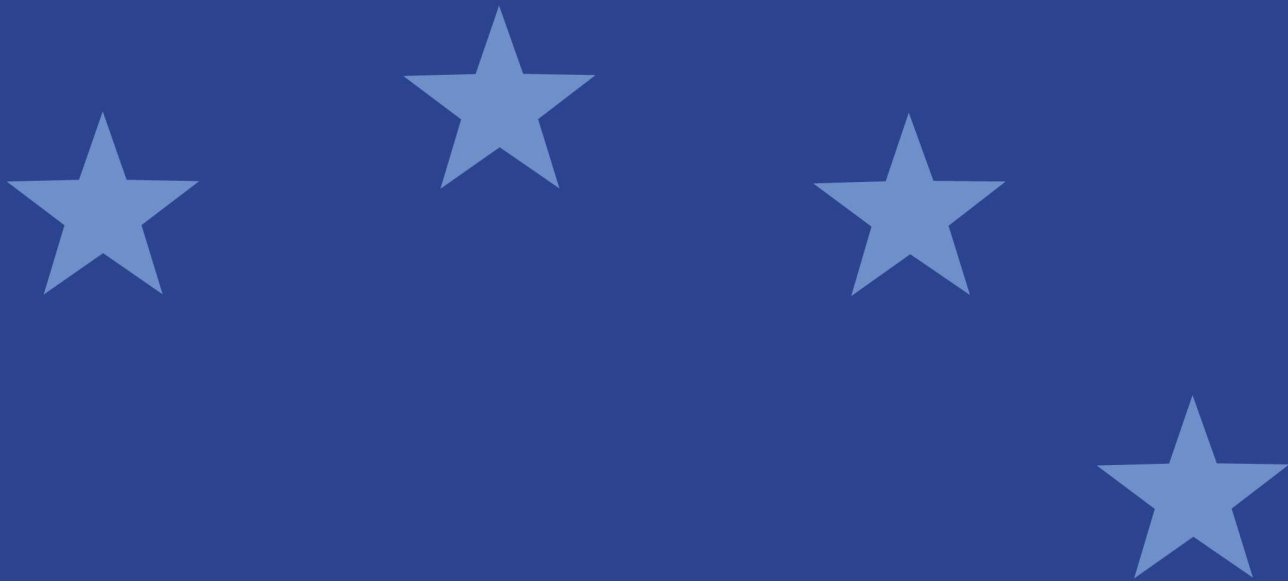


# Report on securities financing transactions and leverage in the EU

**Report prepared under the mandate in Article 29(3) SFTR**





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# 1 Executive Summary

## Reasons for publication

Under Article 29(3) of Regulation 2365/2015, ESMA shall, by 13 October 2016, in cooperation with EBA and the ESRB and taking due account of international efforts, submit a report to the Commission, to the European Parliament and to the Council, assessing: (a) whether the use of SFTs leads to the build-up of significant leverage that is not addressed by existing regulation; (b) where appropriate, the options available to tackle such a build-up; (c) whether further measures to reduce the pro-cyclicality of that leverage are required. ESMA's report shall also consider the quantitative impact of the FSB recommendations.

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Securities financing transactions (SFTs) can contribute to leverage in the financial system. One of the main issues related to leverage is procyclicality, which can manifest itself in many different ways and can incorporate risks for financial stability. The setting of margins and haircuts in relation to SFTs can also have procyclical effects. Other aspects that might lead to procyclicality include lending volumes, willingness to deal with some counterparties, collateral requirements, and other SFT price or non-price credit terms.

There are different definitions of leverage (gross and net, entity-specific or system-wide) which need to be adequately analysed in order to define the appropriate tools aimed at limiting procyclicality. Several micro-prudential measures addressing leverage in individual entities are already in place or currently being implemented in the EU, notably through EMIR or CRR/CRD and other relevant prudential regulation.

The current lack of granular SFT data at EU level<sup>1</sup> prevents a thorough analysis of EU SFT markets, and hampers our understanding of the effects of the recent regulatory reforms and those that are still being implemented on leverage and procyclicality.

This report was prepared in cooperation with the EBA and the ESRB. The EBA contribution focuses on the EU banking sector regulation that is relevant in the context of leverage and SFTs. The ESRB contribution, published in parallel on the ESRB website, informed various parts of the ESMA report, including the conceptual descriptions and analysis. However, on some issues, including in its recommendations, the ESMA report takes different views to those expressed in the ESRB opinion.

ESMA recommends that:

- a. The FSB qualitative standards on the methodology used to calculate haircuts in non-centrally cleared SFTs should be introduced as a first step to improve the transparency and stability of haircuts, and the resilience of financial institutions;

- 
- b. The procyclicality of collateral haircuts used by CCPs should be addressed in the context of the EMIR review;
  - c. Numerical haircut floors for non-centrally cleared transactions, such as those set out by the FSB, can only be introduced and calibrated following a thorough analysis using granular SFT data (which will become available after the full implementation of the SFTR), and following careful assessment of the scope, considering in particular the size and relevance of EU government bond markets;
  - d. Other macroprudential instruments, including counter-cyclical ones, should be agreed at international level first, and can only be introduced after a careful assessment that the already introduced measures (such as capital requirement and bilateral margins) are not sufficient to limit the leverage in the system. Only subject to these two conditions can it be considered whether additional macro-prudential instruments would still be needed.

Going forward, ESMA stands ready to participate constructively in any potential future discussions around SFT policy instruments. ESMA will continue to monitor the market developments while remaining flexible, should earlier implementation of the FSB numerical haircut floors be required.

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<sup>1</sup> A reporting obligation on SFT will apply around end-2018.

## 2 Introduction

### 2.1 SFT Regulation and ESMA's mandate

1. The Regulation on transparency of securities financing transactions and of reuse (the Regulation or SFTR hereinafter)<sup>2</sup> is part of a globally coordinated effort initiated by the Financial Stability Board (FSB) to reduce financial stability risks arising from shadow banking activities, including securities financing transactions (SFTs, hereinafter). The two main components of SFTR are a transaction reporting requirement and a transparency obligation towards investors on the reuse of collateral. By bringing transparency to SFT markets, the SFTR will allow European authorities to monitor systemic risks and shed light on existing market practices. To that end, ESMA is currently working together with other securities and markets authorities and the European System of Central Banks on draft Technical Standards, to be delivered to the European Commission in early 2017.
2. In the Regulation, SFTs include repurchase agreements (repos) and reverse repurchase agreements, securities or commodities lending and borrowing transactions, buy-sell backs and sell-buy backs, and margin lending and borrowing. They can be broadly described as the temporary exchange of cash or securities against collateral. As highlighted by the FSB (2013) and the European Commission (2015), the different types of SFTs have similar economic effects. However, they differ in many aspects, including among other aspects the size of these markets, the purpose of the transactions, the nature of collateral exchanged, the type of market participants, and existing market practices. Reflecting this, the report investigates separately SFTs, where relevant, regrouped into three broad categories: repos, securities lending, and margin lending.
3. This report is prepared as part of the SFTR Art. 29(3) mandate, which stipulates that *“ESMA shall, by 13 October 2016, in cooperation with EBA and the ESRB and taking due account of internal efforts, submit a report to the Commission, to the European Parliament and to the Council, assessing:*
  - (a) whether the use of SFTs leads to the build-up of significant leverage that is not addressed by existing regulation;*
  - (b) where appropriate, the options available to tackle such a build-up;*
  - (c) whether further measures to reduce the pro-cyclicality of that leverage are required;**ESMA's report shall also consider the quantitative impact of the FSB recommendations.”*
4. By 13 October 2017, the *“Commission shall submit a report to the European Parliament and to the Council on progress in international efforts to mitigate the risks associated with SFTs, including the FSB recommendations for haircuts on non-centrally cleared SFTs, and on the appropriateness of those recommendations for Union markets. The Commission shall submit that report together with any appropriate proposals”* under SFTR Art. 29(3).

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<sup>2</sup> Regulation (EU) 2015/2365 of the European Parliament and of the Council of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012.

5. ESMA prepared this report in cooperation with the European Banking Authority (EBA) and the European Systemic Risk Board (ESRB). The input from EBA focused specifically on measures to address the build-up of leverage under banking regulation, including from SFTs, and can be found mainly in section 4.1. The input from the ESRB, which is published in parallel as an opinion on the ESRB website, informed mainly section 3 and section 6. In formulating its recommendations, ESMA has taken into account these contributions, although the recommendations differ in some areas from the proposals presented in the ESRB opinion.
6. This report focuses specifically on EU SFT markets. However, given the largely cross-border and cross-sectoral characteristics of SFTs, the delineation of these markets is not always clearly defined. Considering this, and given current data limitations, ESMA adopted a broad approach in its analysis, which includes an overview of the existing and future regulatory regimes applicable or related to SFTs. While the report tries to distinguish, where relevant, between centrally and non-centrally cleared transactions, the lack of SFT data on counterparties prevents ESMA from thoroughly analysing separately bank to bank, bank to non-bank and non-bank to non-bank transactions. Nonetheless, ESMA sought to investigate these aspects in the feedback received from market participants and National Competent Authorities (NCAs)..

## 2.2 FSB recommendations

7. In addition to setting out the global standards for SFT data collection that served as a basis for some of the transparency requirements under SFTR, the FSB published in November 2015 a regulatory framework for haircuts on non-centrally cleared SFTs. Building on previous work by the Committee on the Global Financial System (CGFS, 2010), the framework includes recommendations intended to limit the build-up of excessive leverage outside the banking system and to reduce the procyclicality of that leverage, based on two main elements:
  - a. qualitative standards for methodologies used by market participants to calculate collateral haircuts;
  - b. numerical haircut floors on non-centrally cleared SFTs, in which financing against collateral other than government debt securities is provided to non-banks (Table 1).



**Table 1: Numerical haircut floors for securities-against-cash transactions<sup>20</sup>**

Residual maturity of collateral	Haircut level	
	Corporate and other issuers	Securitised products
≤ 1 year debt securities, and Floating Rate Notes (FRNs)	0.5%	1%
> 1 year, ≤ 5 years debt securities	1.5%	4%
> 5 years, ≤ 10 years debt securities	3%	6%
> 10 years debt securities	4%	7%
Main index equities	6%	
Other assets within the scope of the framework	10%	

Note: Numerical haircut floors for non-centrally cleared SFTs in which financing against collateral other than government securities is provided to non-banks. Source: FSB Regulatory framework for haircuts on non-centrally cleared SFTs.

8. These recommendations are complementary to the ones incorporated into the Basel III framework. Securities financing received by banks and broker-dealers subject to adequate capital and liquidity regulation on a consolidated basis is excluded from the scope of application of the numerical haircut floors, because the FSB considers that applying haircut floors to those transactions may duplicate existing requirements.
9. Currently, numerical haircut floors do not exist in the EU. The FSB framework foresees that authorities should implement the numerical haircut floors by the end of 2018. This would be done by requiring market participants to conduct transactions above the haircut floors<sup>3</sup>. The framework could be implemented either through entity-based regulation (i.e. Basel III framework), through market regulation, which would capture a broader set of entities potentially providing securities financing to non-banks, or through a combination of these methods.
10. The scope of the qualitative standards for methodologies includes all SFTs. The numerical haircut floors, however, would apply only to “non-centrally cleared SFTs in which financing against collateral other than government securities is provided to non-banks”. In practice, the following SFTs are excluded from the scope of the recommendations:
  - a. bank to bank transactions;

<sup>3</sup> The FSB indicates that the numerical floors are intended to apply both where haircuts are applied at the transaction level and where margin is applied at the portfolio level, by collecting minimum margin amounts consistent with the haircut floors. The latter is equivalent to applying portfolio-level haircuts, while the definition of “margins” used in the ESMA report is narrower (see paragraph 24).

- b. bank to non-bank transactions where financing is provided to banks (i.e. repos where the selling counterparty is a bank, and securities lending transactions collateralised with cash where the lending counterparty is a bank);
  - c. securities lending transactions collateralised with non-cash, where the collateral receiver is unable to re-use or provide representations that they do not and will not re-use the securities received as collateral<sup>4</sup>;
  - d. transactions where the collateral was issued by central governments, central banks, government public sector entities identified as sovereign, or supra-nationals.
11. In addition, securities lending transactions collateralised with cash would be excluded from the scope of the FSB recommendations on numerical haircut floors, where the cash collateral is reinvested
  - a. either at shorter maturity than the maturity of the loan;
  - b. or according to minimum standards set out by the FSB (2013).
12. ESMA believes that, considering the exemptions listed above, particular attention should be given to the scope of the FSB quantitative recommendations on numerical haircut floors. Based on the available data and feedback received, the share of EU securities financing markets that may fall under the FSB scope is carefully investigated in this report.
13. Furthermore, the definition of banks and non-banks in the FSB framework requires some mapping with the definitions of entities in the EU regulatory framework. In particular, the question of whether “banks” should be interpreted as including all forms of EU investment firms (e.g. those as defined in the Markets in Financial Instruments Directive (MiFID)) may require consideration further to any developments regarding the prudential treatment of such firms. In this regard the EBA recently proposed that investment firms should be classified into three new categories based on their risk features, with a modified prudential regime applying to investment firms that do not conduct bank-like activities or pose material risks.<sup>5</sup> Work is on-going in this area, and whether such investment firms could be exempted from the FSB scope would depend on the specific features of any modified prudential regime, and on the extent to which the risks that numerical haircut floors seek to address are already covered.

## 2.3 Methodology, data and other sources of evidence

14. A significant limitation to this report is the current lack of granular EU-wide regulatory data on SFTs. SFTR will greatly improve the transparency of EU SFT markets but the reporting obligation only starts in 2018. In light of this, and given limited public and commercial data availability, any overview, analysis and understanding of EU SFT markets will remain limited until SFTR data become available. The evidence presented in this report should be used accordingly and ESMA recommends that rigorous analyses of the issues addressed

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<sup>4</sup> Securities lending transactions collateralised with non-cash (or “collateral upgrades” in the FSB framework) fall within the scope only when back-to-back repo transactions are used in order to circumvent the numerical haircut floors.

<sup>5</sup> See EBA (2015), “Report on investment firms”.

be undertaken once the data available to EU authorities under SFTR are of sufficient completeness and quality for this purpose.

15. ESMA relied on alternative sources of evidence to prepare the report. Regarding quantitative SFT data, the report uses a mix of public data, commercial data, and industry surveys available for repos and securities lending. As highlighted above, differences in the nature, granularity and coverage of these sources make an informed assessment a challenging exercise. For other types of SFTs, such as margin lending or commodities lending, no quantitative data on EU transactions are currently available. Data on haircuts used in SFTs are also sparse, and ESMA relied mainly on interactions with market participants to gather evidence, including:
  - a. Discussions with industry associations and market participants spanning EU SFT markets (buy-side firms, sell-side firms and intermediaries);
  - b. Consultation with the ESMA Market Data Standing Committee's and the Post-Trading Standing Committee's Consultative Working Groups;
  - c. Feedback received in the context of the SFTR Discussion Paper consultation.
16. The outcome of the discussions is reflected throughout the report, and in particular in Section 5. The International Capital Markets Association (ICMA) kindly shared data on non-centrally cleared repo haircuts collected from ICMA European Repo and Collateral Council members (section 6).
17. Lastly, ESMA used a variety of reports from EU and other international bodies, and academic studies to complement the analysis (see References).

## 3 Definitions and concepts

### 3.1 SFTs and collateral

18. Building on ESRB (2016a), SFTs are secured (i.e. collateralised) transactions that involve the temporary exchange of cash against securities, or securities against other securities. If the collateral giver defaults, the collateral taker retains the collateral to cover the potential losses. Under, the Regulation, SFTs include:
  - a. repos;
  - b. securities or commodities lending and securities or commodities borrowing;
  - c. buy-sell backs or sell-buy backs;
  - d. margin lending.
19. Collateralisation in the EU is defined in the Directive on financial collateral arrangements<sup>6</sup> (FCD). Two types of financial collateral arrangements are defined in Articles 2(1)(b) and 2(1)(c). The first one is "title transfer financial collateral arrangement" in which a collateral

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<sup>6</sup> Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 (OJ L 168, 27.6.2002, p. 43). See also the Commission's report on FCD evaluation: [http://ec.europa.eu/finance/financial-markets/docs/collateral/fcd\\_report\\_en.pdf](http://ec.europa.eu/finance/financial-markets/docs/collateral/fcd_report_en.pdf)

provider transfers full ownership of the collateral to the collateral taker (this includes repos and securities lending arrangements). The second one is “security financial collateral arrangement” where a collateral provider provides financial collateral by way of security to a collateral taker, but the full ownership of the financial collateral remains with the collateral provider when the security right is established. In that second case, a right-of-use clause might apply. In that context right of use means the right of the collateral taker to use and dispose of financial collateral.

20. Under SFTR, a repo is defined as a “*transaction governed by an agreement by which a counterparty transfers securities, commodities or guaranteed rights (...) and the agreement does not allow a counterparty to transfer or pledge a particular security or commodity to more than one counterparty at a time, subject to a commitment to repurchase them, or substituted securities or commodities of the same description at a specified price on a future date specified, or to be specified, by the transferor, being a repurchase agreement for the counterparty selling the securities or commodities and a reverse repurchase agreement for the counterparty buying them.*”
21. Sell-buy backs (and buy-sell backs) are very similar to repos (and reverse repos), but based on separate buy and sell contracts without a master agreement. In SFTR, a buy-sell back or sell-buy back means “*a transaction by which a counterparty buys or sells securities, commodities or guaranteed rights (...), agreeing, respectively, to sell or to buy back securities, commodities or guaranteed rights (...) at a future date (...), such transaction not being governed by a repurchase agreement (...).*” These transactions tend to be used to a larger extent than repos in some specific countries (e.g. Spain).
22. Securities lending transactions are conceptually similar to repos, where one counterparty borrows securities for a fee, against a collateral in the form of cash or non-cash. In SFTR, securities lending means “*a transaction by which a counterparty transfers securities or commodities subject to a commitment that the borrower will return equivalent securities or commodities on a future date or when requested to do so by the transferor (...).*” When cash collateral is provided by the borrower, it can be reinvested into other instruments. Importantly, in securities lending arrangements, haircuts apply to the collateral provided and not the securities borrowed. For a detailed overview and description of EU repo and securities lending markets, see section 5.
23. Margin lending is defined in SFTR as “*a transaction in which a counterparty extends credit in connection with the purchase, sale, carrying or trading of securities, but not other loans that are secured by collateral in the form of securities*”. Margin loans are part of the range of services that prime brokers offer to their clients (i.e. investment funds). The loans are collateralised by a portfolio of securities, or securities held in a margin account, that prime brokers manage as part of the other services they provide, including trading in repo, derivative and cash markets. A key difference with repos and securities lending is that margin loans typically do not require the use or pledge of any additional collateral.

## **3.2 Margins and haircuts**

24. The primary objective of margins and haircuts is to cover for risks related to counterparty creditworthiness or to the use of collateral, stemming from different trading activities. As a result, the terms are sometimes used interchangeably. To avoid confusion, and given the

different meanings of margins based on the context (e.g., CCPs, derivatives or securities lending), the report differentiates between margins and haircuts: margins refer to the collateralisation of counterparty exposures, and haircuts to the discount applied on securities used as collateral.

