ARTICLES

THE EUROSYSTEM COLLATERAL FRAMEWORK THROUGHOUT THE CRISIS

The global financial crisis has been a driver of change in most, if not all, areas of the financial world and thus has also called for Eurosystem policy responses in the context of its collateral framework. During the various phases of the ongoing financial crisis, the Eurosystem has drawn on the flexibility of its collateral framework, either by means of temporary measures or by implementing changes to the standard Eurosystem collateral framework, in order to avoid widespread collateral constraints in its continued efforts to support bank lending and liquidity in the euro area money market. This article reviews the ways in which Eurosystem collateral policies have been changed on several occasions as a direct consequence of the crisis in order to address and mitigate market malfunctions in a timely manner, but also in response to modifications to the Eurosystem risk control framework, echoing, to some extent, the lessons learned during the financial crisis. Moreover, this article illustrates the ways in which the ECB's actions have affected developments in the size and composition of Eurosystem collateral in terms of both eligible and used[1] assets.

1 INTRODUCTION: THE EUROSYSTEM'S OPEN MARKET OPERATIONS AND ITS COLLATERAL FRAMEWORK

The Eurosystem has a number of instruments available for the implementation of monetary policy within the euro area. Within its set of instruments, open market operations represent the key instruments used by the ECB. They comprise reverse transactions, outright transactions, the issuance of ECB debt certificates, foreign exchange swaps and the collection of fixed-term deposits. Of these, liquidity-providing reverse transactions are by far the most important. They consist of lending central bank money to banks with a fixed maturity, at a certain interest rate, and include, for example, the main refinancing operations (MROs) as well as longer-term refinancing operations (LTROs).[2]

All Eurosystem credit operations, which include open market operations as well as the use of the marginal lending facility and intraday credit, need to be based on adequate collateral, as defined by Article 18.1 of the Statute of the ESCB. The concept of adequate collateral has two dimensions: first, it implies that the Eurosystem should be protected from incurring losses in its credit operations; second, it requires that sufficient collateral be available to a broad set of counterparties so that they can obtain the necessary amount of liquidity from the Eurosystem.

In order to be considered eligible to collateralise Eurosystem liquidity-providing reverse transactions, marketable assets as well as non-marketable assets must fulfil a number of eligibility criteria. The eligibility criteria for these two asset classes, which are uniform to all Eurosystem credit operations across the euro area, are laid down in the document entitled "The implementation of monetary policy in the euro area: General documentation on Eurosystem monetary policy instruments and procedures" (Guideline ECB/2011/14, as amended, and commonly referred to as the "General Documentation" or the "standard Eurosystem collateral framework"). Notably, the type of asset, the place of issuance, the type and residence of issuers/debtors/guarantors, the denomination and the credit quality of the asset/issuer/debtor/guarantor are crucial elements for determining the eligibility of Eurosystem collateral.

1 The words "use", "pledge", "post", "mobilise" are used interchangeably in this article to refer to collateral that is posted with the Eurosystem, which does not, however, necessarily mean that credit is drawn against it.
2 Foreign exchange swap operations have been used by the Eurosystem since the onset of the financial turmoil in view of the tensions observed in the foreign exchange market and in order to provide foreign-denominated funding to its counterparties. Outright transactions, on the other hand, were introduced by the Eurosystem in 2009 and 2010. These outright transactions were conducted in the form of the covered bond purchase programme (CBPP), which aimed at reviving the covered bond market, and the Securities Market Programme (SMP), which aimed at ensuring depth and liquidity in those euro area government bond market segments that were dysfunctional. Finally, fixed-term deposits were introduced in May 2010 in order to reabsorb the liquidity injected through the SMP. ECB debt certificates have, until now, not yet been issued.

When implementing monetary policy operations via liquidity-providing reverse transactions, the Eurosystem is exposed to risk factors such as counterparty default as well as to the credit, market and liquidity risk associated with this collateral. These risk factors are mitigated by a set of risk control measures that are calibrated to bring the exposure of the Eurosystem to acceptable levels. Such measures include requiring counterparties to submit adequate collateral by maintaining high credit standards for these assets, evaluating the submitted collateral on a daily basis, and applying appropriate valuation haircuts and mark-downs. Moreover, in order to also ensure that marketable and non-marketable assets comply with the same credit standards, a Eurosystem credit assessment framework (ECAF) was set up, which relies on various credit assessment sources. The risk control measures applied by the Eurosystem, which include procedures and rules establishing and monitoring the Eurosystem's requirement of "high credit standards" for all eligible collateral, are also outlined in the above-mentioned General Documentation.

Compared to other major central banks, the Eurosystem has, since its inception, been accepting a broad range of assets as collateral in all its credit operations. This breadth is due to the historical, structural and institutional differences reflected in the wide range of collateral frameworks in place across national central banks prior to the introduction of the "Single List"[3]. The varied market size, legal characteristics and stage of development of euro area financial market segments have also played a role in shaping the Eurosystem collateral framework.

The fact that the Eurosystem had already operated with very large reverse transactions before the onset of the crisis, together with the fact that access to Eurosystem open market operations is granted to a large pool of counterparties, has been key in supporting the implementation of monetary policy during times of financial stress. While adjusting the frequency and maturity of liquidity-providing operations, notably in order to address the impaired functioning of the euro area money market during the financial crisis,[4] the Eurosystem has also been altering and expanding the eligibility criteria for collateral, either by means of temporary measures or by implementing changes to the standard Eurosystem collateral framework, in order to avoid widespread collateral constraints. At the same time, the Eurosystem has continued to regularly review its risk control measures in order to ensure that the Eurosystem continues to be adequately protected in a changing market environment, while still making sufficient eligible collateral available to banks.

Section 2 of this article focuses on the major changes which the Eurosystem introduced to its collateral framework in response to the various stages of the crisis, but also as a direct consequence of modifications to the Eurosystem risk control framework. Section 3 focuses on developments in eligible collateral in the euro area, that is to say, marketable and non-marketable assets that fulfil the eligibility criteria, as laid down in the General Documentation. It also illustrates developments in terms of used collateral for Eurosystem credit operations, that is to say, the collateral actually posted with the Eurosystem. Section 4 concludes.

3 The Eurosystem developed a single framework for eligible collateral common to all Eurosystem credit operations (also referred to as the "Single List"). On 1 January 2007, this single framework replaced the two-tier system that had been in place since the start of Stage Three of Economic and Monetary Union. The single framework covers marketable and non-marketable assets that fulfil uniform euro area-wide eligibility criteria, as specified by the Eurosystem.

