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Collateral transactions and shadow banking

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Ross Spence

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Previously published work

This thesis contains and/or builds upon the following previously published work by the author:

M Haentjens (ed), Y Diamant, J Siena, R Spence and A Zacaroli, *Financial Collateral: Law and Practice* (2020) Oxford University Press (Chapters 3 & 9).

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R Spence, "The Role of Shadow Banking in the Capital Markets Union" (2019) in Major Trends in Banking Union and Capital Markets Union: Jean Monnet Project – Reform of Global Governance of EMU 75-101.

R Spence, "The Vulnerabilities of Debt in the Shadow Banking Sector" (28-29 October, 2019) *Financial Stability Conference Paper, Berlin* 1-33.

R A Spence, "Corporate Finance and the Role of Lawyers" (2017) *3 (2) Edinburgh Student Law Review* 102-113.

Table of abbreviations

AIFMD	Alternative Investment Fund Managers Directive
AT 1	Additional tier 1
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BRRD	Bank Recovery and Resolution Directive
CCP	Central counterparty
CDO	Collateralised debt obligation
CET 1	Common equity tier 1
CJEU	Court of Justice of the European Union
CoCo	Contingent convertible bond
CRR	Capital Requirements Regulation
CSA	Credit Support Annex
DGSD	Deposit Guarantee Scheme Directive
EBA	European Banking Authority
ECB	European Central Bank
EDGS	European Deposit Guarantee Scheme
EDIS	European Deposit Insurance Scheme
EMIR	European Market Infrastructure Regulation
ESMA	European Securities and Markets Authority
ESTER	Euro Short Term Rate
EU	European Union
FC	Financial Collateral
FCD	Financial Collateral Directive
FSB	Financial Stability Board
G20	Group of Twenty
GDP	Gross Domestic Product
GESLA	Gilt-Edged Stock Lending Agreement
GFC	Global Financial Crisis
GMRA	Global Master Repurchase Agreement
GMSLA	Global Master Securities Lending Agreement
ICMA	International Capital Market Association
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
ISDA	International Swaps and Derivatives Association
ISLA	International Securities Lending Association
LIBID	London Interbank Bid Rate
MEFISLA	Master Equity and Fixed Interest Stock Lending Agreement
MiFID II	Markets in Financial Instruments Directive II
MMMF	Money market mutual fund

OSLA	Overseas Securities Lending Agreement
OTC	Over-the-counter
PRIMA	Place of Relevant Intermediary Approach
Repo	Repurchase agreement
RTS	Regulatory Technical Standards
SFTR	Securities Financing Transactions Regulation
SIFMA	Securities Industry and Financial Markets Association
SOFR	Secured Overnight Financing Rate
UCITS	Undertakings for Collective Investment in Transferable Securities Directive
UK	United Kingdom
UNIDROIT	The International Institute for the Unification of Private Law
USA	United States of America
VaR	Value-at-Risk

1 Introduction

In the years leading up to the 2007/2008 Global Financial "Crisis, structural vulnerabilities had built-up in the global financial system. Complex financial products with long intermediation chains and misaligned incentive structures led to an accumulation of exposures that were poorly understood and managed across the system… [As a result,] many institutions did not fully understand their own risk exposures" and in particular, regulators failed to govern the financial system and neglected to exercise proper supervision and oversight of financial institutions.[1] Complexity and opacity therefore became pervasive and the financial system as a whole became riskier as a consequence.[2]

The Global Financial Crisis has therefore had a profound influence on the global financial system. Significant fault lines were exposed, risks and structural vulnerabilities had built-up, and specifically, the crisis highlighted the growing importance of the so-called 'shadow banking sector'. The term 'shadow banking' can broadly be described as a sector that provides an alternative source of funding to that offered by the traditional banking sector, but without being subject to prudential regulation. It is indeed noteworthy that numerous empirical studies demonstrate that since before the Global Financial Crisis, the size of the European Union ("EU") shadow banking sector has grown rapidly to now become the primary funding source for market participants in the EU.[3]

---

1 Paul Krugman has argued that the lack of controls during the Global Financial Crisis amounts to "malign neglect" – see P Krugman, *The Return of Depression Economics and the Crisis of 2008* (2009) 162-163. See also, D Domanski, "Achieving the G20 goal of resilient market-based finance" (2018) *22 Banque de France Financial Stability Review* 155 at 156.

2 See generally, Domanski (n 1) at 155-165.

3 See generally, European Systemic Risk Board, "EU Non-bank Financial Intermediation Risk Monitor" (2019), available at: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report190717_NBFImonitor2019~ba7c155135.en.pdf. See also, M Hodula, "Monetary Policy and Shadow Banking: Trapped between a Rock and a Hard Place" (2019) *5 Working Paper Series Czech National Bank;* Financial Stability Board, "Shadow Banking: Strengthening Oversight and Regulation" (27 October, 2011); R Davies, "The Moonshine of our Times: The Global Rise of Shadow Banking" (2015) *The International Economy* 70 at 71; S Pearlstein quoting Federal Reserve Chair Jerome H Powell, "The shadow banks are back with another big bad credit bubble" (31 May, 2019) *Washington Post;* S Gebauer and F Mazelis, "Macroprudential regulation and leakage to the shadow banking sector" (May, 2020) *2406 ECB Working Paper Series*, available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2406~af673f115a.en.pdf.

Importantly, such growth highlights the strength of the shadow banking sector and its concomitant benefits to the overall economy. For example, an advantage to shadow banking is that it reduces the dependency on the traditional banking sector as the only source of credit. In order to provide an alternative source of funding to the economy, the shadow banking sector "performs bank-like functions" by transforming long-term risky assets (such as bonds) into short-term safe assets (such as cash).[4] This is a positive benefit for the economy because the shadow banking sector does not only provide financial diversification, it also facilitates liquid and efficient markets, which is crucial for an effective economy. As such, the shadow banking sector provides a functionally equivalent service to that offered by the traditional banking sector but does so without being subject to the costly and burdensome prudential regulation.[5]

The shadow banking sector is not solely beneficial however; it is also a sector that can undermine financial stability given its relationship with systemic risk.[6] We were reminded during the Global Financial Crisis of how the traditional banking sector has direct and explicit access to official credit and liquidity backstops. It was however a different story for the shadow banking sector, which is not subject to prudential regulation and consequently does not have explicit access to this type of backstop. Liquidity support is therefore less assured and funding can be quick to flee.[7]

Pertinent for this study is the shadow banking sector's use of collateral transactions, namely repurchase agreements ("repos"), securities lending and derivative transactions, and the role financial collateral and margin play therein. The shadow banking sector utilises collateral transactions to intermediate credit throughout the financial system and build-up leverage by way of, *inter alia,* maturity transformation – transforming long-term securities, such as government bonds, which are used as financial collateral to secure short-term funding.[8] It is this maturity transformation function that renders the shadow banking sector intrinsically fragile since, by definition, a leveraged

4 Financial Stability Board (n 3) 1 at 1.

5 E Perotti, "The roots of shadow banking" (2013) *69 CEPR Policy Insight* 1 at 2.

6 M Hodula, "Off the Radar: Exploring the Rise of Shadow Banking in the EU" (2018) *16 Working Paper Series Czech National Bank* 1 at 3.

7 However, as will be discussed below, the shadow banking sector may now have an implied backstop. On this, see Chapter 2, section 3.2.1.3. See also, R Foroohar, "How the virus became a credit run" (16 March, 2020) *Financial Times* 1 at 17; *The Economist,* "Repo-market ructions were a reminder of the financial crisis" (26 September, 2019); G Tett, "The repo markets mystery reminds us that we are flying blind" (19 September, 2019) *Financial Times,* available at: https://www.ft.com/content/35d66294-dadc-11e9-8f9b-77216ebe1f17; S C Keiger, "Reducing the Systemic Risk in Shadow Maturity Transformation" (8 March, 2011) *Federal Reserve Bank of New York – Remarks at the Global Association of Risk Professionals 12th Annual Risk Management Convention, New York City.*

8 G B Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* (2012) 43.

market participant engaging in maturity transformation cannot honour a sudden request for full withdrawals.

As the name implies, collateral transactions are 'secured' with financial collateral to hedge default risk. Financial collateral is therefore a safety net implying that should default occur, the collateral can be liquidated to make good on the initial promise.[9] To mitigate the risk that the financial "collateral falls below the notional amount of the transaction, the market standard" is to overcollateralise the transaction such that 'excess' financial collateral ('margin') covers net exposures from one party to another party.[10] However, as illustrated by the Global Financial Crisis and the more recent effects on financial markets due to the Covid-19 pandemic, when asset prices fall, margin levels increase and highly leveraged financial institutions are forced to de-leverage, causing market participants to 'run' in advance of other market participants motivated to do exactly the same thing.[11] Consequently, a "vicious cycle can emerge where lenders raise margin levels thereby demanding more financial collateral, forcing de-leveraging and more asset sales at fire sale prices and thus further price declines", eventually generating a downward leverage and liquidity spiral.[12] This is what Professors Gary Gorton and Andrew Metrick called "the run-on repo" during the Global Financial Crisis.[13] The source of this instability is a recurring phenomenon involving

9 A M Pacces and H Nabilou, "The Law and Economics of Shadow Banking" (2017) *ECGI Working Paper Series in Law* 1 at 11-12.

10 European Systemic Risk Board, "ESRB opinion to ESMA on securities financing transactions and leverage under Article 29 of the SFTR" (October, 2016) 1 at 4. See also, Paragraphs 2 (aa) and (bb) GMRA 2011.

11 H McVea, "Targeting hedge funds and 'repo runs'", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 177 at 195. See also, Foroohar (n 7) 1 at 17; European Systemic Risk Board, "Liquidity risks arising from margin calls" (June, 2020) 1 at 2-4, available at: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report200608_on_Liquidity_risks_arising_from_margin_calls_3~08542993cf.en.pdf; Bank for International Settlements, "Containment Measures: Policy Interventions" (June, 2020) *Annual Economic Report* 1 at 44, available at: https://www.bis.org/publ/arpdf/ar2020e.pdf.

12 The leverage and liquidity spiral will be discussed in greater detail in Chapter 6, section 5.2. See also, V Constancio, "Margins and haircuts as a macroprudential tool" (6 June, 2016) Vice-President of the ECB, at the *ESRB international conference of the macroprudential use of margins and haircuts*, available at: https://www.esrb.europa.eu/news/speeches/date/2016/html/sp160606.en.html; R Comotto, "Repo: guilty notwithstanding the evidence?" (25 April, 2012) *International Capital Markets Association*, available at: https://www.icmagroup.org/assets/documents/Maket-Practice/Regulatory-Policy/Repo-Markets/Comotto%20-%20repo%20haircuts%20April%202.pdf; R Spence, "The Vulnerabilities of Debt in the Shadow Banking Sector" (28-29 October, 2019) Financial Stability Conference Paper, Berlin 1 at 27, available at: http://financial-stability.org/wp-content/uploads/2019/11/2019_FSC-WS_PAPER_Spence_Vulnerabilities-of-debt-in-the-shadow-banking-sector.pdf.

13 G B Gorton and A Metrick, "Securitized Banking and the Run-on Repo" (2009) *15223 NBER Working Paper Series.* See also, G B Gorton and A Metrick, "Who Ran on Repo?" (2012) *18455 NBER Working Paper Series.*

the build-up of leverage that makes the economy particularly vulnerable to financial crises.[14]

Crises do tend to come at a great cost to society. As such, the key objective should therefore be focused on how best to comprehensively "strengthen the oversight and regulation" of the shadow banking sector to make it more robust.[15] In an attempt to facilitate regulation and transform the shadow banking sector into a "resilient market-based financial system", numerous publications, policy proposals and EU legislative instruments have been published.[16] While it is a truism that regulating the EU shadow banking sector is a gargantuan task, and given the efforts of EU authorities over the last decades, one would expect a convincing regulatory result.[17] Sadly, the reality is less compelling given that the regulatory response has, to date, been piecemeal at best.[18]

1 Problem Statement

The aforementioned risks and vulnerabilities stemming from the shadow banking sector are indeed a serious cause of concern. The adverse effects that the shadow banking sector had on society during the Global Financial Crisis was catastrophic. Because the shadow banking sector can undermine financial stability and exacerbate systemic risk, precisely because it is a sector (arguably) not subject to appropriate oversight and regulation, the concern is that should another crisis ensue, the cost to the economy and particularly the negative externalities, could again re-appear at a greater cost to society.[19] This issue becomes particularly precarious when we discover, not unsurprisingly that the next crisis is imminent, taking account of two (more) recent events. Firstly, on 15 September 2019, the repo market suffered a severe "ruction" where leveraged market participants were forced to deleverage due to a sudden demand for cash. Understandably, this resulted in a severe spike in the 'repo

14 M K Brunnermeier and Y Sannikov, "The I Theory of Money" (2016) *Princeton University* 1 at 44.

15 See generally, Financial Stability Board (n 3). See also, Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos" (29 August, 2013).