25. Margins can be considered a form of insurance that involve a transfer of cash or securities to collateralise exposures (Gregory, 2014). They are usually designed to cover for counterparty credit risk. In the EU margins are required by central counterparties (CCPs) for all centrally cleared transactions, including SFTs. In the future, non-centrally cleared derivatives transactions will also require the use of margins. In case of counterparty default(s), the surviving party (i.e. a CCP in the context of centrally cleared transactions), can make use of the margin to cover the losses.
26. A haircut is a discount applied to the value of collateral provided, in order to account for market risk. The market value of collateral typically fluctuates over time. If the market value of the collateral falls, the collateral taker is exposed to market risk, i.e. the risk that proceeds from the sale of the collateral in case of counterparty default will be insufficient to cover for the losses incurred. Similarly, market participants tend to take into account the credit risk of their counterparties, or counterparty creditworthiness, which tends to be correlated with changes in market risk. To mitigate these risks, a discount is applied so that the market value of collateral exceeds the price of the collateral used in the transaction. This discount to the market value of collateral is referred to as a haircut.

$$\text{Haircuts \%} = \frac{\text{Market value of collateral} - \text{Discounted price of collateral}}{\text{Market value of collateral}}$$

27. There are important differences between haircuts in a centrally cleared and in a non-centrally cleared context. In non-centrally cleared SFTs, the haircut is a discount applied to the value of the collateral exchanged as part of the transaction. SFTs are fully or over-collateralised transactions, which means that the discounted value of the collateral received (after haircut) should at least cover for the value of the nominal exposure. For example, a 10% haircut corresponds to financing of EUR 9mn obtained through a repo transaction, against collateral worth EUR 10mn in cash markets.<sup>7</sup>
28. In centrally cleared transactions, CCPs require their Clearing Members (CM) to post margins to collateralise net exposures. These net exposures are calculated on the basis of multiple transactions that may include derivatives, SFTs, and other types of trades. Margins can be posted by CMs either in cash or securities. When securities (or cash in non-base currency) are posted, a haircut applies. For example, a long SFT position of 200 netted with a short derivative position of 100 results in net exposure and CCP margin requirement of 100. The CM may post e.g. 100 in cash, or 110 in securities which would correspond to a 10% haircut.
29. Therefore, in centrally cleared transactions, haircuts may either refer to CCP haircuts on the collateral posted for margining purposes across multiple transactions, or to haircuts on the collateral exchanged between SFT counterparties. Whereas in non-centrally cleared

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<sup>7</sup> Haircuts are economically equivalent to margins (the term used in securities lending markets), which are usually expressed as a percentage of the collateral price (e.g. 110%). For simplicity and comparability with the FSB framework, this report uses haircut discount percentages only (e.g. 10%).

SFTs, haircuts always apply to the collateral exchanged between counterparties. In practice, this implies that haircuts may be difficult to compare across market segments.

30. In the context of margin lending, the set-up is very different. In a typical margin lending scenario, prime brokers offer margin loans to their clients, which are usually funds, against a portfolio of securities held in a margin account (ESMA, 2016). Prime brokers calculate on a daily basis their clients' margin requirements, together with the amount of margin financing available to their clients, based on this portfolio. Margin loans are extended against this collateral portfolio without requiring clients to post additional cash or securities. Therefore, haircuts are not used in margin loans since there is no new collateral received, and margin requirements are not influenced by margin loans.

### 3.3 Leverage

31. It is widely recognised that SFTs contribute to the build-up of leverage.<sup>8</sup> For example, Yan et al. (2010) suggest using the size of repo markets as an observable proxy for leverage in the financial system.

32. Leverage is relevant from a systemic risk perspective for several reasons. First, it may give rise to a higher likelihood of default by amplifying the impact of asset price changes on the solvency of the institution. In addition, haircuts and margining practices can contribute to procyclicality by reinforcing asset price movements, possibly involving fire sales during sell-offs (see below).<sup>9</sup> Lastly, by creating contagion channels it may also create negative externalities for market participants that are not directly dealing in these markets.<sup>10</sup>

33. Leverage may take different forms. Since SFTs involve direct borrowing from counterparties, these transactions are generally accounted on the entities' balance sheets and captured in financial leverage ratios.<sup>11</sup> Haircuts and margin requirements on SFTs directly impact the ability of market participants' to build up leverage. Box 1 provides a simple illustration of how SFTs can increase leverage, and of the direct impact of haircuts on leverage ratios (Box 1).

#### Box 1: SFTs and haircuts: impact on financial leverage<sup>12</sup>

##### Initial situation

Counterparty A		Counterparty B	
Assets	Liabilities	Assets	Liabilities
Safe asset 100	Other liab 190	Cash 100	Equity 100
Risky asset 100	Equity 10		

**Gross leverage of counterparty A = 20x**

<sup>8</sup> See for example FSB (2013) and ESRB (2013).

<sup>9</sup> Brunnermeier and Pedersen (2009).

<sup>10</sup> For example, the collapse of Long-Term Capital Management in 1998 had repercussions that went far beyond the hedge fund industry or derivatives markets. See for example Edwards (1999).

<sup>11</sup> There are various ways to measure leverage ratios, however this is beyond the scope of this report.

<sup>12</sup> The examples in Box 1 are for illustrative purposes only. ESMA is aware that the accounting treatment of certain types of repos transactions, such as variable-price repo, might require the de-recognition of the transferred asset by the collateral giver.

Scenario 1: Repo using safe asset as collateral

In this scenario, Counterparty A uses a safe asset worth 100 to obtain 100 in cash from Counterparty B through a repo, corresponding to a 0% haircut. Under IFRS 9, the safe asset is not derecognised but encumbered.

As a result, the gross leverage ratio (the sum of assets divided by equity) of Counterparty A increases.

Counterparty A		Counterparty B	
Assets	Liabilities	Assets	Liabilities
Cash 100	Liab to B 100	Cash 0	Equity 100
Safe asset 100	Other liab 190	Receivables 100	
Risky asset 100	Equity 10		

**Gross leverage of Counterparty A = 30x**

Scenario 2: Repo using risky asset as collateral

In this scenario, Counterparty A uses its risky asset worth 100 to obtain 75 in cash from Counterparty B through a repo, corresponding to a 25% haircut. Under IFRS 9, the risky asset is not derecognised but encumbered.

As a result, the gross leverage ratio of Counterparty A increases less than in scenario 1.

Counterparty A		Counterparty B	
Assets	Liabilities	Assets	Liabilities
Cash 75	Liab to B 75	Cash 25	Equity 100
Safe asset 100	Other liab 190	Receivables 75	
Risky asset 100	Equity 10		

**Gross leverage of Counterparty A = 27.5x**

34. The difference between gross and net leverage is important. Market participants can make extensive use of SFTs while remaining risk-neutral, provided that their exposures and risks are properly hedged, including through other SFTs. This can result in a high gross leverage ratio but may translate into a relatively low and, most importantly, stable net leverage ratio. From a risk management perspective, net leverage is sometimes considered at entity level to be an economically more meaningful measure of risk.
35. From a system-wide perspective, gross leverage is equally relevant. It provides an indication of the amount of financing available in the broader financial system. However, a leveraged financial system can be vulnerable to “runs” and generate contagion risk. Leverage also creates procyclicality by contributing to credit growth and asset price increases during surges of confidence, while making precipitate falls in asset price and credit more likely by creating credit channels vulnerable to sudden loss of confidence (FSB, 2015). Increases in system-wide leverage may reflect short-term developments such as

increased risk appetite, changes in market participants' behaviour such as search-for-yield, but also developments in the long-term business or credit cycle of the real economy.

36. The main objectives of the FSB framework on non-centrally cleared SFTs is to limit the build-up of leverage outside the banking system, and to reduce the procyclicality of that leverage. To achieve this, the framework uses a two-prong approach. First, the minimum standards for the methodology used to calculate haircuts complement the existing entity-based regulation of leverage (see Section 3) and address specifically procyclicality. Second, the numerical haircut floors seek to address the build-up of (gross) system-wide leverage outside the banking system, in addition to procyclicality.

### 3.4 Procyclicality

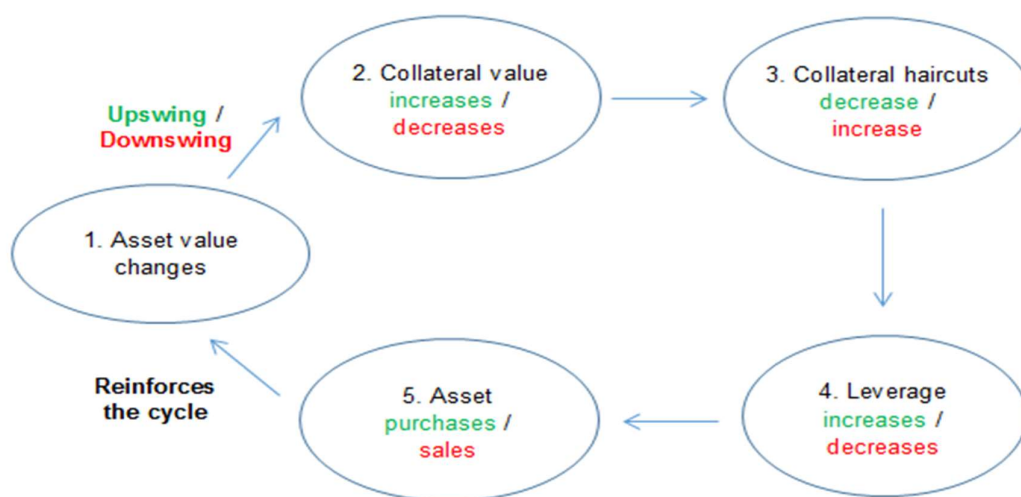
37. There is no harmonised definition of procyclicality. Following the Principles for Financial Market Infrastructures (CPSS-IOSCO, 2012), procyclicality is discussed in this report with reference to changes in risk management requirements or practices that are positively correlated with business or credit cycle fluctuations and that may cause or exacerbate financial instability. By accelerating credit supply and asset price increases during upswings while accelerating declines in asset values and credit during downturns, a leveraged financial system tends to be more procyclical. This is on account of the direct relationship of funding levels to asset values and volatility (FSB, 2013).
38. Leverage has been extensively analysed in the literature, and the implications for procyclicality have increasingly come into focus. Schoenmaker and Wiertz (2015) call for policy intervention to mitigate balance-sheet growth. They introduce a model to determine a maximum leverage requirement which should adjust in a counter-cyclical way to neutralise the effects of price changes.
39. In a similar vein, Adrian and Shin (2008) analyse the balance sheets of US investment banks. They find that leverage is procyclical, i.e. higher when the balance sheet sizes are large, and conclude that excessive leverage may lead to a funding crisis. Yan et al. (2010) discuss the close relationship between liquidity and leverage, and how the large decline in leverage coincided with the recent financial crisis. During financial crises, haircuts levels rise sharply to higher levels, accompanying a shrinking in the repo market and therefore causing dramatic deleveraging.
40. Procyclical risk management requirements or practices can take different forms. The FSB mainly focuses on the procyclicality of haircuts and margin requirements. This is in part explained by a seminal paper by Gorton and Metrick (2012), which argue that increased repo haircuts on securitised assets, and subsequently declining asset prices, played a major role in the global financial crisis of 2007-2008. This triggered a run on repos and weakened the US banking system which became insolvent for the first time since the Great Depression.
41. In response to this paper, Copeland et al. (2014) show that there was no system-wide run on repo, based on evidence from tri-party repos, a major segment of the US repo market. The differences in behaviours between bilateral and tri-party repo markets may have implications for the effectiveness of policies designed to reduce the fragility of repo markets. Adrian et al. (2014) also compare the behaviour of tri-party and bilateral US repo markets in the aftermath of the global financial crisis, showing that in the bilateral market



stress manifested itself as a fast increase in haircuts, promoting a generalised run on the market. In the tri-party repo market, haircuts barely moved but some firms experienced dramatic decreases in the amount of financing they could obtain.

42. This contrasting evidence provides an illustration of the different forms that procyclical risk management requirements or practices may take, with different outcomes for market participants and the financial system. These forms include for example counterparty eligibility, lending volumes (caps), and other non-price credit terms (collateral quality, maturity limits, etc.). In this context, the FSB framework addresses specifically the procyclicality of margins and haircuts.

**Figure 1: Procyclicality of haircuts from price changes**



43. Figure 1 illustrates how changes in haircuts may create procyclicality by reinforcing asset price movements. In the expansionary phases of the cycle higher asset prices increase the value of collateral used in SFTs. At the same time, market participants tend to require lower haircuts, reflecting lower collateral liquidation risk and higher counterparty creditworthiness from the benign market or economic environment. Lower haircuts result in increased financing (leverage) obtained from SFTs, which may create further demand for financial assets, leading to higher asset valuations. Such a loop can exacerbate the build-up of leverage in the system and create greater vulnerabilities.

44. The same feedback mechanism may lead to a negative spiral in asset prices during a downturn: when the value of collateral used in SFTs decreases due to lower asset valuations, market participants tend to increase haircuts to protect themselves against deteriorating counterparty creditworthiness and higher collateral liquidation from stronger price volatility.<sup>13</sup>

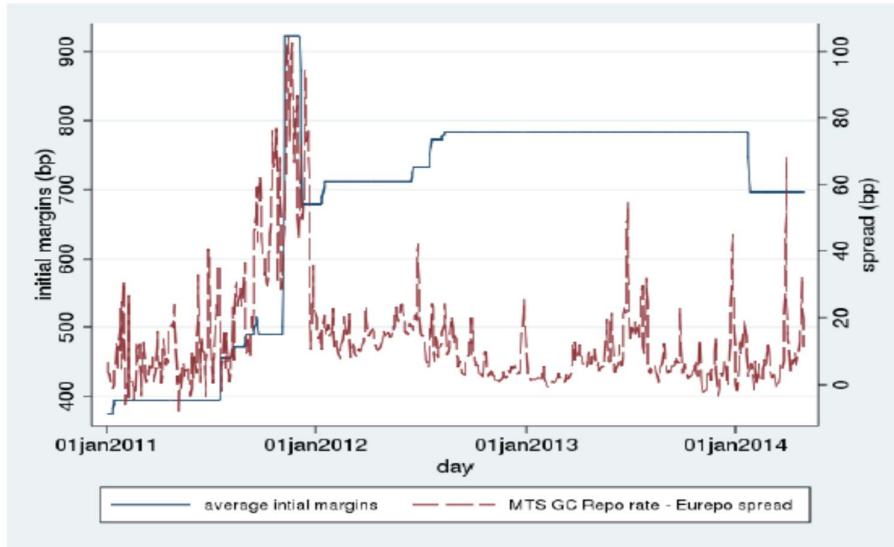
<sup>13</sup> The decreasing usability of certain assets as collateral can induce market participants to sell those assets, which puts further pressure on liquidity and value of such assets, which in turn leads to higher haircuts. This can lead to a severe liquidity spiral related to SFTs. CCPs and counterparties in bilateral transactions may also lower haircuts and margins to reflect the favourable market conditions, potentially creating herd behaviour.

45. Similarly, margin requirements may contribute to procyclicality in the financial system. Margin calculation methodologies are usually based on the volatility of assets, and on net counterparty exposures and creditworthiness. As a result, margins tend to be lower in good times (when volatility is low and market liquidity ample), followed by large and sudden increases in bad times. Such movements can reinforce other features of the cycle. For example, during the expansionary phase, low volatility goes hand-in-hand with rising asset prices, resulting in higher borrowing capacity due to the increasing value of collateral. On the other hand, big-step changes in margining requirements in a default scenario may exacerbate market stress.
46. Therefore, the procyclical features of margins and haircuts may differ somewhat. As highlighted above, haircuts have a direct relationship to leverage, and haircut movements may thus reinforce the procyclicality of leverage, especially when these movements reflect changes in asset prices. On the other hand, CCP margins reflect changes in net exposures and counterparty credit risk, but are only indirectly linked to leverage, and may have procyclical effects regardless of their impact on system-wide leverage. While there may be similar consequences (e.g. fire sales), this difference also implies that the policy toolkit to reduce the procyclicality of haircuts might need to be different from the toolkit to reduce the procyclicality of margins.
47. As entities relying on both margins and haircuts, and given the significant volumes they clear (see Section 5), the procyclicality of risk management requirements and practices in European CCPs comes into focus. The procyclicality of CCP margin requirements has been addressed by ESMA in the 2015 EMIR Review (see Section 4). The Review also considered the eligibility of collateral and collateral haircuts, where ESMA recommended that a CCP should “*take into account procyclical effects when revising the list of acceptable collateral and haircuts to the extent that this will not affect negatively its soundness and financial security*”, and that CCPs should “*take into account scenarios of extreme but plausible market conditions*” (ESMA, 2015). Given the potential resulting increases in collateral requirements, an impact assessment should be carried out to determine the benefits of these additional requirements, taking into account the potential correlation between CCP margin requirements and collateral haircuts, which would go in the direction of reinforcing procyclicality.

### 3.5 Evidence of procyclicality

48. As highlighted in the introduction, data limitations on SFTs and in particular haircuts hamper any comprehensive analysis of procyclicality in the EU financial system. The evidence is, therefore, limited to the academic literature, and to the sparse data that are currently available or that were collected for this specific purpose (see section 6).
49. For centrally cleared transactions, Miglietta et al. (2015) show that increasing spreads between Italian government bonds and other European bonds during the sovereign debt crisis in late 2011 led to rapidly increasing CCP initial margins on Italian repos (Chart 1). The increase in initial margins occurred immediately after spreads increased, while margins decreased only slowly as spreads narrowed. This suggests that margins may behave differently depending on the phase of the cycle, with the procyclical effects likely being greater during downturns.

**Chart 1. Average CCP initial margins and spreads on the Italian repo market**

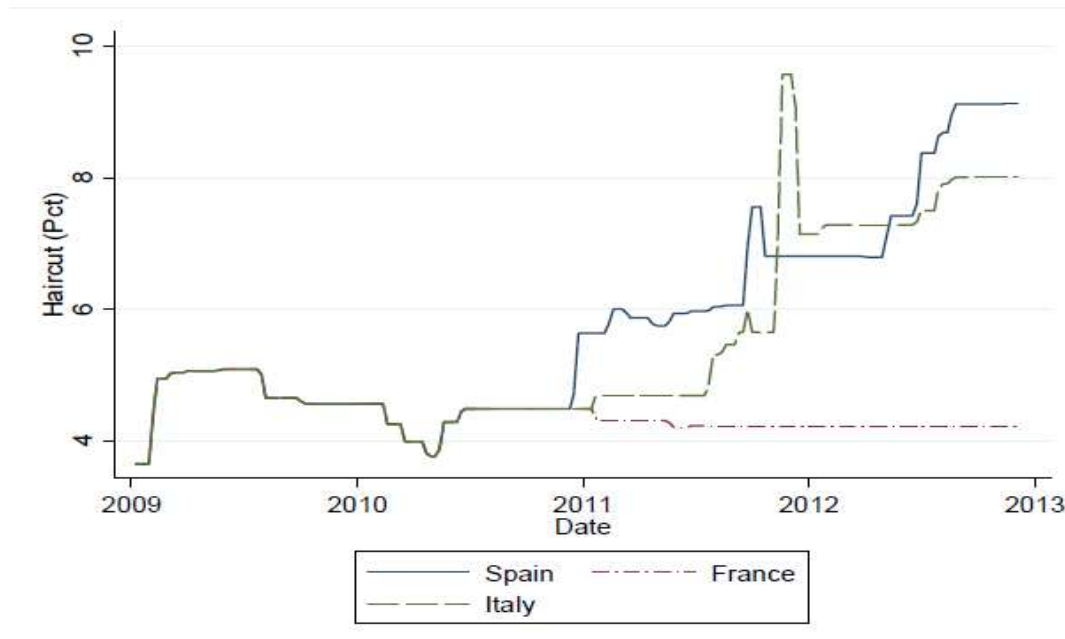


Note: In the graph, a daily average of initial margins applied to different maturity buckets are plotted (solid blue line, left-hand scale) along with the daily average spread between MTS GC Repo rates and Eurepo rate (red dashed line, right-hand scale). Data are in basis points.

Source: Miglietta et al. (2015), The impact of CCPs' margin policies on repo markets.

50. There is mixed empirical evidence on the procyclicality of CCP collateral haircuts. Focusing on the euro interbank repo market, Mancini et al. (2014) find that centrally cleared repo rates, volumes, maturities, and haircuts were not negatively affected by the recent crises. Instead, they highlight that the key driver of European CCP-repo market activity is central bank liquidity provision, and monetary policy measures taken in response to crises. However, Boissel et al. (2014) show that CCPs helped to stabilise some repo markets before 2011 by breaking the sovereign repo-to-CDS feedback loop when the level of sovereign stress was moderate, through higher haircuts (Chart 2). The authors argue that haircut increases were not large enough in Spain and Italy to prevent the repo market from reacting to very high sovereign stress.