4 More detailed information on the ECB's non-standard monetary policy measures can be found, for example, in the box entitled "Non-standard measures in 2011", *Annual Report*, ECB, 2011. Moreover, a detailed description of the ECB's non-standard measures and the response to the financial crisis can be found in the document entitled "The ECB's non-standard measures – impact and phasing-out", *Monthly Bulletin*, ECB, July 2011, and in "The ECB's response to the financial crisis", *Monthly Bulletin*, ECB, October 2010, as well as in "The implementation of monetary policy since August 2007", *Monthly Bulletin*, ECB, July 2009.

2 THE EUROSYSTEM COLLATERAL FRAMEWORK – CHANGES IN COLLATERAL ELIGIBILITY REQUIREMENTS AND RISK CONTROL MEASURES

In response to the financial market tensions that began in August 2007, the Eurosystem, similarly to several other central banks, adjusted its day-to-day liquidity-providing activities. Besides adjusting its open market operations, the Eurosystem has also changed its collateral framework over the past six years in order to preserve and increase collateral availability. In addition, modifications were introduced, which were not necessarily a direct consequence of the crisis but rather echoed other more general changes to the euro area, such as Member States joining the euro area, the consequences of the lessons learned during the various phases of the financial crisis, and the improvements in the methodological framework that were introduced in the context of the Eurosystem's regular risk control framework review. The remainder of this section summarises the major changes to the Eurosystem collateral and risk control framework by distinguishing between the measures that were implemented by virtue of the temporary framework, as laid down in the document entitled "Guideline of the ECB of 20 March 2013 on additional temporary measures relating to Eurosystem refinancing operations and eligibility of collateral and amending Guideline ECB/2007/9 (recast) (ECB/2013/4)", and those implemented by virtue of the standard framework. The effects in terms of the developments in eligible and posted collateral with the Eurosystem are analysed in Section 3.

TEMPORARY MEASURES INTRODUCED SINCE MID-2008

The period of financial turmoil, defined as the period since August 2007 when severe tensions emerged in interbank markets worldwide, turned into a global financial crisis following the collapse of the US financial institution Lehman Brothers on 15 September 2008.[5] The sharp deterioration of conditions in the euro area money market that began in September 2008 led to a rapid increase in the provision of refinancing by the Eurosystem to the euro area banking sector. Hence, in October 2008, the Eurosystem reacted by announcing measures to expand the collateral framework and thus enhance the provision of liquidity. More specifically, on 15 October 2008, the Governing Council decided to expand – initially until the end of 2009 – the list of eligible Eurosystem collateral on a temporary basis, owing to the additional demand for collateral associated with the introduction of fixed-rate, full allotment tender procedures in all its refinancing operations as well as to the step-up in the provision of term-liquidity in US dollars.[6] These temporary collateral measures were introduced in two stages.

First, as of 22 October 2008, the credit threshold for marketable and non-marketable assets was lowered from "A-" to "BBB-", together with a flat haircut add-on, with the exception of asset-backed securities (ABSs), for which the minimum credit quality threshold of "A-" remained in force. In addition, the Eurosystem also started to accept – as collateral for Eurosystem credit operations – debt instruments issued by credit institutions, including certificates of deposit, which were traded on certain non-regulated markets deemed acceptable by the ECB. Subordinated marketable debt instruments, provided they were protected by an acceptable guarantee and fulfilled all other eligibility criteria, as well as fixed-term deposits held with the Eurosystem, also became eligible in October 2008. At the second stage, from 14 November 2008, the Eurosystem also accepted marketable debt instruments issued and denominated in certain foreign currencies,

5 As defined in "The ECB's response to the financial crisis", *Monthly Bulletin*, ECB, October 2010, the crisis can be broken down into four distinct phases: financial turmoil (as of 9 August 2007); intensification of the financial crisis (starting with the collapse of Lehman Brothers on 15 September 2008); temporary improvements in financial market conditions with a phasing-out of some non-standard measures (end-2009 and early 2010); and the sovereign debt crisis (early May 2010).

6 In December 2007, the Governing Council decided to take joint action with the Federal Reserve by offering US-dollar funding to Eurosystem counterparties.

provided that the issuer was established in the European Economic Area (EEA) and also that the instruments were issued and held/settled in the euro area. In order to fulfil its statutory obligation to ensure that the Eurosystem balance sheet remains protected against financial risk, the ECB applied specific risk control measures (such as valuation mark-downs) to the enlarged set of collateral.

As some of these temporary measures proved to be necessary beyond the end of 2009,[7] owing to the continued high level of liquidity needs, two of them were transformed into the Eurosystem standard collateral framework over the course of 2010. First, the Governing Council decided on 8 April 2010 to keep the minimum credit quality threshold for assets in the Eurosystem collateral framework at the investment level, i.e. BBB-/Baa3. Second, fixed-term deposits from eligible Eurosystem counterparties were added to the list of eligible assets as of 1 January 2011. Other measures, which were introduced in the context of the temporary expansion of the list of eligible Eurosystem collateral in September 2008, were no longer needed. The respective assets were thus removed from the list of eligible collateral as of 1 January 2011.

However, significant deteriorations observed in euro area sovereign bond markets in the second half of 2011 led the ECB to introduce a number of additional non-standard monetary policy measures. In its continued efforts to support bank lending and liquidity in the euro area money market, thus encouraging banks to continue lending to households and non-financial corporations, the Governing Council announced additional enhanced credit support measures following its meeting on 8 December 2011. More specifically, the Governing Council decided, in connection with other non-standard monetary policy measures, to increase collateral availability by: (i) reducing the rating threshold for certain ABSs; and (ii) allowing NCBs, as a temporary solution, to accept as collateral additional performing credit claims (i.e. bank loans) that satisfy specific eligibility criteria. The first measure became effective with the relevant legal acts published on 19 December 2011 and the Governing Council approved the eligibility criteria for additional credit claims (referred to as the ACC framework) on 9 February 2012.[8]

The further temporary expansion of the list of eligible collateral was prompted by concerns that the access of some banks to additional refinancing operations, and in particular to the two three-year LTROs, which were conducted in December 2011 and February 2012, might be restricted by a lack of eligible collateral. While it was expected that, after applying the eligibility criteria and haircut schedules specified in the respective ACC framework, the NCBs authorising the use of the ACC framework would be able to accept ACCs for an estimated aggregate value of around €200 billion, this amount did not, however, materialise in the course of 2012.

