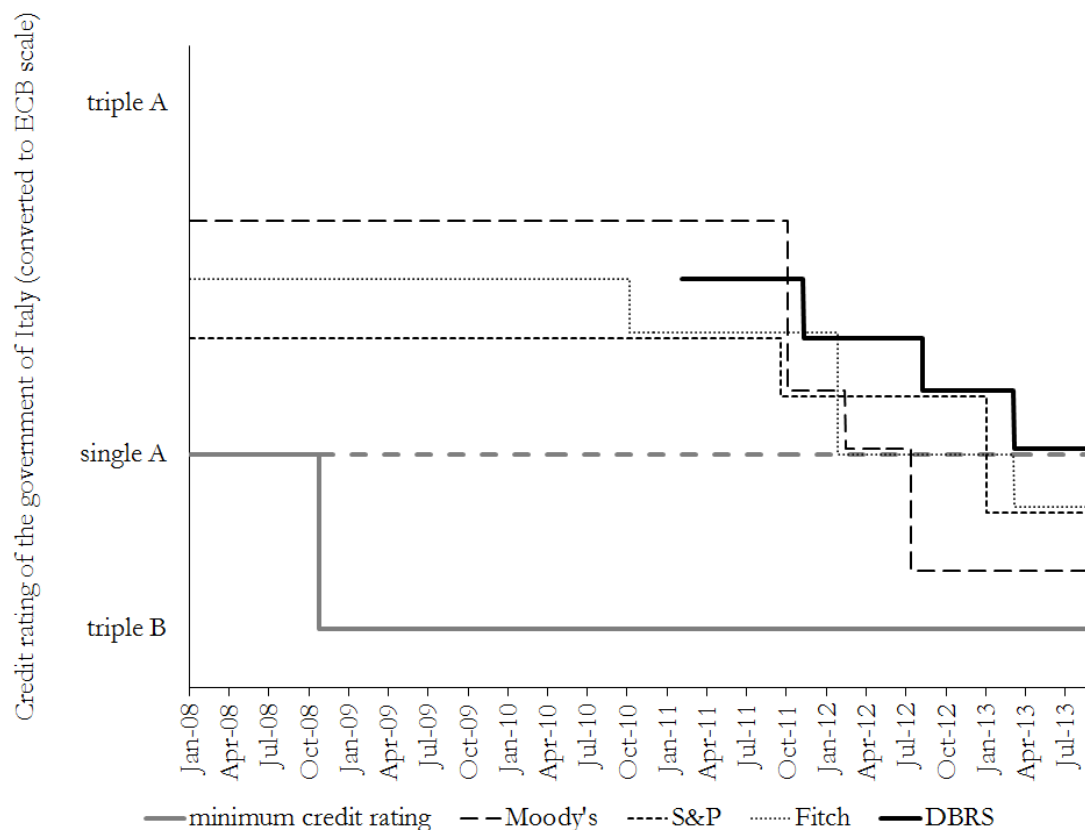
This is particularly relevant as for government-guaranteed debt instruments, the rating of the guarantor, i.e. the government, in reality is often decisive (cf. Subsection 3.4.4). The ECB has been accepting own-use government-guaranteed debt instruments with close links involved since February 2009. This date coincides with the official acceptance of DBRS as fourth ECAI.

In December 2011, the ECB gave the NCBs room to idiosyncratically decide on eligibility criteria for credit claims.<sup>38</sup> This action was called framework for additional credit claims (ACCs). NCBs were conferred the right to set up their own eligibility criteria and risk control measures for accepting such bank loans which then only had to be approved by the ECB

<sup>38</sup> Before, NCBs were allowed to deviate from general eligibility criteria in terms of only size of and handling fee, see Footnote 13.

**Figure 4:** Long-term credit rating for the government of Italy

Analogous to Figure 3, this figure shows the evolution of the long-term credit rating for the government of Italy. Unlike for Ireland, the minimum credit rating for collateral issued or guaranteed by the government of Italy has never been suspended but was lowered in October 2008 from “single A” to “triple B”. DBRS has been rating the government of Italy since February 2011. Since January 2012, it solely provides the highest rating and since March 2013, DBRS is the only ECAI that rates the creditworthiness of the government of Italy within CQS 1 / 2.



Source: ECB, Moody's, S&P, Fitch, DBRS, and authors' compilation.

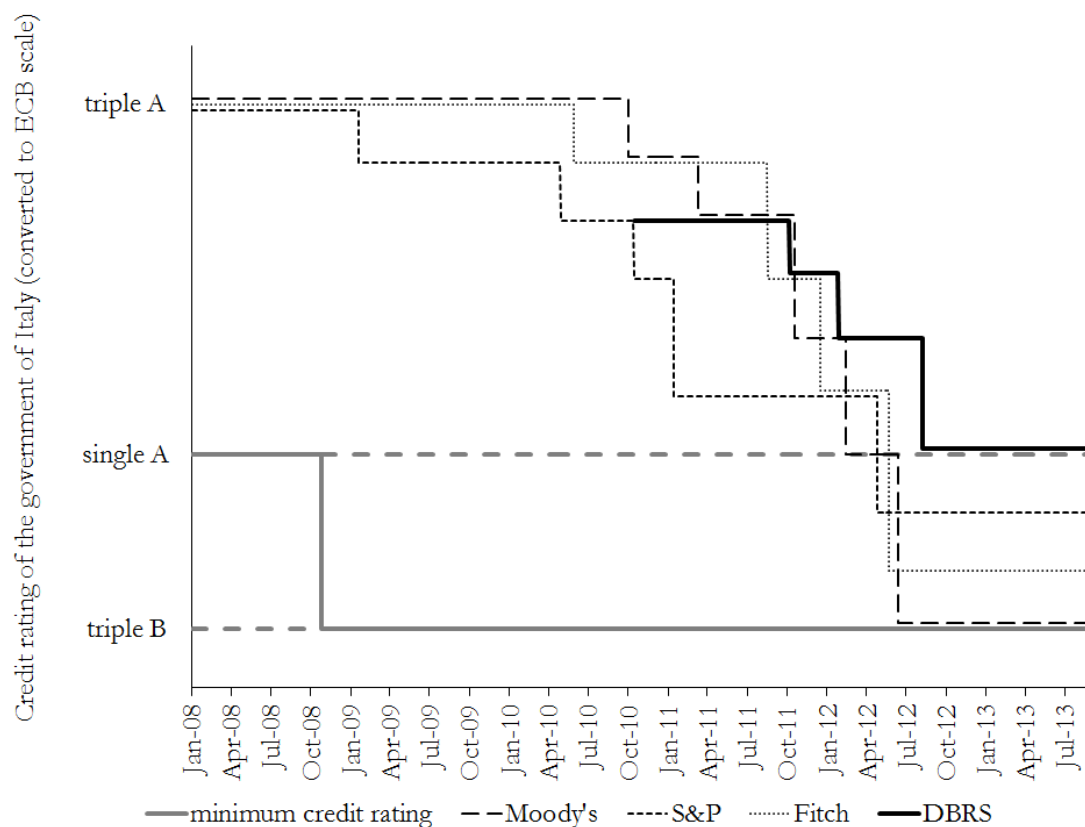
Council. This requirement for approval was eased in September 2012 when the ECB declared its prior approval not necessary in “exceptional circumstances”, provided that the NCBs applied eligibility criteria and risk control measures established by another NCB and which had already been approved by the ECB Council. In case of such exceptional circumstances, NCBs will also be allowed as of January 2014 to accept credit claims that are included in a pool of other credit claims or backed by real estate assets.

#### 4.2 Changes to the eligibility of debt instruments issued or guaranteed by governments

This subsection examines the amendments to the eligibility of debt instruments issued or guaranteed by public entities (with the right to levy taxes, hereafter referred to as governments);

**Figure 5:** Long-term credit rating for the government of Spain

This figure depicts the evolution of the long-term credit rating for the government of Spain. As for Italy, the minimum credit rating has never been suspended but was lowered in October 2008 from “single A” to “triple B”. DBRS has been providing credit ratings for the government of Spain since October 2010 and since December 2011, it solely provides the highest rating. As of June 2012, DBRS has been the only accepted ECAI providing a rating within CQS 1 / 2.



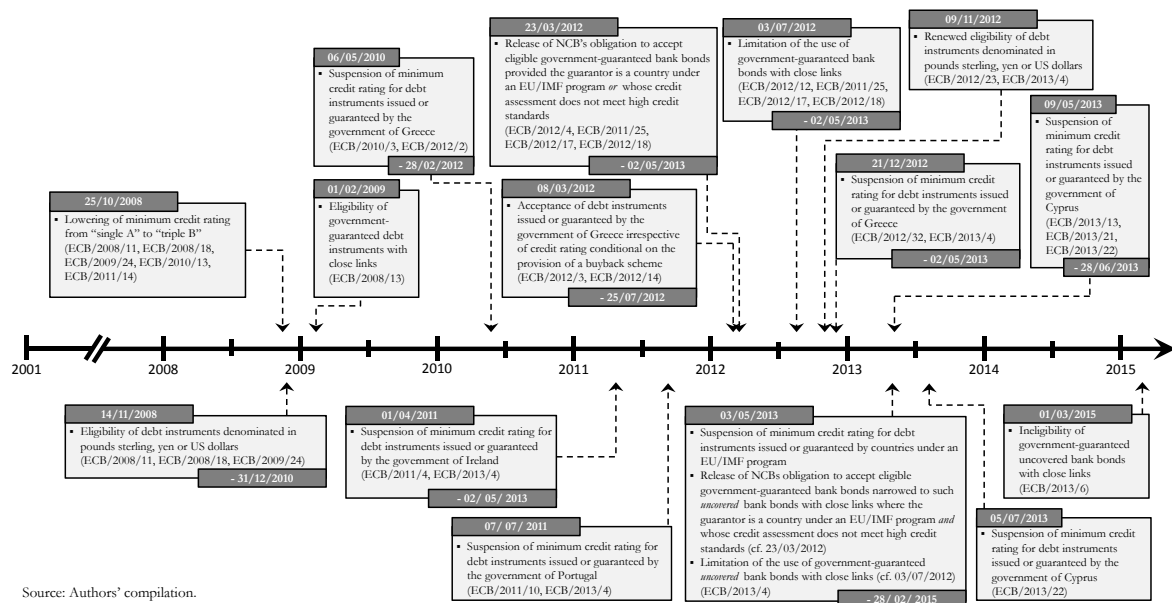
Source: ECB, Moody's, S&P, Fitch, DBRS, and authors' compilation.

the development over time is depicted in Figure 6. Government guarantees are of importance because of two reasons. Firstly, government guarantees for risky assets pose a risk for taxpayers in case of default. Secondly, government guarantees can influence the valuation of the collateral as well as its credit rating, and thereby its refinancing conditions.<sup>39</sup> It has been discussed in Subsection 3.4.4 how the ECB takes government guarantees into account for the assignment of valuation haircuts.

