Special features

A A case for macroprudential margins and haircuts[68]

Financial institutions can build up leverage via the use of derivatives and securities financing transactions (SFTs). In order to limit the build-up of excessive leverage and the associated liquidity risks, as well as the procyclical effects of margin and haircut-setting practices, the macroprudential toolkit needs to be extended. This special feature presents the general case for setting macroprudential margins and haircuts using theoretical and empirical evidence on the effectiveness of various design options. Furthermore, it addresses implementation and governance issues that warrant attention when developing a macroprudential framework for margins and haircuts. It concludes by recommending a way forward that is intended to inform the ongoing policy discussions at the European and international levels.

Introduction

Financial institutions, both banks and non-banks, can build up leverage via the use of derivatives and SFTs. The margins and haircuts set in these transactions determine the amount of leverage that can be created. For example, swaps, futures and other derivatives allow institutions to gain off-balance-sheet exposures to asset classes without having them fully funded. The higher the initial margin on a derivative transaction – the amount of collateral the investor needs to hold in a margin account – the smaller the exposure that can be created with a given amount of equity. In turn, SFTs allow financial institutions to obtain funding and create leverage using the assets they are invested in as collateral. The bigger the haircut on the collateral – the difference between the market value of an asset and its posted value as collateral – the smaller the exposure that can be created with a given amount of collateral.[69]

From a macroprudential perspective, the procyclical nature of margin and haircut-setting practices of market participants is a significant concern. As margin and haircut requirements tend to be a function of recent market developments, these practices stimulate the build-up of excessive leverage and funding risk in good times, while amplifying funding stress and deleveraging in bad times. During upturns, low volatility in asset prices and perceived low risks lead to low margins and haircuts. When the cycle turns, rising risk awareness and increasing volatility feed into higher margins and haircuts, leading to deleveraging and increasing margin calls. As the build-up of leverage leaves market players with lower loss-absorbing capacity, margin calls can lead to fire sales, market and funding

[68] This special feature was prepared by Niccolò Battistini, Michael Grill, Pierre Marmara and Koen van der Veer.

[69] Note that haircuts are also relevant for derivative transactions when margin is posted in the form of non-cash collateral, where haircuts are applied to account for potential changes in the price of this collateral.

illiquidity and contagion across financial markets as firms seek to meet withdrawals and hoard liquidity.

While a number of policy measures aimed at limiting the procyclical effects of margin and haircut-setting have been taken or are under way, none of the current frameworks envisage a role for macroprudential authorities (see Table A.1). For example, at the EU level, the European Market Infrastructure Regulation (EMIR) requires market players to use anti-procyclicality tools such as margin buffers, specific weights for stressed observations, and margin floors. However, it does not provide macroprudential authorities with the tools to vary margin and haircut requirements across the financial cycle. Raising margin and haircut requirements in exuberant times would work against the build-up of leverage when it is deemed necessary, and would also lower the impact of procyclical changes in margins and haircuts in bad times driven by higher volatility and higher risk aversion of market participants.[70]

Table A.1

The overview of the regulatory landscape for derivatives and SFTs shows that none of the current frameworks envisages an active role for macroprudential authorities

Gaps in scope of coverage and macroprudential design of regulation on margins and haircuts

	Derivatives (OTC)		SFTs	
Estimated size of the EU market	≈ €242 trillion[1]		≈ €3.4 trillion[3] (repurchase agreements: €2.9 trillion; securities lending: €0.5 trillion)	
	Centrally cleared[2]	Non-centrally cleared	Centrally cleared repos	Non-centrally cleared repos
	≈ €1.9 trillion[4]	≈ €1.0 trillion[4]		
Key global regulatory frameworks	CPMI-IOSCO Principles for Financial Market Infrastructures (April 2012)	BCBS/IOSCO margin and haircut requirements (March 2015)	CPMI-IOSCO Principles for Financial Market Infrastructures (April 2012)	FSB minimum haircut floors (November 2015)
EU regulatory framework	EMIR		EMIR SFT Regulation for reporting	SFT Regulation for reporting, SFT Regulation clause for haircuts
Scope of coverage	Exempts non-financial counterparties with gross notional OTC exposures below a certain threshold (€1 billion or €3 billion depending on the type of product)	Exempts counterparties with gross notional OTC exposures below €8 billion	Exempts non-financial counterparties with gross notional OTC exposures below a certain threshold (€1 billion or €3 billion depending on the type of product)	FSB framework covers SFTs against collateral other than government securities where financing is provided from banks to non-banks and between non-banks
Macro-prudential tools	NO	NO	NO	FSB minimum haircut framework would set hard floors, but does not provide rules for countercyclical changes