As a further consequence of the ongoing financial crisis and in order to further support the provision of credit to households and non-financial corporations, the Governing Council decided to implement additional measures to improve the access of the banking sector to Eurosystem operations. On 20 June 2012, it reduced the rating threshold and amended the eligibility requirements for certain types of ABSs, thus further broadening the scope of the measures introduced in December 2011. Moreover, the temporary measures aimed at accepting marketable debt instruments denominated in currencies other than the euro were reintroduced by virtue of the relevant legal act on 17 October 2012, as announced in September 2012.

7 The overall volume of marketable assets eligible as a result of the temporary measures to expand the list of eligible collateral was estimated to have amounted to around €1.4 trillion at the end of 2009.

8 Further information on the ACC framework can be found in Box 2 entitled "Implementation of new collateral rules and reserve requirements", *Monthly Bulletin*, ECB, February 2012.

Finally, it should be recalled that the Governing Council decided to suspend the minimum requirements for credit quality thresholds for certain marketable instruments issued or fully guaranteed by the central governments of euro area Members States under an EU/IMF programme, if the respective Member State complied with the conditionality of the financial support and/or macroeconomic programme. Since the Eurosystem contributes to devising and monitoring these programmes, it is indeed in a good position to assess the credit risks related to the public debt in question. Hence, over the past few years, the Eurosystem has also undertaken measures to reduce the role that credit ratings play in its collateral and risk control framework in order to avoid mechanistic approaches that could have otherwise led to abrupt and significant changes to the eligibility of certain financial instruments.

STANDARD MEASURES INTRODUCED SINCE MID-2008

As the Eurosystem has always accepted a broad range of marketable and non-marketable assets as collateral, availability of collateral was not a constraint during the initial phase of the financial crisis in 2007 or much of 2008. Hence, the main modifications to the Eurosystem collateral framework that were announced in September 2008 resulted from the conduct of the Eurosystem's biennial review of the adequacy of the risk control framework, which ensures, on a regular basis, that the Eurosystem remains adequately protected against financial risks across time. The review, which was finalised in 2008, introduced refinements reflecting, inter alia, improvements in the methodological framework, the assessment of market and liquidity risk characteristics of eligible assets, the actual use of eligible assets by counterparties and new developments in financial instruments.[9]

During the subsequent periodical review in 2010, the Eurosystem introduced a number of additional adjustments to its eligibility criteria and risk control framework based on an updated assessment of the risk characteristics of eligible assets and the actual use of eligible assets by counterparties. More specifically, and as already indicated earlier, the Eurosystem decided to keep the minimum credit threshold for marketable and non-marketable assets in the Eurosystem collateral framework at the investment grade level (i.e. BBB-/Baa3) beyond the end of 2010. Hence, the ECB announced, in April 2010, and published in July 2010, a schedule of graduated valuation haircuts to the assets rated in the BBB+ to BBB – range (or equivalent), which replaced the flat haircut add-on which was, until then, uniformly applied to such assets. The new haircuts were aimed at striking a balance between collateral adequacy and sufficiency by keeping the Eurosystem protected against financial risk, while not implying an undue decrease in the collateral available to counterparties. Additional amendments stemming from the 2010 review exercise were also introduced to the standard framework on that occasion.[10]

Moreover, in April 2010, the Eurosystem launched the step-wise practical establishment of loan-level information requirements for potential application in respect of ABSs in its collateral framework. As the Eurosystem is the main recipient of ABSs, the requirement aimed at increasing market transparency vis-à-vis the assets included in pools underlying these securities, therefore, contributed to better informed risk assessments, and helped to restore confidence in the ABS markets. The ABS loan-level data reporting initiative is regarded by the Eurosystem as an important building block in leading the ABS market along the path towards standardisation and simpler structures, and thus made an essential contribution towards restoring normal market functioning.

9 These changes to the risk control framework for Eurosystem credit operations were reflected in the updated version of the General Documentation, which was published on 4 February 2011. An updated consolidated version of the General Documentation, which came into force on 1 January 2012, was published by the ECB on 21 September 2011.

10 See the ECB Press Release entitled "ECB reviews risk control measures in its collateral framework", 28 July, 2010.

Therefore, the Eurosystem decided, in December 2010, to establish loan-by-loan information requirements for ABSs as a permanent eligibility requirement in the Eurosystem collateral framework.[11]

In July 2012, the mandatory provisions of the loan-by-loan information for ABSs, including specific details relating to the reporting requirements, were announced. These provisions and requirements were introduced by means of amending the General Documentation in November 2012. These amendments also included modifications, which aimed at streamlining and strengthening the existing collateral and risk control framework for Eurosystem operations, such as the reporting requirements related to the loan-level data for ABSs, the streamlining of coupon types for eligible marketable instruments, as well as some specific technical changes to ABSs, covered bonds and the ECAF. These changes to the General Documentation came into force on 3 January 2013.

Finally, in March 2013, the Governing Council adopted Decision ECB/2013/6, which prevents, as of 1 March 2015, the use as collateral in Eurosystem monetary policy operations of uncovered government-guaranteed bank bonds that have been issued by the counterparty itself or an entity closely linked to it, as well as covered bonds with such bank bonds in their cover pool. This decision, which aims to ensure the equal treatment of counterparties in Eurosystem monetary policy operations and to simplify the relevant legal provisions, follows the measures implemented on 3 July 2012, which limited counterparties' use of uncovered government-guaranteed bank bonds that they themselves issued.

To conclude, while quite a number of the mentioned changes to the Eurosystem collateral framework were responses to financial market volatility, with some of the temporary measures having been explicitly incorporated into the standard Eurosystem collateral framework, several other modifications also resulted from regular periodic reviews and updates to make the Eurosystem collateral and risk control framework consistent with developments in its operating environment, i.e. the euro area financial system. The table annexed to this article summarises the major changes to the Eurosystem collateral and risk control framework in further detail.