Although the minimum credit rating threshold for government-related assets had already been reduced to “triple B” in line with the lowering of the minimum rating for all assets except ABSs in October 2008, several countries kept struggling to ensure that their governments met this threshold. In order to keep debt instruments issued or guaranteed by these countries

<sup>39</sup>It was shown by Levy and Schich (2010), Levy and Zaghini (2010) as well as Davies and Ng (2011) that the cost of issuing a guaranteed debt instrument is mainly determined by the creditworthiness of its guarantor.

**Figure 6: Evolution of eligibility of debt instruments issued or guaranteed by governments**



eligible, the ECB successively decided to suspend the application of the minimum credit rating threshold to marketable debt instruments issued or guaranteed by these governments, i.e. for Greece (May 2010),<sup>40</sup> Ireland (April 2011), Portugal (July 2011), and Cyprus (May 2013).<sup>41</sup> Together with the suspension of the minimum rating requirement, the ECB announced to review “the relevant risk control measures [...] on a continuous basis.”<sup>42</sup> However, valuation haircuts have consequently only been amended for Greece and Cyprus but not for Ireland and Portugal. This implies that, for Ireland and Portugal, the ECB extended the range of segment 2 in terms of the segmental pooling principle (see Subsection 3.4.5) from three credit rating notches to a maximum of eleven (according to the S&P-scale depicted in Figure 1).<sup>43</sup> Hence, the ECB effectively applies the same valuation haircut to e.g. a “C”-rated bond (“currently highly vulnerable obligations and other defined circumstances”, S&P) as to a “BBB+”-rated bond (“adequate capacity to meet financial commitments, but more subject to adverse economic conditions”, S&P).

<sup>40</sup>The suspension for Greece was repealed in February 2012. However, the general acceptance of debt instruments issued or guaranteed by Greece was reintroduced in March 2012. The acceptance of such debt instruments was conditional on the ability of the Greek government to provide collateral enhancement in form of a buy-back scheme to NCBs. In December 2012, the suspension was again made unconditional.

<sup>41</sup>The suspension for Cyprus was repealed in June 2013 but was soon reintroduced in July 2013.

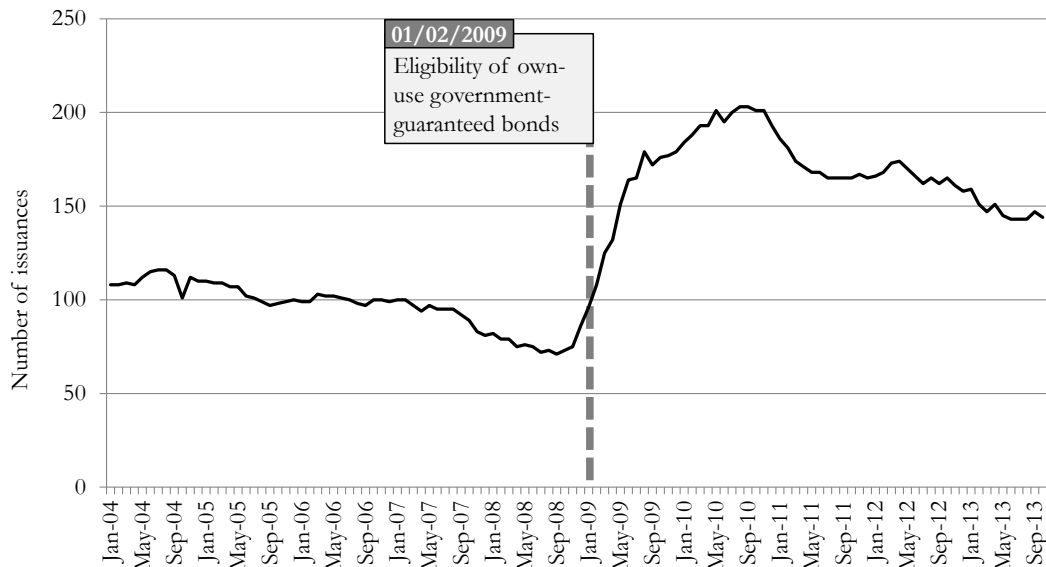
<sup>42</sup>E.g., see ECB, “ECB Announces the Suspension of the Rating Threshold for Debt Instruments of the Irish Government,” *Press Release*, 31 March 2011.

<sup>43</sup>Which valuation haircuts the ECB applies to all eligible assets issued or guaranteed by governments with a rating lower than “BBB-” is not evident from official documents. However, the Eligible Assets Team of the ECB has informed the authors that it simply applies the haircuts of segment 2.

In February 2009, the ECB extended the acceptance of own-use assets to all those guaranteed by governments. In principle, this makes it possible to securitize assets into bonds, which are retained, thus never assessed by the market or a rating agency, and can still be used as collateral for refinancing credits due to the government guarantee. Moreover, the conditions in terms of valuation haircuts would be appealing if the rating of the guaranteeing government is higher than that of the issuer.<sup>44</sup>

**Figure 7:** Barclay’s Euro Aggregate Index for government-guaranteed bonds

This figure shows the development of the European government-guaranteed bond market in terms of issuances between 2004 and 2013. The index for the number of issuances strongly increased after the outbreak of the crisis, almost doubling between October 2008 and October 2010. This development is connected to the guarantees for bank bonds by some European countries after the outbreak of the crisis. Without claiming a causal effect, the figure illustrates that the combination of the market development and the introduction of eligibility for own-use government-guaranteed bonds led to a large increase in the amount of eligible collateral.



Source: Thomson Reuters Datastream.

Figure 7 shows that the date of implementation of the guideline laying down the eligibility of own-use government-guaranteed debt instruments was accompanied by a rocketing of the issuances of government-guaranteed bonds. Certainly, this development is also due to the fact that some European governments launched schemes guaranteeing bonds issued by credit institutions shortly after the outbreak of the financial crisis in order to support their banking

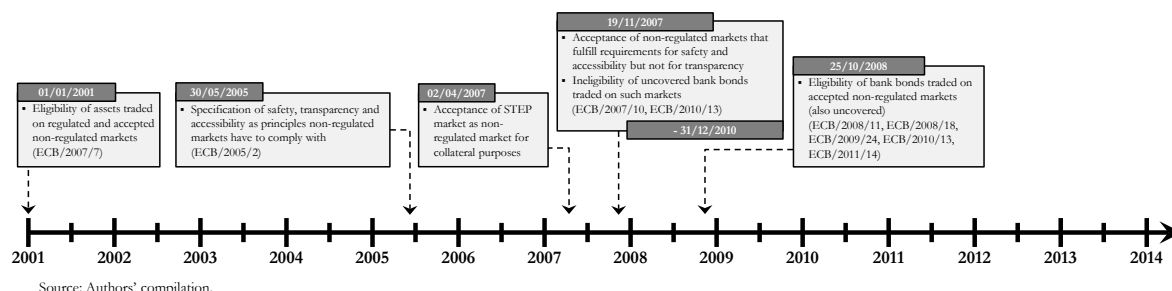
<sup>44</sup> According to news coverage, Italian banks were said to have pledged €40 billion worth of own-use bonds as collateral in 2011, and Irish banks were reported to have done so in the amount of €18 billion in 2011, and another €8 billion in March 2013, see Sirletti and Martinuzzi (2011), “Italy Banks Said to Use State-Backed Bonds for ECB Loans,” *Bloomberg*, 21 December 2011, <http://www.bloomberg.com/news/2011-12-20/italian-banks-are-said-to-use-state-guaranteed-bonds-to-receive-ecb-loans.html>, and Brennan (2013), “Irish Banks Aid Funding With Own-Use Bonds Amid Cyprus Woes,” *Bloomberg*, 28 March 2013, <http://www.bloomberg.com/news/2013-03-28/irish-banksaid-funding-with-own-use-bonds-amid-cyprus-woes-1-.html>.

systems. Nevertheless, this market development suggests that the introduction of the eligibility of own-use government-guaranteed bonds accompanying the suspension of the minimum credit rating has also allowed a substantial fraction of these increasingly issued bonds to find their way into reverse transactions for refinancing credits with the ECB.

### 4.3 Changes to the eligibility of debt instruments traded on non-regulated markets

The requirement for marketable assets to be admitted to trading on accepted regulated and non-regulated markets has already been incorporated in the initial General Framework.<sup>45</sup> The ECB successively modified its acceptance criteria, thereby increasing the number of eligible non-regulated markets over time. The development of the acceptance of non-regulated markets with particular reference to the market for Short-Term European Papers (STEPs, see below) as a controversial example for such a market is illustrated in Figure 8.

**Figure 8:** Evolution of eligibility of assets traded on non-regulated markets



In line with its endeavor to create a comprehensive collateral framework, the ECB refined the standards accepted non-regulated markets had to comply with in May 2005. The ECB explicitly referred to three principles upon which it evaluated non-regulated markets: (1) safety, (2) transparency, and (3) accessibility.<sup>46</sup> The ECB made at the same time clear that it would not aim at assessing the intrinsic quality of each market.

<sup>45</sup>For a market to be considered as “regulated”, it had to comply with criteria as defined according to the Investment Services Directive (*93/22/EEC*) while accepted non-regulated markets have to comply with certain requirements defined by the ECB itself; see below for a detailed description.

<sup>46</sup>According to Guideline *ECB/2005/2*, the principle of safety meant certainty with regard to transactions, in particular on the validity and enforceability of transactions. Transparency was interpreted as unimpeded access to information on the market’s rules of procedures and operation, the financial features of the assets, the price formation mechanism, and the relevant prices and quantities. Finally, accessibility referred to a market’s rules of procedures and operation that allowed the Eurosystem to obtain information and conduct transactions when needed for these purposes.



As a step towards expanding the eligibility of assets traded on non-regulated markets, the ECB brought into force an amendment in November 2007 after first signs of distress in interbank markets.<sup>47</sup> It continued accepting marketable assets which had been issued prior to May 2007 on certain non-regulated markets not fully complying with the three principles. More specifically, these were non-regulated markets which fulfilled the requirements for safety and accessibility, but not for transparency.

Uncovered bank bonds issued on such markets which had become generally ineligible as of June 2007 with the introduction of the Single List were therefore not included in this rule and remained ineligible. But as distress in interbank markets increased in October 2008, uncovered bank bonds (and more general, all bank bonds issued on accepted non-regulated markets) became eligible subject to an add-on haircut. The eligibility was prolonged two times in December 2008 and January 2010 and then adopted in the General Framework in January 2011.<sup>48</sup>

Whenever the acceptance of non-regulated markets is sufficiently strict, the risk for the ECB from the eligibility of assets traded on those markets should not differ significantly from the eligibility of assets traded on regulated markets. However, two arguments could be made to question that this holds. Firstly, the ECB itself declared that it would not pursue the objective to assess the intrinsic quality of each non-regulated market and, secondly, the application of the three principles which the ECB laid down in order to accept non-regulated markets may be challenged. More specifically, the application of the principle *transparency* which should guarantee the ECB “unimpeded access to information on the market’s rules of procedures and operations, the financial features of the assets, the price formation mechanism, and the relevant prices and quantities” (*ECB/2005/2*) was not only repeatedly suspended (see above) but also not rigorously applied (see below).

