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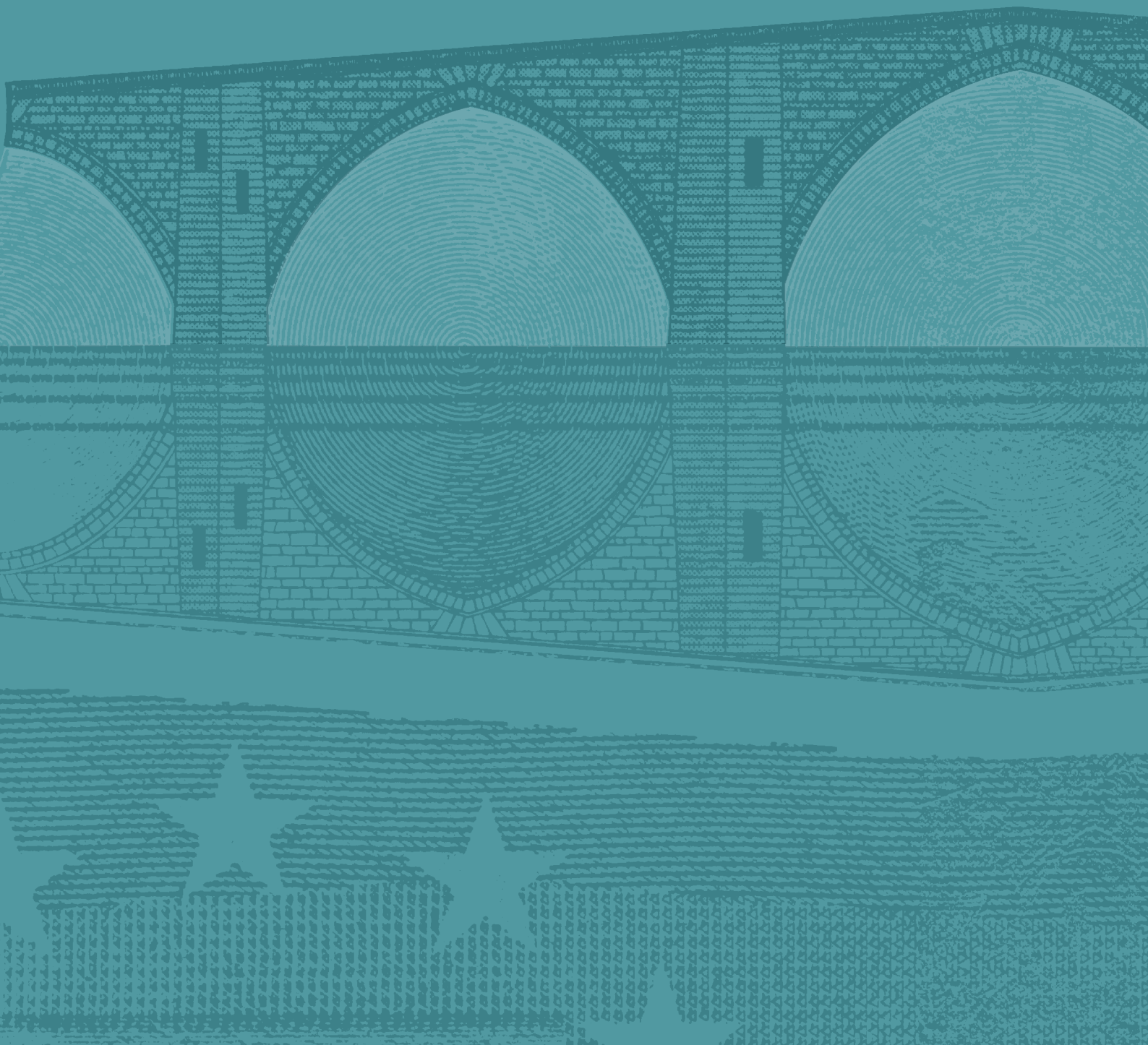
COLLATERAL ELIGIBILITY AND AVAILABILITY

FOLLOW-UP TO THE REPORT ON "COLLATERAL ELIGIBILITY REQUIREMENTS – A COMPARATIVE STUDY ACROSS SPECIFIC FRAMEWORKS" DATED JULY 2013

JULY 2014



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EXECUTIVE SUMMARY

The growing demand for collateral as a consequence of market and regulatory developments in recent years has led to an increased focus of the industry on availability and usability of high-quality collateral assets. Accordingly, the ECB contact group on euro securities infrastructures (COGESI), building on its July 2013 report on collateral eligibility requirements across various frameworks[1], has set out to qualify the *overall supply* of high-quality collateral assets in the current new report and to examine what portion of this supply is effectively *available* and *usable* for financial institutions. Estimations in this respect are derived from various studies on the global supply of collateral assets for financing arrangements. The current report[2] in particular explains that a non-negligible portion of the overall supply of high-quality assets is not available for use as collateral, and not all of the available collateral is usable due to certain securities settlement limitations. Accordingly, the report aims to establish the level of the "real supply" of collateral in the market.

QUANTIFICATION OF COLLATERAL ASSETS AND REVIEW OF AVAILABLE/USABLE COLLATERAL

Regarding the ***overall supply of high-quality assets***, several studies have been published which provide estimates of global amounts of high-quality assets. In this report, the overall supply of high-quality assets that may be used as collateral under the various frameworks is considered to stand at around €41 trillion[3]. The quantification of overall collateral eligible under the selected central bank frameworks covered in the report ranges from around €8 to €36 trillion, while for regulatory frameworks, the amount ranges from around €28 to €37 trillion for the EMIR framework and Basel III LCR respectively. With regard to CCP frameworks, overall eligible collateral amounts to around €2 to €14 trillion for underlying collateral in CCP-cleared repos and €5 to €28 trillion for collateral eligible for initial margins.

The concept of ***available collateral*** as presented in this report takes into account the fact that not all of the aforementioned €41 trillion is effectively accessible to market participants for collateralisation purposes, as a certain portion is blocked on accounts with (I)CSDs/custodians and held in non-actively managed portfolios by both public and private entities (referred to in this report as "idle securities").

Based on feedback from market participants, it is estimated that around 25% of the overall supply of high-quality assets are idle securities not available for use as collateral. This results in a figure of around €31 trillion for available collateral. The figure of 25% for idle securities however should be taken as indicative, and is considered to be a conservative estimate, with the actual percentage likely to be even higher for certain market participants and sectors, in particular during times of stressed market conditions. Different factors influence the amount of available collateral, and the actual impact is difficult to quantify. The main factors include aspects such as investment strategies, prevailing market conditions (e.g. related to the investor's return thresholds), as well as certain legal/regulatory requirements (e.g. related to balance sheet requirements). Market participants also keep buffers of high-quality assets for liquidity purposes, while central banks and global institutional investors also hold a considerable portion of such assets. Collateral assets pledged by market participants to central banks in return for credit however are not considered to reduce the amount of available collateral, except insofar as the collateral pledged substantially exceeds the value of credit outstanding.

1 See "Collateral eligibility requirements: a comparative study across specific collateral frameworks" ECB, 15 July 2013.
2 The current report has been drafted by the ECB in cooperation with an ad hoc group of COGESI on collateral, composed of members of COGESI and the ECB's Money Market Contact Group (MMCG).
3 References to amounts in this report are generally expressed in terms of euro or euro equivalent. Where amounts are expressed in other currencies, this is explicitly noted.

Usable collateral refers to the portion of available collateral assets that can be immediately mobilised by a market participant (with current settlement arrangements). In this report, usable collateral is estimated at around €29 trillion equivalent. Usability of collateral assets may be constrained because of inefficient settlement processes and interconnections between clearing and settlement systems. A number of studies indicate that between 6% and 15% of the available collateral is not entirely usable because of current settlement-related limitations.

The table provides a summary of the quantification of eligible collateral:

Summary of marketable collateral assets under selected frameworks (estimations at global level)

1) Overall collateral	"Overall collateral" is the total amount of high-quality assets globally that may be used as collateral. This amount is estimated to be around €41 trillion equivalent.		
	Sub-sets of overall collateral, eligible under a certain framework:		
	(i) collateral eligible under central bank frameworks: €8 - 36 tr. (Eurosystem: €14 tr. eligible marketable assets);	(ii) collateral eligible under regulatory frameworks: €28 - 37 tr. (€28 tr. equivalent for the EMIR; €37 tr. (eligible as HQLA for LCR);	(iii) collateral eligible under CCP frameworks: €2 - 14 tr. marketable assets as underlying collateral for CCP cleared repos; and €5 - 28 tr. for initial margins.
2) Available collateral	"Available collateral" is the amount of assets that are accessible to the market for mobilisation as collateral. Available collateral is estimated at around €31 trillion. *At least 25 percent of the overall collateral (€41 trillion) is blocked on accounts with (I)CSDs/custodians/ held in non-actively managed portfolios)*		
3) Usable collateral	"Usable collateral" is the amount of assets that can be immediately mobilised (with current settlement arrangements). Usable collateral is estimated at around €29 trillion.		
	At least 6% of the available collateral (€31 trillion) is not entirely usable because of limitations in financial market infrastructure (FMI) functioning, e.g.: (i) inefficiencies of interconnections between (I) CSDs leading to non-availability of collateral: Around €1 - 1.5 trillion; (ii) need to pre-deposit collateral at (I) CSDs for settlement: around €0.5 trillion.		

Sources of estimates: IMF, 2012, CGFS 2011/2013, Bank of Canada, 2013.

REVIEW OF HAIRCUTS UNDER COLLATERAL FRAMEWORKS

Regarding *haircuts for eligible collateral*, the report collected information for the three frameworks covered in the July 2013 report, i.e. the haircut frameworks of central banks, regulatory frameworks and CCPs. To date, information on haircuts is only gathered occasionally for specific purposes (e.g. by FSB for its qualitative impact studies), and is presented/published in a non-recurrent way. The present report presents a comprehensive overview of haircuts of central banks, regulatory frameworks, and CCPs applicable at a certain point in time (end-September 2013).

The collected information indicates that the *size of haircuts* varies, depending on the assessed riskiness/volatility of the underlying collateral. Haircuts for repo transactions with central banks are typically higher than for transactions among market participants (i.e. bilateral transactions involving major market participants typically involve zero or low haircuts). Haircuts applied on transactions involving CCPs are either similar to those of the central banks or higher for some type of assets. Regulatory *frameworks typically do not prescribe the size of haircuts*, and only qualify the characteristics of collateral. However, regulatory frameworks have started in some cases to define the *minimum schedule of haircuts* (i.e. for Basel III LCR, non-centrally cleared derivatives, and in the context of the FSB work on possible haircut schedules of securities financing transactions).

OVERALL CONCLUSIONS

In general, the report demonstrates that the global supply of high-quality assets, standing at around €41 trillion, is a substantial figure and that the amount of available/usable collateral is also relatively large.

Nonetheless, the actual amount of available/usable collateral might differ for certain market participants and sectors. It is also emphasised that the report has been drafted at a moment in time when the greater effects of the increasing demand for collateral assets stemming from regulatory reforms have yet to materialise, and hence COGESI will continue to monitor developments affecting overall supply and availability of high-quality collateral assets. Regulatory reforms, such as the migration to mandatory central clearing for OTC derivatives and collateral requirements for bilateral derivatives clearing as well as provisions for high-quality assets under the Basel III LCR, can be expected to consume a considerable portion of the available €31 trillion of high-quality assets once these reforms are fully implemented at global level. The information collected on haircuts also gives a view on the impact of haircuts on the amount of collateral essentially available, although it is not possible to easily quantify the impact in this respect.

On the other hand, it remains to be seen if there will be developments in the future which go in the direction of helping to increase the total available collateral. For instance, if financial conditions for securities lending improve, some of the current so-called idle securities may be reintroduced into the securities lending market. In addition, the tendency of some market participants to deposit excess collateral with central banks may also be reduced due to the need to use such collateral for other purposes. Various developments underway at post-trade infrastructure level can also be expected to help overcome a number of the current inefficiencies that reduce the volume of available collateral. In particular, the go-live of T2S will support the mobilisation of collateral with common and extended settlement timetables across T2S markets and remove the distinction between procedures for cross-CSD operations, essentially making cross-border operations as efficient as domestic operations. It has also to be acknowledged that financial institutions themselves are adapting to the new environment and are improving their internal set-up and operational processes in order to manage their collateral assets more efficiently. Furthermore, financial market infrastructures and global custodians are providing enhanced collateral management services that could reduce the need for collateral buffers in multiple jurisdictions. Notwithstanding these positive improvements that are underway, further improvements to settlement-related processes are needed to support efficient mobilisation of collateral cross-border as stated in the ECB report "Euro repo market – Improvements for collateral and liquidity management".