3 DEVELOPMENTS IN ELIGIBLE COLLATERAL AND COLLATERAL POSTED WITH THE EUROSYSTEM

DEVELOPMENTS IN ELIGIBLE COLLATERAL IN THE EURO AREA

The financial crisis, as well as the response to it by the Eurosystem, has drastically affected the collateral landscape which, over the past six years, has developed in terms of both volume and composition. On aggregate, the total nominal value outstanding of all eligible marketable assets increased by more than 46% between the onset of the financial crisis in 2007 and the end of 2012 (see Chart 1).[12] In terms of composition, the distribution by asset class remained fairly stable throughout the same time period, consisting mainly of central and regional government bonds (40-50%), followed by uncovered bank bonds (slightly below 20%) and covered bonds (somewhat above 10%). ABSs, corporate bonds, and other marketable assets represented, individually, less than 10% on average (6.1%, 10% and 7.4% respectively) at the end of 2012. By contrast with marketable assets, non-marketable assets

11 Following the general decision announced on 16 December 2010 to establish loan-by-loan information requirements for ABSs in the Eurosystem collateral framework, it was announced in April 2011 that the Governing Council intended to introduce these requirements for commercial mortgage-backed securities (CMBSs) and small and medium-size enterprise (SME) transactions accepted in the Eurosystem collateral framework in 2012.

12 On 6 July 2012, the Governing Council of the ECB decided that the ECB would henceforth publish information on collateral on a quarterly basis. This data is available on the ECB's website.

usually only become known to the Eurosystem upon submission as eligible collateral. Hence, the volume of potentially eligible non-marketable assets (such as "bank loans", which are also referred to as "credit claims") is not systematically and precisely measured by the Eurosystem. Thus, the remaining section focuses mainly on developments in eligible marketable assets in the euro area.

The Eurosystem accepts a wide range of marketable assets as collateral in all its credit operations, including assets from financial and non-financial private sector entities.[13] Central and regional government securities have traditionally been the most highly represented asset class, also within the Eurosystem collateral framework, owing to sufficiently large supplies of actively traded domestic government bonds across the different euro area jurisdictions, as well as relatively easy-to-implement risk control measures. Between 2007 and 2011, the volume of this asset class increased by 37% (or €1.75 trillion) and thus accounted for 52% of the total increase until the end of 2011. Since 2011, the volume of eligible central and regional government securities has remained fairly stable.

Chart 1 Eligible marketable assets

(EUR trillion; nominal amounts; averages of end-of-month data)

Source: ECB.

As discussed in Section 2, the Governing Council decided to implement a set of temporary as well as permanent measures to expand the collateral framework in order to enhance the provision of liquidity by ensuring the effective transmission of the Eurosystem's monetary policy, and thus contributing to the increase in eligible assets between 2007 and 2010.

The average volume of eligible uncovered bank bonds, which, after central and regional government bonds, represent the second largest asset class in terms of eligible collateral, fluctuated between 2008 and 2011 for the following reasons. First, as a result of the temporary measures introduced in October 2008, this asset class possessed one feature unique to its class, that of accepting bonds listed on certain non-regulated markets[14] as eligible collateral. This measure was, however, discontinued in 2011 and then reimplemented on a permanent basis as part of the standard Eurosystem collateral framework on 1 January 2012. Second, some euro area governments launched schemes guaranteeing securities issued by credit institutions in order to support their banking systems and address the funding problems of liquidity-constrained solvent banks. These bonds became eligible when they were issued in late 2008 and most of them matured with the expiry of the state guarantees during the course of 2010. These two developments may justify the decrease seen in this asset class during the course of 2010 and 2011, while the increase observed

13 In this context, it should be noted that under the Eurosystem's collateral policy due respect must be given to Article 124 of the Treaty on the Functioning of the European Union, which prohibits privileged access for the public sector to financial institutions, such that any discrimination between public and private assets shall be precluded.
14 The list of non-regulated markets accepted by the ECB can be found on the ECB's website.

in 2012 was, in addition to the issues highlighted above, partly due to the issuance of uncovered bank bonds under government guarantee still in practice in Italy until the end of June 2012.

The volume of eligible ABSs and corporate bonds almost doubled between 2007 and 2010 (from €0.7 trillion to €1.3 trillion and from €0.8 trillion to €1.5 trillion respectively). In terms of ABSs, the increase in issuances occurred despite the observed market impairments, owing to the fact that the originator of an ABS is allowed to use the issued security as collateral (for further details, see Box 1). Consequently, additional restrictive measures were implemented by the Eurosystem between 2009 and 2011 as a way of mitigating risks relating to the eligibility of ABSs, which included more stringent rating requirements (i.e. the second-best rating rule was applied to all ABSs regardless of their date of issue, as of 1 March 2011) and further clarification of the eligibility criteria for ABSs, both of which are thus mirrored in the reduced average volume of eligible ABSs in 2011.

Box 1

IMPACT OF THE IMPAIRMENT OF THE ABS MARKET ON THE USE OF COLLATERAL

For the purpose of this box, the ABS market has been used to illustrate the way in which market developments and the Eurosystem's rules on eligible collateral as well as its risk control measures can affect the use of collateral. It clearly illustrates how the use of ABSs as collateral with the Eurosystem increased as the depth of the market decreased to negligible volumes.

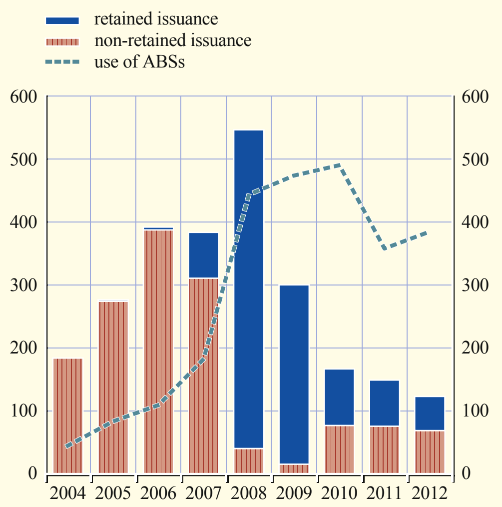
The chart depicts a striking increase in the use of ABSs, for which the following two main factors can be identified.

On the one hand, at the onset of the crisis in 2007, the volume of ABSs newly issued on the market began to decrease, which revealed the first signs of weakness of this formerly booming market. In 2008, the market collapsed and primary market activity remained somewhat silent thereafter. As a result, and owing to the difficulties in placing primary deals on the market, a significant volume of newly issued ABSs remained on the balance sheet of their originators (commonly referred to as "retained issuance"). In order to refund these issuances, some originators had no choice but to pledge these assets with the central bank as collateral for Eurosystem credit operations.