1 Gross notional amount (source: BIS semi-annual OTC derivatives statistics, June 2015). Gross market value: €8.4 trillion.
2 According to trade repository data collected by the ECB, approximately 12.8% of OTC derivative trades in the euro area are centrally cleared (volume of trades, February 2016).
3 Reverse repurchase agreements: €2.9 trillion (source: ICMA, European Repo Market Survey, September 2015); securities lending: €0.5 trillion (source: ESMA Report on Trends, Risks and Vulnerabilities, No 2, 2015)
4 Based on the shares of centrally cleared (66%) versus non-centrally cleared (34%) bilateral repos, as reported in the September 2015 ECB Euro Money Market Survey.

Furthermore, addressing the build-up of leverage in SFTs and derivatives requires a broad regulatory scope. An approach that differentiates between different types of transactions, i.e. whether derivatives and SFTs are centrally cleared or not, or whether they are transactions between banks or between banks and non-banks, risks being ineffective owing to substitution effects. As a result, transactions outside the scope of the framework may be used instead to build up leverage.

70 It should be noted that higher volatility and higher risk aversion also make it difficult to incentivise institutions to reduce margins and haircuts during a downturn.

Therefore, in its response to the public consultation on the EMIR review, the ECB proposed establishing a framework for macroprudential margins and haircuts. The ECB suggested including minimum floors and time-varying add-ons, applied to counterparties at the transaction level.[71] It was considered that all relevant transactions would need to be affected, including those contracted by non-banks, regardless of whether these transactions have been concluded in the centrally cleared market, the non-centrally cleared market, or by EU counterparties clearing their trades via a non-EU central counterparty (CCP).

This special feature summarises recent theoretical evidence and presents some initial empirical results on the optimal design of margin and haircut regulation. Furthermore, it highlights practical and governance issues regarding the implementation of macroprudential margins and haircuts, and concludes by setting out the way forward.

Theoretical evidence on the need for macroprudential margin and haircut regulation

One way of analysing the basis for macroprudential margin and haircut regulation is through the prism of a general equilibrium model framework.[72] In this setting, a macroprudential authority has the power to set haircut requirements for SFTs. Given that the economics behind the build-up of leverage and the procyclical effects of margin-setting practices are similar for derivatives, the analysis can be valid for both margin and haircut regulation, bearing in mind that the complexity of derivatives may require additional analysis.

The model presented allows the quantitative implications of different haircut regulations for financial market outcomes like asset return volatility to be derived. Two design options for haircut regulation are considered: constant haircut floors and floors combined with a time-varying countercyclical add-on. With constant haircuts, the same minimum haircut requirements apply over the whole financial cycle. For countercyclical haircut regulation, the macroprudential regulator has the power to impose additional haircuts in boom times when the build-up of leverage becomes excessive. The study addresses two key questions regarding the scope and optimal design of margin and haircut regulation: first, is it necessary for such regulation to have a broad scope? Second, are time-varying haircuts preferable to simple minimum requirements such as floors?

The analysis shows that a broad scope is required for an effective macroprudential framework. A set-up with two asset classes, i.e. two markets, is considered. For the first class of assets, the minimum haircut requirement is set by a regulator, while the requirement for the second asset class is determined by market

71 "ECB response to the European Commission's consultation on the review of the European Market Infrastructure Regulation (EMIR)", September 2015.

72 Brumm, J., Grill, M., Kubler, F. and Schmedders, K., "Margin regulation and volatility", *Journal of Monetary Economics*, No 75, 2015. Note that the paper generally uses the term "margin requirement" instead of "haircut requirement".

participants. The impact of regulation in this set-up is compared with the outcome of regulating both asset classes. For the setting with the small regulatory scope, it is shown that if investors have access to another *unregulated* market where investors can use assets as collateral to take up leverage without any regulatory restrictions on the haircut applied, changes in the regulation in one market may have only minor effects on those assets' return volatility. This compares with the significant reduction in overall volatility that is found in the setting where regulators are empowered to set haircuts for both markets.