Finally, it needs to be considered further whether improvements in post-trade infrastructures could help increase the velocity of collateral (or re-use of collateral in general) and whether future regulatory reforms could eventually reduce the velocity of collateral. The Eurosystem itself is enhancing its collateral management services via the CCBM in 2014, first with the removal of the repatriation requirement in May and second with the go-live for the support of cross-border triparty collateral management services in September, both of which could have a positive influence on the conditions for velocity/re-use of collateral. Continuous attention is needed to other market developments affecting velocity and thereby availability and usability of collateral.

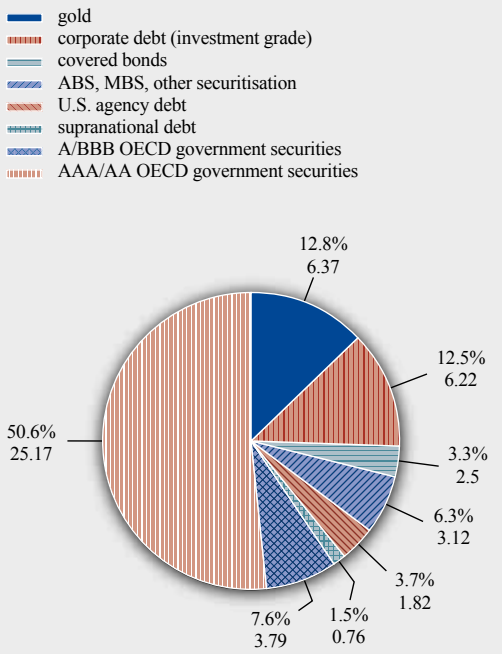
INTRODUCTION

In July 2013 the ECB Contact Group on Euro Securities Infrastructure (COGESI) released a report on collateral eligibility requirements in order to increase transparency, as well as provide a better understanding of the different collateral requirements faced by the financial industry[4], That report presented an overview of collateral eligibility requirements in different "frameworks"[5] such as use with central banks to receive credit, compliance with regulatory requirements and use with CCPs in repo-related clearing/collateral management services and collateralisation of OTC derivative clearing. Further analysis was deemed necessary in order to understand how much collateral would effectively be available to/usable by market participants. Accordingly, the report identified the need for follow-up work regarding (i) quantification of eligible collateral under the three collateral frameworks and (ii) elaboration of haircut schedules per framework. This report provides the main findings of this follow-up work.

The report is structured as follows. The first chapter presents a quantification of collateral supply across the three frameworks considered in the earlier report, namely (i) the collateral policy frameworks of central banks, (ii) certain regulatory frameworks and (iii) practices of EU central counterparties (CCPs). The chapter goes on to review information on collateral availability/usability. The second chapter provides an overview of valuation haircuts requirements based on a "snapshot" of haircut data as at end-September 2013.

Chart 1 Oustanding amounts of potential collateral assets

(2012, EUR trillion)



Source: IMF April 2012 "Safe assets: Financial cornerstone?".

1 ELIGIBILITY AND AVAILABILITY OF COLLATERAL

1.1 QUANTIFICATION OF OVERALL COLLATERAL

In recent years, several studies have been carried out to quantify the amount of overall collateral that can be considered "eligible" to fulfil collateral needs and to estimate the overall value. The aim of these studies was to better understand the extent to which a shortage or scarcity of collateral assets might emerge (see literature list in Annex 1), giving special attention to the changes in the regulatory environment and their expected impact on increased demand for collateral.

Existing studies estimated the global supply of high-quality assets that may be used as eligible collateral to be around **€41 trillion**[6]. The total value of collateral assets mainly consists of

4 See "Collateral eligibility requirements: a comparative study across specific collateral frameworks" ECB, 15 July 2013.

5 "Collateral frameworks" refers to different collateral eligibility requirements in various contexts, such as eligible collateral for use with the central bank. The term "collateral" is generally used in the July report and in the current report and intended to also cover asset eligibility requirements for specific regulatory frameworks.

6 See "Asset encumbrance, financial reform and the demand for collateral assets" CGFS, May 2013, and "Global Financial Stability Report" IMF, April 2012.

fixed-income assets from (i) highly rated sovereigns (with AAA and AA ratings[7]); (ii) the private sector, through securitisation-type assets (ABS and MBS); and (iii) corporate bonds and covered bonds (see Chart 1 comprising an overview of marketable assets eligible as collateral).

The aforementioned studies also estimated the *additional* demand for eligible collateral arising from regulatory reforms to be in a range of between €1.5 trillion and €3 trillion[8], depending on the practical approach/assumptions applied.

The current report does not attempt to provide new estimates of overall eligible collateral, but rather presents additional insights/information on the overall value of assets which potentially could be used as collateral in the three different frameworks covered in the report (i.e. selected central banks, regulatory and CCP frameworks). It should be noted that the outcome of the analysis provided in the report is largely indicative in character. Some limitations in this context reflect the fact that in many collateral frameworks, eligibility criteria are defined only on a very normative rather than on a prescriptive level (e.g. regulatory and oversight requirements typically only specify asset classes).

1.1.1 CENTRAL BANK FRAMEWORKS

In this section, quantification estimations are provided on the value of assets eligible to be accepted as collateral for primary monetary policy operations by selected European central banks (Eurosystem, Bank of England, Swiss National Bank and Sveriges Riksbank), as well as the central banks of the United States and Japan.

Central bank collateral frameworks typically rely on domestic (and sometimes foreign) high-quality government bonds. Debt instruments issued by credit institutions are the second most important asset class (in case of the Eurosystem and SNB). For other categories of collateral, such as non-marketable assets or cash deposits, these vary in importance depending on the central bank concerned.

(i) Marketable assets

Table 1 below provides an overview of the value of marketable assets eligible as collateral under the selected central bank frameworks (for Q3 2013).

As evidenced in Table 1, the total amount of marketable **collateral eligible for acceptance by individual central banks ranges from around €8 trillion** (equivalent) for the Swiss National Bank and Bank of Japan **to around €36 trillion (equivalent) for the Bank of England**. This wide disparity across the central banks is explained by the differing eligibility requirements established by the respective central banks. Some central banks also provide detailed lists of assets accepted as eligible collateral (e.g. Eurosystem and Swiss National Bank), while other central banks (e.g. Bank of England) do not publish lists of eligible assets that could be used as collateral. In particular, the Bank of England and Sveriges Riksbank rely on a broader set of (normative) eligibility criteria which for example, include assets issued in different currencies and issued in different locations (most notably US dollar-denominated, government bonds, which amount to more than €10 trillion). The Swiss National Bank also accepts a wide range of assets (in geographical terms), but restricts the eligibility of collateral in its detailed list of securities. Finally, the value of marketable collateral accepted by the **Eurosystem amounts to around €14 trillion**[9] Although having a relatively broad

7 It is acknowledged that the use of ratings as a criterion for highly rated assets could influence the estimation of the total value of collateral assets (e.g. ratings could decline during a crisis, but could improve again when the economy recovers, making the estimation volatile). It should be understood that the total value of collateral assets is an estimation that could differ depending on the timeframe considered.

8 See "The market for collateral: the potential impact of financial regulation" Bank of Canada, June 2013.

9 The average amount of marketable assets eligible as collateral in Q3 2013 (end of month data).

Table 1 Marketable assets eligible as collateral for selected central banks (Q3/2013)

Collateral	Eurosystem [1)]	BoE	Sveriges Riksbank	SNB	FED (temporary open market operations)	BoJ
Marketable assets						
Debt instruments issued by:						
Central governments						
Central banks	6,898.8	35,986.0	22,819.4	6,086.0	10,643.0	7,795.0
Public sector institutions other than central governments						
Supranational institutions						
Credit institutions (covered bonds)	1,560.6			427.0		
Credit institutions (excluding covered bonds)	2,225.6			745.0		
Corporations (other than credit institutions)	1,519.9			563.0		
Asset-backed securities (ABS)	801.4	425.0				
Total (EUR billion)	**14,150**	**36,411.0**	**22,819.4**	**7,821.0**	**10,643.0**	**7,795.0**

Sources: Relevant central banks, BIS Debt securities statistics; European Covered Bond Council: ECBC Fact Book 2013; Securities Industry and Financial Markets Association (SIFMA).
Notes: Marketable assets, such as certain government bonds, could be eligible at multiple central banks, hence are included in the figures in multiple columns.
1) See ECB website (http://www.ecb.europa.eu/paym/coll/assets/html/index.en.html)

collateral framework in terms of accepted asset types, the Eurosystem restricts its eligible collateral in its standard Eurosystem collateral framework in terms of geographical scope and to euro-denominated assets (as defined in its list of eligible assets).

(ii) Non-marketable assets.

There is no comprehensive data on non-marketable assets eligible for acceptance as collateral by central banks, but some estimation can be made with regard to the credit claims which can be potentially mobilised as collateral, based on the amount of bank lending to non-financial corporations (NFCs). In the case of the euro area, where the NFCs rely for more than 40% on bank lending for covering their financing needs, such loans amount to **almost €4.4 trillion**, i.e. one third of the total value of eligible marketable assets for the Eurosystem.

1.1.2 REGULATORY REQUIREMENTS

In most regulatory frameworks, there are no precise lists of eligible assets (which makes it difficult to provide precise quantifications of acceptance of eligible collateral). Instead, regulatory frameworks tend to describe general features of the assets which could be used as collateral. For example, the CPSS-IOSCO principles for financial market infrastructures (PFMIs) define eligible collateral as assets with "*low credit, liquidity and market risks*".

In this section, estimations are made to indicate the minimum available amounts related to (i) regulatory reforms on mandatory clearing of OTC derivatives (e.g. EMIR in the EU) and (ii) bank-related prudential requirements reforms (e.g. Basel III LCR).

(i) Regulatory reforms on mandatory clearing of OTC derivatives

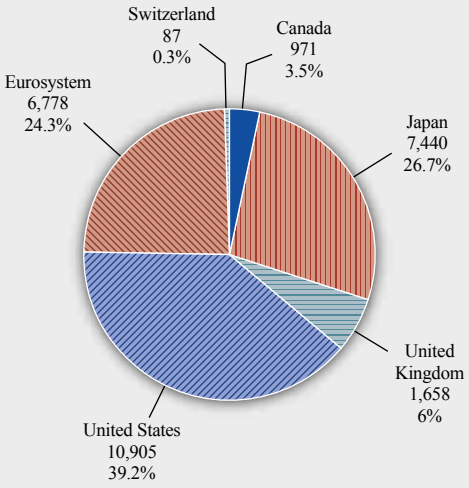
Regulatory requirements typically request CCPs to accept only highly liquid collateral with minimal credit and market risk, which comply with a minimum set of criteria, such as the European Market Infrastructure Regulation (EMIR) in the EU[10]. Under EMIR, the following assets are accepted as collateral: cash, financial instruments, bank guarantees and gold. In addition, according to EMIR,

10 See the regulatory technical standards on requirements for central counterparties (Commission Delegated Regulation (EU) No 153/2013 – Annex II Conditions applicable to highly liquid financial instruments).

securities should be issued in a currency which can be managed by a CCP or in which the CCP clears transactions. Based on these criteria, Chart 2 presents eligible assets accepted under EMIR. The outstanding amounts of government bonds issued in major currencies which could be accepted by CCPs as collateral under the EMIR framework are estimated to be around **€28 trillion** in Q1 2013.

Chart 2 General government debt: outstanding amount by country

(2013Q1; in EUR billions)



Source: BIS Quarterly Review, December 2013.

(ii) Banks prudential requirements

The liquidity coverage ratio (LCR) defined by Basel III aims at assuring short-term resilience of the liquidity risk profile of banks by ensuring that they have sufficient high-quality liquid assets to survive a significant stress scenario lasting 30 calendar days. The assets can be considered as *high-quality liquid assets (HQLA)* if they can be immediately and easily converted into cash at little or no loss of value.

There are two categories of assets that can be included in the stock of acceptable high-quality liquid assets i.e. "Level 1" assets which can be included without limit and "Level 2" assets (which can only comprise up to 40% of the stock).

- Level 1 assets include cash, central bank reserves, marketable securities representing claims on, or guaranteed by, sovereigns, central banks, public sector entities or supranational institutions and satisfying certain conditions.