On the other hand, counterparties in need of additional funding and in shortage of collateral retained ABS transactions with the

Issuance and use of European asset-backed securities (including mortgage-backed securities)

(EUR billions)



Sources: ECB, Dealogic.

sole purpose of collateralising Eurosystem reverse transactions. This practice, also known as "originate-to-repo", enables counterparties to free up their balance sheet by indirectly repoing their outstanding credit claims, which would not necessarily be eligible otherwise. For example, claims in US dollars (ineligible) could be packaged in an ABS transaction denominated in euro. The tight regional restrictions, as well as operational burdens to mobilise credit claims, could also be overcome in such a deal. The Eurosystem remains protected against such risks, as the eligibility criteria and risk control measures take into account the specificities of ABS transactions (applying more stringent rating requirements as well as higher haircuts compared to other marketable assets).

The chart also illustrates that, since 2010, the use of ABSs has decreased, while non-retained issuance activities have recovered slightly.

Although total issuance of covered bonds in the euro area shrank by 27% in 2012 compared to 2011, the volume of eligible covered bonds increased almost continuously from a level of €1.2 trillion in 2007 to around €1.7 trillion by the end of 2012. The factors underlying this development are manifold. First, as a result of the introduction of the covered bond purchase programme (CBPP)[15] by the Eurosystem in July 2009, increasing numbers of euro area countries adopted regulations underlying covered bond issuances. These new covered bonds were often Eurosystem eligible collateral. Second, since covered bonds can be used as collateral by their issuer, they were often considered by banks as a good alternative to ABSs in order to mobilise loans as collateral, as, generally speaking, lower haircuts are applied to covered bonds than to ABSs. Thus, at the end of 2012, covered bank bonds represented the third largest asset class in terms of eligible collateral, with the weight of retained deals increasing from 26% in 2011 to 43% in 2012.

DEVELOPMENTS IN COLLATERAL POSTED WITH THE EUROSYSTEM

Similarly to the volume of eligible assets, the volume of used collateral has risen significantly over the past six years, though for different reasons, as discussed further in this section. The average value of marketable and non-marketable assets posted by counterparties as collateral for Eurosystem credit operations increased, on average, by around 16% per annum between 2007 and 2012 (see Chart 2). In particular, following the onset of the financial market turmoil in August 2007, the volume of collateral posted with the Eurosystem increased substantially, with an annual average increase of approximately 38% in 2008 and 25% in 2009. The decrease observed between 2009 and 2010 mainly reflected the fact that counterparties had, on average, lower liquidity needs throughout 2010. However, despite decreased liquidity needs, counterparties kept, on aggregate, similarly large volumes of collateral with the Eurosystem.[16]

In absolute terms, the total amount of collateral posted by Eurosystem counterparties, after valuation and the application of haircuts, increased from €1.1 trillion in 2007 to almost €2.5 trillion in 2012. In 2009 and 2010, this amount already reached over €2.0 trillion, but decreased to €1.8 trillion in 2011. However, in October 2011, two LTROs of approximately 12 and 13 months were announced,

15 More information on the CBPP can be found in the monthly CBPP reports published between August 2009 and June 2010; and in the paper entitled "The impact of the Eurosystem's covered bond purchase programme on the primary and secondary markets", *Occasional Paper Series*, No 122, ECB, January 2011. Moreover, it should be noted that from November 2011 to October 2012, the ECB conducted a second covered bond purchase programme (CBPP2), which had a target amount of €40 billion. The programme ended with cumulative purchases amounting to €16 billion (below the target), with 37% of this total acquired on the primary market.

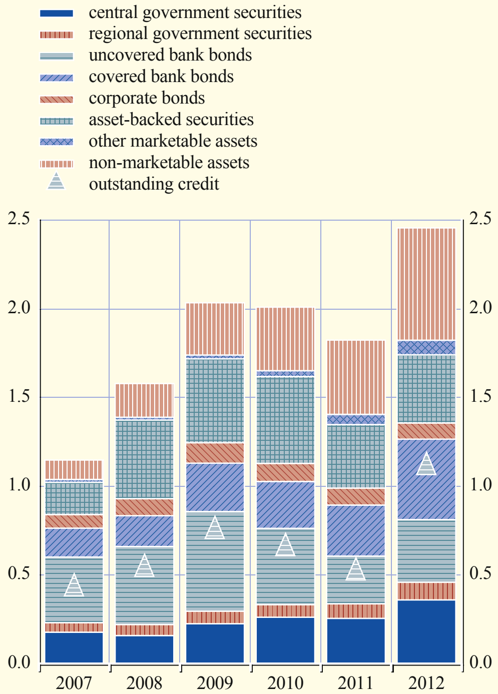
16 The share of collateral used to cover credit from monetary policy operations, therefore, increased to significantly higher levels than in preceding years. This suggests that a shortage of collateral has not been a systemic constraint on the Eurosystem's counterparties at the aggregate level.

and in December 2011, the first three-year LTRO was conducted, in which an amount of €489 billion was allotted. In order to collateralise these operations, counterparties once again posted more collateral over the course of the last quarter of 2011. The monthly average of the total collateral posted for the fourth quarter of 2011 was €2.0 trillion. The increase seen in late 2011 continued in 2012, in particular owing to the second three-year LTRO executed in February 2012. This resulted in an increase in the average amount of collateral posted, of around 35% in 2012, compared with 2011.

The composition of collateral posted has also changed significantly over recent years (see Charts 2 and Chart 3). At the asset class level, the use of central and regional government bonds doubled, from €230 billion in 2007 to €458 billion in 2012. Rating downgrades and falling prices for peripheral euro area government securities resulted in a reduction of the collateral base for the private repo and interbank markets, which consequently led to an increase in central and regional government securities deposited with the Eurosystem as collateral over the last two years.

Chart 2 Use of collateral by asset type and outstanding credit

(EUR trillions; after valuation and haircuts; averages of end-of-month data)



Source: ECB.

The value of uncovered bank bonds used started off at €371 billion in 2007 and reached a peak of €562 billion in 2009, before decreasing to €354 billion by 2012. Similarly to eligible amounts, the use of this asset class decreased significantly in 2011, owing to the end of the 2008 temporary measures (which were phased out on 1 January 2011), declines in asset prices, various rating downgrades, and hence a generally difficult environment for issuing new uncovered bank bonds. One year later, on 1 January 2012, the permanent removal of the eligibility requirement stating that debt instruments issued by credit institutions, other than covered bank bonds, were only eligible if they were admitted to trading on a regulated market, resulted, once again, in an increase in collateral of this asset type.