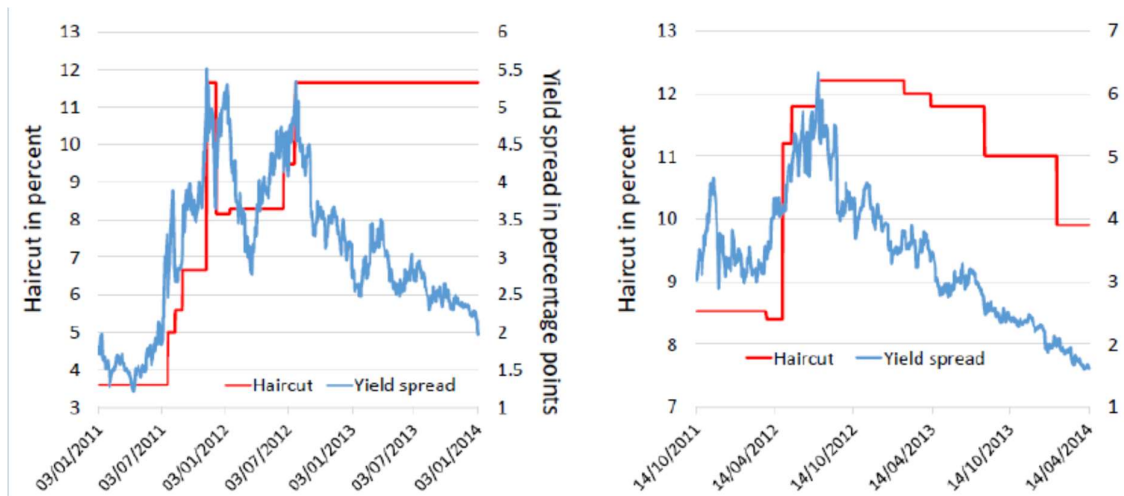
**Chart 2. CCP collateral haircuts on sovereign bonds**



Note: Average haircuts applied to General Collateral repo transactions by ICAP BrokerTec in France, Italy and Spain. Data are in percent.  
 Source: Boissel et al. (2014), Sovereign crises and bank financing: Evidence from the European repo market, LCH.Clearnet SA.

51. The behaviour of CCP collateral haircuts on government bond collateral is also analysed by Armakola et al. (2016), using LCH.Clearnet and CC&G haircuts data. The authors investigate the European repo market and find that haircuts on government bonds increased significantly in countries that were the most heavily affected by the sovereign debt crisis. This provides evidence to support the claim that asset price movements can become procyclical when credit and liquidity risks are high, even for assets that are typically less prone to procyclical movements such as government bonds (FSB, 2015). Chart 3 displays haircuts for Spanish and Italian government bonds as well as spreads to German government bonds. CCP collateral haircuts increased sharply as spreads were rising in late 2011; but recovered only gradually after spreads started converged again in 2013 and 2014.

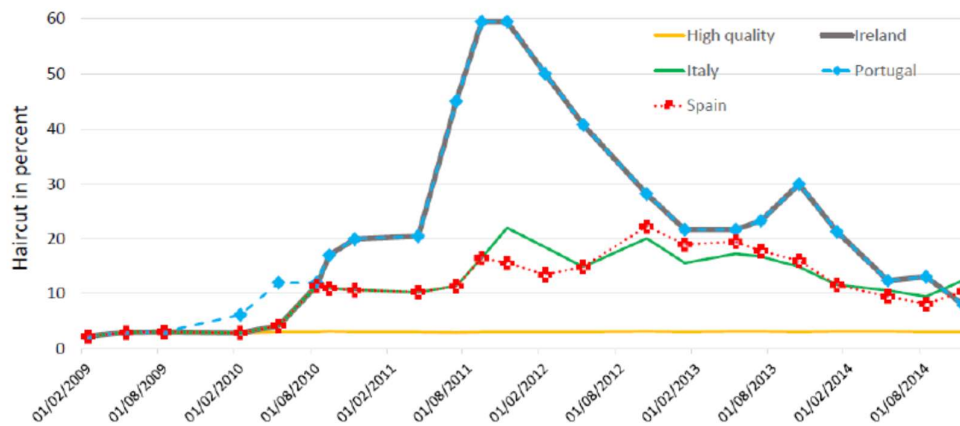
**Chart 3. CCP collateral haircuts and 10-year government bond spreads to Germany**



Note: 10-year government bond spreads to German bonds, and CCP haircuts on sovereign collateral in Italy (left) and Spain (right).  
Source: Armakola et al (2016).

52. Haircuts on government bonds posted as initial margin to Eurex Clearing are displayed in Chart 4. While haircuts remained stable for German and French government bonds during the crisis, haircuts were raised significantly for Italian, Spanish, Portuguese and Irish bonds. Haircuts then gradually declined and converged again.

**Chart 4. CCP collateral haircuts on government bonds, by country of issuance**

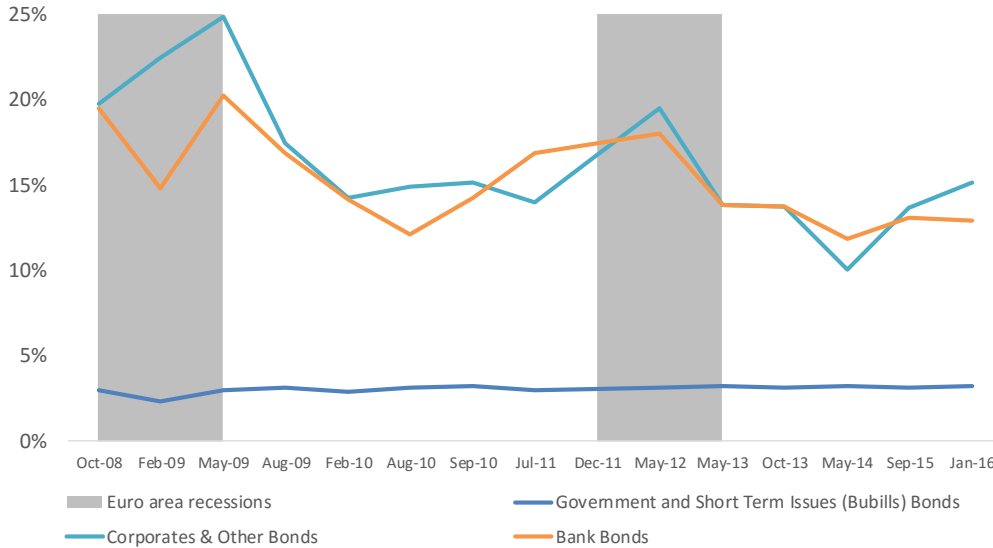


Note: Haircuts applied by Eurex AG to government bonds posted as collateral.  
Source: Armakola et al (2016).

53. Publicly available haircuts data from Eurex Clearing AG collected by ESMA for other asset classes display similar procyclical features, where haircuts on riskier fixed income assets (e.g. financial and non-financial corporate bonds) that are subject to credit and liquidity risks tend to increase when market conditions deteriorate. Although the data displayed

below are incomplete,<sup>14</sup> haircuts seem to peak when the economic outlook deteriorates, which is illustrated in Chart 5 by the grey-shaded areas corresponding to the last Euro area recessions.

**Chart 5. CCP collateral haircuts by type of instruments**

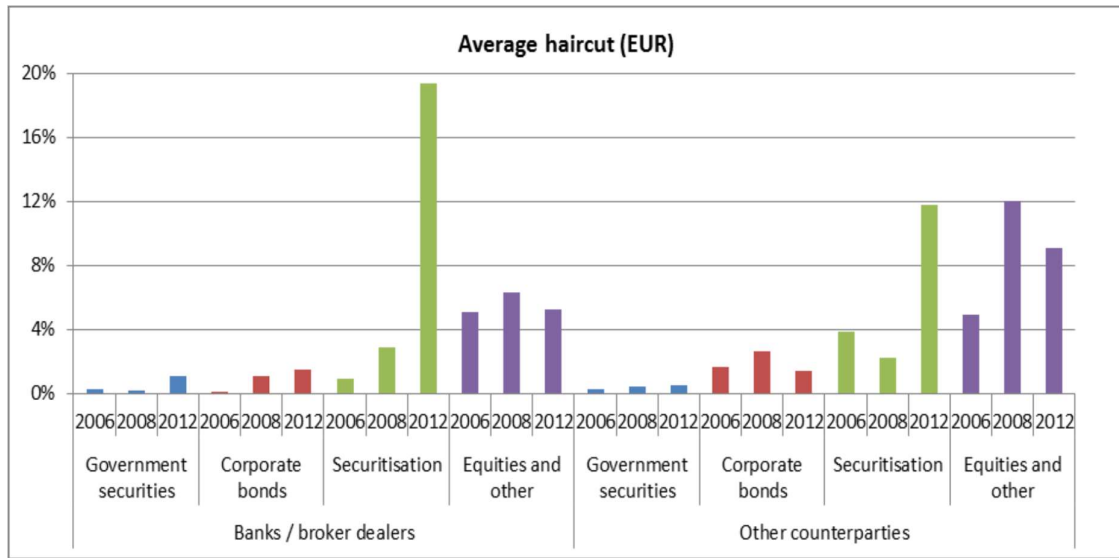


Note: Collateral haircuts by type of instruments and Euro Area recessions. The higher haircuts applied on Irish, Italian, Spanish and Portuguese government bond collateral after the beginning of the sovereign debt crisis were reported separately from the other "Government and Short Term Issues Bonds". Data in %.  
Source: Eurex AG, ESMA.

54. In non-centrally cleared SFT markets, the average haircuts for different types of collateral on reverse repos denominated in euro from the FSB Quantitative Impact Study are presented in Chart 6. These include data for banks and broker-dealers as well as other counterparties, at three different points in time. In 2006, haircuts were at very low levels for all types of collateral, but they increased significantly in 2008 for most collateral types. Haircuts on securitised instruments increased even further from 2008 to 2012 as the liquidity of these instruments continued to deteriorate.

<sup>14</sup> CCP collateral haircuts for fixed income assets can be calculated on a daily basis.

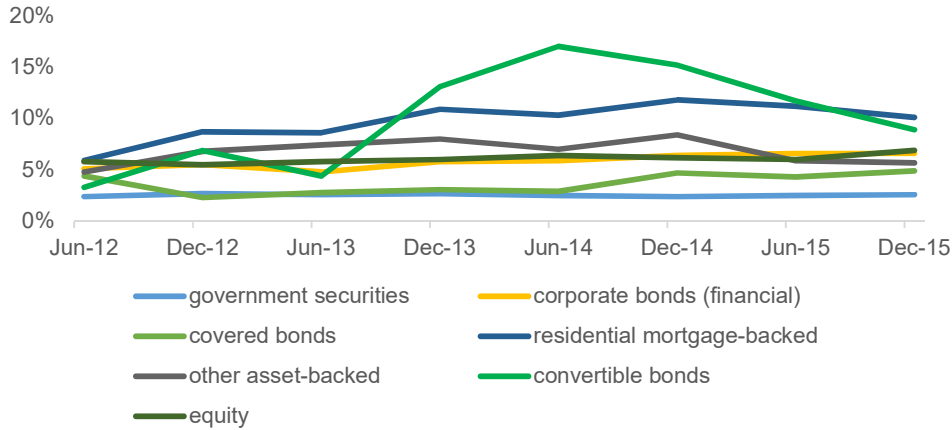
**Chart 6. Average haircuts by asset class**



Note: The QIS1 template asked firms to report the outstanding amount of reverse repos, broken down by counterparty type, collateral type and haircut levels, as at end-Sep 2006 (pre-crisis), end-Sep 2008 (crisis) and end-Sep 2012 (post-crisis).  
 Source: FSB (2014b) "Procyclicality of haircuts: Evidence from the QIS1".

55. Another relevant segment, albeit much less significant than in the US, is the tri-party repo market (see Section 5). Data from industry surveys show that for most asset classes, except convertible bonds, haircut movements over short time-frames seem to be relatively smaller than in non-centrally cleared bilateral markets, especially for riskier assets (Chart 7). This is similar to Adrian et al. (2014), who highlighted that during the 2007-2008 crisis, stress manifested itself in tri-party repo markets through reduced lending volumes rather than haircut changes. This suggests that haircuts may not be the unique source of procyclicality, a point also mentioned by market participants in the context of European tri-party repo markets given the lack of flexibility in tri-party repo haircut setting (see Section 6). However, it is important to note that the data presented in Chart 7 only start in mid-2012 and average transactions across different maturities, credit quality and other collateral characteristics, which could potentially affect haircut data dynamics.

**Chart 7. Tri-party repo haircuts**



Note: Volume-weighted tri-party repo haircuts for selected asset classes. Data in %.  
Source: ICMA European Repo Market Survey, ESMA.

56. The available evidence seems to confirm the possible existence of procyclicality in margins and haircuts, both in the centrally and non-centrally cleared spaces, across different asset classes. However, the magnitude of the problem and its impact cannot be fully established, owing in part to a lack of granular data, with haircuts in some market segments possibly inherently less prone to procyclical movements. Moreover, a number of regulatory changes that directly affect margins and haircuts have not yet been implemented, or were only recently implemented and have not been fully assessed yet. In particular, in centrally cleared markets, ESMA concluded that the EMIR prudential provisions have objectively strengthened the ability of authorised European CCPs to prevent and control risks and potential procyclical effects (ESMA, 2015). However, additional measures to monitor these tools would be needed, and considerations for measures to limit procyclicality of collateral would need to be made in the context of the EMIR review.

## 4 SFTs in the EU regulatory framework

### 4.1 Credit institutions and investment firms

#### 4.1.1 Overview

57. The financial crisis exposed a number of failings in the system of bank regulation which led to excessive leverage and credit growth, inadequate capital and liquidity buffers, and a high degree of systemic risk.<sup>15</sup>

<sup>15</sup> See Basel Committee on Banking Supervision (2015), "Implementation of Basel Standards".



58. Post-crisis a comprehensive set of regulatory reforms has been agreed at the international level to strengthen the regulation, supervision, risk management and disclosure practices of banks and to mitigate system-wide risks (the Basel III framework<sup>16</sup> transposed in the EU via Capital Requirements Directive (Directive (EU) No 2013/36) and the Capital Requirements Regulation (CRR) (Regulation (EU) No 2013/575)<sup>17</sup> and accompanying technical standards). The new regulatory framework has two complementary objectives: (i) ensuring minimum standards of resilience so that financial firms are less likely to fail, and (ii) reducing the impact of failure on the financial system and the economy.<sup>18</sup>
59. In summary the new regulatory framework:
- a. establishes significantly higher requirements for loss absorption (including to mitigate various sources of systemic risk) and places greater emphasis on higher quality capital;
  - b. enhances risk capture (e.g. by strengthening capital requirements for counterparty credit exposures arising from banks' derivatives and SFTs);
  - c. constrains leverage (the Leverage Ratio (LR)) and exposures to counterparts/connected counterparties;
  - d. addresses liquidity risk (the Liquidity Coverage Ratio (the LCR) and the Net Stable Funding Ratio (the NSFR));
  - e. creates better risk-management, governance and compensation structures.
60. The framework includes for the first time a number of elements which address specifically macro-prudential risks. These are:
- a. the capital conservation buffer (a new additional layer of capital that applies in addition to the minimum requirements and can be drawn down in times of financial distress to absorb losses and maintain lending);
  - b. the counter-cyclical capital buffer (to promote the build-up of additional capital cushions to further enhance resilience and limit pro-cyclicality).
61. SFTs enable market participants to access secured funding through the temporary exchange of assets as a guarantee for a funding transaction. Banks, like many other types of market participant, use SFTs to increase their leverage by borrowing against their assets as collateral and to enhance liquidity. As such the use of SFTs can present risks, including from maturity transformation. To mitigate these risks a range of regulatory measures are in place. Focusing on the bank regulatory measures, it is relevant to consider the CRR framework for:
- a. the calculation of own funds requirements;
  - b. the LR;
  - c. the large exposures framework.

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<sup>16</sup> <http://www.bis.org/bcbs/basel3.htm?m=3%7C14%7C572>.

<sup>17</sup> [http://ec.europa.eu/finance/bank/regcapital/legislation-in-force/index\\_en.htm](http://ec.europa.eu/finance/bank/regcapital/legislation-in-force/index_en.htm).

<sup>18</sup> *Finalising post-crisis reforms: an update*, BCBS, November 2015: <http://www.bis.org/bcbs/publ/d345.pdf>.

#### 4.1.2 Own funds requirements

62. In order to ensure that institutions<sup>19</sup> exposures are backed by a high quality capital base, institutions are required to comply at all times with own funds requirements which are expressed as a percentage of the *total risk exposure amount* as defined in Article 92(3) CRR, which includes the *risk-weighted exposure amounts* for, among other things:
- a. credit risk and dilution risk in respect of the business activities of the institution (Article 92(3)(a) CRR), and
  - b. counterparty risk arising from the trading book business of the institution, including for SFTs (Article 92(3)(f) CRR).<sup>20</sup>
63. *Risk-weighted exposure amounts* are calculated using either the Standardised Approach (Part Three, Title II, Chapter 2 CRR) or, where supervisory permission is granted (Article 143 CRR), the Internal Ratings Based Approach (IRB Approach) (Part Three, Title II, Chapter 3 CRR) (Article 107(1) CRR).
64. The Standardised Approach is the simplest of the approaches for calculating credit risk and comprises a framework of risk weights for different exposure classes (Article 112 CRR) and allowances for risk mitigation to be applied to calculate exposure amounts. The IRB Approach on the other hand enables institutions to use internal models (which are required to be appropriately conservative and CRR compliant) to calculate exposure amounts.<sup>21</sup>
65. Under both the Standardised and IRB Approaches exposures must be assigned to different exposure classes (see Article 112 CRR for the SA and Article 147 CRR for the IRB) to which specified treatments are to be applied in order to determine the risk-weighted exposure amount.
66. Particularly relevant in the context of SFTs is the capacity, under either approach, to take account of *credit risk mitigation techniques* (e.g. the use of collateral such as cash, securities or commodities purchased, borrowed or received under a repo or securities or commodities lending or borrowing transaction (Article 193(4) CRR)) (Article 108 CRR). In particular, Part Three, Title II, Chapter 4 (calculating the effects of credit risk mitigation) may be applied where institutions apply the Standardised Approach or where the IRB Approach is applied and institutions do not use their own estimates of LGD and conversion factors. (Where an institution applies the IRB Approach and uses its own estimates of LGD, credit risk mitigation shall be applied in accordance with Chapter 3 (IRB Approach), and is therefore subject to the approval of the supervisor, including as regards the treatment of collateral.)

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<sup>19</sup> Credit institutions and investment firms as defined in, respectively, points (1) and (2) of Article 4(1) CRR.

<sup>20</sup> Subject to Articles 93 and 94 CRR, institutions shall at all times satisfy the following own funds requirements: (a) a Common Equity Tier 1 capital ratio of 4.5%; (b) a Tier 1 capital ratio of 6%; and (c) a total capital ratio of 8%.

<sup>21</sup> Institutions must comply with the requirements of Part II, Title II, Chapter 3 in order to secure approval to use the IRB Approach (Article 143 and 144 CRR), including own estimates of loss given default (LGD). In particular, supervisors must be satisfied that the systems of the institution for the management and rating of credit risk exposures are sound and implemented with integrity, including that: (a) the institution's rating systems provide for a meaningful assessment of obligor and transaction characteristics, a meaningful differentiation of risk and accurate and consistent quantitative estimates of risk; (b) internal ratings and default and loss estimates used in the calculation of own funds requirements and associated systems and processes, and in the credit approval, internal capital allocation and corporate governance function of the bank (Article 144(1)(a) and (b) CRR).

67. Where the Standardised Approach is used, and where an institution is using the Financial Collateral Comprehensive Method (Article 223 CRR) (or where the IRB Approach is used and own estimates are not applied), price volatility adjustments (as set out in Articles 223 to 225 CRR) are applied when calculating exposure values of securities of commodities sold, posted or lent under a repurchase transaction or under a securities or commodities lending or borrowing transaction and margin lending transactions (Article 111(1) CRR). Where the Standardised Approach is used and the Comprehensive Method is not used, the Financial Collateral Simple Method is to be applied (Article 222 CRR), under which adjustments are calculated through the application of conservative risk weights as proxy for the risk of changes in market value of the collateral.
68. Focusing on the Financial Collateral Comprehensive Method, which is used by all of the largest banks, the value of collateral is to be calculated taking account of volatility adjustments which, in short, have the effect of reducing the value of the collateral (e.g. pursuant to Article 224(2) CRR, for secured lending transactions institutions are required to assume a 20-day liquidation period and tables 1, 2 and 3 are therefore to be applied accordingly). Consequently, the application of the volatility adjustments results in higher risk-weighted exposure amounts and therefore, all other things being equal, higher own funds requirements.
69. The new arrangements ensure that the capital base reflects appropriately the risks arising from SFTs and other business activities. In addition, these arrangements could be said to create a *disincentive* for institutions to enter into SFTs where collateral takes a form other than cash or government or other securities within the meaning of Article 197(1)(b) CRR (and therefore eligible for a 0% risk weight) and therefore mitigate the build-up of leverage. This is because such transactions have a higher risk-weighted exposure amount (reflecting the higher risk/more volatile nature of the collateral) and result in higher capital charges.