- Level 2 assets can be comprised of (Level 2A) marketable securities representing claims on, or guaranteed by, sovereigns, central banks, public sector entities or multilateral development banks that satisfy certain conditions; corporate debt securities (including commercial paper) and covered bonds that satisfy certain conditions; and (Level 2B) RMBS; corporate debt securities and common equity shares.

The overall pool of eligible marketable assets under the LCR framework is estimated by CGFS to be around **€37 trillion**[11]. At EU level, Basel III will be implemented by the CRD IV package[12].

1.1.3 CCP COLLATERAL FRAMEWORKS

The current section presents estimates of underlying collateral for CCP repo clearing arrangements as well as margin and default fund contributions[13].

11 See "Asset encumbrance, financial reform and the demand for collateral assets", CGFS, May 2013.
12 The new rules will apply as at 1 January 2015, with full implementation on 1 January 2019 at the latest.
13 The accepted collateral for variation margin collected by a CCP to cover its current exposures resulting from actual changes in market prices is typically includes cash (and therefore not considered further in this report). Also the default contributions collected by CCPs are not considered, as CCPs rely mainly on cash and high-quality government bonds.

Table 2 Marketable assets eligible as underlying collateral for CCP-cleared repos

(€ billion- end of 2012)

Collateral	LCH. Clearnet SA		Eurex Clearing [1)]		LCH. Clearnet Ltd	
	€ GC Plus basket No.1	€ GC Plus basket No.2	ECB basket	ECB EXT basket	Repo Clear € GC	Repo Clear UK GC
Marketable assets						
Debt instruments issued by:						
• Central governments	3,913.1	6,268.48	6,222.8	9,003.6	3,584.5	1,723.5
• Central banks						
• Public sector institutions other than central governments						
• Supranational institutions						
• Credit institutions (covered bonds)	1,700.9		870.3	921.2		
• Credit institutions (excluding covered bonds)			77.3	3,141.5		
• Corporations (other than credit institutions)			65.6	1,208.7		
Asset-backed securities (ABS)						
Total (€ billion)	**5,614.0**	**6,268.48**	**7,236.0**	**14,275.0**	**3,584.5**	**1,723.5**

Source: Websites of CCPs
1) Market value as at March 2014.

(i) Underlying collateral for CCP-cleared repos

The underlying repo collateral accepted by CCPs typically encompasses in most cases assets accepted for central bank collateral purposes, albeit with some stricter eligibility criteria. Accordingly, the current study presents the assumptions (exclusively) with respect to the accepted government bonds and covered bonds, as the remaining types of assets, due to a variety of additional, often specific limiting eligibility criteria, preclude their general quantification.

The total amount of eligible collateral in CCP frameworks for underlying collateral ranges from around **€3 to €14 trillion** (see Table 2).

(ii) Initial margin

Regarding initial margin, the accepted collateral typically includes cash and high-quality government bonds issued in major currencies. Some CCPs (e.g. Eurex Clearing) also accepts those categories of assets, which are covered under the Eurosystem collateral framework. The table below presents the value of collateral eligible for initial margin purposes across various CCPs. CCPs impose several eligibility restrictions, but in general it is estimated in this report that CCPs accept eligible government bonds and for Eurex Clearing, also Eurosystem eligible marketable collateral. The total amount of eligible collateral in CCP frameworks for initial margin ranges from **€5 to €28 trillion** (see Table 3).

Table 3 Quantification of marketable assets eligible as initial margin collateral with CCPs

(EUR billion 2013Q2)

	LCH Clearnet Ltd	CME Clearing Europe	Eurex Clearing	LCH. Clearnet SA	ICE Clear Europe	CC&G	MEFF	NASDAQ OMX Nordic
Eligible collateral (government bonds)	27,799.2	15,690.6	28,287.8	18,890.5	20,107.7	3,296.0	17,117.2	5,728.4

1.1.4 Summary of the results

This section aims to quantify the overall global supply of high-quality assets and then estimates the values of collateral that are eligible under the different frameworks.

– Regarding the global supply of high-quality assets that may be deemed eligible for use as collateral, the figure is considered to stand at around €41 trillion. This figure is taken from studies carried out by other parties (CGFS and IMF) that capture estimations of the overall global supply of high-quality assets.

– Regarding the supply of high-quality collateral that is eligible under the different frameworks, the following summary could be made of the quantification results:

- Collateral that meets **central bank requirements** is estimated to be in the range of around **€8-€36 trillion**.

- Collateral that meets the **regulatory requirements** is estimated to be around **€28 - €37 trillion**. In particular, for market-infrastructure related requirements (under EMIR), it is estimated that €28 trillion of assets are eligible as collateral. For Basel III LCR[14], it is estimated that €37 trillion represent so-called "high-quality liquid assets" (HQLA) according to CGFS 2013[15].

- Collateral that meets **CCP requirements** is estimated to be around **€3-€14 trillion** (related to underlying collateral for CCP-cleared repos) and **€5-€28 trillion** (related to initial margin collateral with CCPs).

It is noted that there is an overlap of eligible assets across the different frameworks, for example, high-quality sovereign debt is generally eligible in all three frameworks hence the estimations cannot be summed together

Table 4 provides an overview of the results of eligible collateral across various frameworks:

Table 4 Summary of collateral eligible in different frameworks

Frameworks	Minimum	Maximum	Rough estimate
Central Banks eligible assets	8	36	
Eurosystem			13 (+ 4*)
Regulatory requirements			
CCP requirements (EMIR)			28
Banking requirements (BIII LCR)			37
CCP			
Collateral requirements for repo	3	7	
Initial margin	5	28	

* Non-marketable assets.

14 The implementation of Basel III regulatory requirements in the EU will be will occur with two legislative instruments: a directive (Capital Requirements Directive) governing the access to deposit-taking activities and a regulation (Capital Requirements Regulation) establishing the prudential requirements institutions need to respect. A phase-in period will start on 1 January 2015 (with a minimum requirement set at 60%) and rise in equal annual steps until 1 January 2018 (to reach 100%).

15 See CGFS 2013. Collateral amount of $48 trillion meets the narrow (HQLA) definition, which includes high-quality liquid assets under the Level 1 and Level 2 definitions of the LCR.

1.2 AVAILABILITY AND USABILITY OF COLLATERAL

The previous section quantifies the value of collateral eligible in different frameworks. However, it does not indicate the collateral that would be effectively *available* and *usable* in market participants' accounts.

Availability of collateral

Availability of collateral depends on whether the total amount of eligible assets quantified in the previous section is effectively available to market participations for collateral purposes. In particular, part of the total collateral is not available when it is "locked" on accounts at (I)CSDs/ custodians, and is being held in non-actively/less-actively managed portfolios. In this report, it is estimated that at least 25% of total assets could be considered as "idle securities" at (I)CSDs (based on the feedback from (I)CSDs and custodians represented in the COGESI group).[16] Accordingly, the figure for available collateral is estimated at around ***€31 trillion***.

ESTIMATIONS OF AVAILABILITY OF COLLATERAL

The estimation that at least 25% of the overall supply of high-quality collateral assets is not available for collateral purposes should be taken as an indicative figure because there is currently no accurate data collected on how much assets can be considered "idle securities", although some surveys give indications in this respect. In particular, an industry survey with insurance companies indicates that up to 60-70% of insurers pledge their investment portfolios as collateral, while around 30% of assets of insurance companies are made available to support secured borrowing[17]. Another study noted that up to 15% of collateral of financial institutions is left idle[18]. Given that there is no comprehensive and precise data available, it is acknowledged that other studies may arrive at somewhat different results depending on market players or market segments taken into consideration. In general, however, and based on the feedback of market participants involved in compiling this report, it is understood that a non-negligible portion of the overall supply of high-quality assets is not easily accessible for collateralisation purposes because it is blocked on safe-keeping accounts and held in non-actively managed portfolios.

FACTORS INFLUENCING THE AVAILABILITY OF COLLATERAL

The extent to which investments/activities of various public and private institutions results in high-quality assets being held back from the market is not easily quantified. The main factors that reduce the real supply of collateral in the market are related to investment strategies, prevailing market conditions and regulations. In particular, the following factors which should be taken into account in assessing the availability of collateral:

– First, financial institutions may hold assets for different reasons, e.g. as liquidity buffers for unexpected liquidity needs or other reasons related to the institution's risk assessment (and operational feasibility), market conditions (e.g. related to the investor's return thresholds), as well as certain legal/regulatory requirements (e.g. to comply with regulatory requirements such as the LCR implementation in the future, which might be different at national level[19]).

16 Non-active portfolios result in "idle securities" that are deposited in (I)CSDs/custodians. In some securities financing markets, there is low velocity in the collateral flows, with only certain collateral being re-used by the collateral receiver. In addition, market participants sometimes provide "excess collateral" to the CCP (over-collateralisation), which is segregated and recorded separately in the respective books of CCPs and clearing members. Finally, market participants could have non-active portfolios which are not used in the automated securities lending services of their custodian or (I)CSD.

17 BNYM collateral management survey 2013, available at http://www.bnymellon.com/collateralservices/cc/connections-issue6.pdf

18 See http://www.clearstream.com/ci/dispatch/en/kir/ci_nav/3_gsf/015_collateral_mgt

19 The Basel III framework is implemented in Europe by the CRD IV package, consisting of a regulation which is directly applicable legislation and a directive which needs to be transposed into national law. See http://ec.europa.eu/internal_market/bank/regcapital/legislation_in_force_en.htm

– Second, high-quality assets, in particular in the form of highly rated government securities, constitute a significant portion of the foreign reserve holdings of central banks and assets of sovereign wealth and investment funds. While no comprehensive data is published in this respect, various reports and press articles over the years draw attention to the tendency of some central banks with very substantial holdings of high-quality fixed-income securities in G10 currencies to hold these assets back from the market. For example, US treasury security holdings attributed to certain Asian central banks and held back from the market are estimated to be in the region of €1.8 trillion[20]. Estimations as to the high-quality government debt held by sovereign wealth funds point to amounts of around €0.8 trillion[21], although the extent to which such assets are held back/placed into the market is difficult to gauge.

– Third, certain policy actions of central banks can result in high-quality assets being withdrawn from the market. As a consequence of the financial crisis in particular, a number of major central banks have engaged in specific programmes to purchase government and other securities (e.g. Securities Market Programme of the Eurosystem, Quantitative Easing of the Federal Reserve System, etc). Table 5 provides a brief of overview of the main programmes in this respect and indications of securities holdings.

– Fourth, financial institutions often hold "excess collateral" with central banks and CCPs. Such excess collateral refers to the amount above that required to collateralise credit extended by central banks or beyond that needed for initial margin purposes at the CCP. It is difficult to quantify holdings of excess collateral with central banks due to the pooling of assets in many cases and the inclusion of assets in the pool which are not all commensurate with the "high-quality" definition. In the case of the Eurosystem, collateral assets with a value of €2.2 trillion were held at end-Q4 2013 versus credit extended of €0.8 trillion[22]. In the case of CCPs, excess collateral could be around 10% of total collateral at the CCP although this varies strongly depending on market conditions.

Table 5 Asset purchases by selected central banks

(Estimation end 2013/early 2014)

	Holdings type	Value (billion, issuance currency or USD)	Value (EUR, billion)
Federal Reserve System	US Treasury securities	$ 2,273	1,664
	Federal agency debt securities	$ 57	41
	Mortgage-backed securities	$ 1,574	1,152
Eurosystem	Securities Markets Programme	€ 13	13
	Covered bond purchase programmes	€ 5	5
Bank of England	UK gilts	£ 375	449
Bank of Japan	Japanese government securities	¥ 167,691	1,272
		Total	**4,596**

Sources: FED statistical release, 26 December 2013, Face value of the securities: http://www.federalreserve.gov/releases/h41/20131226/
ECB Annual account, December 2013.
BOE Asset Purchase Facility, September 2013.
BoJ Accounts, 20 September 2013.

20 HQ government debt, held as a part of the foreign reserves. Source: US Treasury, February 2014; Ministry of Finance Japan, February 2014.
21 Source: Sovereign Wealth Fund Rankings, SWF Institute, February 2014.
22 See ECB's "Collateral data", 14 February 2014, available at http://www.ecb.europa.eu/paym/pdf/collateral/collateral_data.pdf?0e3e08e75ce3429b98db7f6b5f8606ac

– Fifth, market conditions and infrastructure arrangements themselves may influence the extent to which high-quality assets are brought into the market. For example, agency lending programmes of FMIs provide services to exchange cash for securities (e.g. triparty repo cash/securities lending programmes of (I)CSDs). In addition, in recent surveys with lenders of securities, it is estimated that there is a supply of around $14 trillion for securities lending[23]. Regarding market conditions, investors/holders of such assets could be inclined to keep the assets on their books instead of lending them out because of, as is the case currently, relatively low return rates (e.g. GC lending or repo rates), which would in their view not compensate for the additional risk of lending. From a risk perspective, it is noted that lenders increasingly require third-party insurance or indemnifications against borrower default to compensate for the risk (in low return environments). However, future changes in market rates and financial incentives however could quickly affect behaviour in terms of increased willingness to lend out assets.