Time-varying countercyclical haircuts turn out to be more effective than constant haircuts. The analysis presented shows that applying countercyclical regulation reduces return volatility and increases welfare significantly more than does constant regulation. In response to larger haircut requirements in good states, market participants are more constrained in their build-up of leverage compared with the situation where haircut floors would remain flat. When a negative shock occurs, withdrawal of such a countercyclical add-on decreases the deleveraging pressure induced by binding collateral constraints.

Taken together, this theoretical evidence indicates that only comprehensive regulation of margins and haircuts can reduce the build-up of leverage and asset market volatility in an economically meaningful way. Any macroprudential margin and haircut framework should therefore have a broad scope – capturing both derivatives and SFTs, and both centrally cleared and non-centrally cleared transactions. Moreover, this theoretical evidence shows that floors combined with a time-varying countercyclical buffer are more effective in reducing volatility and increasing welfare than constant minimum requirements, such as constant floors. This suggests that any policy framework should ideally allow regulators to set countercyclical margins and haircuts.

Empirical evidence on optimal margin and haircut regulation

In this section, some initial empirical results on the optimal design of margin and haircut regulation are provided. Following the theoretical analysis, the focus is again on the effectiveness of a constant minimum requirement versus countercyclical requirements, and the extent to which these different tools would reduce the procyclicality of margins in the cash equity market is analysed.[73] Daily stock market data allow for an empirical analysis of the effectiveness of macroprudential margin regulation. However, given that market players typically charge additional procyclical margin add-ons in derivative contracts, the results here are likely to underestimate any potential gains from macroprudential regulation in derivatives markets.[74]

[73] The empirical analysis in this section is based on Battistini, N., "*Pro-cyclicality of margin requirements: Determinants, mitigation and measurement*", mimeo, 2015.

[74] To draw final conclusions on the calibration of macroprudential margins and haircuts in derivative transactions and SFTs, EMIR and SFT Regulation data could be used in future work.

Empirical strategy and data

The empirical strategy contains three building blocks: (i) a model that simulates baseline margins[75] using current benchmark market methodologies, (ii) four measures for the procyclicality of these margins, and (iii) two policy tools that could potentially reduce margin procyclicality – a minimum margin floor and a combination of a floor with a countercyclical buffer.

First, to model baseline margin dynamics, daily data on stock prices are used for the shares of the 50 largest euro area firms, as measured by market capitalisation, for the period between January 2005 and December 2014. These data allow a standard simulation technique to be applied to compute portfolio exposures and the associated returns for a representative investor,[76] using a portfolio decision model that is widely used by market participants.[77] On the basis of the portfolio returns, baseline margins are calculated by applying a model that is consistent with the margin methodology used by CCPs for their clearing services.[78]

The second building block includes four measures to assess procyclicality in the simulated baseline margins. The first two measures account for the variation in margins – i.e. both the short and long-term elasticity of margins to volatility shifts are measured.[79] The third and fourth measures examine the tendency of margins to co-move with the cycle – i.e. the coincidence of high margins with periods of high volatility, low liquidity and deleveraging (and vice versa). The correlation of margins with the volatility regime (proxied by the ECB's composite indicator of systemic stress (CISS) equity market sub-index) and with the liquidity cycle (proxied by the ECB's financial market liquidity indicator (FMLI) foreign exchange, equity and bond markets sub-index) is calculated.

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75 Margin is defined as the amount of collateral that an investor has to post in order to cover potential variations in the market value of its position for the duration of the margin period of risk (i.e. close-out period, liquidation period, or period between the initiation of the clearing process and the settlement of the transaction) and is expressed as a percentage of the market value of an investor's holdings of shares. In other words, if EUR p is the market value of one share and q is the number of shares held by the investor, then a margin requirement of x% implies that the investor has to post EUR (x/100)*p*q as collateral.

76 This modelling choice, which is used the literature (see, for example, Heath, A., Kelly, G. and Manning, M., "Central counterparty loss allocation and transmission of financial stress", *Research Discussion Paper*, Reserve Bank of Australia, 2015), implies a partial equilibrium framework, which establishes a clear dependence of margin requirements on price dynamics, but does not allow for any feedback mechanism such as that in the structural analysis by Brumm et al. (2015) discussed in the previous section.