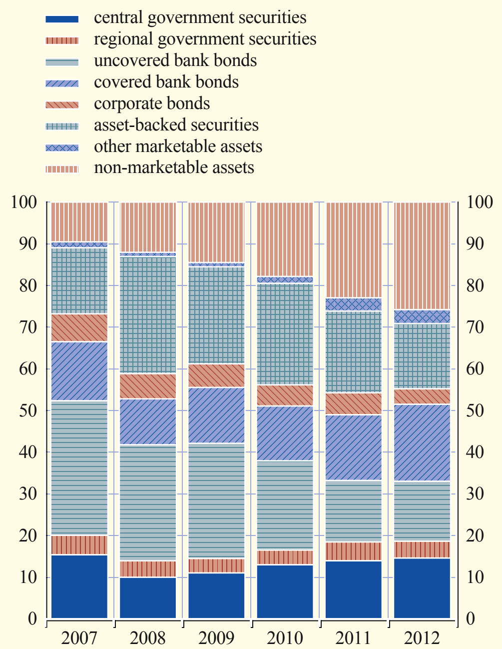
Covered bonds, on the other hand, increased more consistently during the period under review, namely from €163 billion in 2007 to €454 billion in 2012. Hence, covered bonds have not only grown in importance as a source of direct funding for many financial institutions in the euro area, but they have also come to be used increasingly as collateral in Eurosystem credit operations. The use of ABSs increased from €182 billion to €490 billion between 2007 and 2010, before decreasing to €385 billion in 2012. The use of corporate bonds and other marketable assets remained contained during the same period, with an increase from €93 billion in 2007 to €173 billion in 2012.

The use of non-marketable assets increased steadily from €109 billion in 2007 to €633 billion in 2012. It should be noted that this asset category encompasses credit claims mobilised under the standard framework as well as under the ACC framework. Moreover, the use of fixed-term deposits, which became a permanent eligible asset on 1 January 2011, after having previously been accepted on a temporary basis, also contributed to a substantial increase in non-marketable assets posted by counterparties as collateral for Eurosystem credit operations over the last two years.

In terms of the relative weighting of each asset class in the total collateral pool, some of the shares remained stable from 2007 to 2012, while others shifted considerably (see Chart 3). Indeed, central and regional government securities, covered bonds, and corporate bonds remained around the respective averages of 16%, 14% and 5% of the total collateral posted. Conversely, the share of uncovered bank bonds decreased from 32% to 14% in the same period, while non-marketable assets jumped from 10% to 26%. As far as ABSs are concerned, their share increased from 16% in 2007 to 28% in 2008. Subsequently, the share of ABSs in the total collateral pool remained between 20% and 24%, on average, between 2009 and 2011, and stood at a level of 14% in 2012.

Chart 3 Use of collateral by asset type

(percentages; average of end-of-month data)



Source: ECB.

In 2007, there was a mix between pooled and earmarked collateral within the Eurosystem. Nowadays, collateral is generally posted in a so-called pooling system, where counterparties simply pledge a basket or pool of assets, without assigning them to a specific liquidity-providing operation.[17] As such, counterparties may have significant amounts of collateral posted and very little credit outstanding.[18] Conversely, if counterparties manage their collateral pool very effectively, they may consistently present low over-collateralisation.[19] Under the current fixed-rate, full allotment regime, because counterparties systematically receive the amounts they bid, the decision on how much collateral to pledge mainly depends on a trade-off or arbitrage between refinancing channels. As such, the development in the use of collateral mainly depends on the behaviour and conditions of Eurosystem counterparties. Box 2 analyses, more specifically, the developments in the average haircut applied to the collateral used by counterparties in Eurosystem monetary policy operations, along with the developments in the credit risk profile of pledged collateral, and details the main decisions concerning collateral taken by the ECB since mid-2008.

17 In an earmarking system, the collateral delivered for Eurosystem credit operations is earmarked to specific loans or reverse transactions.
18 In aggregate terms, as seen in Chart 2, the amount of total collateral posted was significantly higher than the credit drawn against it.
19 The tendency to pledge extra collateral is, among other factors, also related to costs and other factors (such as precautionary or supervisory factors). Moreover, some counterparties prefer to pledge extra collateral if the same collateral pool is also used for intraday credit.

Box 2

DEVELOPMENTS IN AVERAGE HAIRCUTS APPLIED BY THE EUROSYSTEM

The developments in the average haircuts mainly reflect changes in the eligibility criteria, which allowed counterparties to pledge with the Eurosystem collateral assets with a riskier profile than that accepted under the standard framework prior to 2008.

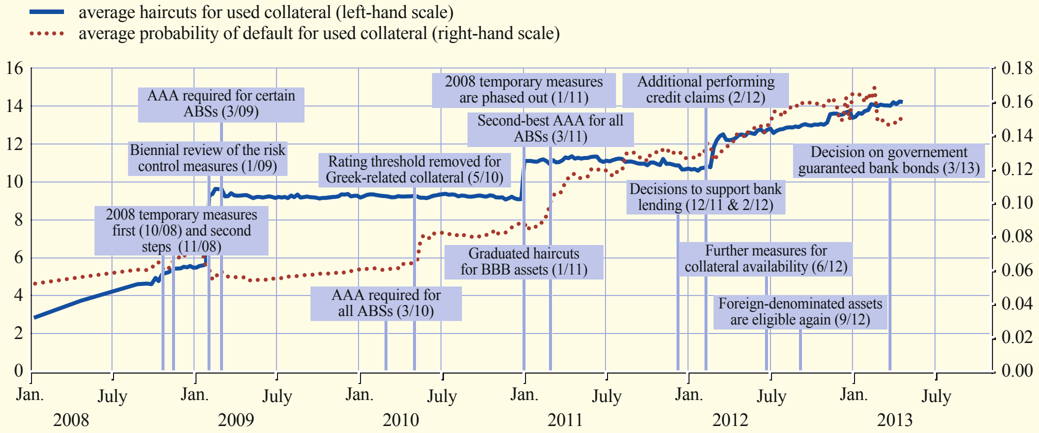
Chart A shows the developments, since 2008, in the average haircut applied to the collateral used by counterparties in Eurosystem monetary policy operations, as the set of eligible collateral was gradually expanded. The average is weighted by the amount of each asset used, after valuation and before the application of haircuts. Chart A also outlines the main decisions taken by the ECB on collateral during the period shown.