– Sixth, national debt management offices may hold back assets at issuance to support secondary market activities at a later stage if needed. In the case of one large euro area country at least, this is an established practice with the percentage of assets held back being on average around 20% of the issue.

– Seventh, impediments to the velocity of collateral is another important factor that should be taken into account when reflecting on collateral availability as such impediments may hamper collateral received in one transaction from being re-used in another transaction[24]. Efficient market infrastructure arrangements could enhance collateral availability in this respect. For example, triparty collateral management arrangements contribute to an efficient flow of collateral and re-use among market participants as well as with central banks.

– Eighth, availability of collateral also depends on the application of haircuts (see Chapter 2) and other risk management requirements, which reduce the value of available collateral, such as valuation practices (see Box 1 below). Collateral is not fully available for obtaining credit/collateralising credit exposures, as haircuts and valuation practices in reality "reduce" the value of available collateral. On the other hand, cash is also available as collateral, e.g. from repo cash providers which provide cash against lower quality assets. After the exchange of lower quality assets against cash, the investor could either directly use the cash as available collateral or could lend cash out to obtain high-quality collateral.

23 Markit estimates that $14 trillion is lendable supply, including equities. Data covering only high-quality liquid assets available via securities lenders could therefore be much lower. See http://content.markitcdn.com/corporate/ResourceManager/xFAgqlWTDYfaA5CWdNlSwQ2/d/f/635234967755146065/Content/Documents/Products/Brochures/MKT_Pricing_Data_brochure.pdf

24 See "Velocity of Pledged Collateral: Analysis and Implications", Manmohan Singh, IMF working paper, WP/11/256, November 2011, available at http://nowandfutures.com/large/VelocityOfPledgedCollateral-wp11256(imf).pdf

Box 1

VALUATION OF COLLATERAL

Central banks and market participants typically rely on current market prices of a given asset for determining collateral values. Different sources exist for asset prices, e.g. specialised institutions or market infrastructures. However, when such information is missing (due to, for example, specific features of the assets, such as in case of ABSs), internal valuation mechanisms and

principles could be used. For example, the Eurosystem developed the Common Eurosystem Pricing Hub (CEPH), which provides the Eurosystem with a unique price per asset per business day that is used by all Eurosystem central banks to value eligible marketable assets submitted as collateral in Eurosystem credit operations.

To define these unique prices or the Eurosystem, CEPH collects available market prices and defines the most reliable one on a given business day. In the absence of a reliable market price for a particular marketable asset on the business day preceding the valuation date, the CEPH calculates a theoretical price. The value of a marketable asset is calculated on the basis of this unique Eurosystem price on the business day preceding the valuation date. The CEPH started its operations for marketable assets on 24 September 2012. For non-marketable assets, the value is assigned responding either to the theoretical price or to the outstanding amount. However, if the national central bank opts for the valuation corresponding to the outstanding amount, the non-marketable assets may be subject to higher haircuts.

Some CCPs (such as Eurex Clearing) apply a logic similar to that of the ECB[1].

1 Eurex Clearing tries to retrieve current market prices from several price locations. Should such market prices not be available, internal evaluation mechanisms are applied to calculate theoretical prices.

USABILITY OF COLLATERAL

Usability of collateral depends on whether mobilisation/settlement procedures work effectively. Usability of assets is constrained if securities cannot be transferred swiftly between different accounts at (I)CSDs due to inefficiencies of settlement arrangements. Enhancements are being implemented by securities market infrastructures in relation to FMI links and interconnections, but some inefficiencies still exist due to interconnections on a cross-border/cross-system basis, which reduce the speed of settlement, or usability of (I)CSD links. Several pools of 'local liquidity' are often created, due to fragmentation and lack of links/interconnections between (I)CSDs and/or CCPs. In addition, collateral assets may be reserved for the settlement arrangements of (I)CSDs and intermediaries (and are related to inefficiencies in cross-border/cross-system processes, settlement arrangements in commercial bank money, etc).

The limitations in current settlement process are not new[25]. However, the increased move to secured funding by market participants and same-day transfers of collateral on a cross-border/cross-system basis require a timely and efficient transfer of assets to another system where they may be needed.

The fragmentation (and therefore usability of collateral) could be improved by increased establishment of (I)CSD links and extension of their operating hours. Also collateral optimisation services (such as triparty collateral management services) could help make collateral more usable. In this respect, it is noted that the Eurosystem is enhancing its collateral management services via the CCBM in 2014, with the removal of the repatriation requirement and support of cross-border collateral management services, both of which could have a positive influence on the usability of collateral[26]. Finally, market participants could also optimise internal collateral management processes (e.g. with better visibility on existing collateral, inventory management and centralising of

25 See "Euro repo market – Improvements for collateral and liquidity management", ECB [forthcoming] and "Report on efficient CoBM settlement arrangements', ECB, [forthcoming].

26 The repatriation requirement was part of the CCBM since its establishment in 1999. It required Eurosystem counterparties to transfer assets to the respective issuer SSS before they could be mobilised as collateral for Eurosystem credit operations. The repatriation requirement was abolished in May 2014, thus eliminating the need to move assets from the investor SSS to the issuer SSS in CCBM operations.

group-wide collateral). Participants of CCPs are also in the process of rationalising their processes, so that collateral is grouped in a few locations and the number of intermediaries is reduced.

In this report it is estimated that inefficiencies, which currently limit the usability of collateral could negatively impact the amount of available collateral by up to €1 - 1.5 trillion. There is only limited data available, but this amount may be "*unlocked"* in the medium term because of initiatives of custodians and (I)CSDs to optimise collateral management and settlement arrangement[27]. The migration to T2S will create a single securities settlement engine in Europe, with a single set of rules, standards and tariffs for all securities transactions across all T2S markets. In addition, the collateral management initiatives of commercial providers will help market participants to better optimise the use of their collateral assets[28]. Currently, there is the need to pre-deposit collateral at (I)CSDs for settlement, while other requirements could also limit the usability of collateral ,e.g. participants have to move and pre-deposit collateral early/ day in advance due to different cut-off times for various markets as served by (I)CSD links and intermediaries. In this report, it is estimated that the need to pre-deposit collateral could limit the usability of collateral by €0.05 trillion[29].

Improvements in post-trade infrastructures have the ability to "unlock" collateral, and increase the velocity of collateral and thereby availability and usability of collateral. Attention should be paid to the impact of on-going market developments and regulatory reforms, which could eventually hamper the usability of collateral.

Overview of the *overall* vs available vs *usable* collateral (at global level)

In this report, the quantification of collateral assets is considered under three general headings:

1. First, the value of **"overall collateral"** is estimated to stand at around **€41 trillion** (CGFS, 2013) and is also referred to as the universe of high-quality assets (HQA), including assets such as high-quality sovereign debt, liquid equity securities and corporate bonds).

2. Second, the value of **"available collateral"**, which is estimated to be around **€31 trillion**, taking as a basis the value of overall collateral as per 1 above less that which is held/blocked on non-actively managed portfolios. A figure of around 25% is taken to represent the value of overall collateral held for example by buy-to-hold investors and which is not actively traded or re-introduced into the market via repo/securities lending activities.

3. Third, a concept of "**usable collateral**" is identified to reflect the fact that not all of the available collateral as referred to under 2 above can immediately be mobilised for use under specific collateral frameworks. A figure of **€29 trillion** is estimated for usable collateral taking into account the inefficiencies that may limit the use of collateral in this respect and lead to operational difficulties or market constraints to mobilise collateral in due time. Such inefficiencies could be internal (bank-specific collateral management set-up) and external (market infrastructures and external services providers).

27 See IMF Working Paper entitled "The Changing Collateral Space", by Manmohan Singh, January 2013, available at http://www.imf.org/external/pubs/ft/wp/2013/wp1325.pdf

28 Examples are the Collateral Highway service of Euroclear, the Global Liquidity Hub service of Clearstream or the BNY Mellon Collateral Universe service.

29 Estimations of the benefit of the introduction of T2S, which will reduce significantly current inefficiencies in cross-border settlement for euro transactions (e.g. reduce capital shortfall under Basel III rules by €33 billion) See http://www.clearstream.com/ci/dispatch/en/listcontent/ci_nav/news/30_Press/43_2013/Content_Files/2013/press_130903.htm?headline=Study__TARGET2_Securities_has_potential_to_reduce_capital_shortfall_under_Basel_III_rules_by_33_billion_Euros

4. Finally, the available amount of collateral of €31 trillion/usable collateral of €29 trillion should be seen from the perspective of the estimations/amounts of collateral that is actually being used in the financial system. In particular, it is estimated that approximately €10.2 trillion is currently being used as collateral in the financial system (excluding cash). The total amount including cash is believed to be well in excess of €12 trillion. These estimations suggest that there is currently sufficient available collateral to meet demand.

1.3 MARKET DEVELOPMENTS AND REGULATORY REFORMS

Market developments and regulatory reforms are expected to change the demand for, and supply of, collateral in the coming years. The impact of these changes on collateral availability/use has been estimated in several studies, with varying results. On the one hand, there are indications that collateral usage could increase by €4 trillion, while on the other, improvements in the velocity of collateral could lead to savings of up to €2 trillion (see Table 6). Because the impact of reforms is not yet fully visible (e.g. mandatory clearing of OTC derivatives only took effect in the US in 2013 and will only take effect in Europe mid-2014, while the global phased implementation of Basel III LCR will only commence in January 2015), it is acknowledged that the increased demand for collateral could be higher in the coming years than previously estimated[30].

Market participants are responding to the increased demand for collateral by looking at ways to more efficiently and more effectively manage their collateral holdings, for example, by the increased use of collateral optimisation techniques. Such optimisation solutions could, for example, include implementation of mechanisms in-house that allow for more efficient monitoring and greater strategic use of collateral and/or reliance on collateral services provided by specialised providers (e.g. triparty collateral management services provided by (I)CSDs/global custodians). Market participants could also use collateral transformation services to change ineligible collateral into eligible collateral (which is typically of higher quality)[31].

Table 6 Changes in collateral demand and supply

Increase in collateral usage		*Increase in collateral savings stemming from*	
1. Derivatives reform			
IM requirements for noncentrall cleared OTCD [1)]	€0.7 trillion	Reduction of costs of internal fragmentation [2)]	€4 billion /annually
IM requirements for centrally cleared OTCD [3)]	€0.6 trillion	Liquidity/Tier 1 capital savings with pooled cash accounts and T2S [4)]	€33 billion
2. Liquidity regulation		Further improvements to cross-border use of collateral (e.g. with T2S and harmonisation of settlement cycles will increase netting potential and reduce CCP margin requirements by one third).[5)]	€0.77 - 1.15 trillion
LCR requirements [6)]	€1.8 trillion		
3. Capital requirements			
Capital requirements apply (but lower for exposures from repos and covered bonds)	(unknown)		

1) The BCBS-IOSCO's WGMR proposal requiring two-way initial margin would result in an increase of the total initial margin to around €0.7 trillion (applying haircuts with the universal threshold of €50 million) or roughly €1.7 trillion for the entire global market (applying no threshold). In this paper, the total amount of margin collateral of €700 billion is taken (i.e. with the universal threshold).
2) See "Collateral Management – Unlocking the Potential in Collateral" Accenture, September 2011.
3) See "Collateral requirements for mandatory central clearing of over-the-counter derivatives", BIS Working papers 2012, Heller, D. and Vause, N. The IM for centrally cleared OTCD ranges from 0.1 to 0.6 depending on conditions.
4) See "The 300-billion-euro Question – Survey on the Benefits of TARGET2-Securities" PWC, August 2013.
5) See Singh, M., "New Regulations and Collateral Requirements – Implications for the OTC Derivatives Market", Swift Institute, Working Paper No 2012-004, October 2013.
6) BCBS, 2013. However, the estimation should be lower, as it does not yet take into account the changes to the LCR of January 2013.