#### 4.1.3 Leverage ratio

70. It is widely recognised that high levels of leverage may cause the fragility of individual institutions and the financial system as a whole, should leverage increase to a critical level where institutions become more and more prone to shocks. Leverage has also been shown to follow a procyclical pattern with significant increases of leverage during periods of credit boom and strong deleveraging in financial downturns.<sup>22</sup>
71. These elements were borne out again in the last crisis when it became clear that institutions had built up excessive on- and off-balance sheet leverage whilst, in many cases, still maintaining strong capital ratios. This is because risk-weighted capital requirements can underestimate the actual risks on institutions' balance sheets due to estimation errors and model parameters. The rapid deleveraging during the crisis amplified the downward

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<sup>22</sup> See EBA (2016), *Motivations for introducing a LR requirement*, "Report on the leverage ratio requirements under article 511 of the CRR"

See also ESRB (2015), Chapter 2.3 and Annex 2, "ESRB Handbook on Operationalising Macroprudential Policy in the Banking Sector - Addendum: Macroprudential Leverage Ratios."

and *Margins and Haircuts as a Macroprudential Tool*, remarks by Vítor Constâncio at the ESRB Conference on Macroprudential Margins and Haircuts, Frankfurt 6 June 2016:

<https://www.ecb.europa.eu/press/key/date/2016/html/sp160606.en.html>.

pressure on asset prices exacerbating the feedback loop between losses, capital, and credit availability and had a significant destabilising effect on the financial markets.

72. To address this, in addition to the strengthened capital framework, the BCBS agreed a simple, transparent, non-risk based LR.<sup>23</sup> This is intended to provide a backstop measure to complement the risk-weighted capital requirements (by providing additional safeguards against model risk and measurement error) and the new liquidity standards (the LCR and the NSFR which require institutions to hold a sufficient quantity of highly liquid assets to meet liquidity demands over specified periods and in specified conditions).
73. The LR is defined as the ratio of Tier 1 capital to total exposures. The measure of total exposures is the sum of all on-balance sheet exposures, derivative exposures, SFTs and off-balance sheet items.<sup>24</sup> Therefore the LR constrains the growth of institutions' balance sheets for a given levels of equity.
74. In the EU the LR has been incorporated via Articles 429 to 430 CRR and has been introduced first as a new measure that could be applied to institutions at the discretion of supervisors (and, should Member States so permit, specifically in pursuance of macro-prudential objectives (see recital (18) CRR)) and includes specific reporting and disclosure obligations for institutions related to the LR pending a potential migration to a binding (Pillar 1) measure in 2018.<sup>25</sup>
75. Leverage is defined in point (93) of Article 4(1) CRR as “the relative size of an institution’s assets, off-balance sheet obligations and contingent obligations to pay or to deliver or to provide collateral, including obligations from received funding, made commitments, derivatives or repurchase agreements, but excluding obligations which can only be enforced during the liquidation of an institution, compared to that institution’s own funds”. The introduction of this common definition supports supervisors in monitoring leverage and the appropriateness of institutions’ leverage positions.
76. The LR itself is defined in Article 429 CRR consistent with the BCBS definition as the total on- and off-balance sheet items compared to an institution’s Tier 1 capital. This is expressed as the following percentage:

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<sup>23</sup> <http://www.bis.org/publ/bcbs270.htm>.

<sup>24</sup> The BCBS is consulting on some changes to the framework for calculating the total exposures (expected to be finalised before the end of this year), including a shift towards the use of the more risk-sensitive Standardised Approach for measuring counterparty credit risk exposures (SA-CCR) method to replace the Current Exposure Method. The BCBS is also considering the treatment of derivatives (in particular whether to allow initial margin, received from clients and properly segregated from their own cash, to reduce the potential future exposure on the client leg) in light of industry concerns about the impact on the provision of client clearing services. These changes are not expected to have a significant impact on the calibration of the LR levels nor the capacity of the LR to address pro-cyclicality. (see the BCBS Consultative Document: <http://www.bis.org/bcbs/publ/d365.htm>.)

<sup>25</sup> Later this year the Commission is expected to report to the European Parliament and the Council on the impact and effectiveness of the LR, together with a potential legislative proposal on the introduction of one or more levels of the LR, taking account of the *EBA Leverage Ratio Report* (Article 511 CRR) available here: <http://www.eba.europa.eu/-/eba-recommends-introducing-the-leverage-ratio-in-the-eu>. The EBA’s report includes an assessment of banks with different models and risk profiles to consider whether a more granular approach (than a blanket 3% minimum) is appropriate to address the risk of excessive leverage. Having regard to the exposure composition of different types of banks (e.g. cross-border universal banks, local universal banks, small banks etc.) the EBA did not conclude that a more granular approach is justified observing that overall the exposure composition of different types of banks is diversified. As regards derivatives exposures and SFTs exposures the EBA found that these tend to be relatively low as a percentage of total exposures across all groups of banks (generally below 4% of total exposures), except for private banks where 24% of exposures are SFTs.

$$\text{Leverage ratio} = \frac{\text{Capital measure}}{\text{Exposure measure}}$$

77. The exposure measure generally follows the accounting standards without the recognition of any credit risk mitigation techniques. This is consistent with the LR definition as a non-risk sensitive measure and with its role as a backstop to the risk-weighted capital requirements. It comprises the following:
- a. assets excluding derivatives and credit derivatives measured at their accounting value;
  - b. an add-on for counterparty credit risk for SFTs (calculated pursuant to the Financial Collateral Simple Method);
  - c. derivatives measured at the replacement cost and an add-on for potential future exposure.
78. EU implementation is generally consistent with the BCBS framework but in some cases there are technical departures, including as regards the treatment of SFTs. In particular, the BCBS permits the netting of SFT receivables and payables only where there is the same explicit settlement date; open-repos are not eligible for netting (albeit the BCBS is collecting further information to reassess this point<sup>26</sup>). Under the EU arrangements the netting of open-repos is permitted.<sup>27</sup>
79. Where institutions are identified as having a risk of excessive leverage (defined in point (94) of Article 4(1) CRR as “the risk resulting from an institution’s vulnerability due to leverage or contingent leverage that may require unintended corrective measures to its business plan, including distressed selling of assets which might result in losses or in valuation adjustments to its remaining assets”), supervisors may require institutions to take such action as they consider appropriate and, for this purpose, have available a range of supervisory powers, including those listed in Article 104 CRD.
80. The LR is considered to have a number of advantages. First, as noted above, the LR is complementary to risk-weighted capital requirements in tackling uncertainty, model risk and aggregate financial system risks linked to overall balance sheet size.<sup>28</sup>
81. Second, a number of commentators note that the LR may be considered an effective counter-cyclical metric. As noted in the EBA’s Leverage Ratio Report:<sup>29</sup> *“The empirical results indicate that the LR is somewhat more sensitive to the economic cycle than risk-based capital requirements and is thus the first capital requirement to signal the need for corrective action from credit institutions during booms, i.e. when perceived risk levels are low. In this sense, the LR would be a relatively tighter constraint in booms and a relatively looser constraint in recessions. This empirical observation is also intuitive because the LR exposure measure is not influenced by risk estimates, which may tend to be relatively optimistic during booms and relatively pessimistic during recessions. Given these statistical properties of the risk-based Tier 1 ratio and the LR, it is expected that the combined*

<sup>26</sup> See Basel Committee on Banking Supervision (2016), “Revisions to the Basel III Leverage Ratio Framework”.

<sup>27</sup> See recital (7) of Commission Delegated Regulation (EU) 2015/62 of 10 October 2014 amending Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to the leverage ratio: [http://ec.europa.eu/finance/bank/regcapital/acts/delegated/index\\_en.htm](http://ec.europa.eu/finance/bank/regcapital/acts/delegated/index_en.htm).

<sup>28</sup> See ESRB (2015), “Handbook on Operationalising Macroprudential Policy in the Banking Sector - Addendum: Macroprudential Leverage Ratios”.

<sup>29</sup> <http://www.eba.europa.eu/-/eba-recommends-introducing-the-leverage-ratio-in-the-eu>.

*application of both requirements will reduce the overall cyclicity of capital requirements, since the LR would limit the expansion of exposures on the basis of low risk estimates during booms while risk-based requirements would curb risk-taking in high-risk environments.”*

82. However, the LR may also have negative consequences by reducing trading volumes due to the increased costs arising from market making, or by disincentivising central clearing given the higher costs of client-clearing activity. Therefore, its overall impact will need to be carefully assessed following the full implementation of its framework.

#### 4.1.4 Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR)

83. In addition to the weaknesses identified above the financial crisis revealed how heavily financial institutions were relying on short term financing to meet liquidity needs whilst, in many cases, still displaying adequate capital levels. When the funding markets, in particular the repo market, contracted abruptly during the crisis<sup>30</sup> many institutions were unable to fund themselves on the open markets<sup>31</sup> and had to rely significantly on emergency liquidity assistance from the central banks.

84. To ensure that banks have more resilient funding arrangements the BCBS has developed a comprehensive liquidity framework.<sup>32</sup>

85. The first component is the LCR (to be phased-in in full by 2018) which is designed to enhance the resilience of banks' short-term liquidity profiles by ensuring that they have sufficient high quality liquid assets (HQLA) to survive an acute short term stress scenario over a 30 day time horizon.<sup>33</sup> (For the EU implementation see in particular Article 460 CRR.)

86. The second, which is intended to address risks relating to liquidity and maturity transformation, is the NSFR which will require banks to maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities in the context of a one year time horizon.<sup>34</sup> It is defined as the amount of available stable funding (ASF)<sup>35</sup> relative to the amount of required stable funding (RSF)<sup>36</sup> and should be equal to at least 100% on an ongoing basis.

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<sup>30</sup> As the value of the assets pledged as collateral in many repo transactions began to decline, repo lenders asked for higher haircuts requiring borrowers to post additional collateral. Where borrowers were unable to pledge collateral financing was not extended resulting in individual institutions encountering serious financing difficulties and market-wide implications as confidence in individual institutions and in the reliability of pledge collateral fell abruptly resulting in the freezing up of the funding markets.

<sup>31</sup> Lehman Brothers and Bear Stearns are notable examples of institutions that relied heavily on short term repo financing. Reserve Primary Fund, on the other hand, is an example of a lender that encountered serious financing difficulties due to the falls in the value of the collateral it received in its repo transactions.

<sup>32</sup> <http://www.bis.org/bcbs/basel3.htm?m=3%7C14%7C572>.

<sup>33</sup> <http://www.bis.org/publ/bcbs238.pdf>.

<sup>34</sup> <http://www.bis.org/bcbs/publ/d295.pdf>.

<sup>35</sup> The ASF is defined as the portion of capital and liabilities expected to be reliable over the 1-year time horizon. This is calibrated taking account of the carrying value of an institution's capital and liabilities multiplied by an ASF factor. For instance, a 0% ASF factor is applied to derivatives liabilities net of derivatives assets.

<sup>36</sup> The RSF is a function of the liquidity characteristics and residual maturities of the various assets held by that institution as well as those of its off-balance sheet (OBS) exposures. Again, this is calculated by assigning the carrying value and then multiplying by the relevant RSF factor. In calculating NSFR derivative assets, collateral received in connection with derivative contracts may not offset the positive replacement cost amount, regardless of whether or not netting is permitted under the bank's operative accounting or risk-based framework, unless it is received in the form of cash variation margin and meets other specified conditions. In addition, a RSF of 20% of total net derivatives liabilities is required.

87. The CRR envisages that the Commission shall assess the appropriateness of implementing the NSFR in the EU and, if appropriate, by end-2016 submit to the European Parliament and the Council a legislative proposal on how to ensure that institutions have a stable source of funding (Article 510 CRR).
88. To support this work in December 2015 the EBA published its report on the NSFR<sup>37</sup> which contains a proposal of calibration of the NSFR (where the Basel NSFR is the benchmark without prejudice to relevant European specificities) and an assessment of its impact on the risk profile of EU institutions by business model, financial markets (with particular attention to the impact on investment in financial assets, different funding markets, secured funding, market making, investment banking activities and the risk capacity of a financial system), the economy and bank lending.
89. The EBA NSFR Report shows that most EU credit institutions are complying already with the NSFR. In addition, the EBA did not find strong statistical evidence suggesting a detrimental effect of the NSFR on bank lending nor did it find evidence that the NSFR would result in significant distortions in financial assets, markets or trading book positions in banks even though some adjustment in prices could arise and therefore certain assets or activities might be affected. Rather, the suggested calibration of the NSFR is expected to protect against the existing funding risks entailed by these transactions.
90. Focussing on the impact of the NSFR on trading activities, including derivatives and SFT exposures, notwithstanding industry concerns, the EBA found no significant empirical relationship between the NSFR and these activities and noted in its report that “*banks seem to be able, on average, to increase their NSFR without in parallel decreasing these trading activities. This suggests that implementing the NSFR should not result in a dramatic downsizing of trading activities for banks*”. However, some data limitations (the fact the analysis could be carried out only for one year - 2014 - rather than across the entire financial cycle) were noted.
91. Put simply, as a result of the new liquidity framework, institutions will be required to fund their activities through sources of funding that are regarded as sufficiently stable in order to mitigate future funding stress, in turn helping to address systemic liquidity risks. These frameworks can be expected to provide banks with incentives to reduce their repo transactions as collateralised assets are not eligible for the liquidity buffer thus complementing other measures to mitigate the build-up of leverage in the financing system.<sup>38</sup> Furthermore short term funding is made less attractive since this increases the outflow denominator of the LCR (whilst, conversely, increasing the appeal of holding HQLA).

#### 4.1.5 FSB framework and BCBS work (ongoing)

92. As mentioned in Section 2.2, in November 2015 the FSB published its framework for haircuts on non-centrally cleared SFTs. The framework includes a number of recommendations with regards to credit institutions with varying implementation dates:

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<sup>37</sup> <https://www.eba.europa.eu/documents/10180/983359/EBA-Op-2015-22+NSFR+Report.pdf>.

<sup>38</sup> Ibid.

- a. Regulatory authorities should set quality standards for the methodologies that firms use to calculate collateral haircuts/margins whether on an individual transaction or portfolio basis, and should review these standards against the guidance set out by the end-2017. In particular, regulatory authorities should seek to minimise the extent to which these haircut methodologies are procyclical. Standard setters (e.g. the BCBS) should review existing requirements for the calculation of collateral haircuts in line with this FSB recommendation by end-2015. (recommendation 12)
  - b. For non-centrally cleared SFTs in which banks and broker-dealers provide financing to non-banks against collateral other than government securities (i.e. bank-to-non-bank transactions), the BCBS should review its capital treatment of SFTs and incorporate the framework on numerical haircut floors [as set out in the FSB framework] into the Basel regulatory capital framework (i.e. Basel III framework) by the end-2015. The framework of numerical haircut floors should then be implemented by end-2018 (recommendation 13).
93. In developing its recommendations the FSB observed that risks arising from SFTs span both banking and shadow banking and noted the need to ensure that its recommendations “*minimise the risk of regulatory arbitrage as well as undue distortion of markets, and are consistent with other international regulatory initiatives*”.<sup>39</sup> In particular the FSB considered whether:
- a. to apply numerical haircut floors to all qualifying transactions between all types of counterparties so that all market participants are equally subject to those floors;
  - b. to allow financing of regulated financial intermediaries (e.g. banks, broker dealers) to be excluded on the grounds that they are already subject to direct appropriate regulation of liquidity and leverage;
  - c. to focus only on the exposures of regulated financial intermediaries to other entities.
94. Ultimately the FSB determined to apply the recommendations relating to quality standards for the methodologies that market participants use to calculate collateral haircuts/margins to all SFTs (i.e. all market participants) but to limit the application of the framework for numerical haircut floors to non-centrally cleared SFTs in which banks and broker-dealers provide financing to non-banks against collateral other than government securities (i.e. bank-to-non-bank transactions).
95. This decision was taken on the basis that, in the banking sphere, a number of the identified risks relating to SFTs (e.g. procyclicality of system leverage, the risk of a fire sale of collateral securities, inadequate valuation practices, and interconnectedness) are mitigated through other regulatory measures therefore any extension of the numerical framework to such transactions may be duplicative and is not necessary to address risks of arbitrage.<sup>40</sup> The FSB noted further the need:
- a. to secure the complementarity of the reforms to other reforms;

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<sup>39</sup> See FSB (2012), “Consultative Document: Strengthening oversight and regulation of shadow banking - A policy framework for addressing shadow banking risks in securities lending and repos”.

<sup>40</sup> See FSB (2014a), “Strengthening oversight and regulation of shadow banking - Regulatory framework for haircuts on non-centrally cleared securities financing transactions”.



- b. for measures to be proportionate to financial stability risks;
  - c. to avoid undue distortion of markets, consequently the FSB focussed on material risks of pro-cyclicality mindful of unintended consequences for market liquidity.
96. The FSB's position was also informed by a rigorous two-stage QIS exercise launched in April 2013 (FSB, 2014b). The second stage was intended to assess the scope and quantitative impact of the consultative proposals on a wider set of market participants including banks, broker-dealers, agent-lenders, and non-bank entities. Therefore, it is limited only to the specified types of SFTs referred to above in relation to which particular, as yet insufficiently covered, risks were identified (specifically, the possible build-up of leverage outside the banking system and the procyclicality of that leverage).
97. Further to FSB recommendations 12 and 13 in November 2015 the BCBS issued a Consultative Document on haircut floors for non-centrally cleared SFTs.<sup>41</sup> Final recommendations are anticipated later this year and, in due course, will be integrated as appropriate into the CRR framework (see above as regards the approaches for taking account of credit risk mitigation in calculating risk-weighted capital requirements).
98. In developing the proposals, the BCBS had in mind the objective to create incentives for banks to set their collateral haircuts above the BCBS floors rather than to hold more capital (i.e. by setting significantly higher capital requirements for transactions with haircuts traded below the haircut floors).
99. Accordingly, the fundamental principle of the BCBS approach is that, for any SFT transaction or netting set of SFT transactions, if the collateral haircut of a transaction or group of transaction is smaller than the haircut floor applicable (as specified in the FSB regulatory framework), then the bank must treat the transaction as an unsecured loan for the sake of calculating capital requirements.
100. It is intended that the framework should be capable of being implemented across the different methods to compute exposures (see above re the use of the Financial Collateral Comprehensive Method and other methods).

## 4.2 Insurance companies

101. The Delegated Regulation and Commission Implementing Regulation (EU) 2015/2450 of 2 December 2015 lay down implementing technical standards with regard to the templates for the submission of information to the supervisory authorities according to Directive 2009/138/EC of the European Parliament and of the Council where specific reporting requirements are defined to supervise this types of transactions performed by insurance and reinsurance undertakings. These specific reporting requirements include:
- a. List of assets with identification of Assets pledged as collateral (subject to exemptions as defined in Solvency II Directive);

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<sup>41</sup> <http://www.bis.org/bcbs/publ/d340.htm>.

- b. List and additional information of all securities lending transactions and repos (due when the value of the underlying securities on and off balance sheet involved in lending or repurchase agreements is higher than 5% of total investments);
  - c. List and additional information of assets held as collateral;
  - d. Off-balance sheet items.
102. In addition of the quantitative information, the Delegated Acts in Article 309 on the Risk profile requires that the regular supervisory report shall include, where the undertaking has entered into securities lending or borrowing transactions, repurchase or reverse repurchase agreements as referred to in Article (1)(82) of Regulation (EU) No 575/2013, including liquidity swaps, information on their characteristics and volume;

### **4.3 CCPs and requirements for margin and collateral under EMIR**

#### **4.3.1 Current framework**

103. Article 41 of EMIR requires CCPs to impose, call and collect margins. The margin requirements are calculated to cover at a given confidence level the total exposure of the CCPs arising from a default of the largest clearing member or the second and the third largest. CCPs call initial margins to protect from future exposures from the last collection of margins until the liquidation of the positions and call and post variation margins on a daily basis to align the exposure to the market value.
104. Even if SFT per se are not financial instruments and CCP are authorised under EMIR to clear financial instruments, when an authorised CCP clears SFT, it shall equally apply EMIR, as EMIR covers the entire activity of an authorised CCP.
105. Variation margin requirements can be a source of procyclical effects, but will cover the current exposure of the CCP on the basis of realised (mark to market) or theoretical (mark to model) prices and will therefore reduce procyclicality effects on initial margins, as losses in an adverse market environment will be covered gradually over time reducing the potential future exposure and the necessity of excessive initial margin calls. The initial margin requirements will cover the risk from potential future exposures based on current positions. Thus, disruptive changes in the initial margin requirements may emerge as a result of sharp changes in the nominal exposures (positions), or changes in the short-term potential future volatility of prices.
106. With regards to margin requirements, EMIR provides for the obligation of CCPs to regularly monitor and, if necessary, revise the level of its margins to reflect current market conditions taking into account any potential procyclical effects of such revisions. The minimum confidence level, the time horizon for the liquidation of open positions and the selection of the historical look-back period are further specified in the RTS 153/2013 considering the regulatory requirement to limit procyclicality.
107. Under Article 46 of EMIR, collateral requirements are to be met with cash and highly liquid financial instruments having minimal credit and market risk in order to avoid potential disruptive changes with regards to the eligibility or valuation of posted collateral during stress events. In accordance with Article 39(8) of EMIR, CCPs have a right of use relating to the margins or default fund contributions collected via a security financial collateral

arrangement, within the meaning of Article 2(1)(c) of FCD provided that the use of such arrangements is provided for in its operating rules. The clearing member shall confirm its acceptance of the operating rules in writing. The CCP shall publicly disclose that right of use, which shall be exercised in accordance with Article 47.