77 The investor allocates its available funds according to a mean-variance (MV) portfolio optimisation problem, the workhorse framework of modern portfolio decision models. The MV portfolio allows for time-varying weights and both long and short positions. Moreover, the portfolio exhibiting the maximum Sharpe ratio (i.e. the maximum risk-adjusted return) on the frontier of efficient portfolios is selected.

78 In this empirical exercise, baseline margins are calculated according to a historical expected shortfall model with a one-year look-back period and a one-day close-out period. The calibration of the model aims to replicate actual margin models used by CCPs. Results do not differ qualitatively if the look-back or close-out period increases.

79 Short-term volatility is measured as the average 30-day peak-to-trough relative (i.e. percentage) distance greater than the 90th percentile of the historical distribution. Long-term volatility is measured as the peak-to-trough relative distance (representing the largest across-the-cycle margin call in percentage terms) of the historical distribution. Similar measures of procyclicality have been proposed in the literature (see Murphy, D., Vasios, M. and Vause, N., "An investigation into the pro-cyclicality of risk-based initial margin models", *Financial Stability Paper*, Bank of England, 2014).

Finally, the performances of a margin floor and a combination of a floor with a countercyclical buffer are compared. The first mitigation tool, enacted into EU law via the Regulatory Technical Standards (RTS) of EMIR, is a minimum margin floor computed with a ten-year look-back period. Strictly speaking, the margin floors are not "hard" floors, but depend on past volatility. Nevertheless, as in this setting, they do not depend on models devised by market participants and can be considered as a proxy for a hard minimum floor. The second mitigation tool is a margin obtained by adding a countercyclical buffer on top of the minimum margin floor. This margin buffer is calculated as a function of the weighted average of the volatility and liquidity cycle indicators, where higher volatility and/or liquidity imply a lower buffer requirement (see **Box 1** for details).

Box 1

Methodology for the computation of the countercyclical margin buffer

The countercyclical margin buffer CMB_t is computed according to a logistic function:

$$\mathrm{CMB}_t = \frac{\alpha}{1 + e^{-\beta\,(\mathrm{cycle}_t - \gamma_t)}},$$

where α denotes the maximum buffer (so that $0 \leq \mathrm{CMB}_t \leq \alpha$), β defines the steepness of the curve, cycle_t indicates a weighted average of the volatility and liquidity cycle indicators (see below), and γ_t represents a certain percentile of the historical distribution of cycle_t up to period t (so that, if $\mathrm{cycle}_t = \gamma_t$, $\mathrm{CMB}_t = \alpha/2$). In order to compute the aggregate cycle indicator, an exponentially weighted moving average (EWMA) approach is applied to the weighted average of the two cycle indicators considered, formally:

$$\mathrm{cycle}_t = \lambda\,\mathrm{cycle}_{t-1} + (1-\lambda)[-\omega\,\mathrm{CISS}_t + (1-\omega)\,\mathrm{FMLI}_t],$$

for a given initial value cycle_0, where λ denotes the decay parameter (i.e. the relative weight on past information) and ω the relative weight on the indicator of the volatility cycle; note that the negative sign on CISS_t implies that high values of cycle_t represent favourable (low-volatility/high-liquidity) market conditions.

Results

Chart A.1 provides a first visualisation of our key results. It shows that: (i) baseline margins are indeed procyclical[80], (ii) a margin floor would have prevented the very low levels of margins in the run-up to, and aftermath of, the global financial crisis, and (iii) a countercyclical buffer on top of the margin floor would have further reduced margin procyclicality as a result of the build-up of an additional margin buffer before the crisis.