30 Estimations vary widely, e.g. see "Improving collateral management efficiency in the context of OTC derivative reforms", the Eurofi Financial Forum, 27 and 28 September 2012, available at http://www.eurofi.net/wp-content/uploads/2012/09/Collateral-management-in-the-context-of-OTC-derivative-reforms.pdf

31 See "Securities Lending and Repos: Market Overview and Financial Stability Issues" Financial Stability Board, 27 April 2012.

2 VALUATION HAIRCUTS

This report refers to valuation haircuts applied to the value of securities provided as collateral in underlying repo transactions and posted as initial margin to cover centrally cleared repo and OTC derivatives exposures [32]. Box 2 illustrates haircuts and margins in the repo market.

32 See "The role of margin requirements and haircuts in procyclicality", CGFS, March 2010. In the repo market, "*a haircut is a percentage discount deducted from the market value of a security that is being offered as collateral in a repo in order to calculate the purchase price*". In the derivatives market, the term initial margin refers to the amount required to be collateralised (typically in form of cash or securities) in order to open a position.

Box 2

ILLUSTRATION OF HAIRCUTS AND MARGINS IN THE REPO MARKET

Market participants typically apply different risk control measures for bilateral or centrally cleared repo transactions. In general there are three principles applied in the repo market:

a. OTC/bilateral/securities driven repo transactions: The securities price and haircut is fixed on the day of trading, e.g. €100 cash versus €105 market value of securities (assumed market value = 100%, haircut = 5%, market value post haircut gives €100). Any changes in market value or haircuts can be covered between the involved parties in the form of margins. The securities exchanged as part of the repo transaction itself remains unchanged. If the haircut is increased by one party or the valuation price changes strongly, margin can also be called bilaterally and needs to be collateralised according to the respective margin collateral framework. The collateral provider would in this case have an uncovered exposure of 5% towards the collateral taker.

b. CCP/special repo transactions: The CCP determines the price and haircut for the repo transaction. The trading entities agree on the securities nominal of the repo transaction. On the repo transaction itself, €100 in cash and €100 in market value of securities (assuming market value=100%) are exchanged. The CCP will call 5% margin to cover the market risk plus any changes in the market value of the respective security from both parties of the respective bond (assuming 5% being the haircut of the security). If the haircut rises or prices change to the disadvantage of one party, the margin requirement increases and needs to be collateralised according to its margin collateral framework. The nominal securities exchanged as part of the repo transaction itself remains unchanged.

c. CCP/triparty repo/cash-driven repo transactions/GC Pooling: The parties to the trade agree on the applicable haircut (e.g. for Euro GC Pooling, it is the CCP Eurex Clearing which determines the haircut). The collateral management services (CMS) provider or the CCP determines the valuation price of the security. The CMS now applies on a daily basis the current haircuts and valuation prices of the provided securities and adjusts the allocated securities as required to ensure full collateralisation of the exposure. If an exposure of €100 is to be collateralised, the CMS selects €105 market value (assuming market value = 100% and 5% haircut). If the haircut increases (e.g. by 1%), the collateral provider will have to provide €106 market value of securities (managed by the CMS provider). The extra

securities provided will be the agreed triparty repo/GC Pooling eligible securities (margin collateral not being the respective basis). The CCP calls extra margins towards the cash provider/collateral taker to cover the default risk. The collateral provider will not be subject to an extra margin call due to market price/haircut changes. (In a triparty repo, the cash provider typically will not have to pay extra margins, and the collateral provider would have an uncovered exposure towards the collateral taker of 5%.)

Information on haircuts is not yet collected comprehensively. The size of haircuts also varies depending on the perceived riskiness and price volatility of the collateral.[33] There could be no (zero) or very low haircuts among prime brokers and major financial institutions when government bonds are used in repo (and local government bonds in some jurisdictions). Other market participants typically apply haircuts of between 1% and 3% on government bonds[34]. In Europe, the range for haircuts for bilateral repos is typically between 1% and 2% for government bonds, around 20% for equity, and 15% for other credit repo (according to the ICMA's semi-annual European repo market survey[35]).

This chapter provides a general overview of the range of valuation haircuts applied by selected:

– *central banks*, on eligible collateral in the conduct of their main monetary policy operations;

– *regulatory frameworks*, in particular Basel III's LCR and BCBS-IOSCO's framework on OTC non-centrally cleared derivatives;

– *CCPs* operating in Europe, on collateral underlying repo transactions and on securities posted as initial margin collateral for centrally-cleared repos and OTC derivatives.

The information is summarised in overview tables which present comparable asset classes and their range of valuation haircuts requirements as at a certain point in time (i.e. September 2013). It is noted that haircuts represent only one element of the risk management frameworks in place at financial institutions and financial market infrastructures; a range of other risk control measures also apply; however, these are outside the scope of the current report. Furthermore, supplementary haircuts may also be applied to ensure adequate risk protection in line with risk preferences/policies of financial institutions and financial market infrastructures (however, this report does not provide information on these or the conditions under which they are applied). In addition, it is noted that there are differences in bilateral repo trades on the one hand, where typically only the collateral provider must provide collateral (with haircut), and centrally cleared repo trades on the other, where the CCP has to guarantee against non-performance/default of both parties and accordingly, both the collateral provider and collateral taker apply haircuts.

2.1 HAIRCUTS UNDER CENTRAL BANK FRAMEWORKS

Central banks apply haircuts on (collateralised) credit operations, when they act as collateral taker. Information on central bank haircut schedules is publicly available on the websites of the central

33 In general, haircuts/initial margins should be a function of market/liquidity risk in the underlying collateral, operational risk, legal risk and default risk of collateral issuer See "Haircuts and initial margins in the repo market", ICMA ERC, 8 February 2012.
34 CGFS March 2010. In 2009, the CGFS held bilateral interviews with market participants on haircuts. For repo trades, the CGFS noted that haircuts are lower among prime brokers and major financial institutions.
35 See "Haircuts and initial margins in the repo market", ICMA ERC, 8 February 2012.

banks, but is often structured differently by each central bank (e.g. according to asset categories, maturities, etc).

In Table 7, the haircut schedules of selected central banks are presented by applying the logic of the Eurosystem collateral framework. Thus, the various asset classes of relevance for the other central bank frameworks have been grouped to fit with the Eurosystem haircut categories in order to aid comparison. The overview focuses on haircuts applied by central banks on *eligible marketable assets with coupons*. The table does not show haircuts applied on zero coupon assets (where different). In the annex, more detailed tables are provided showing all the maturity bands in the different frameworks, thereby retaining the highest level of information available.

In further examining the general overview of central bank haircuts schedules (as outlined in the table), it is important to consider the specific characteristics of central bank collateral eligibility frameworks as regards aspects such as the *currency* of issuance, the *minimum rating* requirements, and/or the requirements related to the *country* of issuance for each category of asset.

Each central bank framework has different characteristics. For the haircuts applied to the first category in the table (i.e. debt instruments issued by central governments and central banks), the

Table 7 Overview of haircuts applied by selected central banks

		Eurosystem[1]		Bank of England (BoE)[2]	Federal Reserve System[3]		Sveriges Riksbank[4]	Bank of Japan (BoJ)		Swiss National Bank (SNB)
Debt instruments issued by	Maturity	AAA TO A-	BBB+ TO BBB-	No distinction by rating[2]	U.S. denominated	Foreign denominated	No distinction by rating is made[2]	JGBs	Foreign	
• Central Governments • Central banks	<1y	0.5	5.5	0.5	1.0-3.0	8.0	3.0	1.0-2.0	3.0	0.0
	1-5 yrs	1.5-2.5	6.5-7.5	1.5-2.0	1.0-3.0	8.0	3.0-4.0	1.0-2.0	3.0	
	5-10 yrs	3.0-4.0	8.0-9.0	3.0	3.0-5.0	10.0	5.0-6.0	3.0-4.0	5.0	
	>10 yrs	5.5	10.5	4.5-7.5	4.0-6.0	11.0	7.0	3.0-10.0	5.0-8.0	
• Local and regional governments • Agencies • Supranationals • Credit institutions (jumbo covered bonds)	<1y	1.0	6.0	0.5-3.0	2.0	8.0	3.0	2.0-3.0		0.0
	1-5 yrs	2.5-3.5	10.5-15.5	1.5-6.0	2.0	8.0	3.0-5.0	2.0-3.0		
	5-10 yrs	4.5-5.5	18.0-19.5	3.0-8.0	4.0	10.0	7.0-10.0	4.0-5.0		
	>10 yrs	7.5	20.0	4.5-15.0	5.0-10.0	11.0-13.0	15.0	4.0-8.0		
• Credit institutions (covered bank bonds) • Nonfinancial corporations and other issuers	<1y	1.5	8.0	3.0-30.0	3.0-5.0	9.0	3.0	3.0-4.0		0.0
	1-5 yrs	3.0-5.0	18.0-25.5	5.0-33.0	3.0-5.0	9.0	3.0-5.0	3.0		
	5-10 yrs	6.5-8.5	28.0-29.0	8.0-35.0	5.0-7.0	11.0	7.0-10.0	5.0		
	>10 yrs	11.0	29.5	10.0-42.0	6.0-8.0	12.0	15.0	5.0-8.0		
• Credit institutions (unsecured) • Financial corporations other than credit institutions	<1y	6.5	15.0	N/A	3.0-5.0	9.0	8.5	3.0-4.0		0.0
	1-5 yrs	8.5-11.0	27.5-36.5		3.0-5.0	9.0	8.5-11.0	3.0		
	5-10 yrs	12.5-14.0	38.5-39.0		5.0-7.0	11.0	15.0-20.0	5.0		
	>10 yrs	17.0	39.5		6.0-8.0	12.0	35.0	5.0-10.0		
• Asset-backed securities	<1y	16.0	Not eligible	12.0-15.0	2.0-11.0		Not eligible	3.0		Not eligible
	1-5 yrs			17.0-18.0	2.0-11.0			3.0		
	5-10 yrs			20.0	5.0-16.0			5.0		
	>10 yrs			22.0-27.0	8.0-18.0			5.0-8.0		

1) The Eurosystem haircuts have been updated (1 Oct 2013), but the haircuts of September 2013 have been kept for comparative reasons.
2) A haircut add-on is applied to allow for currency volatility when securities are non-sterling denominated.
3) Federal Reserve System haircuts apply to a "duration buckets" instead of "maturity buckets". The stated margins apply to collateral pledged for discount window or payment system risk purposes. Other margins apply for other Federal Reserve System programmes.
4) A haircut for foreign exchange risk will be made if a security is issued in a currency other than Swedish krona.

Eurosystem applies different haircut schedules for debt instruments with a minimum rating grade of A- (between 0.5 and 5.0) compared to assets with a minimum rating of BBB- (between 6.0 and 13.0). It should be remembered that within its standard collateral framework, the Eurosystem only accepts euro-denominated assets, i.e. no foreign-denominated bonds. *Bank of England* on the other hand applies the same level of haircuts to all central government bonds issued by the respective countries deemed eligible under its framework, but a differentiation of haircuts is made by applying an "add-on" to foreign-denominated bonds (i.e. based on the currency of issuance). The *Federal Reserve System*'s haircut schedule applies to eligible investment grade securities, but higher haircuts are set for non-US-dollar-denominated government bonds (without further differentiating the haircut schedule by currency of issuance). Under the collateral framework of *Sveriges Riksbank* and *Bank of Japan*, higher minimum rating grades are also required for foreign denominated securities. Sveriges Riksbank stipulates that securities must have a credit rating corresponding at least to A- to be accepted as collateral and an extra-haircut is applied according to the asset's currency of denomination. Bank of Japan applies no minimum rating requirements for Japanese government bonds, but a minimum rating of AA is required for foreign government bonds, which also fall under a higher haircut schedule (the latter, however, is not differentiated by foreign currency of issuance). Finally, the *Swiss National Bank's* haircut policy should be seen in relation to its general collateral eligibility framework. The SNB requires a minimum rating of A/A2 for government bonds issued in Swiss francs and of AA-/AA3 for securities in foreign currencies, but does not define any haircut itself. Moreover, the trading and settlement platform SIX SIS Ltd (SIS) conducts three times daily a valuation procedure for all open repo transactions (as part of SIS risk management procedure) [36].

2.2 HAIRCUT REQUIREMENTS UNDER REGULATORY FRAMEWORKS

This section provides an overview of haircuts in selected regulatory frameworks, i.e. the (i) Basel III LCR, (ii) FSB's work on haircuts on securities financing transactions and (iii) the framework for non-centrally cleared OTC derivatives.