108. Furthermore, RTS 153/2013<sup>42</sup> provide three alternative options for the treatment of procyclical effects linked to the volatility of prices:

- a. A 25% buffer on margin calculations;
- b. A minimum 25% weight to stress observations
- c. A floor of margins calculated using a 10 year look-back period.

109. These options have been carefully assessed in ESMA's EMIR Review Report No.2 on the efficiency of margining requirements to limit procyclicality (ESMA, 2015), whose conclusions are summarised in sections 4.3.2 and 4.3.3 below.

110. Furthermore, Article 47 of EMIR imposes very strict requirements for CCPs to invest their own funds or the contributions received. CCPs are allowed to invest their financial resources only in cash or in highly liquid financial instruments with minimal market and credit risk<sup>43</sup>. A CCP's investments shall be capable of being liquidated rapidly with minimal adverse price effect. Moreover, financial instruments posted as margins or as default fund contributions shall, where available, be deposited with operators of securities settlement systems that ensure the full protection of those financial instruments. Alternatively, other highly secure arrangements with authorised financial institutions may be used. In similar fashion, cash deposits of a CCP shall be performed through highly secure arrangements with authorised financial institutions or, alternatively, through the use of the standing deposit facilities of central banks or other comparable means provided for by central banks. In addition, under Article 47(8) of EMIR CCPs shall take into account their overall credit risk exposures to individual obligors in making their investment decisions and shall ensure that the overall risk exposure to any individual obligor remains within acceptable concentration limits.

#### 4.3.2 ESMA's proposals to further improve the CCP anti-procyclicality framework

111. It is recognised that the current framework has objectively strengthened the ability of authorised European CCPs to prevent and control risks and potential procyclical effects.

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<sup>42</sup> COMMISSION DELEGATED REGULATION (EU) No 153/2013 of 19 December 2012 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on requirements for central counterparties, L 52, OJ 23.2.2013, p. 41

<sup>43</sup> Annex II of RTS 153 defines highly liquid financial instruments, bearing minimal credit and market risk if they are debt instruments meeting each of the following conditions (a) they are issued or explicitly guaranteed by: (i) a government; (ii) a central bank; (iii) a multilateral development bank as listed under Section 4.2 of Part 1 of Annex VI to Directive 2006/48/EC; (iv) the European Financial Stability Facility or the European Stability Mechanism where applicable; (b) the CCP can demonstrate that they have low credit and market risk based upon an internal assessment by the CCP. In performing such assessment the CCP shall employ a defined and objective methodology that shall not fully rely on external opinions and that takes into consideration the risk arising from the establishment of the issuer in a particular country; (c) the average time-to-maturity of the CCP's portfolio does not exceed two years; (d) they are denominated in one of the following currencies: (i) a currency the risks of which the CCP can demonstrate that it is able to manage; or (ii) a currency in which the CCP clears transactions, in the limit of the collateral received in that currency; (e) they are freely transferable and without any regulatory constraint or third party claims that impair liquidation; (f) they have an active outright sale or repurchase agreement market, with a diverse group of buyers and sellers, including in stressed conditions and to which the CCP has reliable access; (g) reliable price data on these instruments are published on a regular basis.

All authorised CCPs have implemented arrangements that will mitigate procyclical effects in compliance with EMIR provisions. However, EMIR identifies that calculation and revision of margin requirements along with eligibility and valuation of collateral are the main channels of transmission of procyclical effects through the CCPs risk management arrangements to the clearing participants and the financial system in general. In consequence, as part of the EMIR review, ESMA made the following proposals to improve the framework for addressing potential procyclicality risks:

- a. CCPs to define one or more procyclicality metrics and to test regularly, including also before any significant margin parameters revision.
- b. Better specification by ESMA of the tools provided in Article 28 of the RTS 153/2013 to address procyclicality in order to increase their effectiveness.
- c. Extension of the mandate for ESMA to develop draft regulatory technical standards to specify the frequency of monitoring and revising margin parameters and the information that needs to be publicly disclosed or provided to the clearing members, taking into account the objective to limit procyclicality. Furthermore, the ESMA proposed that CCP could be required to perform an impact analysis before any significant margin parameters revisions and notify at least the market participants with significant expected margin calls as early as possible before the new parameters become effective.
- d. Increase of the predictability of margin requirements and the awareness of market participants by complementing the existing requirements with an obligation for CCPs to either make publicly available or, as a minimum, share with the clearing members the entire history of margin parameters revisions including a justification for the changes, the current procyclicality adjustment level & usage and provide clearing members with tools that will enable them to calculate margin requirements for simulated positions, prices and margin parameters. The latter may also raise confidentiality and intellectual property concerns and should be subject to consultation and further considerations.
- e. Requirement for CCPs to take into account any potentially procyclical effects when revising the list of acceptable collateral and haircuts to the extent that this will not affect negatively its soundness and financial security. Furthermore, in order to minimise the probability for CCPs to be forced to raise the collateral haircuts during periods of stress, ESMA suggested that the same article is complemented with a requirement for CCPs to take into account the scenarios of extreme but plausible market conditions referenced in Article 42(3) of EMIR, when setting the adequate haircuts. This is expected to increase collateral requirements and their costs and benefits should be duly analysed.

#### 4.3.3 Conclusions

112. The current framework has objectively strengthened the ability of authorised European CCPs to prevent and control risks and potential procyclical effects. CCPs use SFTs only as secure arrangements ensuring the full collateralisation of their investments, thus removing credit and market risk.

113. The amendments proposed in the ESMA's EMIR Review Report No. 2 aim at enhancing it and making EU CCPs more resilient and less exposed to procyclicality. As suggested, the effort for international convergence, also in the area of procyclicality treatment, shall continue in order to avoid regulatory arbitrage and accommodate the mitigation of systemic risks. In particular, the convergence of procyclicality treatment measures on a global level towards best practices is critical to ensure a level playing field as European CCPs already face more prescriptive requirements. In this respect, it should be noted that the equivalence decision related to US CCPs supervised by the CFTC contains specific conditions aiming at ensuring that recognised US CCPs adopt equivalent counter-cyclical measures as the one established in EMIR.
114. The design and implementation of counter-cyclical measures shall be aligned with the overall objective of prudential requirements, which is to safeguard the financial stability of the CCPs. Moreover, such measures shall first target to prevent procyclical effects, but then also control their impact to the clearing participants.

## 4.4 Investment funds

115. In addition to the EU regulatory framework for investment funds relevant to SFTs, which is detailed below, the FSB has issued recommendations addressing specifically the issue of leverage within investment funds, (FSB, 2016). EU authorities are working on the development of a harmonised measure of leverage within and across sectors, in close coordination with other international bodies.<sup>44</sup>

### 4.4.1 Undertakings for collective investment in transferable securities (UCITS)

116. The UCITS Directive<sup>45</sup> sets out rules on undertakings for collective investment in transferable securities (UCITS), as well as rules for entities managing one or more of these collective investment vehicles (UCITS management companies, UCITS investment companies). The aim of this framework lies in establishing a collective investment vehicle with common rules in all European Member States, facilitating cross-border marketing and management of UCITS, as well as fostering a common European investment fund market for retail investors.
117. The UCITS Directive foresees a number of investment limits for UCITS, regarding, *inter alia*, the acquisition of various types of assets for the fund, including derivatives. However, it covers SFTs only in passing, in form of a reference to “efficient portfolio management”, stating the following in its Article 51(2):

*“Member States may authorise UCITS to employ techniques and instruments relating to transferable securities and money market instruments under the conditions and*

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<sup>44</sup> For an overview of the existing measures of leverage in investment funds, see for example ESMA Report on Trends, Risks and Vulnerabilities, No.2, 2016 (pp.72-73)

<sup>45</sup> DIRECTIVE 2009/65/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS), OJ L 302, 17.11.2009, p. 32–96, amended by Directive 2014/91/EU of the European Parliament and of the Council of 23 July 2014 amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards depositary functions, remuneration policies and sanctions, OJ L 257, 28.8.2014, p. 186–213

*within the limits which they lay down provided that such techniques and instruments are used for the purpose of efficient portfolio management.*

*When those operations concern the use of derivative instruments, the conditions and limits shall conform to the provisions laid down in this Directive.*

*Under no circumstances shall those operations cause the UCITS to diverge from its investment objectives as laid down in the UCITS' fund rules, instruments of incorporation or prospectus."*

118. In regard to the techniques and instruments relating to efficient portfolio management under the UCITS Directive, the Eligible Assets Directive (EAD)<sup>46</sup> states that "(...) *techniques and instruments which relate to transferable securities and which are used for the purpose of efficient portfolio management shall be understood as a reference to techniques and instruments which fulfil the following criteria:*

*(a) they are economically appropriate in that they are realised in a cost-effective way;*

*(b) they are entered into for one or more of the following specific aims:*

*(i) reduction of risk;*

*(ii) reduction of cost;*

*(iii) generation of additional capital or income for the UCITS with a level of risk which is consistent with the risk profile of the UCITS and the risk diversification rules laid down in Article 22 of Directive 85/611/EEC;*

*(c) their risks are adequately captured by the risk management process of the UCITS."<sup>47</sup>*

119. In December 2012<sup>48</sup>, ESMA issued Guidelines on ETFs and other UCITS issues<sup>49</sup>, which, among other things, specify the requirements around efficient portfolio management techniques in more detail. Under the Guidelines, UCITS employing efficient portfolio management techniques (including SFTs) should make sure that the risks arising from these techniques are adequately captured by the risk management process of the UCITS. In particular, UCITS should take into account the risks from these transactions when developing their liquidity risk management process to ensure that they can comply at any time with their redemption obligations.

120. The Guidelines also establish strict requirements on repos, reverse repos and securities lending transactions:

a. A UCITS should ensure that it is able at any time to recall any security that has been lent out or terminate any securities lending agreement into which it has entered.

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<sup>46</sup> Commission Directive 2007/16/EC of 19 March 2007 implementing Council Directive 85/611/EEC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards the clarification of certain definitions, OJ L 79, 20.3.2007, p. 11–19

<sup>47</sup> See Article 11(1) of the EAD

<sup>48</sup> A revised version of the Guidelines was published on 1 August 2014.

<sup>49</sup> [https://www.esma.europa.eu/system/files\\_force/library/2015/11/esma-2014-0011-01-00\\_en\\_0.pdf](https://www.esma.europa.eu/system/files_force/library/2015/11/esma-2014-0011-01-00_en_0.pdf)

- b. A UCITS that enters into a reverse repo should ensure that it is able at any time to recall the full amount of cash or to terminate the reverse repo on either an accrued basis or a mark-to-market basis. When the cash is recallable at any time on a mark-to-market basis, the mark-to-market value of the reverse repo should be used for the calculation of the net asset value of the UCITS.
  - c. A UCITS that enters into a repo should ensure that it is able at any time to recall any securities subject to the repo or to terminate the repo into which it has entered.
121. Fixed-term repos and reverse repos that do not exceed seven days are considered as arrangements on terms that allow the assets to be recalled at any time by the UCITS.
122. UCITS also have strict requirements with regards to the collateral received as part of transactions in derivatives. For the purposes of collateral management, collateral arising from OTC derivative and efficient portfolio management transactions should be combined when calculating counterparty limits. All collateral received should comply with the following criteria at all times:
- a. Liquid;
  - b. Valued on at least a daily basis and conservative haircut;
  - c. High credit quality – collateral received should be of high quality;
  - d. Not correlated with the counterparty;
  - e. Sufficiently diversified;
  - f. Clearly identified, managed and mitigated operational and legal risk;
  - g. Held by a depositary in case of title transfer or by a third party custodian;
  - h. Fully enforced by the UCITS at any time without reference;
  - i. Non-cash collateral should not be sold, re-invested or pledged;
  - j. Cash collateral should be placed on deposit, reinvested in high quality government bonds, used in reverse repos or invested in short-term MMFs.
123. UCITS are also required to have appropriate stress-testing policy, in case they receive collateral of at least 30% of the value of their assets, and a clear haircut policy adapted to each asset class received. Zero-percent haircuts (and under-collateralised transactions) need to be justified.
124. National competent authorities in all Member States comply or intend to comply with these guidelines.<sup>50</sup>

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<sup>50</sup> [https://www.esma.europa.eu/sites/default/files/library/2016-602\\_compliance\\_table\\_-\\_guidelines\\_on\\_etfs\\_and\\_other\\_ucits\\_issues.pdf](https://www.esma.europa.eu/sites/default/files/library/2016-602_compliance_table_-_guidelines_on_etfs_and_other_ucits_issues.pdf)

#### 4.4.2 Alternative investment fund managers (AIFMs)

125. The Alternative Investment Fund Managers Directive (AIFMD)<sup>51</sup> sets out rules for managers of “alternative investment funds” (AIFs) in the EU. In this context, an AIF can be any collective investment undertaking which raises capital from a number of investors, invests this capital in accordance with a defined investment policy for the benefits of those investors, and does not require authorisation pursuant to the UCITS Directive. The aim of AIFMD lies in establishing a common set of rules for AIF managers as well as providing a harmonised and stringent regulatory and supervisory framework for the activities of AIFMs within the Union.
126. While the UCITS Directive is mainly directed at the retail investor, the scope of AIFMD is limited to AIFs marketed to professional investors only. Member States are free to extend the scope of AIFMD to AIFMs managing retail AIFs. Furthermore, and in contrast to the UCITS framework, AIFMD itself does not foresee product rules for AIFs, focusing instead on a number of obligations subject to which managers are allowed to manage AIFs.
127. AIFMD defines leverage as “any method by which the AIFM increases the exposure of an AIF it manages whether through borrowing of cash or securities, or leverage embedded in derivative positions or by any other means”<sup>52</sup>. As part of their risk management process, AIFMs shall set a maximum level of leverage which they may employ on behalf of each AIF they manage as well as the extent of the right to reuse collateral or guarantee that could be granted under the leveraging arrangement.<sup>53</sup> When setting the maximum level of leverage, an AIFM should take at least the following into account:
- a. the type of the AIF;
  - b. the investment strategy of the AIF;
  - c. the sources of leverage of the AIF;
  - d. any other interlinkage or relevant relationships with other financial services institutions, which could pose systemic risk;
  - e. the need to limit the exposure to any single counterparty;
  - f. the extent to which the leverage is collateralised;
  - g. the asset-liability ratio; and
  - h. the scale, nature and extent of the activity of the AIFM on the markets concerned.
128. AIFMs shall make available to AIF investors information on their investment strategy, objectives, the types of assets in which the AIF may invest, the techniques it may employ and all associated risks, any applicable investment restrictions, the circumstances in which the AIF may use leverage, the types and sources of leverage permitted and the associated

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<sup>51</sup> Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010, OJ L 174, 1.7.2011, p. 1–73

<sup>52</sup> See Article 4(1)(v) of AIFMD

<sup>53</sup> See Article 15(4) of AIFMD



risks, any restrictions on the use of leverage and any collateral and asset reuse arrangement, and the maximum level of leverage.<sup>54</sup>

129. Periodic disclosure of changes to the maximum level of leverage which the AIFM may employ, as well as any right of the reuse of collateral or any guarantee granted under the leveraging arrangement is also required.<sup>55</sup>
130. An AIFM is subject to regular reporting obligations to NCAs, regarding the principal markets and instruments in which it trades on behalf of the AIFs it manages. An AIFM managing AIFs employing leverage on a substantial basis shall make available information about the overall level of leverage employed by each AIF it manages, a break-down between leverage arising from borrowing of cash or securities and leverage embedded in financial derivatives and the extent to which the AIF's assets have been reused under leveraging arrangements to the competent authorities of its home Member State.<sup>56</sup> Additionally, NCAs may require AIFMs to report additional information where necessary for the effective monitoring of systemic risk on a periodic and ad-hoc bases, such as the VaR of AIFs they manage, or other risk measures.
131. The Directive empowers NCAs to use the information gathered through regular AIFMD reporting for the purposes of identifying the extent to which the use of leverage contributes to the build-up of systemic risk in the financial system, risks of disorderly markets or risks to the long-term growth of the economy.<sup>57</sup>
132. An AIFM shall demonstrate that the leverage limits set by it for each AIF it manages are reasonable and that it complies with those limits at all times. If an NCA, after having assessed the risk around the use of leverage by an AIFM, comes to the conclusion that this use might endanger the stability and integrity of the financial system, it is allowed to impose limits to the level of leverage the AIFM is allowed to employ.<sup>58</sup>
133. The AIFMD Level 2 Regulation<sup>59</sup> supplements the above requirements stipulated by AIFMD with more detailed provisions regarding, inter alia, the calculation of leverage (gross and commitment methods)<sup>60</sup>, as well as methods of increasing the exposure of an AIF<sup>61</sup>. Furthermore, it sets out rules on regular disclosure of the maximum level of leverage to investors<sup>62</sup>, details on when leverage shall be considered to be employed on a substantial basis<sup>63</sup>, as well as rules on the assessment carried out by NCAs in regard to the restriction of the level of leverage employed by AIFMs.<sup>64</sup>

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<sup>54</sup> See Article 23(1)(a) of AIFMD

<sup>55</sup> See Article 23(5) of AIFMD

<sup>56</sup> See Article 24(4) of AIFMD

<sup>57</sup> See Article 25(1) of AIFMD

<sup>58</sup> See Article 25(3) of AIFMD

<sup>59</sup> Commission Delegated Regulation (EU) No 231/2013 of 19 December 2012 supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to exemptions, general operating conditions, depositaries, leverage, transparency and supervision, OJ L 83, 22.3.2013, p. 1–95 ("L2 Regulation")

<sup>60</sup> See Articles 6-8 of the L2 Regulation

<sup>61</sup> See Article 9 and Annex I of the L2 Regulation

<sup>62</sup> See Article 109 of the L2 Regulation

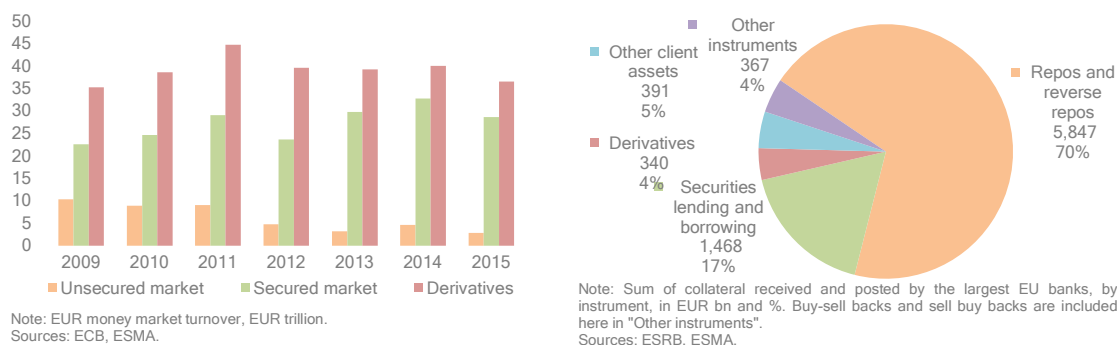
<sup>63</sup> See Article 111 of the L2 Regulation

<sup>64</sup> See Article 112 of the L2 Regulation

## 5 Overview of EU SFT markets

134. Although they have economically equivalent effects, SFTs differ greatly in the size, purposes and market practices they serve in EU financial markets, with different implications in terms of procyclicality risks.
135. EU SFT markets are very large. Industry surveys put the gross amount of outstanding repos by European counterparties at around EUR 5.5tn, and the global amount of securities on loan at EUR 1.8tn. The latter includes around EUR 500bn in EU securities on loan.<sup>65</sup> However, the differences in the coverage and definitions of available data imply that the figures used in the report are not directly comparable. This, together with the absence of data on margin lending, implies that there is currently no comprehensive estimate of the size of EU SFT markets or volumes of SFTs in the EU.
136. The broad shift away from unsecured funding since 2008 and some of the regulatory changes introduced since the crisis have resulted in growing importance of collateral for the EU financial system. According to the ECB, quarterly turnover in unsecured Euro money markets declined from EUR 15.3tn in 2007 to EUR 2.8tn in 2015, in part compensated by an increase in the turnover of secured transactions (SFTs) and derivatives (Chart 8).<sup>66</sup> For the largest European banks, SFTs are also the main choice of instruments in terms of collateral flows, with the collateral posted in repos and received from reverse repos adding up to EUR 5.8tn (Chart 9), compared with collateral posted in and received from derivatives of EUR 340bn (ESRB, 2014).<sup>67</sup>

### Charts 8 and 9: Euro money market turnover and collateral flows in the largest EU banks



137. There have been some significant developments in SFT markets over the last few years, owing to a combination of structural changes, including electronic trading, low interest rate environment, and regulatory reforms. Some of these developments are spelled out below for EU repo markets and securities lending markets.