### **The STEP market as an accepted non-regulated market**

A very recent and controversial example for an accepted non-regulated market is the STEP market, which the ECB included into its list of eligible non-regulated markets in April 2007.<sup>49</sup>

<sup>47</sup>The is amendment was prolonged in October 2009 and was valid until December 2010.

<sup>48</sup>For an extensive discussion of the evolution of eligibility criteria applied to bank bonds, see Subsection 4.4.

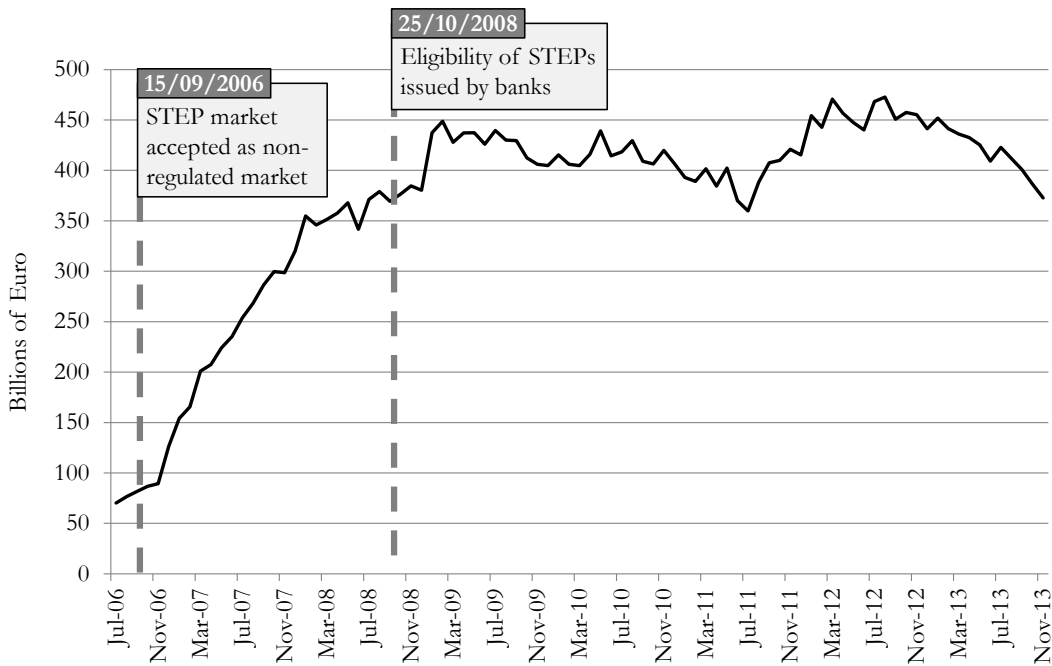
<sup>49</sup>See ECB, “First Publication of Short-Term European Paper (STEP) Yield Statistics,” *Press Release*, 2 April 2007, together with ECB, “Assessment of STEP for Collateral Purposes in Eurosystem Credit Operations”,

For a STEP to be eligible, it had to comply with the eligibility criteria for the specific asset class.<sup>50</sup> Although STEPs in general were eligible as collateral, papers issued by banks had always been excluded from eligibility. As already discussed above, the ECB revoked this derogation in October 2008.

The STEP market may serve as an indication for why the acceptance of non-regulated markets for collateral purposes could pose substantial risk to the ECB’s collateral pool. It is managed by a sub-organization of the European Banking Federation and is supervised by Banque de France. Detailed data on STEPs traded is provided by Euroclear France to the Banque de France only, but not fully reported to the ECB. This lacking disclosure of information stands in contrast to the principle of transparency described above.

**Figure 9:** Development of the STEP market

This figure depicts the development of the STEP market in terms of market volume. It can be observed that both the general acceptance of the STEP market for collateral purposes and the eligibility of STEPs issued by banks were accompanied by increases in market volume. Without claiming a causal effect, the figure illustrates that the combination of the market development and the introduction of eligibility for these STEPs led to a large increase in the amount of eligible collateral.



Source: ECB.

The development of the STEP market is depicted in Figure 9. It is obvious that the announcement of the acceptance of the STEP market as a non-regulated market in September

*Press Release*, 15 September 2006.

<sup>50</sup>According to the ECB Eligible Assets Team, STEPs fall into the asset categories “uncovered bank bonds”, “corporate bonds” and “other marketable assets”, depending on the type of issuer.

2006 was accompanied by a trebling of market volume. Also, another increase can be observed after STEPs issued by banks became eligible as of October 2008. Since then, the amount of STEPs outstanding persisted on a high level. How this enormous amount of STEPs might affect the ECB's collateral pool is sketchy. STEPs are captured in more than one collateral category, depending on the type of issuer (see Footnote 50) and thus, it is difficult to deduct from the published data on collateral used, to which extent STEPs have actually been pledged.

#### **4.4 Changes to the eligibility of bank bonds**

STEPs issued by banks are just one special type of bank bonds the ECB accepts as collateral. More generally, bank bonds are marketable assets and hence, the general eligibility criteria for marketable assets as described in Subsection 4.1 apply. In addition, specific eligibility criteria were established for bank bonds, the development of which is discussed in the following and depicted in Figure 10. One can further differentiate bank bonds as covered or uncovered. Within covered bank bonds an important difference is to be made regarding the compliance of the bond with the UCITS Directive. Also, both covered and uncovered bank bonds can have close links up to the degree of own-use bonds.

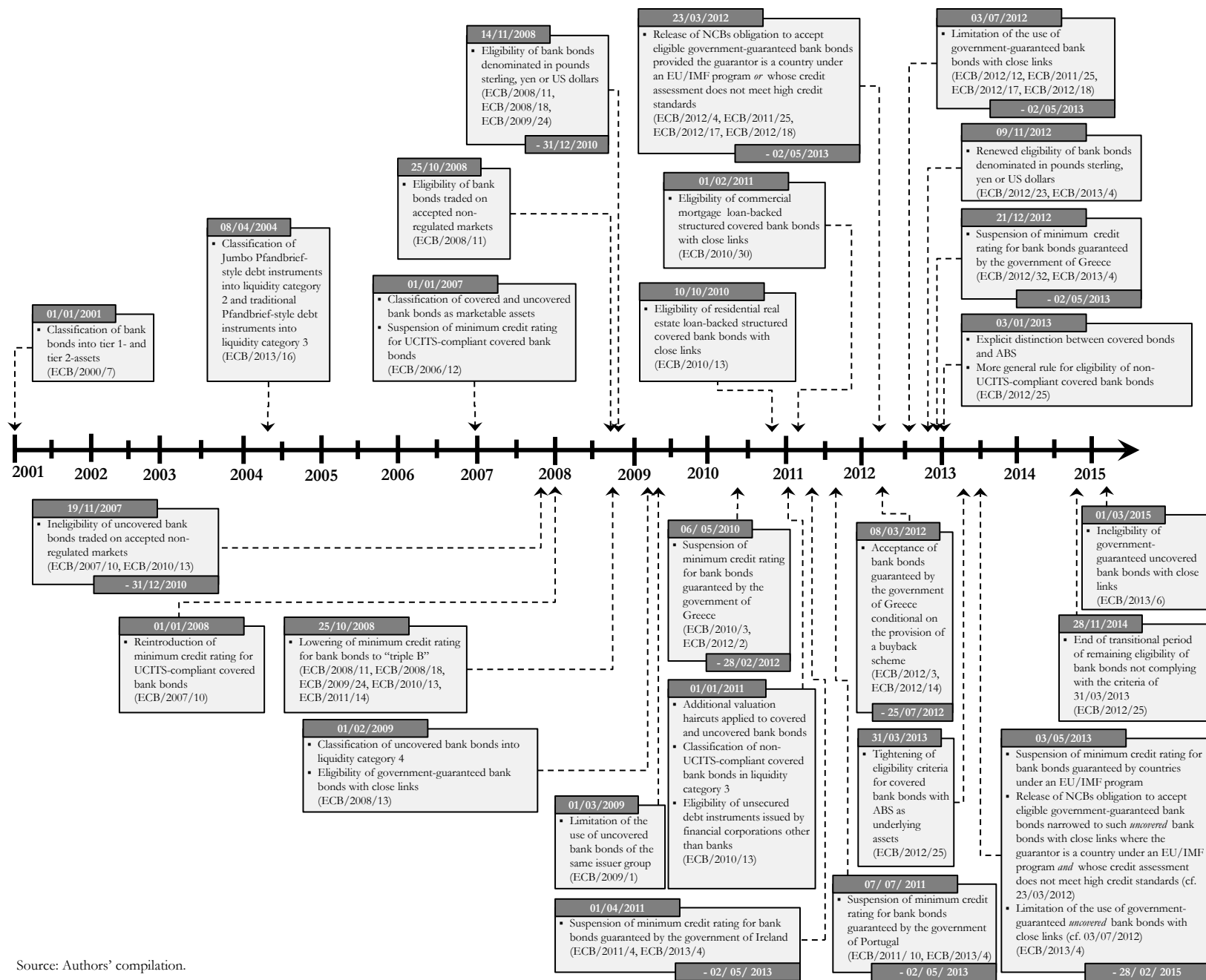
##### **4.4.1 Initial eligibility criteria**

Initially, covered bank bonds had to comply with the UCITS Directive (see Subsection 3.2) in order to be eligible within tier 1. In this case, they were classified into either liquidity categories 2 or 3. While “Jumbo Pfandbrief-style debt instruments” were included into category two,<sup>51</sup> “traditional Pfandbrief-style debt instruments” and all other eligible covered bank bonds were assorted in category 3. For these assets, haircuts differed between categories in addition to coupon structure and residual maturity. Non-UCITS-compliant covered bank bonds were only eligible provided that NCBs included them into their tier 2-list. These bank bonds were then subject to an add-on haircut. Because of a similar structure, covered bank bonds were initially considered equivalent to ABSs but not vice versa. Uncovered bank bonds could initially only be eligible as tier 2.

---

<sup>51</sup>“Jumbo Pfandbrief-style instruments” were defined as debt instruments with an issuing volume of at least €500 million and for which at least two market makers provide regular bid and ask quotes.

Figure 10: Evolution of eligibility of bank bonds



Source: Authors' compilation.