The temporary measures introduced in October and November 2008 helped to enhance the availability of collateral and thus the provision of liquidity by the Eurosystem to the banking sector. Higher haircuts or haircut add-ons were applied to the temporarily eligible new collateral in order to mitigate the risk associated with the acceptance of such collateral, which was generally riskier than that accepted under the standard framework. Moreover, and as already announced in September 2008, higher haircuts were applied to some marketable assets, as of 1 February 2009, to reflect a revised estimate of risk, generated in connection with the periodic review of the risk control framework. Thus, when compared to pre-crisis times, the average haircut had increased by around 3.6 percentage points at the beginning of 2009 to around 9.2%. During the remainder of 2009 and in early 2010, when financial markets showed signs of temporary improvements, the average haircut remained close to that level.

When tensions re-emerged in 2010, the Eurosystem announced, in April 2010, that it would continue, beyond the end of 2010, applying a minimum credit threshold to marketable and

Chart A Average haircuts applied to the collateral used by counterparties in Eurosystem monetary policy operations (weighted by the amount of collateral used, after valuation and before the application of haircuts)[1]

(percentages)



Source: ECB.

1) Average haircuts for used assets are calculated as follows:

$$\frac{\Sigma \textit{(Amount used after valuation and before haircuts * valuation haircuts)}}{\Sigma \textit{(Amount used after valuation and before haircuts)}}$$

non-marketable assets at the investment grade level (i.e. BBB-/Baa3), except in the case of asset-backed securities (ABSs). This permanent change to the standard framework, which did not have a discernible impact on the average haircut, was linked to the introduction of graduated valuation haircuts for lower-rated assets as of 1 January 2011, which aimed at ensuring risk equivalence across eligible collateral assets.

Some of the temporary measures introduced in October 2008 were phased out as of 1 January 2011. This reduced the total amount of outstanding eligible collateral and led some counterparties to use riskier assets, with higher haircuts, as collateral. As a result, the average haircut increased by around 2.0 percentage points to 11.1%.

At the end of 2011 and in the course of 2012, additional measures were taken by the Eurosystem in order to preserve and increase collateral availability, together with other measures to support bank lending and liquidity in the euro money market. This included a temporary expansion of the eligibility criteria for ABSs and the acceptance of additional performing credit claims that satisfied specific eligibility criteria. Once again, higher haircuts were applied to the additional accepted collateral in order to mitigate the increased balance sheet risk.[1] In early 2013, average haircuts stood at around 14%.

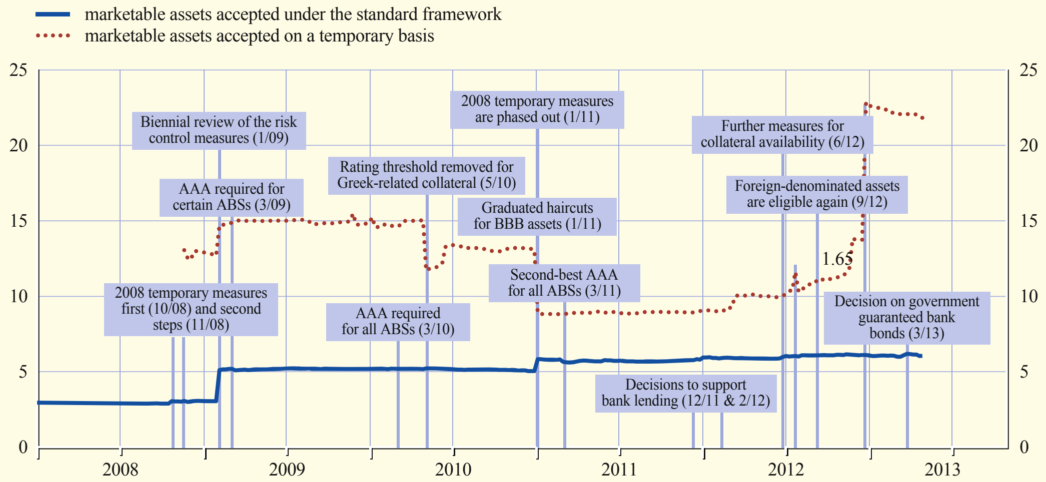
Changes in average haircuts thus reflect two factors: (i) changes in the ECB's assessment of risks, which led to changes in the applicable haircuts; and (ii) changes in the composition of the collateral used by counterparties, reflecting the counterparties' business decisions and (permanent or temporary) changes in the Eurosystem's eligibility rules for collateral, including changes related to non-standard monetary policy measures. In order to disentangle these two effects, it is useful to consider how the average haircuts applied to eligible marketable collateral (as opposed to used collateral) has developed over time (see Chart B).

Chart B reveals that the average haircut applied to the set of marketable assets, which are eligible under the standard framework, was subject to some increases each time the haircut schedule was revised. The chart also shows that higher haircuts were applied to the marketable assets, including additional ABSs, which became eligible on a temporary basis. The drop in the average haircut observed in May 2010, for example, is due to the classification of assets issued or guaranteed by the Greek government in the group of assets accepted on a temporary basis owing to the temporary nature of the rating waiver for such assets. These Greek government-linked assets lost their eligibility as collateral for Eurosystem credit operations in July 2012, as shown in the chart. In December 2012, however, the Governing Council of the ECB decided that marketable debt instruments issued or fully guaranteed by the Greek government – that fulfilled all other eligibility criteria – once again constituted eligible collateral for the purposes of Eurosystem credit operations, subject to special, higher haircuts, as reflected in the observed average haircut increase at the end of 2012. In addition, credit claims, which are not shown in Chart B, are also subject to higher haircuts and their usage has increased over recent years, in particular, but not only, on the back of the acceptance of the additional credit claims. Thus, the increase in the average haircut for used collateral observed in Chart A can primarily be attributed to changes in the composition of the assets used by counterparties as collateral, including, in particular, the use by counterparties of the assets which became eligible on a temporary basis.

1 In addition, haircut add-ons or valuation mark-downs are, for example, applied by the Eurosystem for foreign currency-denominated collateral in order to compensate for the foreign exchange risk. Moreover, the responsibility resulting in the acceptance of certain marketable and non-marketable assets is borne, for some of these assets, by the specific NCB authorising their use.