16 See generally, Financial Stability Board, "Transforming Shadow Banking into Resilient Market-based Finance: Regulatory framework for haircuts on non-centrally cleared securities financing transactions" (12 November, 2015 (updated on 19 July, 2019 and 25 November, 2019)).

17 See generally, Financial Stability Board (n 3). See also, Financial Stability Board (n 15).

18 See generally, Financial Stability Board (n 16).

19 M A van Dijk, "The Social Costs of Financial Crises" (2013) *Erasmus University Rotterdam* 1 at 16.

rate'.[20] The US Federal Reserve succeeded in taming uncertainty by pumping USD $75bn into the financial markets for several days.

Secondly and more significantly, at the time of writing[21] the financial markets are again experiencing significant repercussions regarding the Covid-19 pandemic.[22] While it remains to be seen the extent of the economic impact of Covid-19, the European Systemic Risk Board has commented that the "coronacrisis… is causing a sharp drop in asset prices and increased volatility, resulting among others in significant margin calls across centrally cleared and non-centrally cleared markets… Going forward, these could have major implications for the liquidity management and funding needs of counterparties and possibly even their solvency in a scenario where liquidity stress leads to systemic fire-sales".[23] It is notable that in both events outlined above, leveraged financial institutions are being forced to deleverage to acquire liquidity, much like the situation that occurred in 2007/2008.[24]

These events do highlight significant concerns relating to financial stability in the EU shadow banking sector that are still not adequately addressed. In particular, it has been noted that rising margin levels are a systemic indicator and often the catalyst for future volatility.[25] Specifically, margin calls are associated with periods of financial stress, necessitating substantial reductions in leverage, which ultimately induces parties to run.[26] To demonstrate, consider a situation where the financial sector is "awash with liquidity", meaning that funding is plentiful.[27] When liquidity is easy to come by, during 'boom' periods, the outcome is high levels of leverage. Now consider a situation, outlined in *Figure 1* below, where a buyer and seller enter into a repo transaction.[28]

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20 The 'repo rate' will be discussed in greater detail in Chapter 5, section 3.3.3.

21 15 January, 2021.

22 The Economist (n 7). See also generally OECD, "The impact of the coronavirus (COVID-19) crisis on development finance" (24 June, 2020), available at: https://read.oecd-ilibrary.org/view/?ref=134_134569-xn1go1i113&title=The-impact-of-the-coronavirus-(COVID-19)-crisis-on-development-finance.

23 European Systemic Risk Board (n 11) 1 at 2-4. See also, Bank for International Settlements (n 11) 1 at 44.

24 Foroohar (n 7) 1 at 17.

25 M K Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007-2008" (2009), *23 (1) Journal of Economic perspectives* 77 at 94.

26 T Adrian and H S Shin, "The Shadow Banking System: Implications for Financial Regulation" (July, 2009) *382 Federal Reserve Bank of New York* 1 at 9.

27 See M Brunnermeier, "Financial Crises: Mechanisms, Prevention and Management" in M Dewatripont, X Freixas and R Portes (eds.) *Macroeconomic Stability and Financial Regulation: Key Issues for the G20* (2009) 91 at 92.

28 It should also be noted that this example could also be a securities lending or derivatives transaction. The graphical illustration is similar to, but different from, that found in A M Pacces, *The Role of the Future in Law and Finance* (2017) 6.

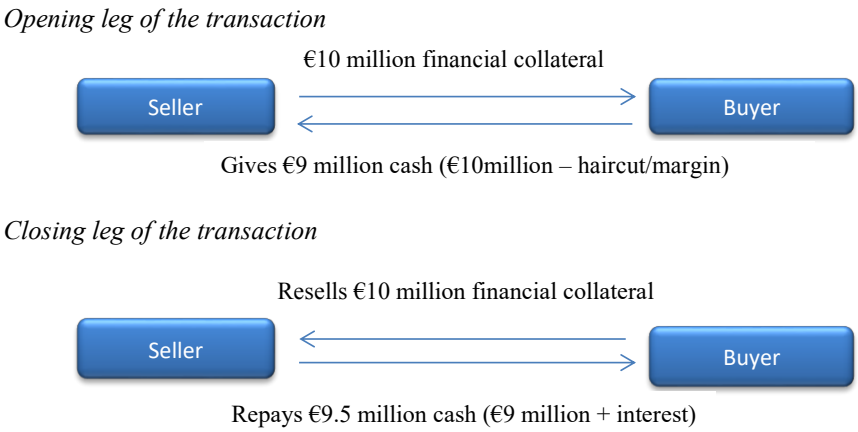

Figure 1: Repo Transaction

This repo transaction gives the seller € 10 million in cash on 10% margin.[29] Therefore, the seller has to fund € 1 million with its own capital and borrows € 9 million from the buyer. Margin is therefore the reciprocal of leverage. A higher level of margin indicates a lower leverage and a lower level of margin indicates a higher leverage. In order to secure the repo transaction, the seller provides the buyer with € 10 million worth of securities as financial collateral to hedge default risk. On maturity, the buyer will return equivalent financial collateral whilst the seller simultaneously returns principal plus interest. However, suppose that prior to maturity of the repo transaction, there is an adverse shock within the financial system, similar to that of 15 September 2019 or the current economic impact in relation to Covid-19 (or indeed Lehman Brothers in 2008).

Such an adverse event will potentially have four significant and simultaneous consequences on the whole financial system.[30] The first consequence of the adverse shock is the market risk arising from plummeting asset prices. Because the market shock directly translates to a decline in the value of the financial collateral, there is significant risk that the buyer may become *under-collateralised* (rather than overcollateralised). As such, there is a potential immediate impact on the seller's inability to fulfil their obligation under the repo transaction because the buyer will automatically trigger the seller to post additional financial collateral (via way of margin calls), who may or may not have the means to do so.

29 As will be discussed in subsequent chapters, the precise terminology is either 'haircut' or 'initial margin'. For the purpose of this example, the term 'margin' will be used.

30 These four consequences are also discussed in Spence (n 12) 1 at 25-27. See also, M Haentjens (ed), Y Diamant, J Siena, R Spence and A Zacaroli, *Financial Collateral: Law and Practice* (2020) 111-113.

The second consequence is the response by the buyer. The buyer will want to ensure that they do not end up in a worse financial position. Consequently, the buyer will safeguard their financial position by accepting the additional posted financial collateral and increasing the margin on the repo transaction. This has two significant repercussions. Firstly, the adverse shock will immediately reduce funding liquidity. Funding liquidity is a term used to illustrate the ease with which market participants can raise funding.[31] Consequently, the adverse shock will make the buyer extremely cautious, who will either tighten funding or become unwilling to extend new funding into the marketplace. This will adversely affect liquidity, investment and economic growth in the real economy because if lenders are unwilling to lend, then liquidity will start to dry-up. Secondly, assets will start to be bought and sold at fire sale prices, which will further depress the asset prices. For example, the seller will have to legally provide additional financial collateral to the buyer in order to fulfil its obligation under the repo transaction; equally, the buyer may want to liquidate its own position to minimise loss.[32]

The third consequence is the downward price spiral. As the fire sale ensues, the price of the assets being bought and sold will decline in value, resulting in further losses. This triggers further fire sales and a rise in risk premiums because financial market actors will want to ensure that they either minimise loss or maximise profits.

The fourth and final consequence is a reduction in market liquidity. Market liquidity relates to the ability of buyers and sellers of securities to transact speedily and efficiently without causing drastic change in the price of the assets.[33] The buying and selling enjoyed prior to the adverse shock will be low because it will be difficult to trade in an overly cautious marketplace. Liquidity can, therefore, be said to have 'evaporated' in that the shock has caused a leverage and liquidity spiral. This spiral has caused liquidity to dry-up and amplify a domino like chain of events that can potentially lead to a full-blown financial crisis.[34]

Given the inability of market participants operating in the EU shadow banking sector to internalise the costs associated with a negative impact like that outlined above, commentators argue there is "a *prima facie* justification for regulatory intervention… in order to prevent more widespread" market failures.[35] For the traditional banking sector, public sector intervention comprises deposit insurance, lender of last resort and an evolving body of prudential regulation. However, comprehensive regulation akin to that found

31 For a more in-depth analysis of 'funding liquidity', see Chapter 3, section 2.3.2.

32 European Systemic Risk Board (n 11) 1 at 2-4. See also, Bank for International Settlements (n 11) 1 at 44.

33 For a more in-depth analysis of "market liquidity", see Chapter 3, section 2.3.1.

34 Brunnermeier (n 25) at 91-94. See also, M K Brunnermeier and L H Pedersen, "Market Liquidity and Funding Liquidity" (2008) *The Society for Financial Studies* 1 at 3-7.

35 McVea (n 11) 177 at 182.

in the traditional banking sector has yet to find its way into the shadow banking sector. The real challenge for the shadow banking sector, then, as it was in the past for the traditional banking sector, is to prevent runs whilst ensuring an efficient credit supply.[36] The question therefore arises: how should regulators tame financial uncertainty and address systemic risk within the EU shadow banking sector?[37] It has been noted that leverage has been at the heart of many past financial crises.[38] This thesis will therefore argue that restricting leverage should be considered paramount. Importantly, margin is a mechanism that directly limits the amount of leverage a financial institution can obtain, and according to David Longworth:

> *"New regulations for margin requirements and haircuts are needed to dampen financial booms and busts".*[39]

Yet it should also be noted that regulating margin is a solution that does not come without risk. The success of regulation will depend upon its impact on the negative externalities that are generated within the shadow banking sector, particularly on the extent to which regulation forces shadow banks to internalise these externalities and at which cost.[40] Therefore, any new recommendations should be weighed and calibrated to ensure that benefit is maximised and risk minimised. Overly restrictive measures would undoubtedly result in stifling liquid and efficient markets as well as facilitating market participants to conduct regulatory arbitrage.

2 Research Questions

Based on the above problems and the potential contribution margin has in undermining financial stability, the central question of this thesis is:

36 J Benjamin, G Morton and M Raffan, "The future of securities financing" (2013) *7 Law and Financial Markets Review* 4 at 4.

37 European Systemic Risk Board (n 11) 1 at 2-4. See also generally, European Systemic Risk Board, "The macroprudential use of margins and haircuts" (2017); S L Schwarcz, "Regulating Shadow Banking" (2012) *31 Review of Banking & Financial Law* 619; J Armour, D Awrey, P Davies, L Enriques, J N Gordon, C Mayer and J Payne, *Principles of Financial Regulation* (2016) 3; A G Balmer, *Regulating Financial Derivatives: Clearing and Central Counterparties* (2018) 5.

38 V Constancio (n 12). See also, M Schularick and A M Taylor, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises 1870-2008" (2012) 102 (2) *American Economic Review* 1029-1061.

39 D Longworth, "Warding Off Financial Market Failure: How to Avoid Squeezed Margins and Bad Haircuts" (2010) 135 C.D. Howe Institute Backgrounder 1 at 1.

40 Brunnermeier (n 27) 91 at 92.

> *"How should mandatory margin requirements operate, from a legal and economic perspective, in the EU shadow banking sector?"*

To comprehensively answer the central research question requires an understanding of how margin *does* currently operate as well as an understanding of how margin *should* operate. As such, the central research question will be aided by four sub-questions:

1. *What is shadow banking, financial collateral and margin and how do they inter-relate?*
2. *Why have margin requirements and what purpose do they serve?*
3. *What is the current legal and regulatory framework in the EU for mandatory margin requirements?*
4. *How* should *margin requirements operate in the EU?*

Sub-question one asks "what is shadow banking, financial collateral and margin and how do they inter-relate?". In order to have an understanding of the role margin plays in the broader EU shadow banking sector, at the outset, it is first crucial to have an understanding of the key components, namely shadow banking, financial collateral and margin.

Sub-question two will explore the economic rationale for margin requirements and asks "why have margin requirements and what purpose do they serve?". In a collateral transaction, margin is an important risk mitigation tool that provides market participants with a crucial safety net used to hedge risk on the financial collateral by overcollateralising the transaction. However, it should also be noted that while margin is principally in place to mitigate risk, it is paradoxically a procyclical mechanism that is itself a source of systemic risk.

Sub-question three will explore and critically analyse "the current legal and regulatory framework in the EU for mandatory margin requirements". The legal underpinnings are principally in the form of industry standard master agreements, such as the Global Master Repurchase Agreement ("GMRA") for repos, the Global Master Securities Lending Agreement ("GMSLA") for securities lending transactions and the Credit Support Annex under the International Swaps and Derivatives Association ("ISDA") master agreement.