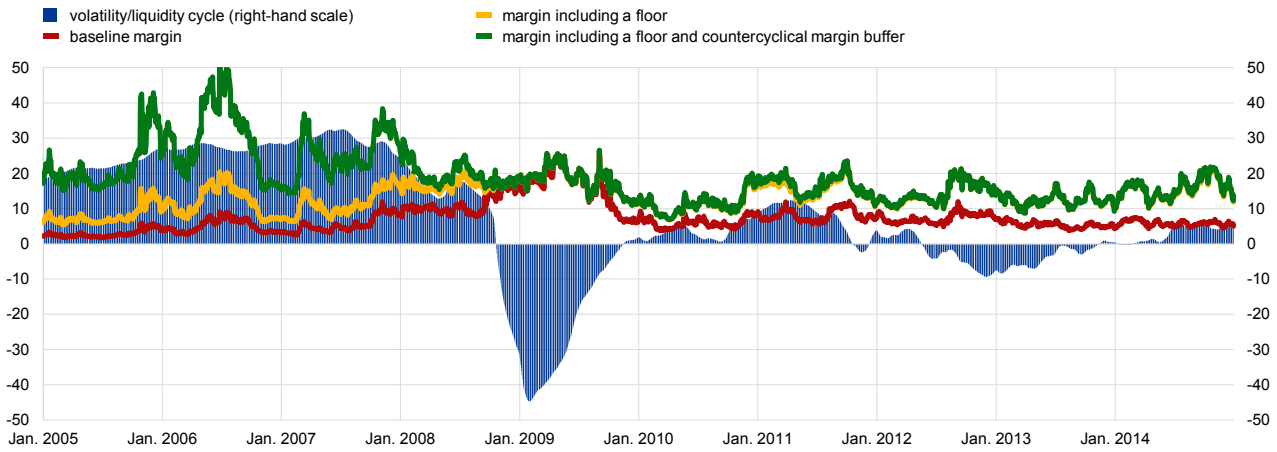
[80] The term "procyclical" is used in the statistical sense. The empirical study does not model feedback loops on the cycle, as in the general equilibrium framework presented in the previous section on theoretical evidence.

Chart A.1

The dynamics of margins based on different mitigation tools suggest that a margin floor combined with a countercyclical margin buffer would have been more effective in containing the build-up of leverage in the run-up to the crisis

Historical dynamics of margins with mitigation tools

(left-hand scale: margin as a percentage of the market value of an investor's exposure; right-hand scale: volatility/liquidity indicator normalised around zero)



Sources: ECB, Bloomberg and authors' calculations.

First, a negative relationship between baseline margins (red line) and the cycle is observable. Baseline margins increase in response to higher volatility of portfolio returns in the wake of the global financial crisis in mid-2007 and increase more steeply when the crisis intensified in late 2008. Conversely, baseline margins decrease again when financial conditions improved in early 2010. When we regress the baseline margins on the volatility/liquidity cycle, we obtain a coefficient of -0.17, confirming a negative correlation of the margin with the cycle, i.e. margins go up when volatility is high and liquidity is low.

Second, adding a margin floor to the calculation of baseline margins (yellow line) limits the co-movement of margins with the cycle. Basically, the margin floor assures conservative margins throughout the whole period, preventing the very low baseline margin levels before and after the crisis. Notably, we now find a less negative regression coefficient of -0.12 when we regress the margin including a floor on the volatility/liquidity cycle.

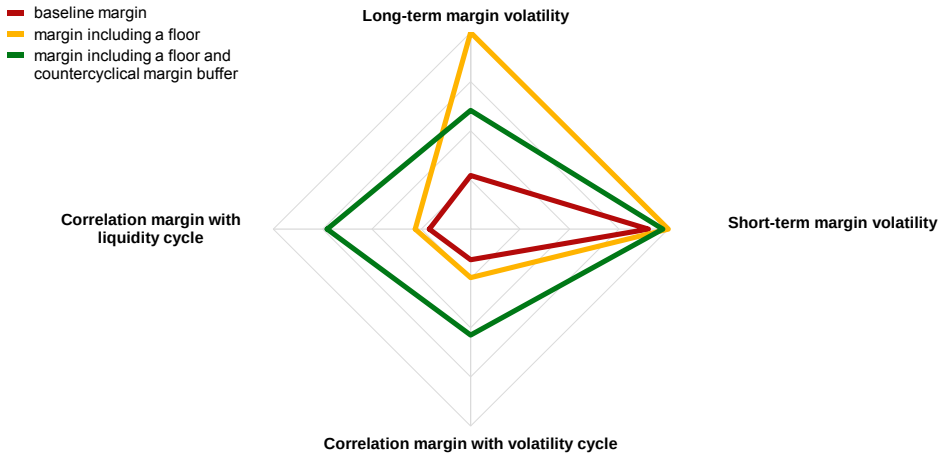
Third, introducing a countercyclical buffer on top of the margin floor further limits the procyclical dynamics of margins (green line). Importantly, we find a positive coefficient of +0.21, indicating that margins decline in the downturn of the cycle. Indeed, margins are now considerably higher in the period of high liquidity/low volatility before the crisis, limiting the build-up of excessive leverage. Conversely, at the start of the crisis, the countercyclical margin buffer quickly (but gradually) drops to zero, allowing margins to converge towards the lower margin floor. In this way, the countercyclical buffer prevents deteriorating market conditions from exacerbating liquidity pressures on investors, while preserving prudent margin levels. Thus, both the margin floor and the countercyclical margin buffer appear to be essential mitigation tools in a holistic macroprudential treatment of margins.