#### 4.4.2 Changes to the eligibility of bank bonds

The ECB deviated from the equivalent treatment of covered bank bonds and ABSs for the first time in May 2006 by clarifying that for ABSs other than covered bank bonds, additional specific eligibility criteria were to be met (see Subsection 4.5).<sup>52</sup> Moreover, with the introduction of the Single List in January 2007, UCITS-compliant covered bank bonds did not have to meet the minimum credit rating threshold between January 2007 and December 2007. Also, uncovered bank bonds (“debt instruments other than covered bank bonds that are issued by credit institutions”, *ECB/2006/12*) were defined eligible by the Single List, at that time provided that they were admitted to trading on a regulated market.

Amendments to the liquidity classifications of marketable assets were undertaken in February 2009 and January 2011. In February 2009, “jumbo covered bank bonds” were marked as liquidity category 2,<sup>53</sup> “traditional covered bank bonds” as liquidity category 3, and all uncovered bank bonds (“credit institution debt instruments, unsecured”) were classified from category 3 into 4, with the respective haircuts applied. In January 2011, also unsecured debt instruments issued by financial corporations other than banks were included in this fourth liquidity category (from previously 3) within marketable assets. Furthermore, all non-UCITS-compliant covered bank bonds (i.e. structured covered bonds and multi-issuer covered bonds) were explicitly included into liquidity category 3 of marketable assets.

Although the ECB was successful in increasing the availability of eligible collateral, it had to cope with the potentially decline in the quality in the collateral pool stemming from the acceptance of bank bonds guaranteed by crisis-stricken countries without requiring minimum credit rating standards (see Subsection 4.2). It therefore exempted NCBs from their former obligation to accept any eligible bank bonds guaranteed by countries under an EU/IMF program *or* by countries whose credit assessments did not meet the ECB’s high credit standards as of March 2012. This attempt to mitigate risk was alleviated in May 2013, when the exemption was narrowed to only *uncovered* bank bonds *with close links* guaranteed by countries

---

<sup>52</sup>However, the ECB has explicitly been distinguishing between covered bonds and ABSs only since January 2013 when it emphasized that “for the purpose of the Eurosystem legal framework related to monetary policy, covered bonds are not considered asset-backed securities” (*ECB/2012/25*).

<sup>53</sup>The requirements for a debt instrument to be classified as “Jumbo covered bank bonds” (before: “Jumbo Pfandbrief-style debt instruments”) were modified as follows: The issuing volume was increased from €500 million to at least €1 billion and at least three market-makers (formerly two) had to provide regular bid and ask quotes; compare also Footnote 51.

whose credit assessments do not meet high credit standards *and* who are under an EU/IMF program.<sup>54</sup> Hence, NCBs have again been left with the obligation to grant refinancing credits for all other bank bonds guaranteed by these countries.

On the same lines of risk mitigation, the use of uncovered bank bonds as collateral has been limited in March 2009. Since then, uncovered bank bonds of the same issuer group (i.e. identical issuer or closely linked issuers) could only be pledged to the extent that the haircut-adjusted value of these bonds had not been exceeding 10% of the total value of the collateral submitted by the counterparty. Hence, an overly exposure to one bank and its affiliates is prohibited and thus potential mutual provision of collateral between two banks is limited.<sup>55</sup> However, government-guaranteed uncovered bank bonds have been excluded from this limitation.<sup>56</sup> Finally, the limitation was generalized<sup>56</sup> to all unsecured debt instruments (i.e. issued by credit institutions and also by any other institution) in October 2010 and included as a means of risk control in the ECB's General Framework (see also Subsection 3.4.2).

In March 2013 the ECB restricted the use of covered bank bonds as collateral by introducing additional eligibility criteria for these bonds. Since then, the ECB has in principle been prohibiting the underlying pool of covered bank bonds to contain ABSs. But at the same time, exemptions were made and several specific types of ABSs remained usable.<sup>57</sup> Moreover, these new requirements do not apply to covered bank bonds which have been on the list of eligible ABSs by November 2012. These bonds remain eligible until November 2014.

#### **4.4.3 Eligibility of bank bonds with close links**

The eligibility of marketable debt instruments with close links was already generally discussed in Subsection 3.4.1. These general eligibility criteria have also been applied to bank bonds

---

<sup>54</sup>As of March 2015, uncovered bank bonds with close links will become ineligible altogether such that this exemption from obligation lapses.

<sup>55</sup>Mind, that the own-use of uncovered bank bonds is per se not eligible and thus mutual buying of the bonds and subsequent pledging for refinancing credit might seem appealing. The limitation was tightened to 5% in January 2012.

<sup>56</sup>Also, the limitation has not been applied to uncovered bank bonds with a total value not exceeding €50 million (again, after haircuts) and bonds already submitted as collateral before 20 January 2009 were excluded. The latter exception lasted until 1 March 2010.

<sup>57</sup>Specifically, the following ABSs are still allowed in the underlying pool of covered bank bonds: (i) ABSs which comply with the requirements laid down in Directives *2006/48/EC* and *2006/49/EC*, (ii) ABSs which are originated by a member of the same consolidated group of which the issuer of the covered bonds is also a member, or (iii) ABSs which are used as a technical tool to transfer mortgages or guaranteed real-estate loans from the originating entity into the cover pool.

with close links, in the most extreme case, own-use bank bonds, i.e. bonds which are issued and pledged by the same bank. But beyond that, the ECB applied specific criteria to such bank bonds, the development of which is captured in Table 1 and discussed in the following.<sup>58</sup>

In October 2010, the ECB broadened the eligibility of covered bank bonds with close links. Before, only UCITS-compliant covered bank bonds were deemed eligible if close links were involved but then eligibility was extended to certain non-UCITS-compliant covered bank bonds. Specifically, residential real estate loan-backed structured covered bank bonds became eligible. The set of eligible non-UCITS-compliant covered bank bonds was extended to such backed by commercial mortgage loans in February 2011. Finally, a more general rule was established in January 2013. It referred to any “covered bank bonds for which all criteria set out in Part 1, Points 68 to 70 of Annex VI to Directive 2006/48/EC are complied with, except for the limits on guaranteed loans in the cover pool” (*ECB/2012/25*).

Government-guaranteed bank bonds with close links became eligible in February 2009, together with all government-guaranteed debt instruments with close links (see Subsection 4.2). They were so far excluded from any limitation and therefore substantially pledged with the ECB.<sup>59</sup> As a consequence, the ECB limited the use such bonds in July 2012 to the nominal value of the bonds submitted by 3 July 2012 (i.e. the day the guideline entered into force). But again, the ECB softened this restrictive measure by making deviations from this limitation possible subject to Council approval.<sup>60</sup> Moreover, the ECB narrowed the limitation to government-guaranteed *uncovered* bank bonds with close links in May 2013. Finally, as of March 2015, the ECB will no longer accept as collateral government-guaranteed uncovered bank bonds with close links as well as covered bonds with such bank bonds in the cover pool. Thus, from then on, uncovered bank bonds with close links will not be eligible at all, while covered bank bonds with close links remain eligible under the provisions described.

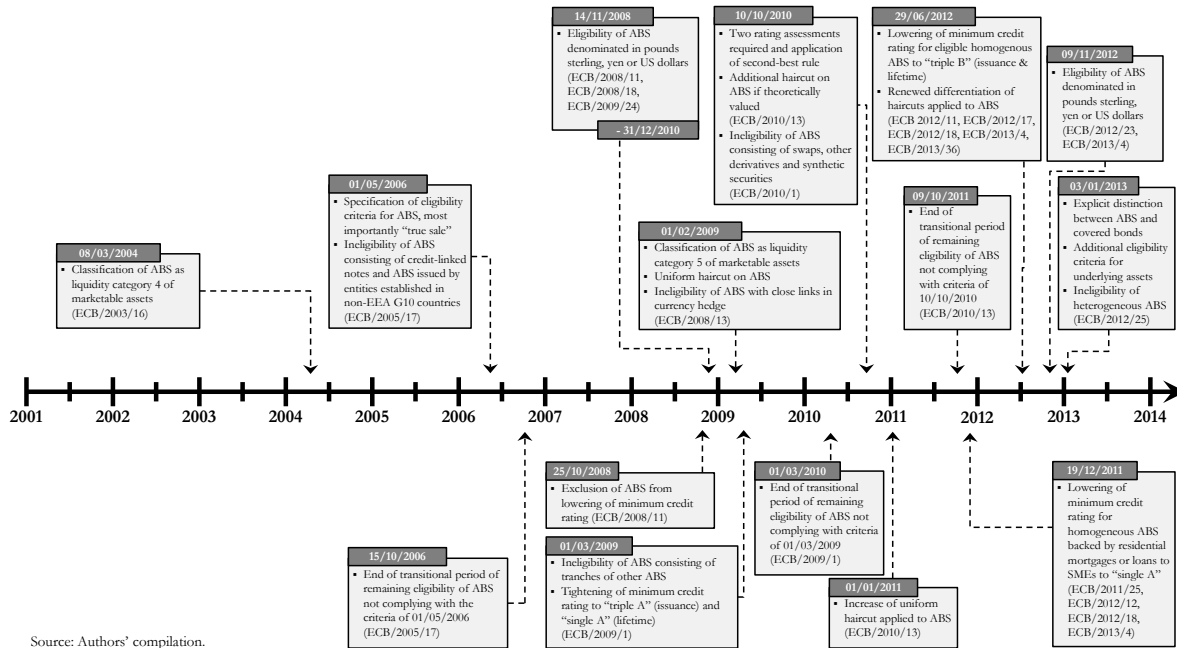
---

<sup>58</sup>As the ECB did not distinguish explicitly between covered bank bonds and ABSs in terms of collateral purposes before January 2013, changes to the application of close links to covered bank bonds are indicated also as changes to ABSs (but not vice versa) until that date.

<sup>59</sup>For examples of the latter, see Sinn (2014), Chapter 5 and Footnote 44.

<sup>60</sup>This change was initially only temporarily valid until September 2012 but was later prolonged until March 2013.

**Figure 11: Evolution of eligibility of ABSs**



#### 4.5 Changes to the eligibility of ABSs

ABSs are as covered bank bonds a possible way for banks to free up their balance sheets and to receive fresh liquidity. But banks have been preferring covered bank bonds over ABSs for two reasons: Firstly, covered bank bonds can be used as collateral by the same issuer and secondly, lower haircuts have been applied to covered bank bonds than to ABSs. It was discussed in Subsection 4.4 that the ECB did not entirely differentiate between ABSs and covered bank bonds before January 2013.<sup>61</sup> It will therefore be presumed that eligibility criteria specified for covered bank bonds (see Subsection 4.4) also apply to ABSs but not vice versa. However, as of May 2006, the ECB additionally set out ABS-specific eligibility criteria which are discussed in the following and captured in Figure 11.