In terms of regulatory underpinnings, collateral transactions conducted in the EU shadow banking sector have several touchpoints and, where necessary, a critical analysis will be conducted into the following EU regulations and directives:

- European Market Infrastructure Regulation[41] ("EMIR") and the accompanying Regulatory Technical Standards[42] ("RTS");
- Securities Financing Transactions Regulation[43] ("SFTR");
- Financial Collateral Directive[44] ("FCD");
- Alternative Investment Fund Managers Directive[45] ("AIFMD");
- Undertakings for Collective Investment in Transferable Securities Directive[46] ("UCITS");
- Markets in Financial Instruments Directive II[47] ("MiFID II"); and,
- The evolving body of prudential regulation.[48]

Sub-question four asks the normative question of "how *should* margin requirements operate in the EU?". Because leverage has been at the heart of many past financial crises, finding a solution to limit leverage is of central importance. Margin has the ability to limit leverage, however it is a mechanism that

41 Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivative, central counterparties and trade repositories ("EMIR").

42 Commission Delegated Regulation (EU) 2016/2251 of 4 October 2016 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories with regard to regulatory technical standards for risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty ("RTS").

43 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.

44 Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements as amended by Directive 2009/44/EC of the European Parliament and of the Council of 6 May 2009 amending Directive 98/26/EC on settlement finality in payment and securities settlement systems and Directive 2002/47/EC on financial collateral arrangements as regards linked systems in credit claims ("FCD").

45 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 ("AIFMD").

46 Directive 2014/91/EU amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities as regards depository functions, remuneration policies and sanctions ("UCITS").

47 Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU ("MiFID II").

48 In particular, EU measures implemented under the Basel Accords, including the Capital Requirements Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending regulation (EU) No 648/2012 (OJ L 176) ("CRR"); see also, Bank Recovery and Resolution Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council ("BRRD").

is not subject to adequate regulation. This sub-question will therefore explore the various options in relation to the optimal operation of margin in the EU shadow banking sector from both a legal and economic perspective.

3 METHODOLOGY

The methodology of this research is driven by the central research question and the various sub-questions. Both a positive and normative methodology will therefore be employed. Before providing an answer to the central research question, which is normative in the sense that it asks how margin *should* operate, it is first crucial to understand how margin *does* currently operate in the EU shadow banking sector. It is important, then, to first describe "what is" in order to determine "what ought to be".[49]

Since this research is interdisciplinary in nature, being at the intersection of law and economics, the primary research method of this thesis will be a traditional theoretical analysis. This will involve exploring and critically analysing (published) literature, particularly in relation to the legal, economic and societal implications of shadow banking, financial collateral and margin. This means that the thesis will begin by adopting a positive methodology by exploring the issue of how *does* margin operate in the EU shadow banking sector from both a legal and economic perspective. As such, the findings presented in Chapters 1-7 are predominantly based on a factual analysis of published (legal and economic) literature, policy proposals and EU legislation. Chapter 8 will adopt a normative approach by providing several solutions to how margin *should* operate in the EU shadow banking sector. Along with the ideas and arguments put forward in this thesis, a general analysis of regulation and prescriptive literature, as well as published guidelines and recommendations issued by international financial institutions and EU organisations will be largely relied upon for the normative part of the research.

Within the positive framework outlined above, an empirical research method has also been employed, specifically in relation to Chapters 2 & 3. In particular, a qualitative research method was relied upon by conducting one-on-one interviews with a specific target audience (two face-to-face interviews and one telephone interview). Because there is a severe lack of granular data in the EU shadow banking sector, this research method enabled the collection of meaningful data/information, based on open ended questions, on the role financial collateral and margin play in the EU economy. The interviewees (one prominent practitioner and two industry experts) have specifically asked for confidentiality and in order to respect this, they will not be explicitly

49 V K Dibble and B Pekowsky, "What Is and What Ought to Be: A Comparison of Certain Characteristics of the Ideological and Legal Styles of Thought" (1973) *79 (3) American Journal of Sociology* 511-549.

named but rather generically referred to as "interviewee #1" etc. for citation purposes.

4 Scope and Limitations of Research

This study will focus on collateral transactions within the EU shadow banking sector from both a legal and economic perspective. Based on the focus of this study, there are several noteworthy limitations regarding scope. Each will be discussed in turn. Firstly, the legal and economic analysis of this research will be confined to the EU as a whole rather than a comparative analysis based on selected EU jurisdictions. This broad EU approach has been adopted because margin is a global issue that can have systemic implications on the entire financial system. To confine the research to a few selected jurisdictions would therefore have no practical relevance considering the view to expand the EU macroprudential (rather than microprudential) regulatory toolkit in relation to margin. Additionally, the EU has been chosen as this is where the research has been conducted and the author of this thesis is trained in EU law. However, it should be observed that in selected parts of this thesis, and where relevant, a comparison has been made with the United States of America ("USA"), albeit to a limited extent.

Secondly, this research is interdisciplinary in nature, specifically focusing on law and economics. From a legal perspective, financial law is a "functional, pragmatic and non-dogmatic" area of law.[50] As such, a practical approach is key. This study will focus on public and private law rules as laid down in EU regulations and directives, as well as exploring the legal and practical relevance of the industry standard master agreements. From an economic perspective, the growing importance of financial globalisation demonstrates the increasing global linkages created through cross-border financial flows. Financial markets are therefore not confined to a single jurisdiction but are largely interconnected. Therefore, the operation and regulation of margin relates not only to financial law but also economic perspectives and this study has the ambition to bring these perspectives together.

Thirdly, I have chosen a functional definition of shadow banking, which I understand to include the following transactions: repos, securities lending and derivatives. As such, this definition generalises from how shadow banking may function in specific markets or jurisdictions, which may differ in important aspects.

Lastly, although this research takes a broad EU and interdisciplinary approach aiming to bring pertinent legal and economic perspectives together, this research must equally have certain limitations else its completion would

50 M Hesselink, "The Structure of the New European Private Law" (2002) *6.4 Electronic Journal of Comparative Law*, available at: http://www.ejcl.org/64/art64-2.html.

otherwise become unattainable. Consequently, it does not cover every issue in relation to the legal and economic implications that may apply to mandatory margin requirements in the EU shadow banking sector. It leaves out, for example, applicable accounting standards and taxation treatment. It also does not cover the important aspects of behavioural economics – including information insensitivity, which may inform policy makers on the possible behaviour of market participants, also when having to predict how effective the rules proposed in this dissertation may be. These perspectives may be of great practical and societal relevance and while outside the scope of this study, could therefore be viewed as important topics for future study.

5 Structure of Thesis: A Roadmap

The structure of this thesis will provide an important roadmap and can be summarised as follows. Chapter 2 will discuss shadow banking. Since the Global Financial Crisis, the shadow banking sector has risen in stature to parallel the traditional banking sector and therefore now accounts for a significant part of the financial system. It is a sector that provides an alternative source of funding but without being subject to prudential regulation. In this regard, the shadow banking sector operates within the legal perimeter, yet outside the confines of prudential regulation. Given the vastness of the shadow banking sector and because it encompasses a varied set of entities, activities and transactions, there is currently ongoing debate regarding the "pejorative" nature of the shadow banking sector, which is arguably proving to be an obstacle to providing a clear and commonly agreed definition.[51] This chapter will therefore focus on what shadow banking is, how it should be defined and the role it played in the Global Financial Crisis. Importantly, it will also locate financial collateral and margin within the EU shadow banking framework.

Chapter 3 will analyse the use of financial collateral and its growing importance within the EU shadow banking sector. Financial collateral is often described as having 'money-like' equivalence given its importance in hedging default risk.[52] High-quality, liquid and safe assets are therefore the main currency used within the EU shadow banking sector, which commentators now often describe as the "collateral-based banking system".[53] The use of financial

51 J S Taub, "What We Don't Talk About When We Talk About Banking" in M H Wolfson and G A Epstein (eds), *The Handbook of the Political Economy of Financial Crises* (2013) 447 at 451.

52 M Singh, *Collateral and financial Plumbing* (2016) 35.

53 Bank of England, "Centre for Central Banking Studies" (2018) 1 at 14, available at: https://www.bankofengland.co.uk/-/media/boe/files/ccbs/ccbs-prospectus-2018.pdf?la=en&hash=CC52F29880CDDAE54988A3F24065123B0EB633F5. See also, P Mehrling, Z Pozsar, J Sweeney and D Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central banking, and

collateral has therefore become a widespread risk mitigation mechanism by financially underpinning various transactions, namely repos, securities lending and derivatives transactions. The smooth operation of these transactions is indeed facilitated by financial collateral, which is a crucial component enabling the economy to function efficiently. There are also issues of property law to consider when discussing financial collateral. For example, what entitlement any participating party has in relation to the financial collateral. This is especially important with regard to whether the financial collateral will be used for recovery or tradability reasons, which are particularly relevant in terms of insolvency, collateral velocity and its re-use/re-hypothecation.

Chapter 4 will deal with the issue of margin and its economic rationale. In order to explain 'what is margin?', the starting point is to understand that financial collateral serves as security and is intended to hedge default risk. Margin is in place to add a further layer of security by hedging the risk on that financial collateral. Therefore, margin is an important tool, in place to overcollateralise the transaction and essentially acts as a financial buffer against any potential price fluctuations. There is a distinction between margin provided *ex ante* and margin provided *ex post*. *Ex ante* margin requirements can either be in the form of a 'haircut' or 'initial margin' – both concepts result in the same outcome, the only difference being the arithmetic used in the calculation process. *Ex post* margin controls take account of the gains or losses on an open position by marking the financial collateral to market. The phrase 'mark-to-market' means that the posted financial collateral in a collateral transaction is valued based on the current market price and this value is then compared with the original/last valuation.[54] It should however be noted that while margin is principally a risk mitigation mechanism, it is equally a procyclical mechanism that can undermine financial stability.

Chapter 5 will explore the practical operation of collateral transactions within the EU shadow banking sector from the perspective of the pertinent master agreements, focusing particularly on financial collateral and margin. In the case of repos, the GMRA will be analysed. Because repos have essentially been transformed from a back-office activity in the 1970's to now become a central component of modern finance, it is important to understand how such transactions operate, especially in relation to risk mitigation measures, namely the application of margin. Securities lending transactions will also be explored from the perspective of the GMSLA. Repos and securities lending play a functionally similar role and this is also the case when discussing the role of margin. The collateralisation of a derivatives transaction from the perspective of the Credit Support Annex under the ISDA master agreement will also be

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the Future of Global Finance" (2012) *Institute for New Economic Thinking* 1 at 4 where the authors state that modern finance or the shadow banking system can also be termed the "collateral-based credit system"; Benjamin *et al* (n 36) 4 at 4-5.

54 Balmer (n 37) 49-50.

discussed. While the ISDA Credit Support Annex is crucial from a legal perspective, since the Global Financial Crisis there is now significant interplay between the ISDA Credit Support Annex and EMIR and the accompanying RTS.

Chapter 6 will discuss the role debt plays in the EU shadow banking sector. Traditionally only the traditional banking sector could create 'safe' debt in the financial system by way of demand deposits. However, with the progress of financial innovation, demand has now grown. As such, the shadow banking sector has successfully managed to replicate the functions of banking by creating a variant of demandable debt, not subject to prudential regulation and credibly backed by a direct claim on liquidity.[55] However, despite shadow banking produced debt being credibly underpinned, it is also 'runnable'. Shadow banking produced debt is runnable when market participants begin questioning the credibility of the asset class in question. A run is a systemic event and often deemed a precursor to crises. When asset prices fall, margin levels increase, which forces leveraged market participants to deleverage precisely at a time when asset prices are low and volatility is high. In this sense, shadow banking sector produced debt is 'runnable' and can therefore be destabilising.

Chapter 7 will explore the various regulatory mechanisms underpinning margin in the EU shadow banking sector. While margin is principally in place to hedge risk, it is paradoxically a procyclical mechanism that can undermine financial stability and exacerbate systemic risk. Importantly, margin is a mechanism that is largely untouched by regulation and is therefore left to the discretion of the contracting parties. However, despite there being no comprehensive EU wide measures covering margin in the EU shadow banking sector, margin is still nevertheless addressed, directly and indirectly, in certain parts of the legal and regulatory framework. The focus of this chapter will therefore be to map the legal and regulatory framework in relation to margin as it currently operates in the EU shadow banking sector.