The metrics of margin volatility and margin-cycle correlation show that countercyclical margins perform best in mitigating procyclicality.[81] **Chart A.2** shows the results. As a general interpretative key for the spider chart, more procyclical margins produce values closer to the origin of the axes. Clearly, compared with baseline margins (red line), both margin floors (yellow line) and the combination of a floor with a countercyclical margin buffer (green line) prove to be effective tools in mitigating procyclicality. That is, both tools outperform the baseline according to all metrics based on historical data. As regards the margin volatility metrics, the relative performances of both policy tools do not differ significantly. However, with respect to reducing the correlation with the volatility and liquidity cycle, adding a countercyclical buffer considerably outperforms the margin floor.

Chart A.2

The margin combining a floor with a countercyclical margin buffer performs better in mitigating procyclicality than the margin including a floor only

Values closer to the origin indicate more volatility or more (positive) correlation with the liquidity and/or volatility cycle



Notes: Each axis corresponds to one of the four different metrics of procyclicality. Each metric has been rescaled so as to lie in the same range of values, while preserving the relative ranking among margins in terms of procyclicality.

Practical and governance issues concerning implementation

A macroprudential framework for margins and haircuts should build on the current regulatory frameworks and policy recommendations as applicable to derivatives and SFTs at the EU and global levels. These frameworks include the Financial Stability Board (FSB) policy recommendations for haircuts on non-centrally cleared SFTs, the Basel Committee on Banking Supervision-International Organization of Securities Commissions (BCBS-IOSCO) margin requirements for non-centrally cleared derivatives and EMIR.[82] Together, these rules establish

[81] Simulations are carried out by (1) modelling each of the 50 time series for stock returns according to an ARMAX(1,1)-GARCH(1,1) process, (2) extracting residuals and estimating their copula *t*-distribution, (3) simulating 500 time series of residuals, each one of 4,898 daily observations, (4) reconstructing simulated price returns and (5) computing portfolio exposures and margins for each simulation.

[82] Regulation (EU) No 648/2012.

conservative margin and haircut requirements that minimise market risk in the event of a counterparty default. They state that haircuts and margins should be calibrated to a high confidence level (e.g. 99.5% for initial margins on OTC derivatives under EMIR), using prudent liquidation and historical time periods. Furthermore, the FSB guidance establishes numerical floors for haircuts on SFTs, while the BCBS-IOSCO rules include predefined margin[83] and haircut[84] schedules to be used as possible alternatives to internal or third-party models. In addition to addressing market risk, these rules seek to limit the potential procyclical effects of margins and haircuts to a certain extent: the BCBS-IOSCO rules authorise the inclusion of periods of stress within look-back periods, while EMIR goes further by requiring the use of anti-procyclicality tools such as margin buffers, specific weights for stressed observations, and margin floors.[85] However, current rules covering derivatives and SFTs do not provide authorities with specific macroprudential tools to raise margin and haircut levels beyond regulatory requirements to prevent the build-up of excessive leverage in the financial system.