The development of the specific eligibility of ABSs is a story of both tightening and loosening. During a first period between May 2006 and January 2011, the ECB limited the eligibility of ABSs as collateral but substantially lowered its requirements thereafter in order to broaden the amount of ABSs eligible for collateral purposes. Since January 2013, it has

<sup>61</sup>ABSs were not explicitly included in the initial General Framework. They were mentioned for the first time in March 2004 and classified into liquidity category 4, i.e. the lowest category possible at that time. This classification was irrespective of the issuer or the rating of the specific ABS. Classified into the lowest liquidity category, the highest haircut values were applied to ABSs, differing by residual maturity and coupon structure.



started to introduce a tight accompanying monitoring of underlying assets.

#### 4.5.1 Tightening the eligibility of ABSs (2006-2011)

In May 2006, the requirement that debt instruments had to have a fixed and unconditional principal amount in order to be eligible was specified not to be valid for ABSs. Moreover, specific requirements were laid down for the assets underlying the ABS: They had to be legally acquired in accordance with the laws of an EU member state and a “true sale” that had to be enforceable against any third party and was beyond the reach of the originator and its creditors.<sup>62</sup> Also, two types of ABSs were excluded from eligibility: ABSs consisting of credit-linked notes and ABSs issued by entities established in non-EEA G10 countries, i.e. the US, Canada, Japan and Switzerland. ABSs not complying with these additional criteria remained eligible until October 2006.

ABSs were shifted to (the lowest) liquidity category 5 when uncovered bank bonds were introduced as the sole fourth liquidity category in February 2009. Moreover, a uniform haircut has from then on been applied to all ABSs irrespective of maturity or coupon structure.

When the ECB lowered the minimum credit rating threshold for marketable and non-marketable assets from “single A” to “triple B” in October 2008, it explicitly excluded ABSs from this lowering. Soon after, the minimum credit rating requirement for ABSs was even tightened in March 2009. The ECB defined its high credit standards for ABSs as “single A” over *lifetime* of the ABS. Additionally, the highest possible credit rating of “triple A” had to be obtained at *issuance*. At the same time, the ECB once more restricted the requirements for the underlying assets. Multiple securitization was excluded by preventing the underlying assets to consist of tranches of other ABSs. ABSs which did not meet these additional requirements but were issued before 1 March 2009 remained eligible for another year.

In October 2010, the ECB required at least two credit assessments from accepted ECAIs to fulfill the beforehand defined high credit standards for ABSs. It has thereby been applying the “second-best rule” according to which not only the best available credit rating has to

---

<sup>62</sup>“True sale” means that the underlying assets are transferred by the seller to a Special Purpose Vehicle (SPV), such that the SPV becomes entitled to the cash flows that are generated by the underlying assets (including those resulting from a subsequent sale of the assets).

comply with the minimum credit quality threshold, but also the second-best one.<sup>63</sup> <sup>64</sup> With respect to underlying assets, the ECB moreover demanded ABSs not to consist of swaps, other derivatives or synthetic securities.<sup>65</sup> Finally, the uniform valuation haircut applied to all ABSs was increased in January 2011.

#### 4.5.2 Loosening the eligibility of ABSs (2011-2013)

In December 2011, the ECB changed course and quit its restrictive collateral policy with respect to ABSs. It lowered the minimum credit rating threshold for specific ABSs which consisted only of one sort of assets, i.e. homogeneous ABSs.<sup>66</sup> For ABSs backed by only loans to small and medium enterprises (SMEs) or only residential mortgages, the minimum rating threshold was lowered to a second-best rating of “single A” at issuance.<sup>67</sup> These ABSs were considered eligible provided that they fulfilled additional criteria.<sup>68</sup> The lowering of the rating threshold was thought to remain in place temporarily until September 2012.

This was, however, not the case. The threshold was even lowered further in June 2012 to “triple B” both at issuance and over lifetime which corresponds to CQS 3, the lowest possible one. Moreover, this lowering was not made exclusive for ABSs only backed by loans to SMEs or residential mortgages as before, but also applied to homogeneous ABSs with commercial mortgages, auto loans as well as leasing and consumer finance as underlying assets.<sup>69</sup> In order to counter the increased risk from accepting ABSs of lower quality, the ECB introduced additional haircuts for these newly accepted ABSs within CQS 3. These

---

<sup>63</sup>The application of this second-best rule is in contrast to the treatment of all other assets for which the less strict first-best rule is applied, see Subsection 3.4.4.

<sup>64</sup>Depending on the date of issuance, the ECB implemented the following regimes: For ABSs issued before 1 March 2010 with only one credit assessment, an additional assessment had to be obtained before 1 March 2011; for ABSs issued before 1 March 2009, both credit assessments had to meet a rating of at least “single A” over lifetime; for ABSs issued between 1 March 2009 and 28 February 2010, the first-best credit assessment had to comply with “triple A” at issuance and “single A” over lifetime and the second-best assessment with “single A” both at issuance and over lifetime.

<sup>65</sup>This requirement did not prevail for swaps used in ABS transactions strictly for the purpose of hedging. ABSs which did not comply with this requirement but had been eligible before October 2010 kept eligibility for another year.

<sup>66</sup>The ECB thereby made a move towards accepting only ABSs considered as “plain vanilla”, i.e. ABSs made from a single pool of underlying assets.

<sup>67</sup>The minimum rating requirement over lifetime remained at “single A”.

<sup>68</sup>Firstly, the counterparty pledging the ABS or any third party with close links was not allowed to provide an interest rate hedge to the ABS. Secondly, the underlying assets were prohibited to contain loans which were non-performing at issuance nor structured, syndicated or leveraged at any time.

<sup>69</sup>At first, this lowering was temporarily valid until September 2012. It was, however, prolonged in September 2012 until March 2013. In March 2013, it was included in the General Framework and is now without expiration date.

haircuts were differentiated by the type of the underlying asset.<sup>70</sup> The measures of loosening eligibility meant to foster the use of ABSs as collateral were in the beginning only temporarily valid and have been prolonged in September 2012 and May 2013. Since then, they have been in place without expiration date.

#### **4.5.3 Tightening the monitoring of eligible ABSs (since January 2013)**

Since January 2013, ABSs have taken an exceptional position within the class of marketable assets. An explicit differentiation has been made between “common eligibility requirements” and “additional eligibility criteria applicable to ABSs”.

Importantly, the “loan-level reporting initiative” has been gradually introduced which aims at making ABSs in general and particularly the underlying assets more transparent. Therefore, the ECB demands comprehensive and standardized loan-level data on the pool of underlying assets.<sup>71</sup> Owing to this, ABSs must be backed by homogeneous assets, as otherwise, the underlying assets could not be reported in accordance with the loan-level reporting requirement.<sup>72</sup> This implies that heterogeneous ABSs have been ineligible since January 2013.

#### **4.5.4 Eligibility of ABSs with close links**

For ABSs with close links, not only the general eligibility criteria discussed in Subsection 3.4.1 but also asset-specific criteria were put into force; see also Table 1. As there had not been an explicit differentiation between covered bank bonds and ABSs until January 2013, it is presumed that the development of the eligibility of covered bank bonds with close links, as described in Subsection 4.4.3, is also relevant when discussing the eligibility of ABSs with close links.

---

<sup>70</sup>For ABSs that did not have two ratings of at least “single A”, the haircut was differentiated with respect to the underlying assets: Those ABSs backed by commercial mortgages were subject to a higher valuation haircut than all other ABSs. These haircuts have again been lowered in October 2013.

<sup>71</sup>The loan-level reporting requirements were introduced for residential mortgage-backed securities (RMBS) as well as ABSs backed by loans to SMEs on 1 January 2013. Since 1 March 2013, the requirements have also been demanded for commercial mortgage-backed securities (CMBS). For consumer finance ABSs, leasing ABSs and auto ABSs, the requirements will become obligatory as of 1 January 2014 and by 1 April 2014 for credit card ABSs.

<sup>72</sup>In order to be reported in accordance with the loan-level requirement, the underlying assets have to be reported using a single template for the specific asset class. This cannot be fulfilled for heterogeneous ABSs, i.e. ABSs consisting of more than one type of assets.

## 4.6 Changes to the eligibility of corporate bonds

Corporate bonds have been labeled as “debt instruments issued by corporate and other issuers” (*ECB/2003/16*)<sup>73</sup> and have always been eligible for collateral purposes provided that they complied with the general eligibility criteria for marketable assets. Thus, corporate bonds were also subject to all general changes of the eligibility criteria applied to marketable assets which have been extensively discussed in Subsection 4.1, while no specific provisions have been made.

## 5 Summary and conclusion

The purpose of this paper was to analyze the ECB’s collateral policy, to present collateral rules and their evolution, and to structure the development of eligibility criteria into an analysis by asset classes. Table 3 sums up the most important collateral policy actions taken by the ECB between 2001 and 2013. In addition, these actions are classified as tightening or loosening of eligibility criteria.

**Table 3:** Summary and classification of main actions in ECB’s collateral policy

The table consolidates the narrative database of ECB collateral criteria by pointing out the most significant collateral policy actions taken by the ECB between 2001 and 2013. Also, these actions are classified as tightening or loosening of eligibility criteria. The table conveys the overall impression that (1) the ECB intensified collateral policy activity in response to the crisis, and that (2) this activity was predominantly directed at loosening eligibility criteria.

Date	Action	Classification	
		tightening	loosening
30/05/2005	Ineligibility of equities	•	
01/01/2007	Abolition of idiosyncratic eligibility criteria (introduction of Single List)	•	
15/09/2008	Collapse of Lehman Brothers		
25/10/2008	Lowering of minimum credit rating for all assets except ABSs from “single A” to “triple B”; eligibility of bank bonds traded in the STEP market		• •
14/11/2008	Eligibility of marketable debt instruments issued in pounds sterling, yen or US dollars		•
01/02/2009	Eligibility of own-use government-guaranteed debt instruments; DBRS accepted as fourth ECAI		• •

<sup>73</sup>The name was changed in January 2011 to “debt instruments issued by non-financial corporations and other issuers” (*ECB/2010/13*).