Chapter 8 will be normative in nature by proposing four complementary measures in relation to how margin *should* operate within the context of collateral transactions in the EU shadow banking sector. Firstly, it is the author's view that all collateral transactions should be subject to mandatory central counterparty ("CCP") clearing. CCP clearing is beneficial because it provides a robust infrastructure that was put to the test during the Global Financial Crisis where "it succeeded perfectly".[56] The advantages of CCP clearing are the *de facto* implementation of mandatory margin requirements; the so-called 'default waterfall', which deals with mitigating risk through the various predefined lines of defence; and, the multilateral netting structure, which in contrast to close-out netting, prevents over-lending given that multilateral netting mutualises losses among all clearing members. However, the big

55 Benjamin *et al* (n 36) 4 at 4. See also, Perotti (n 5) 1 at 2; Spence (n 12) 1 at 1-2.
56 Balmer (n 37) 53-54.

problem yet to be addressed in the CCP clearing framework is that while there is the *de facto* implementation of mandatory margin requirements, the precise margin levels are still left to the discretion of the contracting parties. Therefore, this thesis argues to impose a harmonised regulatory supranational margin framework, consisting of minimum margin floors, countercyclical margin add-ons and a discretionary margin ceiling, all to be built into the CCP framework.

Chapter 9 concludes.

2 Shadow banking[1]

1 INTRODUCTION

As the saying goes, "if it looks like a dog, barks like a dog and walks like a dog, then it is a dog".[2] Yet an institution that acts like a bank and carries out the functions of a bank, may not be a bank, but instead, a shadow bank. According to Gary Gorton and Andrew Metrick, the shadow banking sector "performs *much* the same functions as traditional banking, but the names of the players are different and the regulatory structure is light… *to* non-existent".[3]

Since the 1970's the rise of the shadow banking sector has been rapid; it is a resilient sector that continues to grow and even after the 2007/2008 Global Financial Crisis, it now accounts for a significant part of the financial system.[4] Such impressive growth undoubtedly highlights the strength of the shadow banking sector and the consequent benefits it can bring to the economy as a whole. Significantly, the net credit growth of the economy since the Global Financial Crisis has come from the shadow banking sector rather than traditional banking channels.[5] However, the shadow banking sector also poses

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1 The chapter contains and builds upon the following work previously published by the author: K Parchimowicz and R Spence, "Basel IV Postponed: A Chance to Regulate Shadow Banking?" (2020) 13 (2) *Erasmus Law Review*. Also, R Spence, "The Vulnerabilities of Debt in the Shadow Banking Sector" (28-29 October, 2019) *Financial Stability Conference Paper, Berlin* 1-33, available at: http://financial-stability.org/wp-content/uploads/2019/11/2019_FSC-WS_PAPER_Spence_Vulnerabilities-of-debt-in-the-shadow-banking-sector.pdf.

2 L E Kodres, "What is Shadow Banking?" (2013) 50 (2) *Finance & Development* 42 at 42.

3 G Gorton and A Metrick, "Regulating the Shadow Banking System" (2010) *Brookings Paper on Economic Activity* 261 at 261-262 (*emphasis added*).

4 Financial Stability Board, "Global Shadow Banking Monitoring Report 2016" (10 May, 2017). See also, S L Schwarcz, "Shadow Banking and Regulation in China and Other Developing Countries" (2016) *Duke Law School Public Law & Legal Theory Series* 1 at 1-3; Z Pozsar, T Adrian, A Ashcraft and H Boesky, "Shadow Banking" (2013) *Federal Reserve Bank of New York Economic Policy Review* 1 at 13; C Lagarde, "The Challenge Facing the Global Economy: New Momentum to Overcome a new Mediocre" (2 October, 2014) *International Monetary Fund Speech at Georgetown University.*

5 R Davies, "The Moonshine of our Times: The Global Rise of Shadow Banking" (2015) *The International Economy* 70 at 71. See also, S Pearlstein quoting Federal Reserve Chair Jerome H Powell, "The shadow banks are back with another big bad credit bubble" (31 May, 2019) *Washington Post;* See generally, S Gebauer and F Mazelis, "Macroprudential regulation and

many risks, and given that it is not as stringently regulated as the traditional banking sector, it could become a serious cause of systemic concern. One only has to look to the Global Financial Crisis to discover the damaging role that the shadow banking sector played. As such, the importance of the shadow banking sector to the economy as a whole cannot be overemphasised.

The structure of this chapter, which is in three parts, can be summarised as follows. The first part of this chapter will attempt to define shadow banking. Due to the complex and arguably "pejorative" nature of shadow banking, there is now widespread controversy about what shadow banking is, and, as a consequence, how it should be defined.[6] Whilst the term 'shadow banking' is widely used, any attempt at a precise definition remains "shadowy" and "controversial".[7] In order to try and achieve an appropriate definition of 'shadow banking', it is first important to understand how the shadow banking sector operates in practice. Not only will this provide a useful roadmap for the rest of this thesis, but it will become clear that a reason as to why shadow banking has been so difficult to effectively define may be because the shadow banking sector encompasses a varied and largely unrelated set of entities, activities and transactions. This part of the chapter will therefore explore the various definitional responses, consisting of both the broad and narrow views in relation to trying to find an appropriate definition.

The second part of this chapter will discuss the evolution of the shadow banking sector. This will be approached by explaining the distinction between the traditional banking sector and the shadow banking sector. The International Monetary Fund categorises banking by distinguishing between *core* and *non-core* liabilities. *Core* liabilities encompass traditional banking and includes funding from public depositors; whereas *non-core* liabilities include all remaining funding sources, namely market funding that lie outwith the *core* definition.[8] It is therefore possible to categorise the traditional banking sector as falling under the *core* liability pillar and the shadow banking sector coming under the *non-core* liability pillar. Such a distinction is important because, for numerous reasons, the traditional banking sector has been the catalyst for the rise of the shadow banking sector.

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leakage to the shadow banking sector" (May, 2020) *2406 ECB Working Paper Series*, available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2406~af673f115a.en.pdf.

6 J S Taub, "What We Don't Talk About When We Talk About Banking" in M H Wolfson and G A Epstein (eds), *The Handbook of the Political Economy of Financial Crises* (2013) 447 at 451.

7 Financial Stability Board, "Shadow Banking: Scoping the Issues" (12 April, 2011) 1 at 2, available at: http://www.fsb.org/wp-content/uploads/r_110412a.pdf. See also, The Economist, "A Non-Bank by Any Other Name" (10 May, 2014), available at: http://www.economist.com/news/special-report/21601623-shadow-banks-are-easier-define-what-they-are-not-what-they-are-non-bank.

8 A Harutyunyan, A Massara, G Ugavio, G Amidzic and R Walton, "Shedding Light on Shadow Banking" (2015) *International Monetary Fund* 1 at 4-5.

The third and final part of this chapter will discuss the Global Financial Crisis and the need for regulation. Not only did the crisis expose significant fault lines within the financial system, but it also highlighted negative externalities. A negative externality occurs when an event like the Global Financial Crisis imposes costs on innocent third parties, such as society at large, for which these parties are not adequately compensated.[9] Because the shadow banking sector was at the very epicentre of the crisis, and the fact that the shadow banking sector remains outside prudential regulation, is indeed problematic. The concern is that without adequate regulation, the adverse effects that the shadow banking sector has had on the economy as a whole could easily re-appear should another crisis ensue.

2 DEFINING SHADOW BANKING

2.1 The Origins of Shadow Banking

In 2007, at the Annual Economic Policy Symposium of the Kansas City Federal Reserve in Jackson Hole, Wyoming, American economist Paul McCulley coined the term 'shadow banking' to describe a system that posed significant risk to financial stability because it was untouched by regulation, has lain hidden for years and operates on a subterranean level.[10] Yet despite 'shadow banking' being a relatively new term in the financial lexicon, the concept is not – the origins arguably tracing back to nineteenth century England when Walter Bagehot wrote *Lombard Street: A Description of the Money Market*.[11] Bagehot observed that London banks operated in parallel with financial firms known as 'bill brokers', who performed much the same functions as banks, but were not banks. Bagehot noted that bill brokers were "a special sort of banker who allow daily interest on deposits, and who for most of their money give security" as collateral to hedge risk.[12] In modern day terms, Bagehot's definition of 'bill brokers', who performed the activity of converting bills into money, is very similar to what is known today as shadow banking.[13]

Walter Bagehot is not the only commentator to recognise the importance of the shadow banking sector over the decades, however. There have been

9 J Armour, D Awrey, P Davies, L Enriques, J N Gordon, C Mayer and J Payne, *Principles of Financial Regulation* (2016) 57.

10 P A McCulley, "Teton Reflections" (2007) 2 *PIMCO Global Central Bank Focus*.

11 W Bagehot, *Lombard Street: A Description of the Money Market* (1873).

12 *Ibid* at 28.

13 For example, collateral transactions (namely, repurchase agreements, securities lending and derivatives), which will be discussed in greater detail in subsequent chapters. See also, M Ricks, "Regulating Money Creation after the Crisis" (2011) *Harvard Law School* 75 at 87-88; A M Pacces and H Nabilou, "The Law and Economics of Shadow Banking" (2017) *ECGI Working Paper Series in Law* 1 at 5.

a whole host of other examples,[14] one of which is described by Friedrich Hayek, who, in 1931, observed that:

> *"There can be no doubt that besides the regular types of circulating medium, such as coin, bank notes and bank deposits, which are generally recognised to be money or currency, and the quantity of which is regulated by some central authority… there also exists other forms of media of exchange… without being subject to any central control".*[15]

2.2 The Characteristics of Shadow Banking

The shadow banking sector functions within the legal perimeter, yet outside the confines of prudential bank regulation. Unlike the traditional banking sector, the shadow banking sector is not a single identifiable system, but a constantly evolving sector comprising a largely unrelated set of entities, activities and transactions. In particular, the shadow banking sector decomposes the process of credit intermediation into a sequence of discreet operations, which are pursued by very different types of financial market actors, who interact and rely upon the wholesale funding market.[16] In doing so, the shadow banking sector participates in the activity of credit intermediation by redistributing risk through credit, maturity and liquidity transformation, raising systemic risks, especially if combined with high leverage. Credit intermediation is indeed a defining characteristic of the shadow banking sector, and can be elucidated as follows:[17]

- *Leverage:* As opposed to using equity, leverage involves investing utilising borrowed funds;
- *Transferring credit risk:* The purpose of transferring risk is to pass it from one party who does not want the risk, to another party who is willing, for a fee, to take on the burden of risk;

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14 In 1993, the activity of what is known today as shadow banking was referred to as the "parallel banking system", see generally J W D'Árista and T Schlesinger, "The Parallel Banking System" *Economic Policy Institute Briefing Paper* (1993); P Mehrling, Z Pozsar, J Sweeney and D Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance" (2012) *Institute for New Economic Thinking* 1 at 1-2.

15 F A Hayek, *Prices and Production* (1931) 113-114. See also, J Sweeney, "When Collateral is King" (2013) *Credit Suisse* 1 at 2-4, available at: http://www.bankofengland.co.uk/research/Documents/ccbs/Workshop2013/presentation_sweeney.pdf.

16 S Ghosh, I Gonzalez del Mazo and I Otker-Robe, "Chasing the Shadows: How Significant is Shadow Banking in Emerging Markets?" (2012) *88 The World Bank* 1. See also, R Spence "The Shadow Banking Conundrum" (2017) *Leiden Law Blog*, available at: https://leidenlawblog.nl/articles/the-shadow-banking-conundrum.

17 European Banking Authority, "EBA issues final Guidelines on institutions exposures to shadow banking entities and recommends approach to limiting risks" (15 December, 2015), available at: https://www.eba.europa.eu/-/eba-issues-final-guidelines-on-institutions-exposures-to-shadow-banking-entities-and-recommends-approach-to-limiting-risks.

- *Maturity transformation:* Involves borrowing funds for short periods of time and investing or lending for longer periods of time; and,
- *Liquidity transformation:* The term 'liquidity' represents the ease with which an asset can be turned into cash. Liquidity transformation relates to assets, such as cash, which is used to invest in less liquid assets, such as, shares or bonds.