<sup>65</sup> See ICMA (2016), ISLA (2016) and ESMA (2016). The "gross" repo amount includes repos and reverse repos, but also buy-sell backs and sell-buy backs (around 10% of the total).

<sup>66</sup> The gross turnover figure from the ECB is much larger than the ICMA European repo market survey number, presumably reflecting differences in the methodology (flows or snapshot) and the short-term nature of repo transactions.

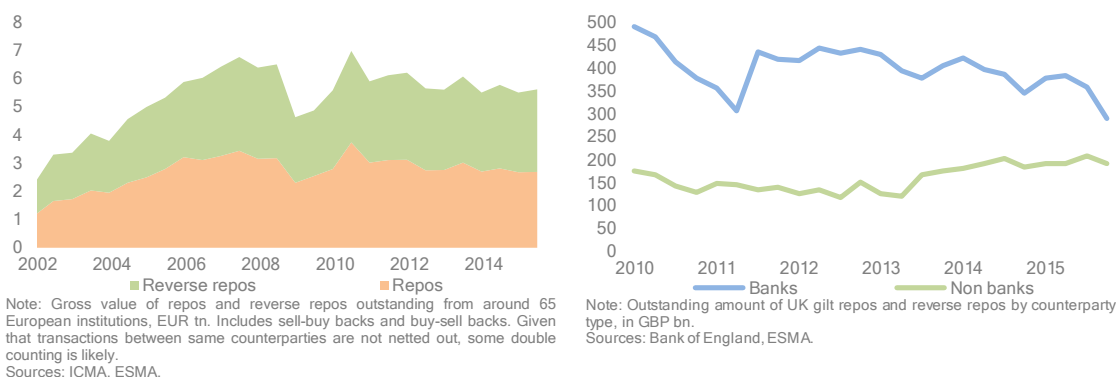
<sup>67</sup> See ESRB (2014), "Securities financing transactions and the (re)use of collateral in Europe", Occasional Paper n.6. These numbers are not directly comparable to other industry or publicly available data sources cited in this report due to differences in the methodology used and coverage.

## 5.1 Repo and buy-sell back markets

138. Measured either by turnover or notional outstanding, repos are the main type of SFTs used in the EU. Quarterly turnover in the secured segment (i.e. repos) of EUR money markets amounted to almost EUR 30tn over the last five years (Chart 8). However, this figure excludes the sizeable UK gilt repo market for which no turnover data are available. In terms of notional values, a frequently-cited industry survey puts the gross notional amount of repos at EUR 5.6tn as of December 2015 (Chart 10).<sup>68</sup>

139. The Bank of England publishes notional outstanding data on the UK gilt market. The gross amount of repos outstanding is around GBP 500bn, in line with the findings of the industry survey mentioned above. One noteworthy trend is the downward trend in repo volumes reported by banks, while European repo markets were largely interbank, in contrast with the growing volumes reported for other types of market participants (Chart 11).

**Charts 10 and 11: European repo market and UK gilt repo market**



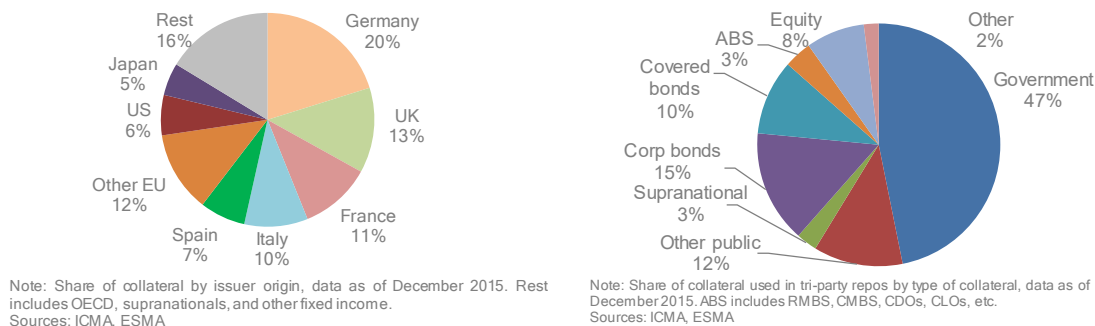
140. According to the industry survey, which includes both Euro area and other EU countries, around 90% of repo transactions are collateralised with fixed income securities, with the very large majority issued by sovereign, quasi-sovereign or supranational entities. More than half of the pool of fixed-income collateral originated from Germany, UK, France and Italy (Chart 12).

141. Repos can be traded bilaterally, with or without CCPs, or through tri-party agents which take care of post-trading services, including the allocation of collateral across clients.<sup>69</sup> While the bilateral repo market is essentially interdealer, tri-party repos take place between dealers and customers. In the tri-party repo market segment (around 10% of EU markets), usually used for financing purposes, the pool of collateral tends to be more diversified with sovereign debt accounting for around half of the total, compared with a combined share of 35% for transactions using corporate bonds, equities, covered bonds or securitised assets as collateral (Chart 13). The quality of the collateral is high nonetheless, with AAA and AA-rated securities making up for more than 50% of the total.

<sup>68</sup> See ICMA (2015). Data collected from EU and other non-EU European entities.

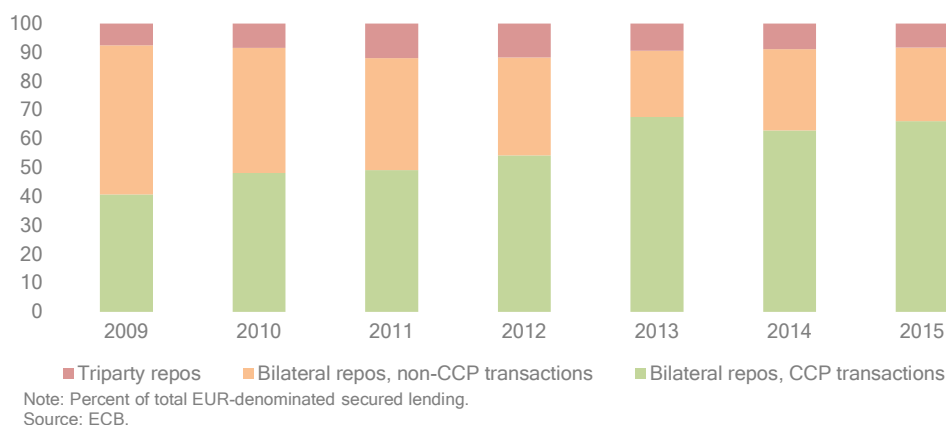
<sup>69</sup> There are various types of repos with different terminologies, including General Collateral (GC) financing trades, Specials, bespoke repos, etc.

**Chart 12 and 13: Origin of government bond collateral used in repos, and share of collateral used in tri-party repos by asset class**



142. There is no mandatory central-clearing of SFTs in the EU. However, voluntary clearing of certain types of SFTs is possible and takes place to varying degrees.<sup>70</sup> In repo markets, the incentive of lighter capital requirements for banks has led to a growing share of centrally cleared repos, although estimates vary significantly between data sources. This is the case in particular for the so-called General Collateral market (GC) which is used for financing purposes. According to ECB turnover data, the share of centrally cleared repos in the Euro Area is around two thirds, significantly higher than five years ago (Chart 14). This compares with around 30% of repos outstanding, according to industry survey data.

**Chart 14: Breakdown of secured EUR money markets**



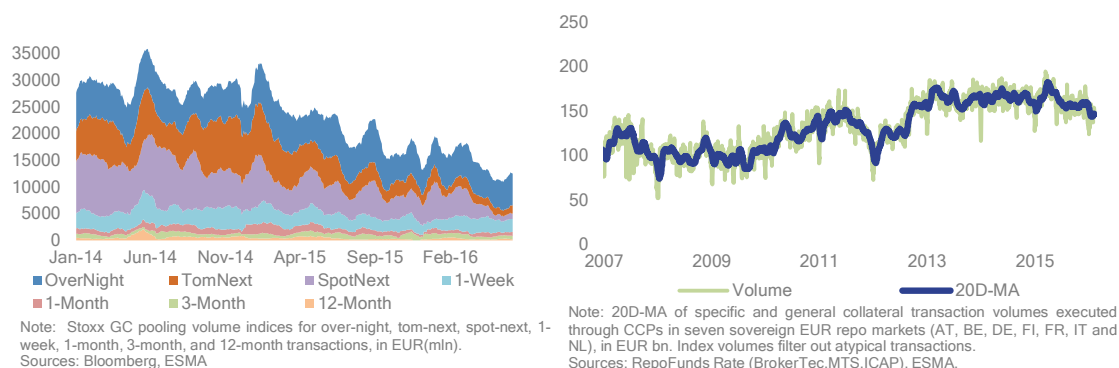
143. The volume of secured EUR funding transactions occurring on Eurex Repo's GC Pooling market, the Pan-European marketplace for financing trades in the EUR secured money market, has steadily decreased since 2014 (Chart 15). Contrasting evidence from ICAP shows that trading volumes for centrally cleared repo EUR repo markets have only slightly declined since 2014, suggesting that the decline in GC financing has been offset

<sup>70</sup> For the full list of CCPs authorised by ESMA to offer repo clearing services, see: [https://www.esma.europa.eu/sites/default/files/library/ccps\\_authoured\\_under\\_emir.pdf](https://www.esma.europa.eu/sites/default/files/library/ccps_authoured_under_emir.pdf)

by a comparable increase in the volume of “specials” (Chart 16). LCH.Clearnet Group reported EUR 147tn and Eurex AG 89tn in repo clearing volumes in 2015.

144. Repos are typically very short-term instruments. According to ECB data, more than 75% of repo turnover has a one-day maturity or less. This compares with only 16% for outstanding repo amounts, based on industry survey data. The decline in GC Pooling volumes was mainly due to a decrease of around 60% in the volume of tomorrow-next and spot-next transactions, while trades volumes for longer maturities remained comparably stable.

**Chart 15 and 16: Eurex GC pooling volumes, and BrokerTec/MTS trading volumes**



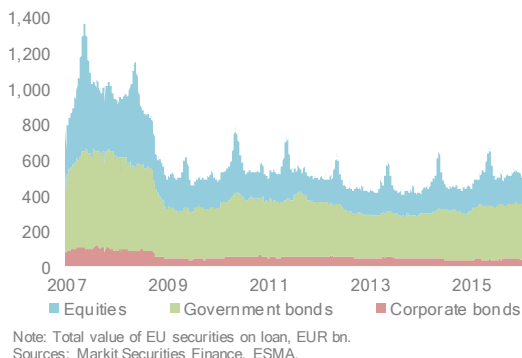
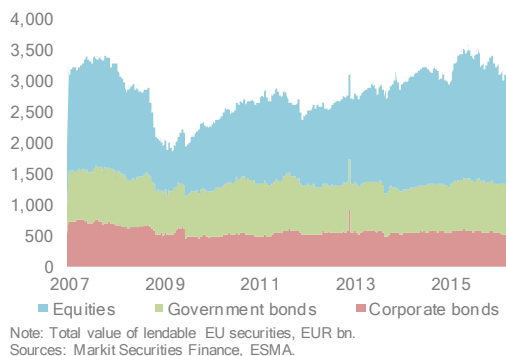
145. In summary, the main trends in repo markets are:

- Predominant use of (high-quality) government bonds as collateral;
- A decline in the volume of GC financing transactions;
- A large but decreasing volume of very short-term transactions;
- A growing share of centrally-cleared repo turnover, at least in the Euro Area;
- A stable share of tri-party repos, usually using highly-rated securities;
- The growing relevance of non-banking repo counterparties, at least in the UK.

## 5.2 Securities lending

146. As at the end of 2015 there were around EUR 3tn in EU securities available for lending, including EUR 1.5tn in equities, EUR 1tn in government bonds and EUR 0.5tn in corporate bonds (Chart 17). The value of EU securities on loan amounted to EUR 500bn, two thirds of which were government bonds and the rest mainly equities and corporate bonds (Chart 18). Other instruments such as asset-backed securities or exchange-traded funds are also sometimes borrowed, but this remains currently marginal.

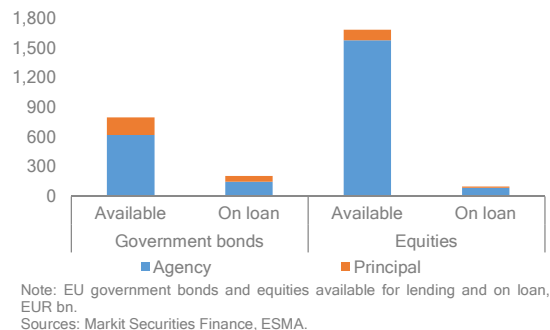
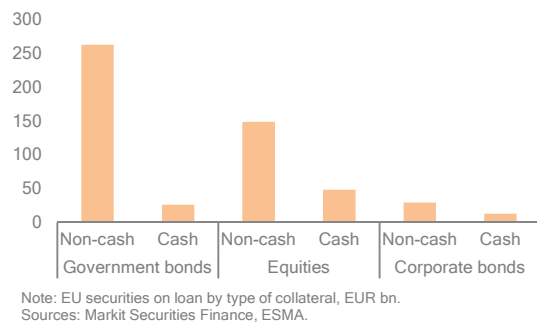
### Charts 17 and 18: EU securities available for lending and EU securities on loan



147. EU securities lending markets are, therefore, smaller than repo markets. Most EU securities on loan are collateralised with non-cash, especially in the case of EU government bonds (Chart 19), and to a lesser extent, equities. Currently, there are no data available on the sector of the borrowing counterparties, or on the characteristics of the non-cash collateral received, although the feedback received from market participants suggests that a large share of transactions involve bank-to-non-bank exchanges,<sup>71</sup> while the volume of non-bank to non-bank transactions is currently very small. Public data collected by ESMA on SFTs for some of the largest EU investment funds show only banking sector counterparties, and a relatively high degree of concentration.

148. Securities lending arrangements may involve the use of tri-party agents, as in repo transactions. However, a specificity of this market is the very high reliance on agent lenders, for around 75% of EU government bonds, and 90% of EU equities (Chart 20). Agent lenders are typically large custodian banks or asset managers that lend the securities they hold in custody on behalf of beneficial owners. Agent lenders reinvest cash collateral on behalf of their clients, but typically do not reuse non-cash collateral.<sup>72</sup>

### Charts 19 and 20: Securities lending by collateral, and Agency versus. principal lending

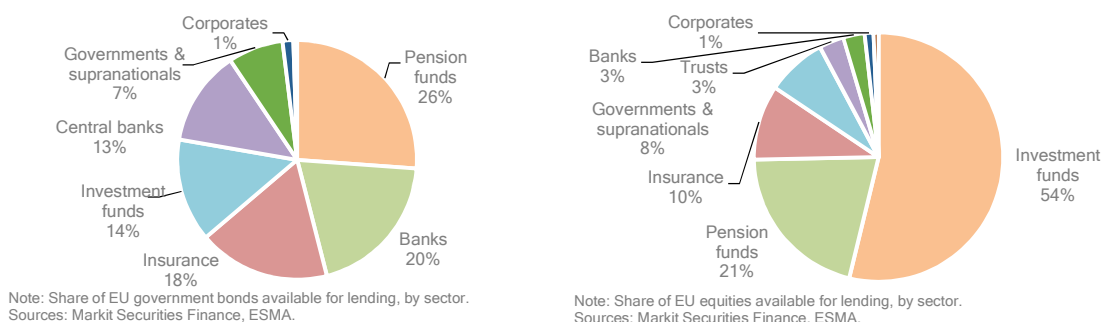


<sup>71</sup> In the US, the very large majority of securities borrowers are broker-dealers or banks, while the majority of securities owners are pension funds, government agencies, insurance companies and investment firms (Baklanova et al., 2016).

<sup>72</sup> See for example the RMA/ISLA/PASLA response to the FSB consultation on the Standards and processes for global securities financing data collection and aggregation (p.6): <http://www.fsb.org/wp-content/uploads/RMA-ISLA-PASLA-on-1411DEG.pdf>

149. This set up brings together a much broader range of institutions in EU securities lending markets, compared for example to repo markets. For example, institutional investors and banks own the largest shares of EU government bonds available for lending, with respectively EUR 275bn (44% of the total) and EUR 124bn (20%) available (Chart 21). For EU equities, the vast majority available for lending is owned by investment funds, with EUR 719bn available (54% of the total), including EUR 206bn owned by UCITS specifically (Chart 22). It is worth highlighting that public sector entities (central banks, governments, public sector enterprises and public pension plans) also contribute substantially to securities lending markets.

**Charts 21 and 22: EU government bonds and equities available for lending, by type of beneficial owners**



150. The structure of securities lending markets reflects the purpose that securities lending transactions serve. Where repos were originally used by banks for financing purposes,<sup>73</sup> securities are primarily lent by buy-side firms seeking to earn extra returns. Market participants also borrow securities to cover short positions, avoid settlement fails and perform collateral transformation operations.<sup>74</sup> The feedback received from UCITS funds suggests that they mainly use SFTs to generate extra returns, rather than obtain financing.

151. Although there are no quantitative data to confirm this, according to market participants central clearing of securities lending and borrowing arrangements remains marginal.<sup>75</sup> This can be explained by different factors, including the structure of the market, where the same participants always sit on one side of the trade with thus limited interest in CCP multilateral netting, as well as existing incentives, with central clearing likely to reduce returns from securities lending activities.

152. Lastly, securities lending transactions tend to have long tenure, reflecting the fact that many transactions are open term (around 80% of the market). Although term transactions have recently been growing in EU markets, they remain nonetheless less standard than fixed-maturity transactions in repo markets.

153. In summary, the main trends in securities lending markets are:

<sup>73</sup> The feedback from market participants suggests that this may be changing, from a liquidity-driven market (i.e. demand for cash) to a security-driven market (i.e. demand for collateral).

<sup>74</sup> Collateral transformation includes for example collateral upgrades, which can be achieved by lending e.g. equities against government bond collateral.

<sup>75</sup> As of August 2016, there were two CCPs authorised by ESMA to offer securities lending clearing services. See [https://www.esma.europa.eu/sites/default/files/library/ccps\\_authorized\\_under\\_emir.pdf](https://www.esma.europa.eu/sites/default/files/library/ccps_authorized_under_emir.pdf)

- a. Use of (high-quality) government bonds and equities as collateral;
- b. Predominant use of non-cash collateral, especially for government bond loans;
- c. Large reliance on agent lenders;
- d. Many bank to non-bank transactions;
- e. No central clearing;
- f. A growing share of term transactions.

### **5.3 Margin lending**

154. There are no EU data available on margin lending. As described in section 3.1, although they may have similar economic effects, margin loans are very different from other types of SFTs. In particular, given that margin loans do not require the pledge, loan or sale of additional collateral, issues relating to the reuse of collateral are important with regards to potential procyclical effects.
155. The amount of margin financing made available to clients is calculated on a daily basis, alongside the clients' margin requirements. Margin calculations are based on various factors including for example net exposures and counterparty credit risk profile. Although there are no data on the volumes of margin lending taking place, feedback from market participants suggest that margin lending is a non-negligible part of their revenues.