**Table 3:** Summary and classification of main actions in ECB’s collateral policy (cont.)

Date	Action	Classification	
		tightening	loosening
01/03/2009	Increase of minimum credit rating for ABSs from “single A” to “triple A” at issuance	•	
06/05/2010, 01/04/2011, 07/07/2011, 03/05/2013, 09/05/2013	Suspensions of minimum credit rating for debt instruments issued or guaranteed by the governments of Greece, Ireland, Portugal; later by governments under an EU/IMF program and Cyprus		•
19/12/2011	Idiosyncratic acceptance of credit claims by NCBs; lowering of minimum credit rating for specific ABSs from “triple A” to “single A” at issuance		• •
29/07/2012	Lowering of minimum credit rating for all ABSs from “single A” to “triple B” at issuance and over lifetime		•
03/01/2013	Ineligibility of heterogeneous ABSs	•	

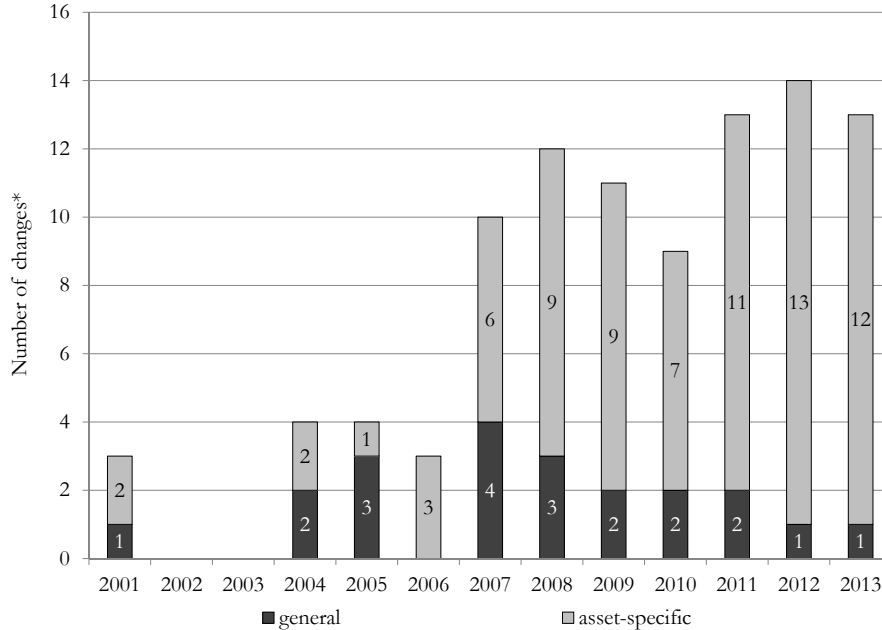
Source: Authors’ compilation.

The table conveys the impression that (1) the ECB intensified collateral policy activity in response to the crisis, and that (2) this activity was predominantly directed at loosening eligibility criteria accompanied by a broadening of the eligible collateral pool. This impression arises from a qualitative consideration. It can, however, be reinforced once a quantitative dimension complements the analysis, as summarized in the following three stylized facts.

**Stylized fact 1: The ECB has been very active in collateral policy making, especially after the collapse of Lehman and the consequent turmoil in interbank markets.** Figure 12 shows how the changes that were discussed throughout this paper scatter over time. Before the outbreak of the financial crisis, changes were mainly directed at harmonizing and standardizing the collateral framework across the euro area. The ECB substantially increased activity in collateral policy making since 2007. Another increase in the number of changes can be identified in 2011, which was triggered by the worsening of the European debt crisis. Moreover, as a first response to the crisis, the ECB rather undertook general changes but refined its policy making over the years towards the alteration of asset-specific criteria. Before the crisis, only 6 official documents affecting collateral rules were released. After the outbreak of the crisis in 2008, however, this number increased by more than six times to 38. Also, the number of changes increased from 25 before to 71 after the Lehman event.

**Figure 12:** Activity in ECB collateral policy making

The figure shows the number of changes to the ECB’s collateral framework per year according to the authors’ calculation. The bars differentiate between changes applying to all asset classes (“general”) and changes to specific asset classes (“asset-specific”). The ECB substantially increased its activity in collateral policy making since 2007. Another increase in the number of changes can be identified in 2011, which was triggered by the worsening European debt crisis. Moreover, as a first response to the crisis, the ECB rather undertook general changes while it refined its activity over the years towards the alteration of asset-specific regulations.

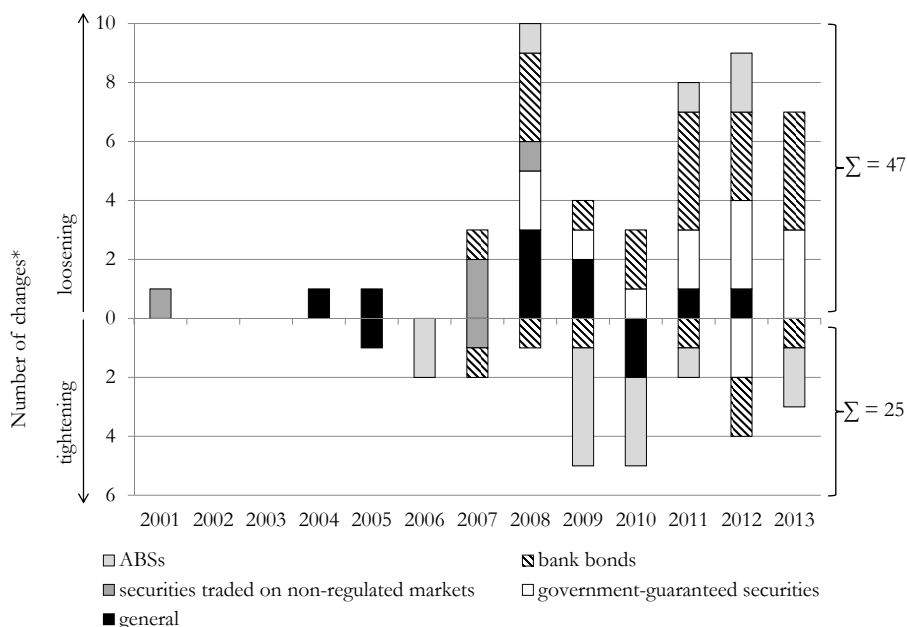


\*Due to the analysis on an asset-specific level, changes affecting more than one asset class (e.g. general lowering of minimum credit rating) are included multiply.  
Source: Authors’ compilation.

In Figure 13, these changes are classified as either tightening or loosening measures. Changes that could not be classified in this sense are neglected. The bars sum up changes in either direction differentiated by asset class. Both in response to the financial crisis (especially in 2008) and in response to the European debt crisis (since 2010), the loosening measures prevail. Overall, 47 loosening and 25 tightening amendments can be counted since the introduction of the collateral framework in 2001. 41 of the loosening and 19 of the tightening changes were made after the collapse of Lehman.

**Figure 13:** Tightening and loosening changes to the collateral framework

The figure shows the authors' classification of the changes to the collateral framework depicted in Figure 12 as either tightening or loosening measures. Changes that could not be classified in this sense are neglected. The bars sum up changes in either direction differentiated by asset class. It can be seen from the figure that the loosening measures prevail both in response to the financial crisis and in response to the European debt crisis.



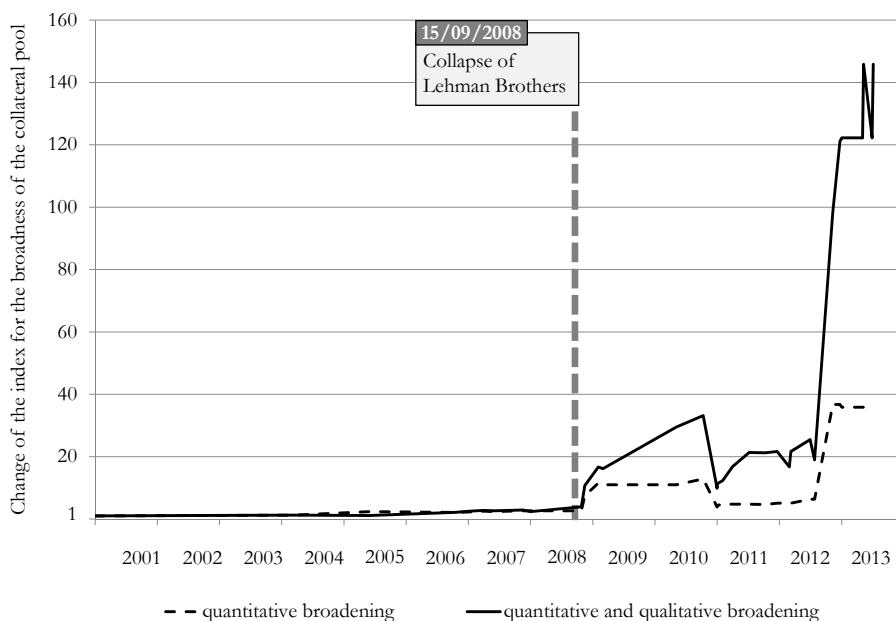
\*Due to the analysis on an asset-specific level, changes affecting more than one asset class (e.g. general lowering of minimum credit rating) are included multiply; neutral changes are excluded.  
Source: Authors' compilation.

**Stylized fact 2: At the extensive margin, the ECB broadened the pool of eligible collateral quantitatively.** In line with Bagehot's dictum, the ECB lent early and freely through its full allotment of refinancing credit. This was, however, necessarily connected with the *quantitative* broadening of the collateral pool in order to ensure that banks possessed the means to collateralize the refinancing credit. This broadening is depicted in Figure 14 by an index for the broadness of the collateral pool. The broadness is measured by the number of eligible asset types. Asset types are differentiated according to (1) asset class (e.g. government bond or corporate bond), (2) place of issue(r), (3) denomination, (4) credit rating, and (5) close links involvement. For example, a covered bank bond was initially only eligible if it was issued in an EEA country, denominated in euro, rated with at least "single A" and was not own use. Today, the ECB additionally deems eligible e.g. covered bank bonds that are denominated in US dollars if issued in the euro area, rated with "triple B" and are own use, etc. Both examples would represent distinct asset types throughout the analysis. The index is

then constructed as follows: The number of asset types that were initially eligible is counted and normalized to unity. For the consecutive years, growth rates of the number of eligible asset types relative to the initial value are computed. At this point, only the ECB's activity at the extensive margin is measured such that changes to the credit rating requirements are for now neglected. Therefore, the dotted line shows this development of the index for only the quantitative broadening of the collateral pool. Thus, keeping the intensive margin, i.e. the credit quality requirements, fixed, a quantitative increase of the broadness of the collateral pool by the factor of 36 is indicated by the index.

**Figure 14:** Broadening of the eligible collateral pool

The figure depicts the evolution of an index that measures the eligible collateral pool of the ECB. The number of asset types within the collateral framework that were eligible in 2001 is normalized to unity. Then, the development of the number of eligible asset types is considered in terms of growth rates for the number of assets relative to the initial value. A differentiation is made between a quantitative broadening at the extensive margin of the eligible collateral pool, e.g. deeming an additional type of asset of the same quality level eligible, and a qualitative broadening at the intensive margin, e.g. lowering the minimum credit rating threshold. The former effect contributed to a broadening of the pool by the factor of 36 while the latter added an additional broadening by the factor of 110.



Source: Authors' compilation.