Participants of the shadow banking sector include a wide range of bank and non-bank financial intermediaries conducting various activities who are not subject to prudential banking regulation. Players typically include, but are not limited to, money market mutual funds, hedge funds, prudentially regulated banks, investment firms/banks and special purpose vehicles to name a few.[18] The transactions through which these entities carry out their activities are generally repos, securities lending and/or derivatives transactions.[19]

Figure 2 below gives an illustration of the distinguishing features of the shadow banking sector and seeks to depict one of the many examples as to how this sector operates in practice.[20]

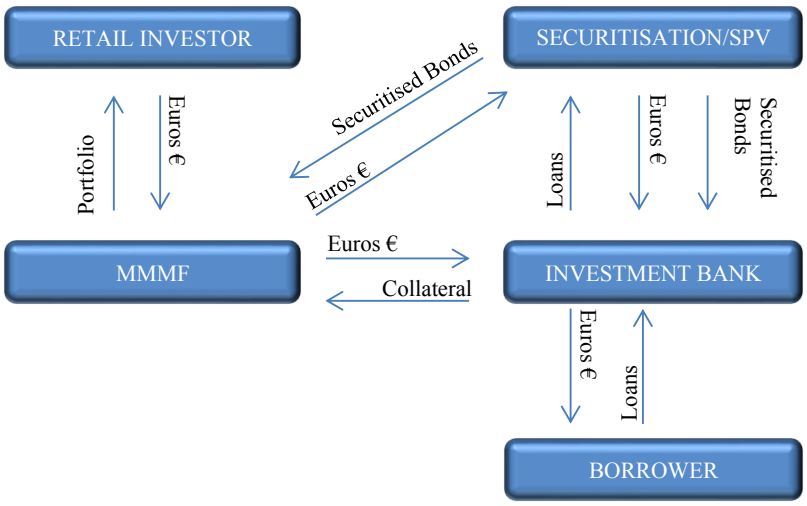

Figure 2: Shadow Banking Sector

Figure 2 above illustrates that a retail investor has chosen to invest outwith the traditional banking sector. In this example, the retail investor, such as a

18 This list is not finite; in fact, virtually any entity operating in the financial system can conduct shadow banking in one way or another.
19 These transactions will be discussed in greater detail in subsequent Chapters 3 and 5.
20 Gorton and Metrick (n 3) at 264.

high net worth individual, whose investment exceeds the European Deposit Guarantee Scheme threshold of € 100,000,[21] has decided to invest in a money market mutual fund in return for shares in an investment portfolio. A money market mutual fund is a fund that invests in debt securities characterised by their minimal credit risk and short maturities. Now that the money market mutual fund has the new cash investment, it will then sell the money to, for instance, an investment bank. In return for the cash from the money market mutual fund, the investment bank will post collateral to hedge default risk. The collateral, in the form of marketable securities, is priced using a mark-to-market valuation and a certain percentage is discounted from this price, which is intended to hedge the risk on the collateral. The discounted percentage is referred to as the 'haircut' or 'initial margin' and is designed to provide a further layer of security against market price fluctuations.[22]

Given the size of transactions typically involved in the shadow banking sector, which will very quickly exceed the levels protected under the European Deposit Guarantee Scheme, the money market mutual fund will require assurance that they will be able to recoup the principal sum should the investment bank not be able to return the cash upon maturity. Collateral and the use of margin are these assurances and act as the functional equivalent to the European Deposit Guarantee Scheme found in the traditional banking sector. The transaction carried out between the money market mutual fund and investment bank is called a repo.[23] A repo is a contract where upon maturity, the principal amount is returned, with interest, whilst simultaneously returning equivalent collateral. In the EU, a repo is structured legally as a sale and repurchase but in practice behaves economically as a loan and repayment.[24]

However, the shadow banking sector is rarely as straightforward as suggested in the example above. For instance, it is often the case that the investment bank will not have enough collateral to complete the transaction with the money market mutual fund. In such a situation, the investment bank can,

21 Recitals 21 and 23 and Article 6 (1) and (2), Directive 2014/49/EU of the European Parliament and the Council of 16 April 2014 on Deposit Guarantee Schemes ("DGSD"). Under the newly formed European Banking Union, the third pillar, titled the European Deposit Insurance Scheme ("EDIS"), is not yet operational. However, EDIS will take over from the current European Deposit Guarantee Scheme. On this, see Commissioner Lord Hill at the Press Conference on the EDIS Proposal at the European Parliament on 24 November, 2015 in Strasbourg, available at: http://europa.eu/rapid/press-release_SPEECH-15-6154_en.htm.

22 M Haentjens and P de Gioia-Carabellese, *European Banking and Financial Law* (2020) 236-238.

23 It must also be noted that money market mutual funds also invest in commercial paper, which is not collateralised.

24 By contrast, in the United States of America a repo transaction does not transfer legal title to the collateral, so title transfer is backstopped by the contingent pledging of collateral but with the pledge exempted from certain US Bankruptcy Code provisions that would normally apply to pledges. On this see, International Capital Market Association, "Frequently Asked Questions on Repo" (January, 2019) 1 at 17-18, available at: https://www.icmagroup.org/assets/documents/Regulatory/Repo/Repo-FAQs-January-2019.pdf. See also Haentjens and de Gioia-Carabellese (n 22) 231.

for example, generate on-balance sheet loans. They can get these loans on their balance sheet by taking all the Euros that it has received from the money market mutual fund and hand them over to borrowers as loans. What the investment bank will then do is sell and transfer their claims under the loan agreements to a 'special purpose vehicle' in a securitisation. The reason that the investment bank does this is that the securitisation can create, from the raw material of the loans, forms of asset-backed securities that can then be turned into bonds, which can subsequently be used as collateral for the money market mutual fund. In addition, the money market mutual fund may also be direct purchasers of this collateral, where they buy the bonds from the securitsation vehicle and in return, give cash over. That cash would then get recycled back through the investment bank in the same way as described above.

Through creative thinking, the investment bank that previously did not have enough collateral to complete the transaction is now able to finance all of its activity. This is done through multiple steps and these steps are necessary because no entity providing such a sum will want to complete such a transaction on an unsecured basis.

Entities operating in the shadow banking sector are not only closely linked to one another; they are also heavily interconnected with entities operating within the traditional banking sector.[25] There are indeed several channels that feed the interconnections between the shadow banking sector and the traditional banking sector, namely:[26]

- Traditional banks may be part of the shadow banking sector intermediation chain;
- Traditional banks can obtain funding through money market mutual funds or other entities and transactions that are part of the shadow banking sector; and,
- Traditional banks can provide financial support to the shadow banking sector through the provision of funds or contingent credit lines.

Many shadow banking activities involve a vast network of financial instruments, such as collateral transactions, which at some stage may have originated or been held by a traditional sector bank.[27] Commentators have therefore gone as far to state that shadow banks are effectively a subsidiary of their

25 H Hannoun, "Financial Deepening Without Financial Excesses" (21 March, 2008) *Bank for International Settlements Speech at the 43rd SEACEN Governors' Conference, Jakarta* 1 at 8, available at: http://www.bis.org/speeches/sp080403.pdf.

26 E Jeffers and C Baicu, "The Interconnections Between the Shadow Banking System and the Regular Banking System: Evidence form the Euro Area" (2013) *2013/07 CITYPERC Working Paper Series* 1 at 4.

27 D Luttrell, H Rosenblum and J Thies, "Understanding the Risks Inherent in Shadow Banking: A Primer and Practical Lessons Learned" (2012) *Federal Reserve Bank of Dallas Staff Papers* 1 at 6.

traditional parent bank.[28] While a key difference between the shadow banking sector and the traditional banking sector is that traditional sector banks are subject to prudential regulation and the shadow banking sector is not, it is still often very difficult to draw a clear line between traditional banking sector and shadow banking sector activities.[29]

> *"Due to the interconnectedness of financial institutions' balance sheets through a web of counterparty exposure and difficult to value securities, market participants can quickly lose confidence because of their inability to manage and measure risk appropriately".*[30]

Such interconnectedness creates a channel for contagion and therefore systemic risk within the entire banking system. Difficulties within the shadow banking sector can, therefore, propagate within the traditional sector and vice versa, thereby affecting the real economy.[31]

2.3 Appropriateness of the Term

The fact that the shadow banking sector now accounts for a significant part of the financial system makes one wonder whether the term 'shadow banking' is "pejorative"?[32] Indeed, the term automatically implies a sector of dubious legality containing somewhat "clandestine" and "nefarious" connotations.[33] Arguably, however, this explanation does capture the activities that played a large part in precipitating and exacerbating the Global Financial Crisis, such as excessive self-interest, corporate greed, poor governance and regulatory

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28 P Tucker, "Shadow Banking: Thoughts for a Possible Policy Agenda" (27 April, 2012) *Bank of England Speech* 1 at 2, available at: http://www.bankofengland.co.uk/archive/Documents/historicpubs/speeches/2012/speech566.pdf. See also, J Lee, "Shadow Banking in China: Boon or Threat?" (2016) *Financier Worldwide* 1 at 5, available at: http://www.financierworldwide.com/shadow-banking-in-china-boon-or-threat/#.V5fYmpOAOko; M L Fein, "The Shadow Banking Charade" (15 February, 2013) 1 at 8, available at: https://www.sec.gov/comments/s7-04-09/s70409-95.pdf – where Melanie Fein argues that commercial banks have now become the largest shadow banks.

29 Luttrell *et al* (n 27) at 6.

30 Luttrell *et al* (n 27) at 15.

31 N Doyle, L Hermans, P Molitor and C Weistroffer, "Shadow Banking in the Euro Area: Risks and Vulnerabilities in the Investment Fund Sector" (2016) *174 European Central Bank Occasional Paper* 1 at 3, available at: https://www.ecb.europa.eu/pub/pdf/scpops/ecbop174.en.pdf?2cc4d889706adbcb918c06de4e5df144.

32 M Singh, "The Economics of Shadow Banking" (2013) *Reserve Bank of Australia Conference Volume* 5 at 22 (footnote 29). See also, Spence (n 16).

33 J Macey, "It's All Shadow Banking, Actually" (2011 – 2012) *31 Rev. Banking & Fin. L* 593 at 593. See also, E Lee, "Shadow Banking System in China after the Global Financial Crisis – Why Shadow Banks can Distort the Capital Market Order" (2015) *3 Peking University Law Journal* 361 at 362-363.

arbitrage[34] – this is potentially a reason as to why the shadow banking sector now has such an ignominious reputation.[35]

Yet the shadow banking sector is not all related to systemic risk. There are many elements of the sector that pose little systemic threat. As such, commentators have argued that it may be beneficial to disaggregate the various elements that fall under the ambit of the shadow banking sector by assessing the risks and benefits they present.[36] It is arguably incorrect and technically imprecise to categorise the safe and beneficial aspects under the negative term 'shadow banking'. In an attempt to facilitate this disaggregation, more synonymous and neutral phrases, such as, "parallel banking",[37] the "market-based credit system",[38] "non-bank financial intermediation"[39] and "near-bank entities"[40] have all been coined in an attempt to replace the original term. An interesting comparison can be drawn with India, who uses the term: "Non-Banking Financial Company", which has been within the regulatory architecture of the Reserve Bank of India since 1963.[41] Nevertheless, despite the valiant efforts, the term 'shadow banking' continues to be used in most jurisdictions and by many commentators, potentially to highlight that a problem exists and the urgent need to address it.[42]

The term 'shadow banking' is, therefore, both an unfortunate use of words and a stroke of genius. Unfortunate, because the term is wrongly ascribed to many safe and beneficial elements of the financial system. Genius, because the very phrase 'shadow banking' invokes something hidden, furtive even;

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34 The Global Financial Crisis will be discussed in greater detail below, see section

35 E McBride and S Pignal, "Shadow and Substance" (10 May, 2014) *The Economist*, available at: http://www.economist.com/sites/default/files/20140510_international_banking.pdf.

36 D K Tarullo, "Thinking Critically about Nonbank Financial Intermediation" (17 November, 2015) *Speech given at the Brookings Institution in Washington D.C.,* available at: https://www.federalreserve.gov/newsevents/speech/tarullo20151117a.htm.

37 T Geithner, "Reducing Systemic Risk in a Dynamic Financial System" (9 June, 2008) *Federal Reserve Bank of New York.* See also, D'Árista and Schlesinger (n 14) at 7.

38 P Mehrling, *The New Lombard Street: How the Fed Became the Dealer of Last Resort* (2011) 113. See also, P Mehrling, Z Pozsar, J Sweeney and D H Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance" (2013) 1 at 2-4.

39 Financial Stability Board, "Global Monitoring Report on Non-Bank Financial Intermediation 2019" (19 January, 2020), available at: https://www.fsb.org/wp-content/uploads/P190120.pdf.

40 R H Huang, "Shadow Banking and its Regulation: The Case of China", in R Buckley, E Avgouleas and D Arner (eds) *Reconceptualising Global Finance and its Regulation* (2016) Chapter 17 generally.

41 Non-banking finance companies are said to include: Insurance companies, pension funds and public financial institutions. See, R Gandhi, "Danger Posed by Shadow Banking Systems to the Global Financial System – The Indian Case" (21 August, 2014) *International Conference on Governance & Development: Views from G20 Countries* 1 at 4-5, available at: http://www.bis.org/review/r140827b.pdf.

42 Huang (n 40) at 340.

a sort of film noir backdrop in contrast to the well-lit setting of the insured depository banking institution.[43]

2.4 The Definition Problem

'Shadow banking' is often used as a catch-all term to refer to a number of divergent entities, activities and transactions. The amorphous nature of the term 'shadow banking' has arguably become an obstacle to providing a clear and commonly agreed definition. There are many different objects wrapped up in this term, each manifesting different issues requiring different definitional responses.[44] The current debate is centred around two approaches to defining shadow banking, namely the broad approach, which covers entities and activities, and the narrow approach, which identifies transactions – each will be discussed in turn.