Existing standardised margin and haircut schedules are simple and transparent, and could form the basis for setting macroprudential margins and haircuts. Macroprudential authorities could adopt a similar approach to the standardised FSB/BCBS-IOSCO haircut and margin schedules, which offer a transparent means of calculating initial margins and predefined haircut levels which can be used as alternatives to internal haircut calculation models.[86] Macroprudential authorities could draw inspiration from this approach by setting market-wide margin and haircut floors on the basis of a standardised initial margin/haircut formula, which would be disconnected from the features of internal models. The parameters of the standardised margin/haircut calculation could be adjusted to match the degree of systemic risk in the financial system and the desired reduction in leverage. This would address the fact that counterparties can frequently calibrate margins and haircuts according to internal or third-party risk models with wide discretion. Going forward, competent authorities should develop indicators as part of the operational framework for setting such macroprudential margins and haircuts over the cycle.

Ensuring non-bank entities are appropriately affected by market-wide margins and haircut requirements would be a key aspect of any future macroprudential regime. To a significant extent, non-banks currently access derivatives markets indirectly by channelling their activity through larger financial institutions, which act as principals to the transactions (the complex indirect structure of these markets is known as “tiering”). It is possible that the effects of macroprudential tools would be distorted as a result of this indirect structure, and not fully affect the behaviour of the entities ultimately driving leverage in the system, particularly in centrally cleared

83 See “BCBS-IOSCO margin requirements for non-centrally cleared derivatives”, Annex A, 2015.

84 See “BCBS-IOSCO margin requirements for non-centrally cleared derivatives”, Annex B, 2015.

85 See “ESRB report on the efficiency of margining requirements to limit pro-cyclicality and the need to define additional intervention capacity in this area”, July 2015.

86 The standardised initial margin calculation proposed under the BCBS-IOSCO guidance is the following: *Net standardised initial margin = 0.4 * Gross initial margin + 0.6 * NGR * Gross initial margin,* where NGR is defined as the level of net replacement cost over the level of gross replacement cost for transactions subject to legally enforceable netting agreements.

markets. Macroprudential tools would need to be designed to ensure they can be fully "passed through" to non-banks.

The implementation of any future macroprudential regime would also need to prevent arbitrage across markets and jurisdictions, and could be designed in a way that ensures market infrastructure practices are not affected.[87] Indeed, the tools would need to be applied consistently across cleared and uncleared transactions so as to preclude a shift away from central clearing. Authorities also need to be aware of the risks of regulatory arbitrage: if counterparties can avoid the costs of macroprudential margins and haircuts by booking their transactions in a different jurisdiction, the purpose of the tools may be defeated.[88] Furthermore, the interaction of these tools with existing rules in EMIR would need to be analysed.

To sum up, a successful framework for macroprudential margins and haircuts should build on existing regulatory frameworks, and would need to have broad application covering all relevant transactions by risk-taking entities.[89] First, it would need to be based on a standardised and transparent model, and be applied on a market-wide basis – i.e. to all relevant derivative and SFT transactions – regardless of whether or not transactions are centrally cleared. Second, macro-prudential authorities would need to apply these tools directly to the transactions contracted by all risk-taking entities whose behaviour they seek to affect, regardless of the market, jurisdiction or infrastructure where the transactions were booked. An international agreement similar to the one reached on minimum haircuts for SFTs[90] would help implement these tools consistently across jurisdictions.

Conclusions and the way forward

This special feature has argued that macroprudential margins and haircuts could be effective tools in limiting the build-up of leverage and the procyclicality of margin and haircut-setting practices in SFT and derivatives markets. The ongoing review of EMIR would provide an opportunity to establish such tools in European legislation, as already proposed by the ECB in its response to the public consultation on the EMIR review in August 2015. Moreover, the Securities Financing Transactions Regulation (SFTR) contains a clause that authorises ESMA, in collaboration with the ESRB and the EBA, to prepare a report, due by October 2016, on the options available to tackle the build-up of leverage in SFT markets and whether further measures to reduce the procyclicality of that leverage are required. The analysis presented suggests that it would be appropriate to implement macroprudential haircuts via the SFTR.

87 For example, this may be achieved by requiring CCP participants themselves to ensure they meet macroprudential margin and haircut floors for every transaction they centrally clear.

88 As for any macroprudential tool, the implementation of macroprudential margins and haircuts in practice should be accompanied by a cost-benefit analysis.

89 It should be recalled that infrastructures such as CCPs act as intermediaries in transactions and are not risk-taking entities themselves.

90 Note that the FSB framework already states that numerical haircut floors could in the future be used as a countercyclical macroprudential tool by relevant national/regional authorities.