## **6 Assessment**

### **6.1 SFTs and the build-up of leverage**

156. As highlighted in Section 3, SFTs may be used by market participants to build leverage. The distinction between gross and net leverage is essential from a balance-sheet perspective: SFTs may be used to hedge against other physical or synthetic exposures, resulting in higher gross leverage but possibly lower net leverage. From a system-wide perspective, the contribution of SFTs to the build-up of (gross) leverage is widely recognised and is documented. This is the case in particular for SFTs where financing is provided against securities, such as repos, cash-collateralised securities lending, and margin lending.
157. Leverage can be problematic from a financial stability perspective for several reasons, including the fact that it contributes to balance-sheet growth during good times and to deleveraging pressures during bad times. Margins and haircuts are useful instruments which allow market participants to manage some of the risks from SFTs and may help to limit the build-up of leverage in the system. The benefits of reduced leverage include for example reduced procyclical effects.
158. However, the net benefits of limiting leverage are lower if margin and haircuts display procyclical features themselves. There is indeed evidence that margins and haircuts have reacted in a procyclical manner, especially during the recent crises (Section 3). This was



the case not only for haircuts on riskier asset classes, but also for CCP collateral haircuts some European government bonds used in centrally cleared transactions.

159. Leverage is addressed in several parts of the EU regulatory framework, which are described in detail in Section 4. ESMA agrees with the ESRB that there are currently no EU-wide instruments available to limit the build-up of leverage across sectors (ESRB, 2016a). However, EU-wide measures designed to limit leverage in certain sectors and ensure better monitoring exist, some of which have only recently been introduced and are not fully implemented yet.
160. A comprehensive assessment of the contribution of SFTs to the build-up of leverage in the financial system will require greater data granularity and understanding of these markets. For example, the volumes of margin lending in the EU are currently unknown. Similarly, the various purposes of SFTs, which tend to be reflected in some of the main characteristics of the transactions (central clearing, tri-party market, agency lending, etc.), and the differences between gross and net leverage are relevant for the potential consequences that leverage may have for financial stability. In addition, there is work currently on-going to develop consistent measures of leverage in order to ensure a consistent approach across the different jurisdictions and sectors.<sup>76</sup>

## 6.2 Options available to tackle the build-up of leverage

161. In addition to the tools described in section 4.1 to address leverage in the banking sector, there are various tools available in the EU to address the build-up of leverage in the EU outside the banking sector. For example, in the asset management industry, NCAs can impose leverage limits to AIFs for the purpose of financial stability. In addition, work is currently on-going in the EU to identify macro-prudential tools that would help to address excessive leverage in the non-banking sector (ESRB, 2016b).
162. By reducing the amount of financing made available to market participants during good times, numerical haircut floors are theoretically adequate instruments to tackle the build-up of leverage specifically from SFTs. However, the impact of the FSB floors would be limited, at least in the short-run, by two main factors: The scope excludes a large majority of transactions in the EU, and the haircuts used in EU SFT markets are on average currently higher than the FSB floors. In addition, several practical issues raised by market participants would require clarification before haircut floors can be implemented.

### 6.2.1 Scope of FSB numerical haircut floors

163. Regarding the FSB scope, section 5 provides a detailed overview of EU SFT markets. Although the lack of granular data prevents ESMA from accurately assessing the scope in EU markets, it is clear that a large part of each market would not be covered by the numerical haircut floors due to exemptions.
  - a. In EU repo markets, government bonds (or equivalents) constitute around 80% of bilateral repos and at least 50% of tri-party repos; a very large share of the market is

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<sup>76</sup> See ESRB (2016b), and FSB (2016), “Proposed policy recommendations to address structural vulnerabilities from asset management activities”.

- interbank; and a large and growing segment of repo markets (between 30% and 60%) is already centrally cleared.
- b. Around 75% of EU securities on loan are collateralised with non-cash, and a very large majority of this currently takes place through agent lenders (on behalf of their clients) who typically do not reuse non-cash collateral;
  - c. It is unclear whether and how numerical haircut floors would apply in the context of margin lending, which relies on a dynamic portfolio of securities, including the collateral received through other SFTs and derivative transactions. Haircuts are not used for the margin loans specifically, but may already have been applied on the securities received or pledged as collateral as part of these other transactions. The collateral portfolio may also include government bonds, which are exempted from the FSB scope, but since there is no specific allocation of collateral to individual margin loans, it is unclear whether the exemption would apply.
164. Based on the available data, Table 2 summarises the share of transactions that are potentially in the FSB scope of numerical haircut floors. The FSB floors would apply to less than 35% of EU repo markets, and less than 25% of EU securities loans. Due to the lack of data on SFT counterparties, these numbers also include bank-to-bank transactions and are therefore likely to be upper boundaries.

**Table 2: FSB scope and selected exemptions**

Repo markets	Out of scope		Potentially in scope (including bank-to-bank transactions)
	Centrally cleared	Government debt collateral	
EUR 5.5tn outstanding	30% to 60%	50% to 80%	8% to 35%
Securities lending markets	Out of scope		Potentially in scope (including bank-to-bank transactions)
	Centrally cleared	Non-cash collateral	
EUR 500bn on loan	-	75%	25%

Note Share of repo markets and securities lending transactions out of the scope, and potentially in the scope of FSB numerical haircut floors. The market size and "out of scope" percentages are based on publicly available or commercial data presented in Section 5. The "in scope" boundaries for repos are calculated by taking the minimum and maximum values of both the centrally cleared and government debt collateral shares, i.e.  $(1-0.5)*(1-0.3)=0.35$  and  $(1-0.6)*(1-0.8)=0.08$ . All estimates are upper boundaries since they include bank-to-bank transactions due to lack of data on SFT counterparties.  
Sources: ECB, ICMA, Markit Securities Finance, ESMA.

165. Any consideration on the suitability and possible extension of the FSB scope for numerical haircut floors would require a comprehensive analysis of EU SFT markets and leverage, taking into account existing regulatory requirements. However, current data limitations, in terms of availability and granularity, imply that it is not possible to undertake a comprehensive analysis of EU SFT markets and leverage that would allow to further comment on the scope at this stage.
166. The FSB also recommended conducting an initial assessment of the scale of securities financing activities and the materiality of non-bank to non-bank transactions. As highlighted in Section 5, there is almost no publicly available information in this area. The scarce data collected, together with the feedback from market participants suggests that such activities remain very limited. Feedback received from six EU authorities confirmed this, and highlighted that the securities financing activities of EU investment funds involved almost exclusively banking counterparties:

- a. According to one authority, the collateral received from SFTs by investment funds was almost entirely from securities loans (97%), including 92% from banking counterparties and 8% from investment firms.<sup>77</sup> Another authority confirmed that “Efficient Portfolio Management” transactions (see Section 4) were nearly exclusively dealt with banks, and to a very small extent with investment firms.
  - b. In another country, less than 2% of the repos and securities lending transaction volume by AIFs involved non-banking counterparties; and one agent lender arranging securities lending on behalf of several UCITS reported that the counterparties of these UCITS did not include non-banks.
  - c. According to another authority, the majority of funds they supervise are under the regulatory obligation to enter into repo trading or securities lending only with entities subject to prudential requirements; another authority confirmed that all funds conducted repos and securities lending transactions exclusively with banking counterparties.
  - d. The last authority that provided feedback indicated that funds did not engage into securities financing transactions.
167. Despite these limited activities, ESMA believes that the treatment of non-bank to non-bank transactions should be similar to that of bank to non-bank transactions, taking note for example of the growth of the EU shadow banking sector (ESRB, 2016c). This would ensure a level-playing field in the EU financial system and address all potential sources of leverage outside the banking sector, while preventing the risk of regulatory arbitrage. For this reason, the market-based or hybrid approaches introduced in the FSB recommendations appear somewhat more appropriate than an entity-based approach.

## 6.2.2 Haircuts and level of numerical haircut floors

168. Market participants indicated during interviews that the FSB numerical haircut floors were generally below or at the lower-end of haircuts currently used in markets, both in repos and securities lending transactions. Box 2 analyses data on counterparty-risk free haircuts used by European banks in non-centrally cleared repo markets, collected for this report. The data confirm that haircuts tend to be higher than the FSB floors, although the floors would potentially be binding for some SFT market participants, forcing their counterparties to deleverage.

### **Box 2: Haircuts used by European banks in non-centrally cleared repo markets**

The tables in this box show haircuts used in one-month reverse repos, in which the respondents (European banks) provided financing and took collateral in. Haircuts are “counterparty-risk free”, i.e. reflecting risks related to the collateral and not to the creditworthiness of the repo counterparty. The haircut percentages displayed exclude country-counterparty correlation risk add-ons which are widespread for government bond repos, especially in the case of peripheral bonds.

<sup>77</sup> Investment firms based on CRR definition (see Section 4.1).

The data were collected in April 2016 by the ICMA European Repo and Collateral Council. The survey respondents accounted for around 40% of the December 2015 ICMA European Repo Market Survey, based on volumes. For the full haircuts tables, see Annex 1.

### Government bond repos

Although government bonds are not in the scope of FSB numerical haircut floors, it is common practice for market participants in non-centrally cleared repo markets to use haircuts (Table 3). However, according to ICMA, haircuts are not common in interdealer repos using government bonds.

**Table 3: Mean and median haircuts on government bond repos**

Issuer origin / Concentration limit	EUR 50mn			EUR 500mn		
	5Y	10Y	20Y	5Y	10Y	20Y
<b>Core Euro area</b> bond maturity	5Y	10Y	20Y	5Y	10Y	20Y
Mean haircut	0.9%	1.3%	2.8%	0.7%	1.3%	3.2%
Median haircut	1.0%	1.0%	2.0%	0.6%	0.9%	2.0%
<b>Peripheral Euro area</b> bond maturity	5Y	10Y	20Y	5Y	10Y	20Y
Mean haircut	2.3%	3.2%	4.5%	2.2%	3.5%	4.9%
Median haircut	2.0%	3.5%	5.0%	1.5%	4.0%	5.0%
<b>Core non-Euro area</b> bond maturity	5Y	10Y	20Y	5Y	10Y	20Y
Mean haircut	0.9%	1.4%	3.2%	0.8%	1.4%	3.1%
Median haircut	1.0%	2.0%	3.0%	0.6%	0.9%	2.0%

Note: Mean and median counterparty-risk free haircuts reported by European banks on government bond collateral used in non-centrally cleared repo markets. EA=Euro Area.

Sources: ICMA European Repo and Collateral Council, ESMA.

Haircuts tend to increase with concentration limit, issuer risk, maturity, and bond structuring (i.e. inflation-linked, see Annex 1). However, not all respondents factored all these parameters in when calculating haircuts. For example, 15% of respondents do not change haircuts based on issuer risk. Although it cannot be observed in these data, haircut percentages also expectedly vary with the repo term.

The ranges of haircuts (highest minus lowest haircut) also reflect risk dimensions: less than 5% for 5- and 10-year core Euro area bond collateral at the lower concentration limit, and more than 10% for 20-year peripherals.

Some respondents also reported using 0% haircuts on government bonds, including for peripheral Euro area government bonds. On the other hand, 8% of respondents do not accept peripheral bonds.

### Repos using other fixed income collateral

Mean and median repo haircuts tend to be much higher when the bond collateral used is not a government debt security (Table 4). Moreover, eligibility criteria tend to be stricter than for government bonds, with 31% of respondents not accepting high-yield bonds and 23% not accepting peripheral bank bonds.

**Table 4: Mean and median haircuts on repos using other fixed income collateral**

Concentration limit	EUR 1mn					EUR 25mn					
	Issuer origin / Bond type	Cov.	Bank	Corp.	HY	CoCo	Cov.	Bank	Corp.	HY	CoCo
<b>Core Euro area bond maturity</b>	<1Y	3Y	6Y	6Y	>9Y	<1Y	3Y	6Y	6Y	>9Y	
Mean haircut	2.3%	4.7%	4.8%	20.3%	16.3%	4.0%	6.9%	6.4%	22.3%	17.8%	
Median haircut	1.0%	5.5%	5.0%	17.5%	16.0%	3.0%	6.8%	6.0%	20.0%	19.0%	
<i>FSB floor</i>	0.5%	1.5%	3.0%	3.0%	3.0%	0.5%	1.5%	3.0%	3.0%	3.0%	
<b>Peripheral EA bond maturity</b>	9Y	9Y	4Y	4Y	-	9Y	9Y	4Y	4Y	-	
Mean haircut	5.0%	12.6%	5.8%	20.6%	-	6.5%	18.9%	7.2%	21.7%	-	
Median haircut	4.0%	10.0%	6.0%	20.0%	-	6.0%	15.0%	6.0%	19.0%	-	
<i>FSB floor</i>	3.0%	3.0%	1.5%	1.5%	-	3.0%	3.0%	1.5%	1.5%	-	

Note: Mean and median counterparty-risk free haircuts reported by European banks on bond collateral used in non-centrally cleared repo markets. EA=Euro Area. FSB floors are based on the type of instrument and the maturity. Cov=covered bond, Bank=bank bond, Corp=corporate bond, HY=high-yield bond, CoCo=contingent convertible bond. The FSB floors used for CoCos are those of debt securities. Sources: ICMA European Repo and Collateral Council, FSB, ESMA.

Haircuts tend to increase with issuer risk (both origin and sector) and concentration limit. The mean and median haircuts are above the FSB floors across instruments, in particular for riskier bonds (high-yield and CoCos). For example, the mean haircut for the high-yield bond used in the survey (with 6 years to maturity) is 20.3% at the lower concentration limit, which compares with an FSB floor of 3%.

However, the lowest haircuts reported by survey respondents are sometimes below the FSB floors (Table 5), in particular for small amounts (less than EUR 1mn). This is the case even when the second lowest haircut is considered, i.e. excluding banks that reported the lowest haircut.

For example, the lowest haircut reported for the corporate bond used in the survey (with 6 years to maturity) was 0%, i.e. 3 percentage points below the applicable FSB floor.

**Table 5: Lowest haircuts reported on repos using other fixed income collateral**

Concentration limit	EUR 1mn					EUR 25mn					
	Issuer origin / Bond type	Cov.	Bank	Corp.	HY	CoCo	Cov.	Bank	Corp.	HY	CoCo
Core EA bond maturity	<1Y	3Y	6Y	6Y	>9Y	<1Y	3Y	6Y	6Y	>9Y	
Lowest haircut	<b><u>0.0%</u></b>	<b><u>0.0%</u></b>	<b><u>0.0%</u></b>	11.0%	8.0%	<b><u>0.0%</u></b>	3.0%	3.0%	13.0%	8.0%	
FSB floor	0.5%	1.5%	3.0%	3.0%	3.0%	0.5%	1.5%	3.0%	3.0%	3.0%	
Peripheral EA bond maturity	9Y	9Y	4Y	4Y	-	9Y	9Y	4Y	4Y	-	
Lowest haircut	<b><u>0.0%</u></b>	3.0%	3.0%	13.0%	-	3.0%	5.0%	3.0%	10.0%	-	
FSB floor	3.0%	3.0%	1.5%	1.5%	-	3.0%	3.0%	1.5%	1.5%	-	

Note: Lowest counterparty-risk free haircuts reported by European banks on bond collateral used in non-centrally cleared repo markets. Numbers underlined and bolded highlight instances where the haircuts reported by market participants are below the FSB floors. EA=Euro Area. FSB floors based on the type of instrument and maturity. Cov=covered bond, Bank=bank bond, Corp=corporate bond, HY=high-yield bond, CoCo=contingent convertible bond. The FSB floors used for CoCos are those of debt securities. Sources: ICMA European Repo and Collateral Council, FSB, ESMA.

The repo haircuts displayed here are counterparty-risk free, while the FSB floors would apply specifically to transactions where financing is provided to non-banks. For such transactions, banks might choose to apply a higher haircut.

For CoCos it is unclear what should be the relevant FSB floor. As a debt security, the applicable FSB floor would be 3%, in which case the lowest haircut reported by survey respondents (8%) would be well above. However, should CoCos be considered “Other assets” in the FSB classification, this haircut would fall under the corresponding FSB floor of 10%. This underlines the potential need for greater granularity of the numerical haircut floors.

169. While the impact of relatively low haircut floors on system-wide leverage, especially when applied to a relatively limited share of SFTs, may need to be assessed, higher floors would involve some considerable trade-offs. Some market participants specifically expressed concerns regarding the liquidity of some asset classes and the availability of financing for certain types of counterparties. In this context, a stream of the literature shows the relevance of SFTs for liquidity and funding. Brunnermeier and Pedersen (2008) introduce a model that links a security’s market illiquidity and risk premium to its margin requirement. They find that liquidity is negatively correlated with volatility as trading more volatile assets require higher margin payments. Miglietta et al. (2015) show the existence

of a theoretical and empirical positive relationship between CCPs' initial margin policies and the cost of funding on the Italian general collateral repo market. They also highlight the existence of a similar relationship between CCP margins and quantities traded on the Italian repo market.

### 6.2.3 Other practical issues

170. In the feedback received, market participants highlighted several other practical issues that they believed would require clarification in order to implement the FSB numerical haircut floors. These included:

- a. the use of haircut floors in the context of securities lending transactions. Currently, haircuts apply to the collateral provided in exchange for the securities borrowed, i.e. to non-cash collateral or to cash collateral in non-base currency. However, the FSB specifically targets “securities-against-cash” transactions. This implies that numerical haircut floors may need to apply to the securities on loan against cash, rather than the collateral, which could create a disincentive for beneficial owners to make their securities available for lending, and potentially have a detrimental impact on the liquidity of some securities and on settlement.<sup>78</sup>
- b. the definitions and granularity of asset classes in the FSB framework. The potential overlap between some of the categories implies that greater granularity may be required. However, once again, this calibration would be hampered by the lack of granular data.
- c. the risk of benchmarking to numerical haircut floors (“race to the bottom”). For SFTs in the FSB scope, floors could potentially lead to a decrease from the current market levels, with a risk of spill-over to SFTs that are not in the scope. Haircuts are currently used by market participants as a risk management tool, but regulatory floors may change this perception and stifle liquidity.
- d. the complexity of applying numerical haircut floors in the context of portfolio-based trading, due to the calculation methodologies used for netting out transactions.

171. Minimum haircut floors should nonetheless be useful in the long-run, as memories of the global financial crisis fade and the haircuts used in markets potentially start drifting back towards lower levels, whether owing to excess confidence from market participants or to commercial practices intended to undercut the competition. However, ESMA believes that the implementation of numerical haircut floors in the EU may benefit from more detailed analysis based in particular on future granular data from SFTR.<sup>79</sup> Given that the haircuts currently used in EU SFT markets seem to be generally higher than FSB floors, the need to conduct further analysis on the scope and calibration of numerical haircut floors should not introduce additional risks to financial stability or arbitrage opportunities, at least in the short term.

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<sup>78</sup> The revenue per asset of beneficial owners from securities lending business is relatively limited. Based on data from Markit Securities Finance, in 2015 the average ratio of daily securities lending returns (lending fees + fees from cash collateral reinvestment) to lendable assets was 5.5 basis points for equities, and 3.5 basis points for government bonds.

<sup>79</sup> In order to minimise the potential delay in implementing internationally agreed standards this would introduce, such an analysis should ideally take place shortly after the reporting obligation under SFTR begins, contingent on the quality and comprehensiveness of the data received from TRs.

### 6.3 Further measures available to tackle risks from the procyclicality of leverage

172. Section 3 summarises the available evidence on procyclicality from SFTs, which seems to include at least to an extent market practices in the setting of margins and haircuts. However, both the literature and the feedback received from market participants suggest that haircuts and margins constitute only one dimension of procyclicality. In particular, the most frequently mentioned features during downturns were:

- a. Counterparty eligibility: “lower-tier” counterparties in repo markets tend to be cut off first;
- b. Availability of funding: limits such as lending caps aimed at reducing the volume of financing provided can be introduced, contractually or not, especially on riskier counterparties;
- c. Availability of collateral: beneficial owners may decide to withdraw their securities from e.g. securities lending programmes and hold on to these securities;
- d. Collateral requirements: requirements on the type of assets received as collateral, or on the quality, liquidity and maturity of the collateral tend to become stricter;
- e. Price credit terms: repo rates, securities lending fees and other price-related terms that are subject to negotiations between counterparties tend to reflect deteriorating market conditions more dynamically than haircuts;
- f. Non-price credit terms: Other terms such as the transaction length, right to substitute, the triggers for early termination (“break clauses”), can become stricter;
- g. Reuse of collateral: Clients may be less flexible regarding the possible reuse of collateral (where allowed), and collateral-taking counterparties may reduce the amount of collateral reused.