2.4.1 A broad definition

American economist Paul McCulley, who as noted above coined the term 'shadow banking', defined shadow banking as "the whole alphabet soup of levered up non-banking investment conduits, vehicles and structures".[45] However, one could argue that McCulley's definition does very little in defining shadow banking. Instead, it merely describes the world of structured finance, which creates and utilises these forms of vehicles, structures and conduits.[46] Since McCulley's attempt at defining shadow banking, there have been many other definitional responses, some of which are outlined in the *Broad Definition Matrix* below.

43 A Nesvetailova, "The Evolution of Nowhere Banking" (2014) *Risk & Regulation* 6 at 6-7.

44 S L Schwarcz, "Regulating Shadow Banking" (2013) 31 *The Review of Banking & Financial Law* 619 at 642 (footnote 104).

45 McCulley (n 10). See also, Schwarcz (n 44) at 620; J S Alworth and G Arachi, *Taxation and the Financial Crisis* (2012) 192.

46 Schwarcz (n 44) at 620.

Table 1: Broad Definition Matrix:

AUTHOR	DEFINITION
Bank of England (2010)	"Instruments, structures, firms, or markets which, alone or in combination, replicate, to a greater or lesser degree, the core features of commercial banks: monetary or liquidity services, maturity mismatch, and leverage".[47]
Financial Stability Board (2011)	"Credit intermediation involving entities and activities outside the regular banking system".[48]
European Central Bank (2012)	"Activities related to credit intermediation, liquidity, and maturity transformation taking place outside the regulated banking system".[49]
Federal Reserve (2013)	"Shadow banking activities consist of credit, maturity, and liquidity transformation that take place without direct and explicit access to public sources of liquidity or credit backstops".[50]
Deutsche Bundesbank (2014)	"All entities and activities that are involved in credit intermediation outside the regular commercial banking system".[51]

Every definition outlined in *Table 1* above adopts a broad and all-encompassing approach. For several reasons, trying to define shadow banking in such a way is arguably a fruitless endeavour. Firstly, the scope of these definitions are too wide – the purpose of defining shadow banking in this way appears to be more suitable for surveillance and monitoring, rather than to provide an adequate workable definition. Secondly, these definitions are not the most enlightening, and raise more questions than they answer. Questions, such as, who are the entities and what are the activities and transactions that comprise the shadow banking sector?[52] Thirdly, financial innovation and regulatory change across multiple jurisdictions ensures that the nature of the shadow banking sector is fluid and constantly evolving.[53] It is therefore submitted

47 P Tucker, "Shadow Banking, Financing Markets and Financial Stability" (21 January, 2010) *Bank of England News Release.*

48 Financial Stability Board, "Shadow Banking: Strengthening Oversight and Regulation" (27 October, 2011) 1 at 1.

49 K Bakk-Simon, S Borgioli, C Giron, H Hempell, A Maddaloni, F Recine and S Rosati, "Shadow Banking in the Euro Area: An Overview" (April, 2012) *133 ECB Occasional Paper Series* 1 at 5.

50 Pozsar *et al* (n 4) at 1.

51 Deutsche Bundesbank, "The shadow banking system in the euro area: overview and monetary policy implications" (March, 2014) *Monthly Report* 15 at 17.

52 V Lemma, *The Shadow Banking System: Creating Transparency in the Financial Markets* (2016) 18. See also, E Lee, "The Shadow Banking System – Why it Will Hamper the Effectiveness of Basel III" (2015) *008 University of Hong Kong Faculty of Law Research Paper* 1 at 13.

53 Financial Stability Board (n 4) at 2.

that trying to define shadow banking using this broad approach will always be a challenge. Identifying and summarising a complete set of characteristics that can apply to past, present and future shadow banking entities, activities and transactions may prove to be too difficult a task.

2.4.2 *A narrow definition*

Instead of adopting a broad and all-encompassing definition, a better approach may be to construct a definition in relation to the purpose for which shadow banking is used. For example, the purpose of this thesis will be to focus on collateral transactions and particularly the role of collateral and margin within the EU shadow banking sector by exploring shadow banking as a market-based finance system that has its roots in the money markets. The money market is a market where transactions such as repos, securities lending and derivative contracts facilitate collateralised finance; it is a market where long-term capital market assets are funded with short-term money market liabilities. According to Perry Mehrling and others, one-way of describing collateral transactions in the shadow banking sector is: "money market funding of capital market lending".[54] The *Narrow Definition Matrix* below illustrates two possible responses to a workable definition of shadow banking.

Table 2: Narrow Definition Matrix:

AUTHOR	DEFINITION
Daniela Gabor and Jakob Vestergaard (2016)	"Repo liabilities supported by tradable collateral".[55]
Alessio Pacces and Hossein Nabilou (2016)	"Leveraging on collateral to support liquidity promises".[56]

The aforementioned definitions can be described as 'functional'. A functional approach is able to unpack the economic purposes of the transactions used within the shadow banking sector. Such an approach is beneficial because it is intended to capture the complex practices through which money is created within the modern financial system.[57] Exploring the shadow banking sector in this way, that is, through the lens of the transactions with which the shadow banking sector functions, requires a "money view".[58] The money view

54 Mehrling *et al* (n 38) at 2.
55 D Gabor and J Vestergaard, "Towards a theory of shadow money" (2016) *Institute for New Economic Thinking Working Paper* 1 at 1.
56 Pacces and Nabilou (n 13) at 11.
57 Gabor and Vestergaard (n 55) 1 at 2-5.
58 P Mehrling, "Essential hybridity: A money view of FX" (2013) *41 (2) Journal of Comparative Economics.*

captures a distinctive element of the shadow banking sector: it is a market-based finance system where debt relationships are organised via tradable securities.[59]

Both definitions in *Table 2* above refer to collateral, and it is precisely the presence of collateral that gives the shadow banking sector its distinctive character. Collateral comes in the form of marketable financial assets and depending upon the liquidity of the collateral, implies the promise of cash immediacy without making much of a loss. Collateral can therefore be described as a mechanism that is designed to hedge default risk. It is a safety net implying that, should the borrower default, the collateral can be liquidated to make good on the promise. Collateral is the underpinning feature that makes such promises credible. As such, collateral is widely recognised as having "money",[60] "cash"[61] and "quasi-money"[62] like equivalence. However, the implied liquidity of collateral, and the fact that it can be considered to be as safe as money, makes the contracts backed by the collateral, such as repos, securities lending and derivatives, subject to run[63] – which was a fundamental issue during the Global Financial Crisis and continues to be an issue during the current Covid-19 pandemic.[64]

3 THE RISE OF SHADOW BANKING

3.1 Introduction

How then has the shadow banking sector risen to prominence? There are arguably four inter-related steps of reasoning. Firstly, changes in prudential regulation underpinning the traditional banking sector, such as the evolution of the Basel Accords. Secondly, as a result of new incoming prudential regulation, there has arguably been a subsequent drop in profitability in the traditional banking sector. Thirdly, this drop-in profitability has proved to be a

59 Chapter 6 "The Role of Debt in the Shadow Banking Sector" explores debt relationships in greater detail. See also generally, Gabor and Vestergaard (n 55).

60 G Yeowart, R Parsons, E Murray and H Patrick, *Yeowart and Parsons on the Law of Financial Collateral* (2016) 155.

61 M Singh, *Collateral Reuse and Balance Sheet Space* (2017) 5.

62 E Perotti, "The roots of shadow banking" (December, 2013) *69 Policy Insight Centre for Economic Policy Research* 1.

63 Pacces and Nabilou (n 13) at 5.

64 At the time of writing 15 January, 2021. Issues in relation to the Global Financial Crisis and Covid-19 will be discussed in greater detail below. See also generally, A Schrimpf, H S Shin and V Sushko, "Leverage and margin spirals in fixed income markets during the covid-19 crisis" (2 April, 2020) *2 BIS Bulletin*. See also, OECD, "The impact of the coronavirus (COVID-19) crisis on development finance" (24 June, 2020), available at: https://read.oecd-ilibrary.org/view/?ref=134_134569-xn1go1i113&title=The-impact-of-the-coronavirus-(COVID-19)-crisis-on-development-finance.

real challenge and market participants have therefore exploited regulatory arbitrage and found new ways to conduct business outside the prudentially regulated perimeter. Lastly, because market participants have found ways to avoid the costly and burdensome prudential regulation, financial innovation has flourished, resulting in an increased demand for novel and adaptable financial products offering an above market yield. These factors have all been key facilitators of the rise of the shadow banking sector and as such, each will be discussed in turn.

3.2 Prudential Regulation

Before discussing the evolution of the Basel Accords, it is first important to note that in the EU, in order to reach the status of a 'bank' operating in the traditional banking sector, and carry out the prudentially "regulated activity of accepting deposits… from the public", the "credit institution" must meet various regulatory requirements to gain a banking licence.[65] By contrast, to perform shadow banking is a much simpler and cheaper process because there is no requirement of holding such a licence. This is because the shadow banking sector does not have public depositors who require protection in the form of prudential regulation, but instead, have investors who themselves take on the burden of risk.[66]

3.2.1 Evolution of the Basel Accords

The evolution of the various Basel Accords has been noted to have inadvertently fuelled the growth of the EU shadow banking sector.[67] According to the Basel Committee on Banking Supervision, the aim of the Basel Accords is to:

> *"Strengthen global capital and liquidity rules with a goal of promoting a more resilient banking sector. The objective… is to improve the banking sector's ability to absorb shocks arising from financial and economic stress… thus reducing the risk of spill-over from the financial sector to the real economy".*[68]

65 Article 4 (1) (1) of the Capital Requirements Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending regulation (EU) No 648/2012 (OJ L 176) ("CRR").

66 Kodres (n 2) at 42.

67 B Baur and P Wackerbeck, 'Into the Shadows: How Regulation Fuels the Growth of the Shadow Banking Sector and how Banks Need to React' (19 June, 2013) *European Financial Review,* available at: http://www.europeanfinancialreview.com/?p=1065.

68 Basel Committee on Banking Supervision, "Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems" (2010), available at: http://www.bis.org/publ/bcbs189.pdf.

However, it has been argued that Basel I and II were major drivers that led to the Global Financial Crisis.[69] In particular, the proliferation of off-balance sheet exposures and inadequate growth of banks' capital, which were facilitated by the shadow banking sector, undermined Basel II's risk weighted capital regulation regime. Moreover, after the Global Financial Crisis, Basel III came into effect which significantly amended Basel II and was aimed at preventing another crisis by reducing financial and economic stress and minimising the aftershock effects in the economy.[70]

3.2.1.1 Basel III

Under Basel III, there are three specific requirements imposed on banks that can be argued to have given rise to shadow banking. Firstly, in the EU there is a capital adequacy regime holding that traditional sector banks must maintain a set minimum capital level of 8%.[71] This means that banks operating in the traditional banking sector are required to hold a minimum ratio of capital to risk-weighted assets. By holding a percentage of deposits on the balance sheet, the ultimate aim is to ensure the stability of the financial system by keeping the traditional banking sector solvent.

In order to calculate the capital a bank needs to hold against its assets, the Capital Requirements Regulation describes how to weigh a bank's assets relative to risk. This phenomenon is the so-called 'risk weighted assets'. Assets that are safe and highly liquid, such as cash or gold are disregarded from the risk weighted asset regime; other assets that carry a higher risk, such as loans to other institutions are attributed a higher risk weight. The riskier assets the bank holds, the more capital it has to maintain. Capital comes in two forms: *going concern and gone concern*, each will be discussed in turn.

- *Going concern* capital is the type of capital that has a loss absorbing capacity so that a bank can continue its activities and remain solvent. This type of capital is referred to as Tier 1 capital. Under Article 25 of the Capital Requirements Regulation, Tier 1 capital consists of both Common Equity Tier 1 ("CET 1") capital and Additional Tier 1 ("AT 1") capital. CET 1 can be capital instruments, share premium accounts, retained earnings and other reserves. AT 1 capital is not defined in the Capital Requirements Regulation but must comply with Article 52 (1) of the Capital Requirements Regulation. For example, certain subordinated loans, hybrids and convertibles.

69 Basel II adopted several of the Basel I requirements. See also, F Cannata and M Quagliariello, "The Role of Basel II in the Subprime Financial Crisis: Guilty or Not Guilty?" (2009) 1 at 15, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1330417.

70 See generally, Basel Committee on Banking Supervision (n 68).

71 Article 92 (1) (c) CRR.

- *Gone concern* capital helps ensure that depositors and senior creditors can be repaid, should the bank fail. This type of capital is called Tier 2 capital and is defined under Article 71 of the Capital Requirements Regulation. Tier 2 capital consists of capital instruments, subordinated loans and share premium accounts.