Chart B Average haircuts applied by the Eurosystem, weighted by the nominal value outstanding of all eligible marketable assets for Eurosystem credit operations[1]

(percentages)



Source: ECB.
1) Average haircuts for eligible assets are calculated as follows:

$$\frac{\Sigma\ (\textit{Nominal of all eligible assets * valuation haircuts})}{\Sigma\ (\textit{Nominal of all eligible assets})}$$

When analysing the average haircuts applied to the collateral used by Eurosystem counterparties in monetary policy operations, it is important to isolate the effects of changes in the haircuts applied by the Eurosystem to specific assets, on the one hand, from, on the other, the effects of changes in the composition of used collateral. The latter may reflect changes in collateral eligibility rules and risk control measures but also changes in banks' business activities and structural changes in financial markets. The box shows that recent changes in the average haircuts applied to used collateral reflect, in large part, the acceptance of new collateral, under temporary measures, to which higher haircuts are applied by the Eurosystem.

4 CONCLUSION

The Eurosystem collateral framework has become an important tool in supporting the efforts towards the restoration of market functioning in the euro area. This is due to both its flexibility and its breadth in terms of the wide range of collateral accepted against its credit operations. On the one hand, rapid adjustments to the collateral framework have also allowed it to cope with additional demand for collateral owing to changes in financial market conditions. On the other hand, collateral decisions targeted at very specific market segments have further supported the provision of credit to households and non-financial corporations. The mitigation of risk, and thus the protection of the Eurosystem balance sheet, has continued to play an important role within the Eurosystem collateral framework throughout the various phases of the financial crisis, as illustrated in this article. These combined ECB actions have affected, to a varying degree, the developments in the size and composition of Eurosystem collateral in terms of both eligible and used assets. The ECB's actions have affected eligible and used collateral, in combination with the modifications to the Eurosystem risk control framework, all of which echoes, to some extent, the lessons the Eurosystem has learned during the various phases of the financial crisis.

Annex Changes in Eurosystem collateral rules and risk control measures since mid-2008

Date of announcement	Measure	Date of implementation
4 September 2008	Biennial review of the risk control measures in Eurosystem credit operations	1 February 2009
15 October 2008	Measures to further expand the collateral framework and enhance the provision of liquidity (including technical specifications	
17 October 2008	- Technical specifications for the temporary expansion of the collateral framework	20 October 2008
12 November 2008	- Further technical specifications for the temporary expansion of the collateral framework	22 October 2008
17 November 2008	- Further technical specifications for the temporary expansion of the collateral framework	17 November 2008
20 January 2009	Adjustment of risk control measures for newly issued asset-backed securities and for uncovered bank bonds	1 March 2009/1 March 2010
20 November 2009	ECB amends rating requirements for asset-backed securities in Eurosystem credit operations	1 March 2010 for new ABSs (and 1 March 2011 for all ABSs)
8 April 2010	ECB introduces graduated valuation haircuts for lower-rated assets in its collateral framework as of 1 January 2011	1 January 2011
3 May 2010	ECB announces change in eligibility of debt instruments issued or guaranteed by the Greek government	3 May 2010
28 July 2010	ECB reviews risk control measures in its collateral framework	1 January 2011
9 October 2010	New provisions for the framework for implementation of monetary policy in the euro area – ECB publishes an updated version of the General Documentation	10 October 2010
16 December 2010	ECB refines the framework for the implementation of monetary policy in the euro area – ECB publishes an updated version of the General Documentation	1 February 2011
16 December 2010	ECB introduces ABS loan-by-loan information requirements in the Eurosystem collateral framework	Within 18 months after announcement
4 February 2011	ECB publishes an updated version of the General Documentation	1 February 2011
18 February 2011	Acceptance of Coface rating tool for the purposes of the Eurosystem credit assessment framework	18 February 2011
31 March 2011	ECB announces the suspension of the rating threshold for debt instruments issued by the Irish government	31 March 2011
29 April 2011	ECB introduces loan-by-loan information requirements for CMBSs and SME transactions	Within 18 months after announcement
7 July 2011	ECB announces change in eligibility of debt instruments issued or guaranteed by the Portuguese government	7 July 2011
21 September 2011	ECB publishes an updated version of the General Documentation	1 January 2012
8 December 2011	ECB announces measures to support bank lending and money market activity	19 December 2011 (for ABSs) 9 February 2012 (for additional credit claims)
9 February 2012	ECB approves eligibility criteria for additional credit claims	9 February 2012
28 February 2012	Temporary suspension of eligibility of bonds issued or guaranteed by the Greek government as collateral in Eurosystem credit operations	28 February 2012
8 March 2012	Eligibility of bonds issued or guaranteed by the Greek government as collateral in Eurosystem credit operations	8 March 2012
21 March 2012	Acceptance of certain government-guaranteed bank bonds	23 March 2012
4 April 2012	Information requirement to address modifications to asset-backed securities; compliance of third party rating tools with the Basel II definition of default; and acceptance of credit reform rating AG as rating tool for the purpose of the ECAF	4 April 2012

Annex Changes in Eurosystem collateral rules and risk control measures since mid-2008 (cont'd)

Date of announcement	Measure	Date of implementation
10 May 2012	Loan-level data templates for new classes of asset-backed securities	18 May 2012
22 June 2012	ECB takes further measures to increase collateral availability for counterparties	22 June 2012
3 July 2012	Measures relating to the eligibility of government-guaranteed bank bonds as Eurosystem collateral; compliance with the Basel II definition of default; acceptance of the third wave of national frameworks for additional credit claims; implementation of the loan-level data reporting requirements for asset-backed securities; enhanced transparency for data on operations	3 July 2012
20 July 2012	Collateral eligibility of bonds issued or guaranteed by the Greek government	25 July 2012
6 September 2012	Measures to preserve collateral availability, including changes in the eligibility for central government assets and expansion of the list of assets eligible to be used as collateral	10 October 2012 (adoption of legal acts for expanding the list of assets eligible to be used as collateral)
17 September 2012	Common Eurosystem Pricing Hub (CEPH)	21 September 2012
27 September 2012	Annual review of the list of acceptable non-regulated markets and issuers classified as agencies	27 September 2012
9 November 2012	Uniform minimum size threshold for the acceptance of credit claims as collateral was postponed	9 November 2012
27 November 2012	ECB announces rescheduling of loan-level data reporting requirements	3 January 2013 1 March 2013 1 January 2014
28 November 2012	ECB publishes amendments to the General Documentation	3 January 2013
19 December 2012	ECB announces change in eligibility of debt instruments issued or guaranteed by the Greek government	21 December 2012
19 December 2012	Acceptance of Banka Slovenije's credit assessment system for the purposes of the Eurosystem credit assessment framework	19 December 2012
22 March 2013	ECB announces changes to the use as collateral of certain uncovered government-guaranteed bank bonds	1 March 2015