**Stylized fact 3:** At the intensive margin, the ECB broadened the pool of eligible collateral qualitatively. To complete the picture, the solid line in Figure 14 adds the qualitative component of the broadening of the collateral pool. It hence depicts the overall broadening of the collateral pool, i.e. both quantitative and qualitative. Therefore, also



changes to the credit quality requirements of eligible assets are taken into account for the calculation of the index values. The difference in index values between the solid and dotted line at any point in time displays the *qualitative* broadening of the pool. For the end of 2013, a significant qualitative broadening by an additional factor of 110 at the intensive margin (in the sense of a lowering of quality standards for eligible collateral) is implied by the index. This development can be seen as in contrast to Bagehot's call for "good collateral".

## References

- Bagehot, W. (2002). *Lombard Street: A Description of the Money Market*, Henry S. King and Co., London, UK.
- BIS Markets Committee (2013), "Central Bank Collateral Frameworks and Practices," *Report by a Study Group established by the BIS Markets Committee*, March 2013.
- BIS Committee on the Global Financial System (2013), "Asset Encumbrance, Financial Reform and the Demand for Collateral Assets," *CGFS Papers* 49, May 2013.
- Bundesbank (2013). *Allgemeine Geschäftsbedingungen der Deutschen Bundesbank. Bankrechtliche Regelungen 5*, Frankfurt, Germany.
- Catalão-Lopes, M. (2010). "Fixed- and Variable-Rate Tenders in the Management of Liquidity by the Eurosystem: Implications of the Recent Credit Crisis," *International Journal of Central Banking* 6, 199-230.
- Chailloux, A., S. Gray, U. Klüh, S. Shimizu and P. Stella (2008a). "Central Bank Response to the 2007-08 Financial Market Turbulence: Experiences and Lessons Drawn," *IMF Working Paper* 210, September 2008.
- Chailloux, A., S. Gray and R. McCaughrin (2008b). "Central Bank Collateral Frameworks: Principles and Policies," *IMF Working Paper* 222, September 2008.
- Chaudron, R. F. D. D. (2008). "Collecting Data on Securities used in Reverse Transactions for the Compilation of Portfolio Investment – How to Compromise between Theory and Practice," in: Bank for International Settlements, ed., *IFC's Contribution to the 56th ISI Session, Lisbon, 2007*, IFC Bulletin 28, Basel, Switzerland.
- Cheun, S., I. Köppen-Mertes and B. Weller (2009). "The Collateral Frameworks of the Eurosystem, the Federal Reserve System and the Bank of England and the Financial Market Turmoil," *ECB Occasional Paper Series* 107, December 2009.
- Davies, M. and T. Ng (2011). "The Rise of Sovereign Credit Risk: Implications for Financial Stability," *BIS Quarterly Review*, September 2011, 59-70.
- Drechsler, I., T. Drechsel, D. Marques-Ibanez and P. Schnabl (2013). "Who Borrows from the Lender of Last Resort?," *mimeo*, August 2013.

- ECB (2011). *The Monetary Policy of the ECB*, ECB, Frankfurt, Germany.
- ECB (2013a). "Collateral Eligibility Requirements – A Comparative Study Across Specific Frameworks," *ECB Study*, July 2013.
- ECB (2013b). "The Eurosystem Collateral Framework throughout the Crisis," *ECB Monthly Bulletin*, July 2013.
- Gros, D., C. Alcidi and A. Giovanni (2012). "Central Banks in Times of Crisis – The Fed vs. ECB," *Directorate General for International Policies. Policy Department A: Economic and Scientific Policies*, June 2012.
- Hofmann, C. (2011). "Central Bank Collateral and the Lehman Collapse," *Capital Markets Law Journal* 6, 456-469.
- Levy, A. and S. Schich (2010). "The Design of Government Guarantees for Bank Bonds: Lessons from the Recent Financial Crisis," *OECD Journal: Financial Market Trends* 2010.
- Levy, A. and A. Zaghini (2010). "The pricing of government-guaranteed bank bonds," *Banca D'Italia. Eurosystem Working Papers* 753.
- Levels, A. and J. Capel (2012). "Is Collateral Becoming Scarce? Evidence for the Euro Area," *DNB Occasional Studies* 1, 2012.
- Singh, M. (2013). "The Changing Collateral Space," *IMF Working Paper* 25, January 2013.
- Sinn, H.-W. (2014). *The Euro Trap. On Bursting Bubbles, Budgets and Beliefs*, Oxford University Press, Oxford, UK.
- Thornton, H. (1802). *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain*, Hatchard, London, UK.
- Tucker, P. (2009). "The Repertoire of Official Sector Interventions in the Financial System: Last Resort Lending, Market-Making, and Capital," *Remarks at Bank of Japan International Conference*, May 2009.

## Appendix

### A.1 General changes to the eligibility of assets; see Figure 2

Date	Action	Guideline(s)
01/01/2001	Two tier system of eligible assets	ECB/2000/7
08/03/2004	Reduction of applied risk control measures to “valuation haircuts” and “variation margins” (from formerly six)	ECB/2003/16
08/03/2004	Four liquidity categories of tier 1-assets	ECB/2003/16
30/05/2005	Eligibility of debt instruments issued by entities established in non-EEA G10 countries	ECB/2005/2
30/05/2005	Ineligibility of equities	ECB/2005/2
30/05/2005	Specialization of close links definition	ECB/2005/2
01/01/2007	Single List of eligible assets	ECB/2006/12
01/01/2007	Eurosystem Credit Assessment Framework (ECAAF)	ECB/2006/12
01/01/2007	Definition of minimum credit rating as “single A”	ECB/2006/12
31/05/2007	End of phasing-out of two tier system with the exception of units of FCCs	ECB/2006/12, ECB/2007/10
25/10/2008	Eligibility of fixed-term deposits	ECB/2008/11, ECB/2008/18, ECB/2009/24, ECB/2010/30, ECB/2011/14
25/10/2008	Lowering of minimum credit rating (except ABSs) to “triple B”	ECB/2008/11, ECB/2008/18, ECB/2009/24, ECB/2010/13, ECB/2011/14
14/11/2008	Eligibility of marketable assets denominated in pounds sterling, yen or US dollars	ECB/2008/11, ECB/2008/18, ECB/2009/24
01/02/2009	Eligibility of government-guaranteed debt instruments and RMBDs with close links	ECB/2008/13
01/02/2009	DBRS accepted as fourth ECAI	ECB/2008/13

10/10/2010	Resumption of “initial margins”, “limits in relation to issuers/debtors or guarantors”, “additional guarantees” and “exclusion” as risk control measures	ECB/2010/13
10/10/2010	Introduction of “application of supplementary haircuts” and “limits in relation to the use of unsecured debt instruments” as risk control measures	ECB/2010/13
01/01/2011	Harmonized rating scale	ECB/2010/13
19/12/2011	Idiosyncratic acceptance of credit claims (bank loans) by NCBs (ACCs)	ECB/2011/25, ECB/2012/17, ECB/2012/18, ECB/2013/4, ECB/2013/36
09/11/2012	Renewed eligibility of marketable assets denominated in pounds sterling, yen or US dollar	ECB/2012/2, ECB/2013/4
01/10/2013	Differentiation between short-term and long-term assets for risk control purposes	ECB/2013/35

## A.2 Evolution of eligibility of debt instruments issued or guaranteed by governments; see Figure 6

Date	Action	Guideline(s)
25/10/2008	Lowering of minimum credit rating from “single A” to “triple B”	ECB/2008/11, ECB/2008/18, ECB/2009/24, ECB/2010/13, ECB/2011/14
14/11/2008	Eligibility of debt instruments denominated in pounds sterling, yen or US dollars	ECB/2008/11, ECB/2008/18, ECB/2009/24
01/02/2009	Eligibility of government-guaranteed debt instruments with close links	ECB/2008/13
06/05/2010	Suspension of minimum credit rating for debt instruments issued or guaranteed by the government of Greece	ECB/2010/3, ECB/2012/2
01/04/2011	Suspension of minimum credit rating for debt instruments issued or guaranteed by the government of Ireland	ECB/2011/4, ECB/2013/4

07/07/2011	Suspension of minimum credit rating for debt instruments issued or guaranteed by the government of Portugal	ECB/2011/10, ECB/2013/4
08/03/2012	Acceptance of debt instruments issued or guaranteed by the government of Greece conditional on the provision of a buyback scheme	ECB/2012/3, ECB/2012/14
23/03/2012	Release of NCB's obligation to accept eligible government-guaranteed bank bonds provided the guarantor is a country under an EU/IMF program or whose credit assessment does not meet high credit standards	ECB/2012/4, ECB/2011/25, ECB/2012/17, ECB/2012/18
03/07/2012	Limitation of the use of government-guaranteed bank bonds with close links	ECB/2012/12, ECB/2011/25, ECB/2012/17, ECB/2012/18
09/11/2012	Renewed eligibility of debt instruments denominated in pounds sterling, yen or US dollars	ECB/2012/32, ECB/2013/4
21/12/2012	Suspension of minimum credit rating for debt instruments issued or guaranteed by the government of Greece	ECB/2012/32, ECB/2013/4
03/05/2013	Suspension of minimum credit rating for bank bonds guaranteed by countries under an EU/IMF program	ECB/2013/4
03/05/2013	Release of NCBs obligation to accept eligible government-guaranteed bank bonds narrowed to such uncovered bank bonds with close links where the guarantor is a country under an EU/IMF program and whose credit assessment does not meet high credit standards (cf. 23/03/2012)	ECB/2013/4
03/05/2013	Limitation of the use of government-guaranteed uncovered bank bonds with close links (cf. 03/07/2012)	ECB/2013/4
01/03/2015	Ineligibility of government-guaranteed uncovered bank bonds with close links	ECB/2013/6

### A.3 Evolution of eligibility of debt instruments issued on non-regulated markets; see Figure 8

Date	Action	Guideline(s) / Source
01/01/2001	Eligibility of assets traded on regulated and accepted non-regulated markets	ECB/2007/7
30/05/2005	Specification of safety, transparency and accessibility as principles non-regulated markets have to comply with	ECB/2005/2
02/04/2007	Acceptance of STEP market as non-regulated market for collateral purposes	ECB Press Releases of 15/09/2006 and 02/04/2007
19/11/2007	Acceptance of non-regulated markets that fulfill requirements for safety and accessibility but not for transparency	ECB/2007/10, ECB/2010/13
19/11/2007	Ineligibility of uncovered bank bonds traded on such markets	ECB/2007/10, ECB/2010/13
25/10/2008	Eligibility of bank bonds traded on accepted non-regulated markets	ECB/2008/11, ECB/2008/18, ECB/2009/24, ECB/2010/13, ECB/2011/14