The minimum 8% capital requirement regime is composed of 6% Tier 1 capital, namely 4.5% of CET 1 and 1.5% of AT 1; and, 2% is composed of Tier 2 capital.[72]

Secondly, an underlying feature of the Global Financial Crisis was the build-up of excessive leverage in the traditional banking sector. In many cases, banks built up excessive leverage while maintaining strong risk-based capital ratios. Basel III seeks to restrict this by encouraging banks to take initiatives to reduce their balance sheets by placing a limit on the size of activities a bank can develop compared to its own capital. To achieve this, a minimum leverage ratio has been developed. The "leverage ratio is calculated by dividing a bank's CET 1 capital by the bank's average total consolidated assets. Banks have been set a target of maintaining a leverage ratio in excess of 3% under Basel III".[73]

The third requirement Basel III imposes on the traditional banking sector is the introduction of liquidity ratios. The first is the 'liquidity coverage ratio'. The objective of the liquidity coverage ratio is to promote the short-term resilience of the liquidity risk profile of banks. It does this by ensuring that banks have an adequate stock of unencumbered high-quality liquid assets that can be converted immediately to meet their liquidity needs for a 30-calendar day liquidity stress scenario.[74] The second is the 'net stable funding ratio'. The net stable funding ratio requires banks to maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities. A sustainable funding structure is intended to reduce the likelihood that disruptions to a bank's regular funding sources will erode its liquidity position in a way that would increase the risk of failure and potentially lead to broader systemic stress.[75]

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72 Haentjens and de Gioia-Carabellese (n 22) 130-134.

73 Basel Committee on Banking Supervision, "Basel III leverage ratio framework and disclosure requirements" (January, 2014) *Bank for International Settlements,* available at: http://www.bis.org/publ/bcbs270.pdf. See also, Curtis, Mallet-Prevost, Colt and Mosie LLP, "Basel III and Their Application to Banks in Oman" (2014) *Oman Law Blog*, available at: https://omanlawblog.curtis.com/2014/08/basel-iii-principles-and-their.html.

74 *Ibid.* See also, J Cullen, "The repo market, collateral and systemic risk: in search of regulatory coherence", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 85 at 85-92.

75 Basel Committee on Banking Supervision, "Basel III: The Net Stable Funding Ratio" (October, 2014) *Bank for International Settlements,* available at: http://www.bis.org/bcbs/publ/d295.pdf.. See also Curtis *et al.* (n 73).

3.2.1.2 Basel IV

The most recent Basel Accord, Basel IV, is complementary to Basel III in that Basel IV was introduced to repair the omissions of Basel III. By doing so, Basel IV "now completes the global reform of the regulatory framework which began following the onset of the Global Financial Crisis".[76] It also constitutes the most recent global regulatory initiative, the consequences of which can be argued to contribute to the rise of the EU shadow banking sector.

Under Basel III, the arguably most important requirement is that of capital adequacy, which as described above, is correlated to risk weighted assets. However, the calculation of risk weighted assets had never been comprehensively regulated in any of the previous Basel Accords.[77] Banks could either apply the 'standardised approach' based on the risk weights determined by supervisors or recognised credit rating agencies, or use the 'internal ratings-based model', which allows banks themselves to establish their own criteria for risk-weighting. This choice was left to the banks' discretion. In practice, this means that banks could have a direct influence on the final level of the required regulatory capital. It seems hard to find a better incentive for gaming such a calculation process.[78] *The Economist* called the 'internal ratings-based model' resulting capital – 'do-it-yourself capital'.[79] The significant variation in risk weighted assets across banks with very similar portfolios only proved that nickname to be right.[80] Basel IV aims to limit the use of the 'internal ratings-based model' approach and instead force market participants to rely more heavily on the 'standardised model' constructed by supervisors. By "restoring credibility in the calculation of risk weighted assets and improving comparability of banks" capital ratios, Basel IV seeks to finalise the suite of Basel Accords.[81]

However necessary these reforms sound, the final shape of the Basel Accords is far from perfect. Neither "restored credibility" nor "facilitated

76 Mario Draghi quoted in C Binham, M Arnold and C Jones 'New Basel rules on capital hit European banks' *Financial Times* (7 December, 2017), available at: https://www.ft.com/content/ec3fb98e-db67-11e7-a039-c64b1c09b482.

77 Basel I praised the standardised approach, but then it changed and in both Basel II and III regulators left some discretion regarding the choice of either standardised or internal approach. As a result, banks were able to decide how to calculate risk weighted assets, and therefore indirectly, how much capital to hold.

78 For an in-depth analysis of how and why risk weighted asset calculations vary see V Le Lesleì and S Avramova, "Revisiting Risk-Weighted Assets: Why Do RWAs Differ Across Countries and What Can Be Done About It?" (2012) *12/90 IMF Working Paper*, available at: https://www.imf.org/external/pubs/ft/wp/2012/wp1290.pdf.

79 The Economist, "DIY Capital" (8 December, 2012), available at: https://www.economist.com/news/finance-and-economics/21567958-edifice-modern-bank-regulation-comes-under-scrutiny-diy-capital.

80 Rima Turk-Ariss, 'Heterogeneity of Bank Risk Weights in the EU: Evidence by Asset Class and Country of Counterparty Exposure' (2017) *17/137 IMF Working Paper*.

81 Basel Committee on Banking Supervision, 'Finalising Basel III IN BRIEF' (2017), available at: https://www.bis.org/bcbs/publ/d424inbrief.pdf.

comparability"[82] that regulators aim for are entirely worth the price that the EU banks will have to pay to comply with the new requirements. Most importantly, the negative consequences to be expected in connection with the implementation of Basel IV, such as that related to profitability, could result in a further exodus into the less regulated and more profitable shadow banking sector.[83]

3.2.1.3 Some observations

The purpose of prudential regulation is to subject the traditional banking sector to certain restrictions and requirements while maintaining the integrity of the financial system with the hope of preventing or limiting future crises. Financial stability is therefore better moderated and the risk to depositors and the government is arguably minimised.[84] Importantly, the introduction of the Bank Recovery and Resolution Directive ("BRRD"),[85] the Single Resolution Mechanism,[86] safety nets, namely the European Deposit Guarantee Scheme and emergency backstops, such as the European Stability Mechanism[87] and the lender of last resort are now in place to facilitate financial stability in the traditional banking sector.

In particular, underpinning banks operating in the traditional banking sector is the lender of last resort. In the case of the EU, the lender of last resort is the National Central Bank in the specific Member State.[88] The National Central Bank, amongst other things, acts as an emergency backstop by provid-

82 See generally, Basel Committee on Banking Supervision, 'High-level summary of Basel III reforms' (2017), available at: https://www.bis.org/bcbs/publ/d424_hlsummary.pdf.

83 K Parchimowicz and R Spence, "Basel IV Postponed: A Chance to Regulate Shadow Banking?" (2020) 13 (2) *Erasmus Law Review* 1 at 9-12.

84 M Han, *Central Bank Regulation and the Financial Crisis: A Comparative Analysis* (2015) 32.

85 Bank Recovery and Resolution Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council ("BRRD"). The BRRD introduces the 'bail-in' mechanism whereby the banks' shareholders and creditors are exposed to risk, rather than the taxpayer. The BRRD is also in place to deal with the comprehensive and effective arrangements of failing banks at a national level along with tackling cross-border banking failures.

86 The Single Resolution Mechanism ensures an orderly resolution of failing banks with minimal costs to taxpayers and the real economy. See also, European Commission, "AMC Blueprint: Second Progress Report on the Reduction of Non-Performing Loans in Europe" (2018) *Commission Staff Working Document* {COM (2018) 133 final}, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018SC0072.

87 The European Stability Mechanism has a lending capacity of €500 billion and is in place to provide financial assistance to Euro area countries who experience severe financial problems.

88 In the Eurozone it is the European Central Bank. Other examples include the Bank of England in the United Kingdom or the DNB in the Netherlands.

ing emergency liquidity assistance should something go wrong.[89] Strict prudential rules and regulations are therefore necessary to circumvent government and taxpayer exposure to unnecessary risk.[90] The shadow banking sector, on the other hand, has no *explicit* backstop and is therefore not subject to stringent and costly rules and regulations.

However, it should be noted that two important events of 2019/2020 do suggest that there may indeed be an *implied* backstop in the shadow banking sector.[91] Firstly, on 15 September 2019, the repo market experienced a liquidity shortage. The United States Federal Reserve stepped in and provided a liquidity backstop by injecting in excess of $75 billion to provide market participants with much needed cash.[92] More recently, on 16 March 2020, Rana Foroohar noted that as a result of the Covid-19 pandemic, "central banks are backstopping the financial system with its repo operations, as banks exchange government bonds for cash" – this also includes the EU shadow banking sector.[93] While the general consensus is that the EU shadow banking sector has no *explicit* access to lender of last resort facilities, on these recent views, it could be inferred that there is actually some form of last resort facility, albeit *implied*.

Because the shadow banking sector is not subject to prudential regulation, one reason why the sector has flourished is because it has the ability to circumvent such regulatory constraints.[94] Regulation, such as those implemented by the Basel Accords, are both expensive and burdensome for the traditional banking sector. Credit institutions have to continually alter their business models to comply with incoming rules and regulations, which ultimately impedes profitability. Regulators are essentially forcing credit institutions to disclose information and hold minimum capital reserves. This is arguably something that they may otherwise be reluctant to do. The shadow banking sector in particular has therefore proved to be a popular route for various entities – it is a sector that is more profitable precisely because it is subject to less stringent rules.

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89 P Praet, "The ECB and its role as lender of last resort during the crisis" (10 February, 2016) *European Central Bank Speech at the Committee on Capital Markets regulation Conference, Washington DC*. See also, European Central Bank, "Agreement on emergency liquidity assistance" (17 May, 2017), available at: https://www.ecb.europa.eu/mopo/ela/html/index.en.html.

90 M McLeay, A Radia and R Thomas, "Money Creation in the Modern Economy" (2014) *Q1 Bank of England Quarterly Bulletin* 1 at 2-9. See also, P J Wallinson, "Why Do We Regulate Banks?" (2005) *Banking & Finance* 14 at 15-16.

91 At the time of writing 1 January, 2021.

92 The Economist, "Repo-market ructions were a reminder of the financial crisis" (26 September, 2019); see also, G Tett, "The repo markets mystery reminds us that we are flying blind" (19 September, 2019) *Financial Times*, available at: https://www.ft.com/content/35d66294-dadc-11e9-8f9b-77216ebe1f17.

93 R Foroohar, "How the virus became a credit run" (16 March, 2020) *Financial Times* 1 at 17.

94 Lee (n 52) 1 at 13.

3.3 Profitability

A concomitant reason as to why the shadow banking sector has risen to prominence relates to profitability. While it is not disputed that the tightening of prudential regulation strengthens the resilience of the traditional banking sector, the flipside is that it does so by limiting the profitability of the traditional banking sector. The upward trajectory of forcing the traditional banking sector to strengthen capital and liquidity has the paradoxical effect of negative trajectories for banks' profitability in the EU. A study by Roland Berger depicted in *Figure 3* below demonstrates that profitability of EU banks, as compared to banks in the United States of America ("USA"), has decreased by 9% between 2009-2015. This drop-in profitability poses a real challenge for European banks considering the low interest rates, economic growth and significantly, regulatory pressure and the associated costs.[95]

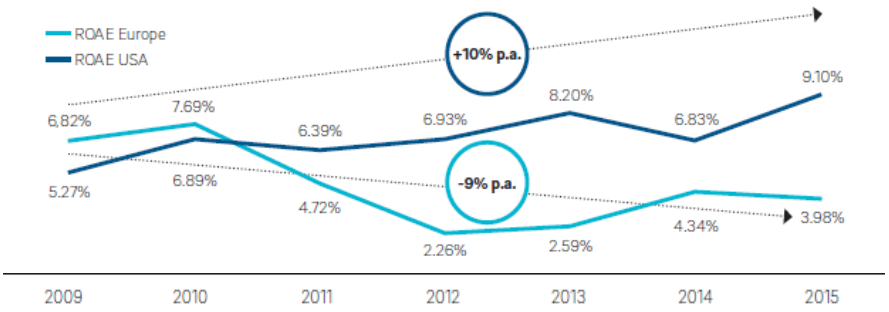

Figure 3: Opposite Trajectories: Profitability of EU/USA Banks
Source: Roland Berger[96]

While there is currently no empirical evidence for a direct causal relationship between regulatory pressure and profitability, along with many other factors that have contributed to a decrease in profitability, such as the Eurozone crisis, this drop-in profitability does imply that regulatory pressure and the associated costs pose a real challenge for EU banks.[97] Sinking profitability in the tradi-

95 This information was obtained from interviewee #1 during an interview at the London School of Economics in London (24 January, 2018). See also, T Quesnel, M Pfeiffer and D Johner, 'Implications of ongoing "Basel IV" debates' *Roland Berger* (2017) 1 at 4. See also, S Schneider, G Schrock, S Koch and R Schneider, "Basel "IV": What's next for banks?" (2017) *Global Risk Practice;* L Amorello, "Beyond the Horizon of Banking Regulation: What to Expect From Basel IV" (2016) *58 Harvard International Law Journal* 21 at 37.