(i) Liquidity Coverage Ratio (LCR)

The LCR aims to promote the short-term resilience of the liquidity risk profile of banks. For this purpose, under the standard, banks must hold a stock of unencumbered high-quality liquid assets (HQLA) to cover net cash outflows over a 30-day period under the prescribed stress scenario, which are subject to the following haircut policies:

- Level 1 assets can comprise an unlimited share of the pool and are not subject to a haircut under the LCR (**zero haircut**)[37];
- Level 2 assets (comprising Level 2A assets and any Level 2B assets permitted by the supervisors) can be included in the stock of HQLA subject to the requirement that they comprise no more than 40% of the overall stock after haircuts have been applied.
  - A **15% haircut** is applied to the current market value of each Level 2A asset held in the stock of HQLA.

36 The Swiss Value Chain consists of Eurex Zürich AG's trading platform Eurex Repo, SIS' securities settlement systems SECOM and the SIX Interbank Clearing (SIC) payments system.

37 For more details, see also http://www.bis.org/publ/bcbs238.pdf. For Level 1 assets National supervisors may wish to require haircuts based on, among other things, their duration, credit and liquidity risk, and typical repo haircuts.

– Certain additional assets (Level 2B assets) may be included in the Level 2 at the discretion of the national authorities[38]. A **larger haircut of 25-50%** is applied to the current market value of each Level 2B asset held in the stock of HQLA.

This information is summarised in the Table 8.

(ii) Upcoming work of FSB on regulatory framework for haircuts on securities financing transactions

On 5 November 2013, the FSB launched further work on the *quantitative impact study* on the proposed regulatory framework for securities financing transactions. In particular, the FSB is assessing the impact on a broader set of firms of the FSB's proposed measures consisting of (i) minimum standards for methodologies to calculate haircuts on non-centrally cleared securities financing transactions and (ii) a framework of numerical haircut floors that will apply to non-centrally cleared securities financing transactions in which entities not subject to regulation of capital and liquidity/maturity transformation receive financing from regulated financial intermediaries against collateral other than government securities.

(iii) Global margin standards for non-centrally cleared derivatives

In 2011, the G20 called upon BCBS and IOSCO to develop global standards for margin requirements on non-centrally cleared derivatives. In its final report of September 2013, the BCBS and IOSCO established that "*all covered entities (i.e. financial and systemically important non-financial entities) that engage in non-centrally cleared derivatives must exchange initial and variation margin (i.e. zero threshold) on a regular basis (e.g. daily)*" with effect from 1 December 2015[39].

Table 8 Overview of haircuts under basel III (LCR)

(percentages)

		HAIRCUTS		
Debt instruments issued by	Debt instruments issued by (detailed)	Level 1	Level 2A	Level 2B
• Central governments • Central banks	• Central governments • Central banks	0.00	15.00	
• Local and regional governments • Agencies • Supranationals • Credit institutions (jumbo covered bonds)	• Local and regional governments • Agencies • Supranationals • Credit institutions (jumbo covered bonds)	0.00 0.00 N.E.	15.00 15.00 15.00	
• Credit institutions (covered bank bonds) • Non-financial corporations and other issuers	• Credit institutions (covered bank bonds, excluding RMBS) • Non-financial corporations and other issuers	N.E.	15.00	50.00
	• Credit institutions (RMBS)			25.00
• Credit institutions (unsecured) • Financial corporations other than credit institutions	• Credit institutions (unsecured) • Financial corporations other than credit institutions			
Asset-backed securities	Asset-backed securities			
Common equity shares	Common equity shares			50.00

38 If Level 2B assets are included at the discretion of the national authorities, these assets should comprise no more than 15% of the total stock of HQLA. They must also be included within the overall 40% cap on Level 2 assets.

39 [add link] Initial margin requirements will be phased in, but at the end of the phase-in period there will be a minimum level of non-centrally cleared derivatives activity (€8 billion of gross notional outstanding amount) necessary for covered entities to be subject to the initial margin requirements. National supervisors should develop their own list of eligible collateral assets based on the key principle established in global the framework, taking into account the conditions of their own markets. As a guide, examples of the types of eligible collateral that satisfy the key principle were listed by BCBS-IOSCO.

Table 9 Overview of new global margin standards for non-centrally cleared derivatives (BCBS-IOSCO)

Standardised haircuts schedule		
Asset Class	Residual Maturity	Haircut (percentage of market value)
Cash in same currency	n.a.	0.00
High-quality government and central bank securities	<1 year	0.5
	1-5 years	2.0
	>5 years	4.0
High-quality corporate covered bonds	<1 year	1.0
	1-5 years	4.0
	>5 years	8.0
Equity included in major stock indices	n.a.	15.0
Gold	n.a.	15.0
Additional (additive) haircut on asset in which the currency of the derivative obligation differs from that of the collateral asset	n.a.	8.0

As part of its specifications on global margin standards for non-centrally cleared derivatives, the BCBS-IOSCO developed a standardised schedule of haircuts for a given list of assets that can be used by the covered entities to value the assets to be exchanged to cover the initial margin requirements. Alternatively, the covered entities, as in the case of initial margin models, could use risk-sensitive quantitative models, both internal or third party, to establish haircuts provided that the model is approved by supervisors and is subject to appropriate internal governance standards.

Table 9 sets out the standardised schedule of haircuts as established by BCBS-IOSCO.

2.3 CCP HAIRCUTS

This section provides a general overview of the haircuts/margin requirements applied by selected CCPs on collateral underlying repo transactions and on securities posted as an initial margin for centrally cleared repo and OTC derivatives exposures.

(i) Haircuts on underlying collateral for centrally cleared repo

CCPs generally accept central government securities as collateral in repo operations, while some CCPs (such as Eurex and soon also LCH Clearnet SA) also accept a broader set of eligible collateral and correspondingly wider array of haircuts also applies. Table 10, which includes an overview of selected CCPs' haircuts on collateral underlying CCP-cleared repos, shows that CCPs address the potential volatility in valuation of the broader set of assets through the application of appropriate haircuts.

Some CCPs evaluate the risk parameters for each individual security (i.e. per ISIN) eligible as collateral on a daily basis when accepting the security for margin collateral, while other CCPs may group securities in their evaluation. CCPs also do not accept all securities under each category, hence haircut data is provided for the eligible assets CCPs accept in each category. The actual securities (list of ISINs) accepted by CCPs is publicly available information.

Table 10 Overview of haircuts on collateral underlying ccp-cleared repo

		Eurex[1]		LCH Clearnet Ltd		BME Clearing
	Residual Maturity	GC Pooling ECB Basket (Asset rated below "A- /A3"are not eligible)	GC Pooling ECB EXTended Basket (Asset rated according to ECB eligibility criteria)	€GC (A- and above)	£GC	Spanish Government bonds
Central government	<1 y	0.5-16.4	0.5-17.0	0.25-1.75	0.25	1-1.75
	1-3 yrs	0.5-16.8	0.5-26.7	0.88-3.75	1.0	1.75-4.00
	3-5 yrs	0.5-17.3	0.5-17.3	2.0-7.75	3.5	4.00
	5-7 yrs	2-17.7	0.5-17.7	2.0-7.75	5.25	4.00-5.00
	7-10 yrs	0.5-11.5	0.5-13.0	2.25-9.50	6.5	6.00-6.5
	>10 yrs	0.5-7.44	0.5-21.5	6.38-8.75	8.25	6.5-10.00
Corporate and other issuers	<1 y	1-8.0	1-8.0			
	1-3 yrs	1-15.0	1-15.0			
	3-5 yrs	3-22.5	1-22.5			
	5-7 yrs	1-26.0	1-26.0			
	7-10 yrs	1-27.0	1-27.0			
	>10 yrs	1-27.5	1-27.5			
Credit institutions (excluding agencies)						
Covered bonds	<1 y	1-8.0	1-8.0			
	1-3 yrs	1-15.0	1-15.0			
	3-5 yrs	1-22.5	1-22.5			
	5-7 yrs	1-28.41	1-28.41			
	7-10 yrs	1-27.0	1-27.0			
	>10 yrs	1-27.5	1-27.5			
Unsecured	<1 y	6.5-13.52	6.5-13.52			
	1-3 yrs	6.5-26.48	6.5-26.48			
	3-5 yrs	6.5-36.5	6.5-36.5			
	5-7 yrs	6.5-40.0	6.5-40.0			
	7-10 yrs	6.5-42.5	6.5-42.5			
	>10 yrs	6.5-53.83	6.5-53.83			
Central government guaranteed bonds	<1 y	6.5-6.75	6.5-6.75			
	1-3 yrs	6.5-8.5	6.5-8.5			
	3-5 yrs					
	5-7 yrs	12.5-12.5	12.5-12.5			
	7-10 yrs					
	>10 yrs	17.0-17.0	17.0-17.0			
Regional/local government	<1 y	1-1.06	1-1.06			
	1-3 yrs	1-2.5	1-2.5			
	3-5 yrs	1-2.79	1-2.79			
	5-7 yrs	1-3.5	1-3.5			
	7-10 yrs	1-5.7	1-5.7			
	>10 yrs	1-9.96	1-9.96			
Agency – non-credit institutions	<1 y	1–16.8	1–16.8			
	1-3 yrs	1–17.3	1–17.3			
	3-5 yrs	1–18.1	1–18.1			
	5-7 yrs	1–4.5	1–4.5			
	7-10 yrs	1–4.5	1–4.5			
	>10 yrs	1–8.0	1–8.0			
Agency – credit institutions	<1 y	1–1	1–1			
	1-3 yrs	1–2.5	1–2.5			
	3-5 yrs	1–3.5	1–3.5			
	5-7 yrs	1–3.5	1–3.5			
	7-10 yrs	1–6.5	1–6.5			
	>10 yrs	1–10.5	1–10.5			
Financial corporations other than credit institutions	<1 y	6.5–13	6.5–13			
	1-3 yrs	6.5–24.5	6.5–24.5			
	3-5 yrs	6.5–32.5	6.5–32.5			
	5-7 yrs	6.5–36	6.5–36			
	7-10 yrs	14–45.3	14–45.3			
	>10 yrs	15.42–44	15.42–44			

1) In the case of Eurex, it should be noted that gaps in the table do not mean that such securities are not eligible, but rather that there are currently no outstanding eligible securities falling into this category/maturity band.

In some CCPs, the eligible securities are part of a basket (e.g. GC Pooling baskets of Eurex, €GC/£GC in LCH.Clearnet Ltd)[40]. In the case of Eurex, the triparty collateral management agent (Xemac) allocates the collateral from the baskets and it applies the haircuts on the selected collateral. The triparty agent also performs the daily re-evaluations and resulting adjustments of haircuts on the collateral. LCH Clearnet SA avails itself of similar services from a triparty agent for applying the haircuts for some products. In general, the CCP haircuts as listed in the tables are to be considered as a basis, and CCPs have the option to call for an extra margin or add-ons (e.g. in case concentration limits are breached).

(ii) Haircuts applied on collateral/securities posted as initial margin on centrally cleared repo and OTC derivatives exposures

Table 11 provides a general overview of the initial margins applied by selected CCPs on securities posted as collateral for centrally cleared repos and OTC derivatives. The table is structured similarly to the table for haircuts on repo.

Table 11 Overview of haircuts applied on collateral/securities posted as initial margin on ccp-cleared repo and otc derivatives

	Residual Maturity	Eurex	LCH Clearnet Ltd	BME Clearing	NASD AQ OMX Nordic
Central government	<1 y	3.2-17.8	0.25-2.00	1.5-8.5	5.00
	1-3 yrs	3.2-17.8	0.88-3.75	1.5-9.0	5.00
	3-5 yrs	3.2-29.7	2.00-7.75	3.0-10.0	5.00
	5-7 yrs	3.2-38.1	2.00-7.75	3.5-10.5	7.00
	7-10 yrs	3.2-47.8	2.25-10.25	4.5-12.5	7.00
	>10 yrs	3.2-75.1	2.25-10.5	5.5-18.0	10.0
Corporate and other issuers	<1 y	5.5-23.3			
	1-3 yrs	5.5-23.3			
	3-5 yrs	5.5-28.5			
	5-7 yrs	5.5-31.4			
	7-10 yrs	11.5-33.8			
	>10 yrs	13.6-51.3			
Credit institutions (excluding agencies)					
Covered bonds	<1 y	13.5			5.00
	1-3 yrs	13.5			5.00
	3-5 yrs	13.5-17.4			5.00
	5-7 yrs	13.5-21.6			7.00
	7-10 yrs	13.5-28.7			7.00
	>10 yrs	13.5-70.1			10.0
Unsecured	<1 y	5.5-14.1			
	1-3 yrs	5.5-14.1			
	3-5 yrs	5.5-16.5			
	5-7 yrs	7.0-22.7			
	7-10 yrs	9.6-30.7			
	>10 yrs	12.1-61.00			
Central government guaranteed bonds	<1 y	13.5	0.75-1.00		
	1-3 yrs	5.5-13.5	2.75-4.50		
	3-5 yrs	5.5			
	5-7 yrs	20.9			
	7-10 yrs				
	>10 yrs	24.9-25.3			

40 A more detailed table is provided in the annex. In the tables, the issuer, asset type, and residual maturity bands are aligned to the logic applied for the ECB risk parameters. Securities which are not included in the ECB eligible list of assets (e.g. equities and non-EU Bonds) are also not included in the overview tables. The focus of the table is on bonds of euro area countries, but the table is complemented with some other main issuer residence countries such as US, UK, CH and SE. The issuer residence is referred to as country classification (e.g. a Eurobond issued by a German issuer is classified as issuer residence in Germany).