### A.4 Evolution of eligibility of bank bonds; see Figure 10

Date	Action	Guideline(s)
01/01/2001	Classification of bank bonds into tier 1- and tier 2-assets	ECB/2000/7
08/04/2004	Classification of Jumbo Pfandbrief-style debt instruments into liquidity category 2 and traditional Pfandbrief-style debt instruments into liquidity category 3	ECB/2013/16
01/01/2007	Classification of covered and uncovered bank bonds as marketable assets	ECB/2006/12
01/01/2007	Suspension of minimum credit rating for UCITS-compliant covered bank bonds	ECB/2006/12
19/11/2007	Ineligibility of uncovered bank bonds traded on accepted non-regulated markets	ECB/2007/10, ECB/2010/13
01/01/2008	Reintroduction of minimum credit rating for UCITS-compliant covered bank bonds	ECB/2007/10

25/10/2008	Lowering of minimum credit rating for bank bonds to “triple B”	ECB/2008/11, ECB/2008/18, ECB/2009/24, ECB/2010/13, ECB/2011/14
25/10/2008	Eligibility of bank bonds traded on accepted non-regulated markets	ECB/2008/11
14/11/2008	Eligibility of bank bonds denominated in pounds sterling, yen or US dollars	ECB/2008/11, ECB/2008/18, ECB/2009/24
01/02/2009	Classification of uncovered bank bonds into liquidity category 4	ECB/2008/13
01/02/2009	Eligibility of government-guaranteed bank bonds with close links	ECB/2008/13
01/03/2009	Limitation of the use of uncovered bank bonds of the same issuer group	ECB/2009/1
06/05/2010	Suspension of minimum credit rating for bank bonds guaranteed by the government of Greece	ECB/2010/3, ECB/2012/2
10/10/2010	Eligibility of residential real estate loan-backed structured covered bank bonds with close links	ECB/2010/13
01/01/2011	Additional valuation haircuts applied to covered and uncovered bank bonds	ECB/2010/13
01/01/2011	Classification of non-UCITS-compliant covered bank bonds in liquidity category 3	ECB/2010/13
01/01/2011	Eligibility of unsecured debt instruments issued by financial corporations other than banks	ECB/2010/13
01/02/2011	Eligibility of commercial mortgage loan-backed structured covered bank bonds with close links	ECB/2010/30
01/04/2011	Suspension of minimum credit rating for bank bonds guaranteed by the government of Ireland	ECB/2011/4, ECB/2013/4
07/07/2011	Suspension of minimum credit rating for bank bonds guaranteed by the government of Portugal	ECB/2011/ 10, ECB/2013/4
08/03/2012	Acceptance of bank bonds guaranteed by the government of Greece conditional on the provision of a buyback scheme	ECB/2012/3, ECB/2012/14

23/03/2012	Release of NCBs obligation to accept eligible government-guaranteed bank bonds provided the guarantor is a country under an EU/IMF program or whose credit assessment does not meet high credit standards	ECB/2012/4, ECB/2011/25, ECB/2012/17, ECB/2012/18
03/07/2012	Limitation of the use of government-guaranteed bank bonds with close links	ECB/2012/12, ECB/2011/25, ECB/2012/17, ECB/2012/18
09/11/2012	Renewed eligibility of bank bonds denominated in pounds sterling, yen or US dollars	ECB/2012/23, ECB/2013/4
21/12/2012	Suspension of minimum credit rating for bank bonds guaranteed by the government of Greece	ECB/2012/32, ECB/2013/4
03/01/2013	Explicit distinction between covered bonds and ABS	ECB/2012/25
03/01/2013	More general rule for eligibility of non-UCITS-compliant covered bank bonds	ECB/2012/25
31/03/2013	Tightening of eligibility criteria for covered bank bonds with ABS as underlying assets	ECB/2012/25
03/05/2013	Suspension of minimum credit rating for bank bonds guaranteed by countries under an EU-/IMF program	ECB/2013/4
03/05/2013	Release of NCBs obligation to accept eligible government-guaranteed bank bonds narrowed to such uncovered bank bonds with close links where the guarantor is a country under an EU/IMF program and whose credit assessment does not meet high credit standards (cf. 23/03/2012)	ECB/2013/4
03/05/2013	Limitation of the use of government-guaranteed uncovered bank bonds with close links (cf. 03/07/2012)	ECB/2013/4
28/11/2014	End of transitional period of remaining eligibility of bank bonds not complying with the criteria of 31/03/2013	ECB/2012/25
01/03/2015	Ineligibility of government- guaranteed uncovered bank bonds with close links	ECB/2013/6



## A.5 Evolution of eligibility of ABSs; see Figure 11

Date	Action	Guideline(s)
08/03/2004	Classification of ABS as liquidity category 4 of marketable assets	ECB/2003/16
01/05/2006	Specification of eligibility criteria for ABS, most importantly “true sale”	ECB/2005/17
01/05/2006	Ineligibility of ABS consisting of credit-linked notes and ABS issued by entities established in non-EEA G10 countries	ECB/2005/17
15/10/2006	End of transitional period of remaining eligibility of ABS not complying with the criteria of 01/05/2006	ECB/2005/17
25/10/2008	Exclusion of ABS from lowering of minimum credit rating	ECB/2008/11
14/11/2008	Eligibility of ABS denominated in pounds sterling, yen or US dollars	ECB/2008/11, ECB/2008/18, ECB/2009/24
01/02/2009	Classification of ABS as liquidity category 5 of marketable assets	ECB/2008/13
01/02/2009	Uniform haircut on ABS	ECB/2008/13
01/02/2009	Ineligibility of ABS with close links in currency hedge	ECB/2008/13
01/03/2009	Ineligibility of ABS consisting of tranches of other ABS	ECB/2009/1
01/03/2009	Tightening of minimum credit rating to “triple A” (issuance) and “single A” (lifetime)	ECB/2009/1
01/03/2010	End of transitional period of remaining eligibility of ABS not complying with criteria of 01/03/2009	ECB/2009/1
10/10/2010	Two rating assessments required and application of second-best rule	ECB/2010/13
10/10/2010	Additional haircut on ABS if theoretically valued (ECB/2010/13)	ECB/2010/13
10/10/2010	Ineligibility of ABS consisting of swaps, other derivatives and synthetic securities	ECB/2010/1
01/01/2011	Increase of uniform haircut applied to ABS	ECB/2010/13
09/10/2011	End of transitional period of remaining eligibility of ABS not complying with criteria of 10/10/2010	ECB/2010/13

19/12/2011	Lowering of minimum credit rating for homogeneous ABS backed by residential mortgages or loans to SMEs to “single A”	ECB/2011/25, ECB/2012/12, ECB/2012/18, ECB/2013/4
29/06/2012	Lowering of minimum credit rating for eligible homogenous ABS to “triple B” (issuance & lifetime)	ECB 2012/11, ECB/2012/17, ECB/2012/18, ECB/2013/4, ECB/2013/36
29/06/2012	Renewed differentiation of haircuts applied to ABS	ECB 2012/11, ECB/2012/17, ECB/2012/18, ECB/2013/4, ECB/2013/36
09/11/2012	Eligibility of ABS denominated in pounds sterling, yen or US dollars	ECB/2012/23, ECB/2013/4
03/01/2013	Explicit distinction between ABS and covered bonds	ECB/2012/25
03/01/2013	Additional eligibility criteria for underlying assets	ECB/2012/25
03/01/2013	Ineligibility of heterogeneous ABS	ECB/2012/25

## Ifo Working Papers

- No. 173 Benz, S., M. Larch and M. Zimmer, Trade in Ideas: Outsourcing and Knowledge Spillovers, February 2014.
- No. 172 Kauder, B., B. Larin und N. Potrafke, Was bringt uns die große Koalition? Perspektiven der Wirtschaftspolitik, Januar 2014.
- No. 171 Lehmann, R. and K. Wohlrabe, Forecasting gross value-added at the regional level: Are sectoral disaggregated predictions superior to direct ones?, December 2013.
- No. 170 Meier, V. and I. Schiopu, Optimal higher education enrollment and productivity externalities in a two-sector-model, November 2013.
- No. 169 Danzer, N., Job Satisfaction and Self-Selection into the Public or Private Sector: Evidence from a Natural Experiment, November 2013.
- No. 168 Battisti, M., High Wage Workers and High Wage Peers, October 2013.
- No. 167 Henzel, S.R. and M. Rengel, Dimensions of Macroeconomic Uncertainty: A Common Factor Analysis, August 2013.
- No. 166 Fabritz, N., The Impact of Broadband on Economic Activity in Rural Areas: Evidence from German Municipalities, July 2013.
- No. 165 Reinkowski, J., Should We Care that They Care? Grandchild Care and Its Impact on Grandparent Health, July 2013.
- No. 164 Potrafke, N., Evidence on the Political Principal-Agent Problem from Voting on Public Finance for Concert Halls, June 2013.
- No. 163 Hener, T., Labeling Effects of Child Benefits on Family Savings, May 2013.
- No. 162 Bjørnskov, C. and N. Potrafke, The Size and Scope of Government in the US States: Does Party Ideology Matter?, May 2013.

- No. 161 Benz, S., M. Larch and M. Zimmer, The Structure of Europe: International Input-Output Analysis with Trade in Intermediate Inputs and Capital Flows, May 2013.
- No. 160 Potrafke, N., Minority Positions in the German Council of Economic Experts: A Political Economic Analysis, April 2013.
- No. 159 Kauder, B. and N. Potrafke, Government Ideology and Tuition Fee Policy: Evidence from the German States, April 2013.
- No. 158 Hener, T., S. Bauernschuster and H. Rainer, Does the Expansion of Public Child Care Increase Birth Rates? Evidence from a Low-Fertility Country, April 2013.
- No. 157 Hainz, C. and M. Wiegand, How does Relationship Banking Influence Credit Financing? Evidence from the Financial Crisis, April 2013.
- No. 156 Strobel, T., Embodied Technology Diffusion and Sectoral Productivity: Evidence for 12 OECD Countries, March 2013.
- No. 155 Berg, T.O. and S.R. Henzel, Point and Density Forecasts for the Euro Area Using Many Predictors: Are Large BVARs Really Superior?, February 2013.
- No. 154 Potrafke, N., Globalization and Labor Market Institutions: International Empirical Evidence, February 2013.
- No. 153 Piopiunik, M., The Effects of Early Tracking on Student Performance: Evidence from a School Reform in Bavaria, January 2013.
- No. 152 Battisti, M., Individual Wage Growth: The Role of Industry Experience, January 2013.
- No. 151 Röpke, L., The Development of Renewable Energies and Supply Security: A Trade-Off Analysis, December 2012.
- No. 150 Benz, S., Trading Tasks: A Dynamic Theory of Offshoring, December 2012.
- No. 149 Sinn, H.-W. und T. Wollmershäuser, Target-Salden und die deutsche Kapitalbilanz im Zeichen der europäischen Zahlungsbilanzkrise, Dezember 2012.
- No. 148 Nagl, W., Better Safe than Sorry? The Effects of Income Risk, Unemployment Risk and the Interaction of these Risks on Wages, November 2012.