173. All these aspects have implications for the application of market-wide instruments, including counter-cyclical ones, and their efficiency in addressing procyclicality.

#### 6.3.1 Methodologies used to calculate haircuts and qualitative FSB standards

174. As explained in Section 2.2, the FSB Regulatory framework for haircuts on non-centrally cleared SFTs encompasses (i) qualitative standards for methodologies used by market participants to calculate haircuts and (ii) numerical floors for haircuts. In this context, the feedback received from trading desks, where the negotiation of the transaction terms takes place, was particularly relevant to understand how SFTs are traded. This specific feedback is summarised below.

- a. Several firms highlighted that haircuts change less frequently and move less dynamically than margins. Haircuts are agreed contractually before execution of the trade and cannot change for the entire duration of the transaction, therefore they need to be sufficiently high to cover potentially large price declines. This is especially the case in securities lending markets where the transaction lengths often span several months. However, haircuts may change when market participants enter into new transactions, although it may be operationally cumbersome. In repo markets, haircut



- movements are relatively more frequent but usually not daily, while they are relatively infrequent in securities lending markets. The volatility of haircuts also varies from one market segment to another, and depends on the price level of the securities – jumps in haircut percentages tend to be larger for lower-priced securities, to create an additional buffer.
- b. The methodologies used for calculating haircuts can be qualitative, quantitative or a combination of the two. Quantitative methodologies seem to be used relatively more often in repo markets, possibly reflecting the relative importance of banking counterparties. Quantitative methodologies sometimes involve back-testing or regular stress-testing using different scenarios. However, the factors and complexity of methodologies vary greatly from one institution to another. A single firm may also rely on quantitative methods for conventional transactions but qualitative methods for other types of transactions (e.g. bespoke transactions, or trades with non-banking counterparties). Haircuts are often, but not always, used as a pricing mechanism following internal discussions between the credit (or risk) department and the trading desks. In securities lending markets, some institutions indicated that they relied on haircut grids pre-determined internally, from which traders can deviate up to a certain percentage, but that the tolerance may depend on the liquidity and credit quality of the collateral.
  - c. In describing their methodology, almost all participants highlighted that collateral and counterparty analysis are the two main components used to determine haircuts. Counterparty credit risk plays a role *before the transaction*, in deciding whether or not to trade, and *during the negotiation* on the terms of the trade. Factors considered in the assessment of counterparty credit risk include creditworthiness, exposures and concentration. Factors considered in the assessment of collateral risk include historical volatility of the asset, residual maturity, market risk, wrong-way risk, currency mismatch, and asset class (for tri-party repos). There were other factors less-frequently mentioned that may also influence the level of haircuts, including for example the type of collateral ownership (title transfer versus collateral pledge).
  - d. Following internal risk assessment, trading desks usually engage in negotiations with their counterparty, which often (but not always) includes haircuts. Haircuts are one of the price components, together with rates and fees, that traders may use to strike a deal. Similarly, haircuts are just one of the possible levers for risk managers. Haircuts can also play a role in determining the volume of financing that counterparties are willing to borrow. They are sometimes used across different assets traded with a single counterparty (e.g. for bundled transactions, or at portfolio level), for example by agent lenders. In contrast, there is no possible bilateral negotiation on haircuts in the tri-party repo market, which may explain why tri-party repo haircuts tend to be relatively more stable (see Section 3).
175. The heterogeneity of haircut setting practices across markets and participants should be at least partially addressed by the FSB qualitative standards. The greater transparency and haircut stability that the standards would foster, at least for some asset classes, also seem broadly compatible with current market practices. This would also leave entities some room for conducting their internal risk assessment, and for negotiations with their counterparty. While negotiating haircuts may lead to procyclical outcomes, it is important

to keep in mind that haircuts are only one aspect of the procyclicality risk from SFTs. Indeed, there seems to be a trade-off between haircuts and other terms in the negotiation phase of deals (e.g. price, volumes, maturity, eligible collateral, etc.). Reduced flexibility in haircut setting may be compensated by larger changes in other terms, or possibly limit the price discovery mechanism and impact market liquidity. This would be counter-productive as reduced credit supply during downturns may exacerbate procyclical effects.<sup>80</sup>

### 6.3.2 Other instruments

176. Other instruments may help to address the procyclicality of leverage from SFTs. These include for example time-varying floors, ceilings or add-ons. There is theoretical evidence that some of these instruments may be more effective than static instruments. For example, Brumm et al. (2014) examine the quantitative effects of margin regulations on asset market volatility. Their model suggests that the presence of collateral constraints can lead to excess volatility by triggering sell-offs when negative shocks occur, and that regulating margin requirements may have stabilising effects by reducing leverage. However, regulatory changes affecting only one asset class have limited effects on assets' volatility if investors have access to another class of collateralisable assets to build leverage. They find that regulation is more effective when applied uniformly to all asset classes, in particular when the margin requirements are counter-cyclical. Ranaldo et al. (2016) analyse the relationship between short-term secured and unsecured money market funding liquidity, and the interaction with asset market liquidity. Focusing on haircut policy, their model shows that counter-cyclical haircuts can improve the resilience of market liquidity, but with potentially adverse effects as they reduce incentives to deleverage, which may foster future money market fragility.

177. ESMA believes that, at the current juncture, the introduction of such instruments is not justified for several reasons. First, ESMA believes that international agreement is required before implementation and calibration of instruments other than numerical haircut floors, in order to prevent the risk of arbitrage between jurisdictions, and to avoid putting EU entities at a competitive disadvantage. Second, there is a lot of uncertainty remaining regarding the calibration of such instruments, and their capacity addressing both the build-up of excessive leverage and the deleveraging pressures remains unclear. Third, a number of measures have already been adopted to reduce leverage in the system and address procyclicality, but some of those measures have not yet been implemented. Therefore, before proposing new measures, ESMA believes that it is necessary to assess how the already agreed measures contributed to addressing risks of high leverage in the system, and should they prove insufficient, to understand the reasons. Fourth, the lack of granular data prevents a thorough analysis of EU SFT markets and hampers our understanding of procyclicality risk from SFTs. This position is different in some respect from the one taken by the ESRB in its opinion to this report.

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<sup>80</sup> One drawback of the FSB qualitative standards mentioned by market participants is the cost this may impose on market participants that currently rely on non-quantitative methodologies. ESMA notes that the cost might be relatively higher for small entities, but such entities are more likely to rely on agent lenders, tri-party agents and other intermediaries or financial services providers in SFT markets, which would be in charge of setting haircuts and complying with those standards.

## 7 Conclusions

178. The objective of SFTR is to lay down the basis for the transparency of SFTs in the EU. The only data currently available are based on public data, surveys and commercial data providers, lacking the coverage and granularity required to conduct a rigorous analysis of EU SFT markets.
179. The absence of supporting evidence requires prudent approach in establishing potential new regulatory requirements. Granular SFTR data will be available only from 2018, hence any proposal based on non-mandatory reported data might potentially run the risk of being partial or biased. To that extent, it is challenging to fully assess the impact of the FSB quantitative recommendations on EU markets. The discussions with markets participants and the data collected revealed in this context that the FSB numerical haircut floors tend to be below or at the lower end of those currently used in EU SFT markets.
180. From the overview of EU regulations in Section 4, ESMA notes that a large part of the regulatory reforms, relevant in the context of SFTs and leverage, initiated following the 2008 financial crisis are still being implemented and their results are not yet fully observable. For instance, many pieces of banking legislation have been defined, however their full impact remains to be assessed. Mandatory central clearing of some derivatives asset classes also started in the EU on 21 June 2016. The rules on bilateral margins for non-centrally cleared derivatives are not yet endorsed. Regarding the approach to establishing haircuts on collateral received by CCPs, there were several aspects identified in the ESMA's EMIR Review Report that need to be further enhanced in Level 1 regulation. Lastly, non-banking entities, such as insurance companies and UCITS, are subject to some requirements with regards to SFTs, or collateral, and their use.
181. While remaining fully committed to the implementation of international agreements to foster and preserve the stability of the financial system, ESMA considers that it is too early to draw definitive conclusions as to the impact of the FSB numerical haircut floors on the resilience of the financial system and on the build-up of leverage. Therefore, ESMA recommends that EU regulatory authorities remain cautious when considering the introduction of new quantitative regulatory requirements. While acknowledging the timeline of the FSB recommendations under which, by 2018, the most important jurisdictions should have introduced a framework for haircuts on non-centrally cleared SFTs, ESMA would propose to submit a report, prepared in similar fashion to this one, once mandatory reported data of sufficient quality becomes available.
182. In this further report, ESMA would focus on assessing the scope of FSB numerical haircut floors, and practical issues in SFT markets related to the implementation of numerical haircut floors. This would contribute to a more robust understanding of the dynamics and haircut practices used in SFT markets in the EU, and the extent to which numerical haircut floors may help to limit the build-up of leverage in the financial system. Data on haircuts currently used in EU SFT markets suggest that the need to conduct further analysis on the scope and calibration of numerical haircut floors should not create significant arbitrage opportunities or risks to financial stability, at least in the short term.
183. In particular, ESMA recommends that the haircuts used in non-centrally cleared SFTs collateralised with government bonds be carefully investigated and analysed, both from a qualitative and a quantitative perspective. As evidenced in Sections 3 and 5 of the report,

government debt securities are used extensively in EU SFT markets, and not always immune to procyclical haircut movements, reflecting changes in market and liquidity risks even in the absence of default risk. However, ESMA recognises that any potential divergence from internationally-agreed standards would risk putting EU entities at a competitive disadvantage.

184. ESMA also notes that the strengthened capital arrangements act as a strong disincentive for banks to enter into SFTs involving collateral other than cash and securities within the meaning of Article 197(1)(b) CRR and eligible for a 0% risk weight. Other reforms are also expected to help control the build-up of leverage in the banking sector arising from SFTs and other transactions. A recent ESRB survey indicates that market participants perceive the new regulatory requirements as reducing market-making activities (thus impacting wider market liquidity), with the new capital requirements, LCR and NSFR identified by the majority of respondents as having the greatest dampening effect on market activity.<sup>81</sup> In addition, the new requirements are reportedly preventing banks from extending their client-clearing offering. In light of these regulatory developments it would seem premature to consider further measures to address leverage and pro-cyclicality, in particular, arising from bank to bank transactions, or where bank-alike requirements are in place.
185. Although the lack of data prevented ESMA from assessing the scale of non-bank to non-bank securities financing activities, the publicly available information and feedback received from other authorities suggest that such activities are currently very limited in the EU (see Sections 5 and 6). However, ESMA believes that the treatment of non-bank to non-bank transactions should be identical to that of bank to non-bank transactions, mainly to prevent the risk of regulatory arbitrage and limit the build-up of leverage outside the banking sector. Therefore, the market-based or hybrid approaches introduced in the FSB regulatory framework would seem more appropriate than the entity-based approach only.
186. Once sufficient historical SFTR data become available, ESMA would propose submitting another report, aimed at assessing the procyclicality of haircuts and leverage from SFTs. This would leave time for the impact of the full implementation of the prudential requirements and other relevant regulatory reforms established in response to the financial crisis to be assessed.
187. Should any further measures be contemplated, ESMA considers that a rigorous impact assessment should be carried out in order to determine whether such measures would be proportionate having regard to financial stability risks covered by the already agreed reforms and the cumulative effect of regulation, in particular the impact on market liquidity and access to clearing services. The design and calibration of additional instruments should be based on clear empirical evidence and detailed analysis of the procyclical effects that are specifically related to margins and haircuts. Furthermore, given the global nature of the SFTs (in European repo markets the share of domestic transactions is only a third), the potential use of macroprudential instruments should be first agreed at international

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<sup>81</sup> *Market Making and Market Liquidity, Final Report of the ESRB Expert Group on Market Liquidity*, ESRB, June 2016: forthcoming. (ESRB Survey 2015/NP5). The banks covered by the survey trade a substantial share of bonds in fixed-income markets. Aggregating banks' own estimation of their market share gives a total market share of the respondents which ranges from 64% in high-yield corporate bond market to 85% in covered bond markets. Therefore, the survey can be viewed as being representative for market-makers in the EU.)

level, in order to maximise their effectiveness and minimise the risk of regulatory arbitrage, while ensuring a level-playing field for market participants inside and outside the EU. ESMA also understands that, at this stage, there is no clear practical evidence that countercyclical measures (e.g. time-varying floors) would effectively reduce procyclicality. While they might reduce the build-up of leverage, it is unclear whether they can ease the deleveraging pressures during an economic downswing. Such an asymmetric effect could create negative externalities and reinforce the perception by market participants that regulatory requirements lead to lower market liquidity.

188. Finally, ESMA recommends that, prior to any further assessments of SFTs, leverage, numerical haircut floors, and potential introduction of additional quantitative macroprudential instruments, the following microprudential measures be considered in the short-term:
  - a. Introduction of the FSB qualitative standards for the methodologies used by market participants to calculate haircuts on non-centrally cleared SFTs, in order to bring greater transparency and stability, especially to haircuts used on risk assets. These standards should seek maximum alignment with the minimum requirements contained in EMIR, where ESMA would be in a position to leverage from the knowledge it has already acquired in this area.
  - b. A framework for countercyclical measures on CCP collateral haircuts in the context of the EMIR review, in line with the conclusions of the ESMA's EMIR Review Report No.2.
189. The aforementioned microprudential measures should help to address some of the issues identified in this report, building on existing EU regulatory frameworks, while keeping the immediate additional regulatory burden limited.
190. Going forward, ESMA stands ready to participate constructively in any potential future discussions around SFT policy instruments. ESMA will continue to monitor the market developments while remaining flexible, should earlier implementation of the FSB numerical haircut floors be required.

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## Annex: Haircuts used in non-centrally cleared repo markets

### Government bond collateral

Scenario: You buy a reverse repo (bonds in/cash out) with a term of up to 1 month against the following collateral:		Standard risk-free (risk-covering) haircut Up to concentration limit of:											Country-counterparty correlation add-on						
		EUR 50 million						EUR 500 million											
		min	max	range	median	mean	mode	min	max	range	median	mean	mode	min	max	range	median	mean	mode
Core Euro area government bond	2021	0.0%	2.6%	2.6%	1.0%	0.9%	0.0%	0.0%	1.5%	1.5%	0.6%	0.7%	0.0%	0.0%	1.5%	1.5%	0.0%	0.2%	0.0%
	2026	0.0%	3.0%	3.0%	1.0%	1.3%	0.0%	0.0%	3.5%	3.5%	0.9%	1.3%	0.0%	0.0%	3.0%	3.0%	0.0%	0.3%	0.0%
	2046	0.0%	5.7%	5.7%	2.0%	2.8%	5.0%	0.0%	9.2%	9.2%	2.0%	3.2%	0.0%	0.0%	5.0%	5.0%	0.0%	0.6%	0.0%
	IL 2026	0.0%	5.0%	5.0%	1.0%	1.9%	0.0%	0.0%	5.0%	5.0%	0.7%	1.5%	0.0%	0.0%	3.0%	3.0%	0.0%	0.3%	0.0%
	IL 2046	0.0%	10.0%	10.0%	2.0%	3.6%	0.0%	0.0%	8.0%	8.0%	2.0%	2.9%	0.0%	0.0%	5.0%	5.0%	0.0%	0.6%	0.0%
Peripheral Euro area government bond	2021	0.0%	6.5%	6.5%	2.0%	2.3%	3.0%	0.0%	7.2%	7.2%	1.5%	2.2%	1.0%	0.0%	4.5%	4.5%	2.0%	1.7%	2.0%
	2026	0.0%	7.8%	7.8%	3.5%	3.2%	1.5%	0.0%	9.2%	9.2%	4.0%	3.5%	1.5%	0.0%	5.0%	5.0%	3.0%	2.6%	0.0%
	2046	0.0%	10.0%	10.0%	5.0%	4.5%	5.0%	0.0%	11.7%	11.7%	5.0%	4.9%	0.0%	0.0%	5.0%	5.0%	3.0%	2.7%	5.0%
	IL 2026	0.0%	8.1%	8.1%	4.5%	3.4%	5.0%	0.0%	6.5%	6.5%	1.5%	2.9%	1.5%	0.0%	5.0%	5.0%	3.0%	2.6%	0.0%
	IL 2046	0.0%	22.8%	22.8%	4.5%	6.1%	0.0%	0.0%	12.5%	12.5%	2.3%	4.5%	9.0%	0.0%	5.0%	5.0%	3.0%	2.7%	5.0%
Core non-Euro area government bond	2021	0.0%	2.7%	2.7%	1.0%	0.9%	0.0%	0.0%	2.0%	2.0%	0.6%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2026	0.0%	3.0%	3.0%	2.0%	1.4%	0.0%	0.0%	3.5%	3.5%	0.9%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2046	0.0%	10.0%	10.0%	3.0%	3.2%	0.0%	0.0%	9.8%	9.8%	2.0%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	IL 2026	0.0%	5.0%	5.0%	2.0%	2.0%	0.0%	0.0%	6.0%	6.0%	0.9%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	IL 2046	0.0%	10.0%	10.0%	3.0%	3.8%	0.0%	0.0%	11.5%	11.5%	2.0%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note: Haircuts reported by European banks on government bond collateral used in non-centrally cleared European repo markets. IL=index-linked bonds. "Risk free" haircuts are haircuts free of counterparty credit risk.  
Sources: ICMA European Repo and Collateral Council, ESMA.

## Other bond collateral

Scenario: You buy a reverse repo (bonds in/cash out) with a term of up to 1 month against the following collateral:		Standard risk-free (risk-covering) haircut Up to concentration limit of:											Country-counterparty correlation add-on						
		EUR 1 million						EUR 25 million											
		min	max	range	median	mean	mode	min	max	range	median	mean	mode	min	max	range	median	mean	mode
Covered bond	Core	0.0%	7.5%	7.5%	1.0%	2.3%	1.0%	0.0%	14.0%	14.0%	3.0%	4.0%	1.0%	0.0%	10.0%	10.0%	0.0%	2.5%	0.0%
	Peripheral	0.0%	11.4%	11.4%	4.0%	5.0%	3.0%	3.0%	11.4%	8.4%	6.0%	6.5%	3.0%	0.0%	10.0%	10.0%	3.0%	3.9%	0.0%
Bank bond	Core	0.0%	8.0%	8.0%	5.5%	4.7%	6.0%	3.0%	10.0%	7.0%	6.8%	6.9%	10.0%	0.0%	100.0%	100.0%	0.0%	13.8%	0.0%
	Peripheral	0.0%	37.0%	37.0%	10.0%	12.6%	10.0%	5.0%	37.0%	32.0%	15.0%	18.9%	37.0%	0.0%	100.0%	100.0%	5.0%	15.9%	5.0%
Non-financial corporate bond	Core	0.0%	7.5%	7.5%	5.0%	4.8%	5.0%	3.0%	10.0%	7.0%	6.0%	6.4%	5.0%	0.0%	100.0%	100.0%	0.0%	13.8%	0.0%
	Peripheral	0.0%	10.0%	10.0%	6.0%	5.8%	4.0%	3.0%	12.0%	9.0%	6.0%	7.2%	5.0%	0.0%	100.0%	100.0%	4.5%	16.1%	5.0%
High-yield bond	Core	11.0%	35.0%	24.0%	17.5%	20.3%	15.0%	13.0%	35.0%	22.0%	20.0%	22.3%	20.0%	0.0%	100.0%	100.0%	0.0%	17.3%	0.0%
	Peripheral	6.0%	38.0%	32.0%	20.0%	20.6%		10.0%	38.0%	28.0%	19.0%	21.7%		0.0%	100.0%	100.0%	5.5%	19.8%	0.0%
CoCo bond	Core	8.0%	25.0%	17.0%	16.0%	16.3%	8.0%	8.0%	25.0%	17.0%	19.0%	17.8%	25.0%	0.0%	2.0%	2.0%	0.0%	0.5%	0.0%

Note: Haircuts reported by European banks on bond collateral used in non-centrally cleared European repo markets. "Risk free" haircuts are haircuts free of counterparty credit risk.  
Sources: ICMA European Repo and Collateral Council, ESMA.