Table 11 Overview of haircuts applied on collateral/securities posted as initial margin on ccp-cleared repo and otc derivatives (cont'd)

	Residual Maturity	Eurex	LCH Clearnet Ltd	BME Clearing	NASD AQ OMX Nordic
Regional/local government	<1 y	3.2-14.1			
	1-3 yrs	3.2-14.1			
	3-5 yrs	3.2-15.3			
	5-7 yrs	3.2-8.8			
	7-10 yrs	3.2-12.1			
	>10 yrs	3.2-15.0			
Supranational issuer	<1 y	3.2-5.5			
	1-3 yrs	3.2-5.5			
	3-5 yrs	3.3-6.9			
	5-7 yrs	4.00-9.3			
	7-10 yrs	5.3-12.00			
	>10 yrs	5.5-23.4			
Agency-non credit institutions	<1 y	3.2-17.8	0.63-0.75		
	1-3 yrs	3.2-17.8	1.25-1.50		
	3-5 yrs	3.2-13.5	2.25-4.00		
	5-7 yrs	3.2-17.8	2.25-4.00		
	7-10 yrs	3.2-12.5	2.63-5.00		
	>10 yrs	3.2-14.8	2.63-8.25		
Agency-credit institutions	<1 y	5.5-17.8			
	1-3 yrs	5.5-17.8			
	3-5 yrs	5.5-19.7			
	5-7 yrs	5.5-25.4			
	7-10 yrs	5.5-27.0			
	>10 yrs	5.5-36.1			
Financial corporations other than credit institutions	<1 y	5.5-14.1			
	1-3 yrs	13.5-14.1			
	3-5 yrs	13.5-20.0			
	5-7 yrs	13.5-22.1			
	7-10 yrs	13.5-28.7			
	>10 yrs	14.1-46.7			
Equities		Minimum of 20.0		Minimum of 25.0	
Exchange-traded funds					
Money market funds					
Gold					

2.4 DIFFERENT LEVELS OF HAIRCUTS

In general, the size of haircuts varies depending on the riskiness/volatility of the collateral. The type of counterparty and type of transactions also play a role. It could also be observed that lower haircuts are applied to repo transactions among major financial institutions/prime brokers compared to haircuts for trades between other (non-major) financial institutions. Haircuts for repo transactions with the central bank are typically higher than for transactions among market participants. Finally, haircuts on repo transactions involving CCPs are either similar to those applied by central banks or higher for some types of assets.

Regulatory frameworks typically do not prescribe the size of haircuts, and only qualify the characteristics of collateral. However, regulatory frameworks have started in some cases to define the minimum schedule of haircuts (i.e. for LCR, non-centrally cleared derivatives, and the FSB

is undertaking further work by for defining possible haircut schedules of securities financing transactions). The LCR minimum haircuts do not apply/affect Level 1 assets (zero haircuts), while haircuts for Level 2 assets are higher than central bank and CCP frameworks (because of the specific aim of LCR to promote the short-term resilience of bank liquidity). The frameworks for non-centrally cleared derivatives have lower minimum haircuts compared to central banks and CCPs (but depending on factors such as maturity and issuance location).

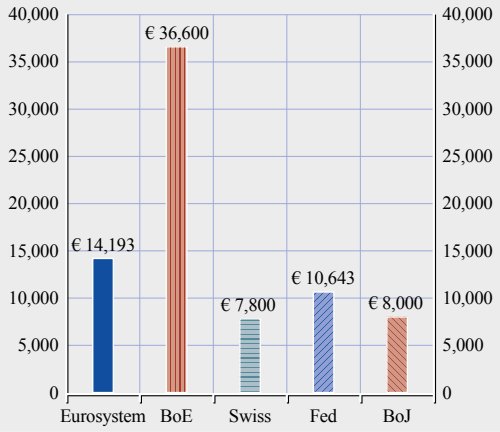
ANNEX 1

DETAILED TABLES ON QUANTIFICATION AND HAIRCUTS

1) Quantification: Eligible assets accepted by central banks (2013)

Chart 1 Total amount of marketable eligible collateral by central banks

(in EUR billion)



Sources: Fed, BIS, ECB, BoE, Bank of Japan and Swiss National Bank.

Table 1 General government: outstanding amount by country

(2013Q1)

Country	2013Q1 (EUR)	Country	2013Q1 (EUR)	Country	2013Q1 (EUR)
Argentina	77.3	Hong Kong SAR	71.8	Pakistan	-
Australia	438.0	Hungary	61.1	Peru	-
Austria	194.4	Iceland	-	Philippines	-
Belgium	348.3	India	-	Poland	185.1
Brazil	-	Indonesia	-	Portugal	123.2
Canada	970.9	Ireland	119.5	Russia	113.2
Chile	-	Israel	110.6	Saudi Arabia	20.0
China	-	Italy	1,650.2	Singapore	89.3
Colombia	-	Japan	7,439.6	Slovakia	33.8
Croatia	17.2	Korea	-	Slovenia	16.3
Cyprus	9.3	Lebanon	-	South Africa	-
Czech Republic	61.8	Luxembourg	5.6	Spain	750.9
Denmark	115.4	Malaysia	114.3	Sweden	138.1
Estonia	0.2	Malta	4.7	Switzerland	87.4
Finland	87.7	Mexico	-	Thailand	80.8
France	1,547.6	Netherlands	327.4	Turkey	202.3
Germany	1,579.5	New Zealand	-	United Kingdom	1,658.2
Greece	99.5	Norway	80.2	United States	10,905.3

Source: BIS.

Table 2 General government: outstanding amount by country

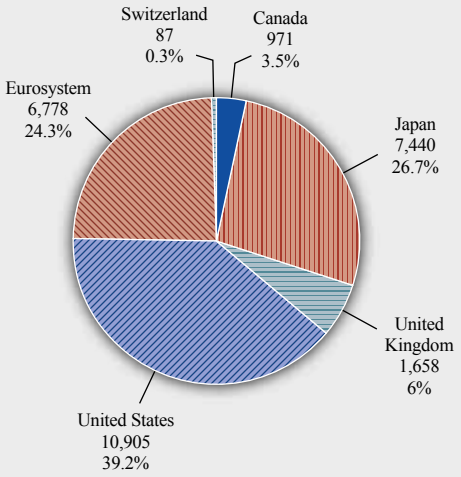
(2013Q1– EUR billion)

Country	Outstanding amount (percentages)	Outstanding amount (2013Q1)
Canada	3.5	970
Japan	26.7	7,439
United Kingdom	6.0	1,658
United States	39.2	10,905
Eurosystem	24.3	6,778
Switzerland	0.3	87

Source: BIS data.

Chart 2 General government: outstanding amount by country

(2013Q1– EUR billion)



Source: BIS data.

2) Haircuts – central banks

Table 3 Haircuts – central banks

		European Central Bank (ECB)				Bank of England (BoE)[1]		Federal Reserve System[2]	
		Rating and Currency							
		AAA to A-		BBB+ to BBB-		No distinction by rating is made		U.S. denominated	
Category	Residual maturity	Coupon	Zero coupon	Coupon	Zero coupon	Coupon	Zero coupon	Coupon	Zero coupon
I	<1yr	0.5	0.5	5.5	5.5	0.5	0.5	1.0-3.0	2.0-3.0
	1-3y	1.5	1.5	6.5	6.5	1.5	1.5	1.0-3.0	2.0-3.0
	3-5y	2.5	3.0	7.5	8.0	2.0	2.0	1.0-3.0	2.0-3.0
	5-7y	3.0	3.5	8.0	8.5	3.0	3.5	3.0-5.0	4.0-5.0
	7-10y	4.0	4.5	9.0	9.5	3.0	3.5	3.0-5.0	4.0-5.0
	10-20y	5.5	8.5	10.5	13.5	4.5	6.0	4.0-6.0	8.0
	20-30y	5.5	8.5	10.5	13.5	6.0	8.5	4.0-6.0	8.0
	>30y	5.5	8.5	10.5	13.5	7.5	14.0	4.0-6.0	8.0
II	<1yr	1.0	1.0	6.0	6.0	0.5-3.0	0.5-3.0	2.0	3.0
	1-3y	2.5	2.5	10.5	11.5	1.5-5	1.5-5	2.0	3.0
	3-5y	3.5	4.0	15.5	17.0	2.0-6.0	2.0-6.0	2.0	3.0
	5-7y	4.5	5.0	18.0	20.5	3.0-8.0	3.0-8.0	4.0	5.0
	7-10y	5.5	6.5	19.5	22.5	3.0-8.0	3.0-8.0	4.0	5.0
	10-20y	7.5	12.0	20.0	29.0	4.5-10.0	4.5-10.0	5.0-10.0	9.0-10.0
	20-30y	7.5	12.0	20.0	29.0	6.0-13.0	6.0-13.0	5.0-10.0	9.0-10.0
	>30y	7.5	12.0	20.0	29.0	7.5-15	7.5-15	5.0-10.0.0	9.0-10.0
III	<1yr	1.5	1.5	8.0	8.0	3.0-30.0	3.0-30.0	3.0-5.0	3.0-5.0
	1-3y	3.0	3.0	18.0	19.5	5.0-32.0	5.0-32.0	3.0-5.0	3.0-5.0
	3-5y	5.0	5.5	25.5	28.0	6.0-33.0	6.0-33.0	3.0-5.0	3.0-5.0
	5-7y	6.5	7.5	28.0	31.5	8.0-35.0	8.0-35.0	5.0-7.0	5.0-7.0
	7-10y	8.5	9.5	29.0	33.5	8.0-35.0	8.0-35.0	5.0-7.0	5.0-7.0
	10-20y	11.0	16.5	29.5	38	10.0-37.0	10.0-37.0	6.0-8.0	6.0-8.0
	20-30y	11.0	16.5	29.5	38	13.0-40.0	13.0-40.0	6.0-8.0	6.0-8.0
	>30y	11.0	16.5	29.5	38	15.0-42.0	15.0-42.0	6.0-8.0	6.0-8.0
IV	<1yr	6.5	6.5	15.0	15.0	N/A		3.0-5.0	3.0-5.0
	1-3y	8.5	9.0	27.5	29.5			3.0-5.0	3.0-5.0
	3-5y	11.0	11.5	36.5	39.5			3.0-5.0	3.0-5.0
	5-7y	12.5	13.5	38.5	43.0			5.0-7.0	5.0-7.0
	7-10y	14.0	15.5	39.0	44.5			5.0-7.0	5.0-7.0
	10-20y	17.0	22.5	39.5	46.0			6.0-8.0	6.0-8.0
	20-30y	17.0	22.5	39.5	46.0			6.0-8.0	6.0-8.0
	>30y	17.0	22.5	39.5	46.0			6.0-8.0	6.0-8.0
V	<1yr	16.0		Not eligible		12.0-15.0	12.0-15.0	2.0-11.0	2.0-11.0
	1-3y					17.0	17.0	2.0-11.0	2.0-11.0
	3-5y					18.0	18.0	2.0-11.0	2.0-11.0
	5-7y					20.0	20.0	5.0-16.0	5.0-16.0
	7-10y					20.0	20.0	5.0-16.0	5.0-16.0
	10-20y					22.0	22.0	8.0-18.0	8.0-18.0
	20-30y					25.0	25.0	8.0-18.0	8.0-18.0
	>30y					27.0	27.0	8.0-18.0	8.0-18.0

Source: ECB, BoE, Fed, Bank of Japan, Swiss National Bank and Sveriges Riksbank.
1) A haircut add-on is applied to allow for currency volatility when securities are non-sterling denominated.
2) Federal Reserve System haircuts apply to a "duration buckets" instead of "maturity buckets". The stated margins apply to collateral pledged for discount window or payment system risk purposes. Other margins apply for other Federal Reserve System programmes.
3) A haircut for foreign exchange risk will be made if a security is issued in a currency other than Swedish krona.

Table 3 Haircuts – central banks (cont'd)

		Federal Reserve System[2]		Sveriges Riksbank[3]		Bank of Japan				Swiss National Bank (SNB)
		Rating and Currency								
		Foreign denominated		No distinction by rating is made		JGBs		Foreign		
Category	Residual maturity	Coupon	Zero coupon	Coupon	Zero coupon	Coupon	Zero coupon	Coupon	Zero coupon	
I	<1yr	8.0	8.0	3.0	3.0	1.0-2.0	1.0-2.0	3.0	3.0	0.0
	1-3y	8.0	8.0	3.0	3.0	1.0-2.0	1.0-2.0	3.0	3.0	
	3-5y	8.0	8.0	4.0	7.0	1.0-2.0	1.0-2.0	3.0	3.0	
	5-7y	10.0	10.0	5.0	9.0	3.0-4.0	3.0-4.0	5.0	5.0	
	7-10y	10.0	10.0	6.0	12.0	3.0-4.0	3.0-4.0	5.0	5.0	
	10-20y	11.0	11.0	7.0	20.0	3.0-4.0	3.0-4.0	5.0	5.0	
	20-30y	11.0	11.0	7.0	20.0	5.0-7.0	5.0-7.0	7.0	7.0	
	>30y	11.0	11.0	7.0	20.0	6.0-10.0	6.0-10.0	8.0	8.0	
II	<1yr	8.0	8.0	3.0	5.0	2.0-3.0	2.0-3.0			0.0
	1-3y	8.0	8.0	3.0	5.0	2.0-3.0	2.0-3.0			
	3-5y	8.0	8.0	5.0	10.0	2.0-3.0	2.0-3.0			
	5-7y	10.0	10.0	7.0	15.0	4.0-5.0	4.0-5.0			
	7-10y	10.0	10.0	10.0	20.0	4.0-5.0	4.0-5.0			
	10-20y	11.0-13.0	11.0-13.0	15.0	25.0	4.0-5.0	4.0-5.0			
	20-30y	11.0-13.0	11.0-13.0	15.0	25.0	6.0-7.0	6.0-7.0			
	>30y	11.0-13.0	11.0-13.0	15.0	25.0	7.0-8.0	7.0-8.0			
III	<1yr	9.0	9.0	3.0	5.0	3.0-4.0	3.0-4.0			0.0
	1-3y	9.0	9.0	3.0	5.0	3.0	3.0			
	3-5y	9.0	9.0	5.0	10.0	3.0	3.0			
	5-7y	11.0	11.0	7.0	15.0	5.0	5.0			
	7-10y	11.0	11.0	10.0	20.0	5.0	5.0			
	10-20y	12.0	12.0	15.0	25.0	5.0	5.0			
	20-30y	12.0	12.0	15.0	25.0	7.0	7.0			
	>30y	12.0	12.0	15.0	25.0	8.0	8.0			
IV	<1yr	9.0	9.0	8.5	9.0	3.0-4.0	3.0-4.0			0.0
	1-3y	9.0	9.0	8.5	9.0	3.0	3.0			
	3-5y	9.0	9.0	11.0	14.0	3.0	3.0			
	5-7y	11.0	11.0	15.0	27.0	5.0	5.0			
	7-10y	11.0	11.0	20.0	35.0	5.0	5.0			
	10-20y	12.0	12.0	35.0	40.0	5.0	5.0			
	20-30y	12.0	12.0	35.0	40.0	7.0	7.0			
	>30y	12.0	12.0	35.0	40.0	8.0-10.0	8.0-10.0			
V	<1yr			Not eligible		3.0	3.0			Not eligible
	1-3y					3.0	3.0			
	3-5y					3.0	3.0			
	5-7y					5.0	5.0			
	7-10y					5.0	5.0			
	10-20y					5.0	5.0			
	20-30y					7.0	7.0			
	>30y					8.0	8.0			

Source: ECB, BoE, Fed, Bank of Japan, Swiss National Bank and Sveriges Riksbank.
1) A haircut add-on is applied to allow for currency volatility when securities are non-sterling denominated.
2) Federal Reserve System haircuts apply to a "duration buckets" instead of "maturity buckets". The stated margins apply to collateral pledged for discount window or payment system risk purposes. Other margins apply for other Federal Reserve System programmes.
3) A haircut for foreign exchange risk will be made if a security is issued in a currency other than Swedish krona.

Category	ECB	BoE	Fed
I	Central government debt instruments; Debt instruments issued by NCBs	Sovereign and central bank debt (including associated strips) of UK, Canada, France, Germany, the Netherlands and the United States issued in either the domestic currency or in sterling, euro or US dollar. Sovereign and central bank debt (including associated strips) of Australia, Austria, Belgium, Denmark, Finland, Ireland, Italy, Japan, Luxembourg, New Zealand, Norway, Portugal, Slovenia, Spain, Sweden and Switzerland, issued in either the domestic currency or in sterling, euro or US dollar.	U.S. Treasuries & fully guaranteed Agencies Foreign government, foreign government guaranteed, and Brady Bonds
II	Local and regional government debt instruments; Jumbo covered bonds Agency debt instruments Supranational debt instruments	Bonds issued by G10 government agencies explicitly guaranteed by national governments, of the highest credit quality (broadly equivalent to AAA) Conventional debt issued by Federal Home Loan Mortgage Corporation (Freddie Mac), the Federal National Mortgage Corporation (Fannie Mae) and the Federal Home Loan Banks System, of the highest credit quality (broadly equivalent to AAA). Sterling, euro and US dollar denominated securities issued by major international institutions. Bank and building society debt guaranteed under HM Government's Credit Guarantee Scheme announced on 8 October 2008 and debt issued under the National Loans Guarantee Scheme announced on 20 March 2012 Senior bank debt that is guaranteed under certain non-UK sovereign debt guarantee schemes. Various schemes have now been reviewed and are considered eligible at the Bank's discretion in light of requests from counterparties. The debt must be due to mature prior to the expiry date of the relevant guarantee.	Government sponsored enterprises Foreign government agencies Supranationals German jumbo Pfandbriefe Municipal bonds Agency-backed mortgages
III	Traditional covered bank bonds Debt instruments issued by non financial corporations and other issuers Other covered bank bonds	Covered bonds. The underlying assets may be either UK or EEA public sector debt, social housing loans or residential mortgages. UK and EEA residential mortgage-backed securities (RMBS). UK, US and EEA securitised portfolios of senior secured or on-balance sheet, corporate loans or SME loans. Leveraged loans are not permitted. UK, US and EEA securitised portfolios of corporate bonds, Portfolios containing high yield bonds are not permitted. UK,US and EEA covered bonds where the underlying assets include SME loans or commercial mortgages. UK, US and EEA commercial mortgage-backed securities (CMBS). Securities containing construction loans will not be eligible. The pool must be diversified. UK, EEA or US covered bonds or ABS backed by certain Export Credit Agency guarantee loans. These will be subject to individual review. Portfolio of senior corporate bonds, of credit quality broadly equivalent to A3/A- or above, and commercial paper of credit quality broadly equivalent to A2/P2/F2 or above issued by non-financial companies in the UK, US and the EU. Subject to diversification requirement that no more than 10% of the total value of the portfolio may be from a single issuer. For the purposes of this requirement, legal entities in the same group or those with close links as determined by the Bank, will be treated as single issuer.	Corporate bonds Covered bonds Commercial mortgage backed securities (AAA rated)

Sveriges Riksbank	Bank of Japan	SNB
Secured issued by central governments	Government bonds (excluding floating-rate bonds, STRIPS, inflation-indexed bonds, and treasury bills) and treasury discount bills (treasury bills and financing bills)	No distinction is made by asset class
Securities issued by central banks	STRIPS	
Other claims on central banks	Foreign government bonds	
Securities issued by international organisations	Government-guaranteed bonds	No distinction is made by asset class
Securities guaranteed by central governments	Government-guaranteed dematerialised commercial paper	
Securities issued or guaranteed by local governments or authorities abroad (in Swedish kommun or landsting)	Municipal bonds	
Securities issued by so- called agencies	Fiscal Investment and Loan Program (FILP) agency bonds	
Covered securities	Corporate bonds	No distinction is made by asset class
	Dematerialised commercial paper issued by domestic corporations	
	Dematerialised commercial paper issued by foreign corporations with guarantees	
	Bills drawn by companies	

Category	ECB	BoE	Fed
IV	Credit institution debt instruments (unsecured)	Credit institution debt instruments (unsecured)	Certificate of deposit, bankers' acceptances, commercial paper, asset-backed commercial paper
	Debt instruments issued by financial corporations other than credit institutions (unsecured)	Debt instruments issued by financial corporations other than credit institutions (unsecured)	Corporate bonds
V	Asset-backed securities	UK, US and EEA asset-backed securities (ABS) backed by credit cards	Asset-backed Securities
		UK, US and EEA asset-backed securities (ABS) backed by auto loans and certain equipment leases.	
		US asset-backed securities (ABS) backed by student loans and consumer loans.	Collateralised debt obligations- AAA rated
		UK and EEA asset-backed securities (ABS) backed by student loans and consumer loans	Trust preferred securities
		Some types of UK, US and EEA asset-backed commercial paper (ABCP) of credit quality broadly equivalent to a short term rating of A-1+/P1/F1+. Only the most senior paper will be accepted and the eligibility of individual programmes must be agreed with the Bank. Underlying assets must be of a type that are eligible for the operation.	Private label CMOs -AAA rated

Sveriges Riksbank	Bank of Japan	SNB
Other eligible securities	Bonds issued by real estate investment corporations	No distinction is made by asset class
	Dematerialised commercial paper issued by real estate investment corporations	
	International financial institution bonds Bills drawn by real estate investment corporations	
Asset-backed securities	Asset-backed securities	Asset-backed Securities

ANNEX 2

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ANNEX 3

ABBREVIATIONS

ABSs	Asset-backed securities
ACC	Additional Credit Claims
ATS	Automatic trading system
Basel III	International regulatory frameworks for banks, developed by the Basel Committee on Banking Supervision
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BoE	Bank of England
BoJ	Bank of Japan
CBF	Clearstream Banking AG, Frankfurt
CBL	Clearstream Banking S.A., Luxembourg
CBWP	Collateral Basket with Pledge (provided by LCH Clearnet SA)
CC&G	Cassa di Compensazione e Garanzia (Italian CCP, part of the London Stock Exchange Group)
CCP	Central counterparty
CFTC	Commodity Futures Trading Commission
COGESI	Contact Group on Euro Securities Infrastructures
CPSS	Committee on Payment and Settlement Systems
CRR	Capital Requirements Regulation
CRD IV	Capital Requirements Directive
CSD	Central securities depository
DBG	Deutsche Börse Group
DFA	Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act)
EBA	European Banking Authority
ECB	European Central Bank
EEA	European Economic Area
EMIR	Regulation (EU) 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories (European Market Infrastructures Regulation)
ESES	Euroclear Settlement of Euronext-zone Securities
ESMA	European Securities and Markets Authority
EU	European Union
Fed	Federal Reserve
FLS	Funding for Lending Scheme
FMIs	Financial market infrastructures
GC	General Collateral
GGBBs	Government Guaranteed Bank Bonds
HQLA	High-quality liquid assets
IOSCO	International Organisation of Securities Commissions
LCR	Liquidity Coverage Ratio
MBSs	Mortgage-backed securities
MEFF	The secondary Spanish derivative market (which runs both the Exchange and the CCP activity). In this report, MEFF is the entity that acts as CCP.
MiFID	Markets in Financial Instruments Directive
MMFs	Money market funds

MTS	Multilateral trading system
NCB	National central bank
NSFR	Net Stable Funding Ratio
OMO	Open market operations
OTC	Over-the-counter
PD	Probability of default
PFMIs	Principles for financial market infrastructures
Riksbank	Sveriges Riksbank
RMBDs	Retail mortgage-backed debt instruments
RTS	Regulatory technical standard
SEC	Securities and Exchange Commission
SMEs	Small and medium-sized enterprises
SNB	Swiss National Bank
SPV	Special purpose vehicle
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
USA	United States of America