96 Quesnel *et al* (n 95) 1 at 4.

97 L Amorello (n 95) 21 at 37.

tional banking sector does constitute a significant incentive for market participants to migrate activities to the less regulated and more profitable shadow banking sector.[98]

3.4 Regulatory Arbitrage

The third inter-related aspect regarding the rise of the EU shadow banking sector is regulatory arbitrage. Because the traditional banking sector is arguably in a 'regulatory straightjacket', consequently impeding profitability, it is unsurprising that there is incentive for market participants to circumvent the rules by exploiting regulatory arbitrage and migrate activities to the less regulated shadow banking sector.[99] Regulatory arbitrage can be defined as: the restructuring of financial activities to circumvent burdensome regulation. The central issue is that as regulation within the traditional banking sector tightens, by default the shadow banking sector will continuously gain traction.

> *"Ironically 'nostalgia' for a simpler financial system centred on deposit taking banks actually produces regulation that drives more activity into shadow banking".*[100]

Regulation has therefore not only generally induced the rise of the shadow banking sector through regulatory arbitrage, but also the more stringent leverage framework and liquidity requirements under Basel III can be said to stimulate the traditional banking sector to either "increase leverage or circumvent their regulatory capital or liquidity requirements through" transactions conducted within the shadow banking sector.[101] This argument becomes more persuasive when it is observed that it takes roughly:

> *"two hours to assemble a team of finance geeks and lawyers to devise a product or transaction that will bypass any new rule or regulation coming our way".*[102]

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98 R Davies (n 5) 70 at 70-72.

99 G Buchak, G Matvos, T Pskorski and A Seru, "Fintech, regulatory arbitrage, and the rise of shadow banks" (2018) *130 (3) Journal of Financial Economics* 453. See also, D Nuoy (Chair of the Supervisory Board of the ECB) "Gaming the rules or ruling the game? – How to deal with regulatory arbitrage" (15 September, 2017), available at: https://www.bankingsupervision.europa.eu/press/speeches/date/2017/html/ssm.sp170915.en.html.

100 J Wilmot, J Sweeney, M Klein, A Plant, J Schwartz, Z Shi and W Zhao, "When collateral is king" (15 March, 2012) Market Focus: Global Strategy Research 1 at 10.

101 S Wei, *Shadow Banking in China: Risk, Regulation and Policy* (2016) 35. See also, J C Coates IV, "Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications" (2015) *124 Yale Law Journal* 882 at 970 (footnote 324).

102 Nesvetailova (n 43) 1 at 6-7. See also, R Spence, "Bridging the Gaps in EU Financial Regulation: A shadow banking perspective" (2018) *Leiden Law Blog,* available at: https://leidenlawblog.nl/articles/bridging-the-gaps-in-eu-financial-regulation-a-shadow-banking-perspective.

According to Charles Goodhart, the migration of activities to the less regulated shadow banking sector not only ensures that the expensive and burdensome regulation is mitigated, but it also adds weight as to why so many people firmly believe that regulation of the traditional banking sector is self-defeating, because there will always be a way to circumvent the rules.[103] The reason regulation of the traditional banking sector is self-defeating is due to the so-called 'boundary problem'. The boundary problem holds that as one level of the traditional banking sector becomes regulated, or starts the process of regulation, there is incentive for financial market actors to scramble over the boundary into the less stringently regulated shadow banking sector to conduct business. Due to a continual drive to maximise profits, the boundary problem then becomes perpetual because as regulation imposes new costs and burdens, it will consequently facilitate regulatory arbitrage.[104]

Additionally, not only is there an economic significance correlated with regulatory arbitrage, there is also geographical significance. For example, low-tax or no-tax jurisdictions are regularly exploited to take advantage of: tax, regulatory, legal and administrative features inherent in those jurisdictions.[105] As such, the shadow banking sector has a global reach because activities span across geographical jurisdictions, which results in cross border implications.[106] Different regulatory and legal frameworks across various jurisdictions potentially provide a safe haven for the shadow banking sector to arbitrage the rules because of the difficulty in monitoring or curbing the activities that spread across the globe.[107]

103 C Goodhart, "The Emerging New Architecture of Financial Regulation" (2011) *Centre for Financial Studies Working Paper* 1 at 25. See also, C Goodhart, *The Central Bank and the Financial System* (1995) 337; P Drysdale, *Reform and Recovery in East Asia* (2003) 40; L Baxter, "Baxter Discusses Financial Regulation in Europe, Asia" (12 October, 2012) *Duke Law News*, available at: https://law.duke.edu/news/baxter-discusses-financial-regulation-europe-asia/; A G Haldane, "Constraining Discretion in Bank Regulation" (9 April, 2013) *Bank of England* 1 at 14.

104 C Goodhart, *Too Important to Fail – Too Important to Ignore* (Parliament Publications, House of Commons 2010) 11.

105 For example, the Cayman Islands, Jersey, Ireland, Luxembourg and the Netherlands. On this see J Deacon, *Global Securitisation and CDOs* (Wiley 2004) 46.

106 R Gandhi (n 41) 1 at 4-5. See also, P R. Wood, *Project Finance, Securitisation and Subordinated Debt* (2007) 6-014-6-017.

107 The issues surrounding regulatory arbitrage outlined above were corroborated from interviewee #1 during an interview at the London School of Economics in London (24 January, 2018). See also, E Lee, 'Shadow Banking System in China After the Global Financial Crisis' (2015) *024 University of Hong Kong Faculty of Law Research Paper* 1 at 1-2, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2631343.

3.5 Financial Innovation

> *"Shadow banking products are far from being unutilised; their novelty and adaptability to financial institutions' needs are part of the reason why shadow banking has grown popular, at an unprecedented speed and to a gargantuan size".*[108]

The final line of reasoning in relation to the rise of the shadow banking sector is financial innovation. While many commentators view regulatory arbitrage as a negative, regulatory arbitrage can also be viewed positively as it facilitates financial innovation by creating new ways to conduct business. The shadow banking sector is a case in point given that there is now a genuine economic demand for services conducted in that sector.

Prior to the Global Financial Crisis, securitisation and collateralised debt obligations were the innovative, novel and adaptable products. Now, amongst other things, collateral transactions, namely repos, securities lending and specific derivatives transactions are mixed into the fold.[109] These activities are all short-term collateralised transactions that constitute part of the secured segment of the money-markets. Collateral transactions are critical to the efficient performance of the shadow banking sector because they provide an alternative and cheaper source of funding to that offered by the traditional banking sector. As such, many entities, activities and transactions operating in the shadow banking sector now have valid and valuable economic and financial market functions.

Concomitantly, competition from independent financial services providers has arguably allowed the shadow banking sector to flourish. For instance, specialised credit providers often have superior knowledge in a specific area and economies of scale, which is made possible by specialising in distinct credit intermediation activities – this specialisation opens the possibility for potential gains.[110] Consequently, the shadow banking sector comprises specialists who have exploited niche markets that have long been neglected by the traditional banking sector. As such, because of this niche speciality, namely specialised lending *vis-à-vis* collateral transactions, the shadow banking sector has a far superior market edge.[111] The shadow banking sector is indeed a hotbed for innovation. It is unstifled by prudential rules and the growth of the shadow

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108 Lee (n 107) 1 at 13.

109 S Claessens, L Ratnovski and M Singh, "Shadow Banking: Economics and Policy" (4 December, 2012) *IMF Staff Discussion Note* 1 at 14-17.

110 M Stanley, "The Paradox of Shadow Banking" (2015) *Roosevelt Institute,* available at: http://rooseveltinstitute.org/wp-content/uploads/2015/11/Stanley_Shadow_Banking.pdf.

111 M Marriage, "Intermediate Capital Group Dismisses shadow-bank label" (9 August, 2015) *Financial Times,* available at: https://next.ft.com/content/6cd44506-3c28-11e5-bbd1-b37bc06f590c. See also, P Jenkins and S Fleming, "Into the Shadows: Taking Another Path" (16 June, 2014) *Financial Times,* available at: https://next.ft.com/content/8016fca4-e106-11e3-875f-00144feabdc0; Stanley (n 110).

banking sector may be understood as one consequence of evolving legal and regulatory structures stemming from the traditional banking sector.[112]

4 THE GLOBAL FINANCIAL CRISIS

The Global Financial Crisis was the result of a combination of factors and the shadow banking sector was at the very epicentre.[113] It is said that regulators failed to govern the financial system by "falling asleep at the wheel" and neglected to exercise proper supervision and oversight of financial institutions.[114] Excessive leverage was embedded off-balance sheet and there was severe liquidity and maturity mismatches during the Global Financial Crisis. Lehman Brothers in particular misled investors about their true position by utilising the shadow banking sector as an "accounting gimmick" through the so-called 'Repo 105' transactions.[115]

4.1 Lehman Brothers

At the heart of the Lehman Brothers bankruptcy, the Valukas Report unearthed the fact that Lehman Brothers engaged in "actionable balance sheet manipulation" by way of Repo 105.[116] Repo 105 transactions were used by Lehman

112 M Singh, *Collateral and financial Plumbing* (2016) 35-39.

113 H L Wilensky, *American Political Economy in Global Perspective* (2012) 142. See also, Davies (n 4) at 70; B Moro and V A Beker, *Modern Financial Crises: Argentina, United States and Europe* (2015) 65.

114 Paul Krugman has argued that the lack of controls during the GFC amount to "malign neglect" – see P Krugman, *The Return of Depression Economics and the Crisis of 2008* (2009) 162-163.

115 C Hines, J Kreuze and S Langsam, "An analysis of Lehman Brothers bankruptcy and Repo 105 transactions" (2011) 26 (1) *AJB* 40. See also, report of A R Valukas, *In re Lehman Brothers Holdings INC., et al.,* (11 March, 2010) United States Bankruptcy Court Southern District of New York 1 at 743.

116 Chapter 11 Case No. 08-13555 (JMP) In re *Lehman Brothers Holdings INC., et al.,* Report of Anton R Valukas, Examiner (11 March, 2010) Volume 1 at 3 and 18 (footnotes 63 and 64). See also, Haentjens and de Gioia-Carabellese (n 22) 244; J Baer and H Sender, "Valukas report finds few heroes" (12 March, 2010), available at: https://www.ft.com/content/09d2f184-2d6d-11df-a262-00144feabdc0. It should also be noted that while this section refers to "Repo 105", Lehman Brothers also engaged in "Repo 108". Lehman Brothers treated both Repo 105 and Repo 108 transactions identically under the same internal accounting policy and according to Anton Valukas, both transactions shared the "same anatomy". They differed only in that Repo 105 predominantly utilised fixed income securities with an overcollateralisation of 5% while Repo 108 transactions predominantly used equity securities with an overcollateralisation of 8%. In addition, the respective 5% and 8% 'haircuts' were necessary for Lehman Brothers to account for the Repo 105 transaction as a 'sale' under US Financial Accounting Standards No.140 ("SFAS 140"). On this, see Chapter 11 Case No. 08-13555 (JMP) In re *Lehman Brothers Holdings INC., et al.,* Report of Anton R Valukas,

Brothers to temporarily remove securities inventory from its balance sheet, usually for a period of seven to ten days, in order to create a materially misleading picture – for financial reporting purposes – of the firm's financial condition. Lehman Brothers did, indeed, regularly increase its use of Repo 105 transactions in the days prior to reporting periods as a way to reduce its "publicly reported net leverage and net balance sheet".[117] In particular, during the first and second quarters of 2008 it managed to sell approximately USD $50bn worth of assets from the firm's balance sheet.[118] Lehman Brothers used the cash raised from Repo 105 to pay down other liabilities, thereby reducing both the total liabilities and total assets reported on its balance sheet while also lowering its leverage ratio.[119]

The fact that repo transactions subject to New York law are often treated as a pledge, meaning that Lehman Brothers would be unable to remove assets from its balance sheet, makes one wonder: how did New York based Lehman Brothers manage to manipulate its balance sheet? The solution was to 'recharacterise' the Repo 105 transaction from a 'pledge' to a 'true sale'. However, it could not do this in the USA because no USA law firm would provide a positive legal opinion permitting the true sale accounting treatment under New York law. Yet under English law, repo transactions are classed as a 'true sale' and provided that the "two parties intend to exchange assets for cash, and then later the party receiving the assets decides to hand back equivalent assets (such as securities of the same series and nominal value) rather than the very assets that were originally delivered", then the transaction can be categorised as a true sale (under English law) and in conformity with USA accounting standards.[120]

As such, Lehman Brothers conducted its Repo 105 programme under the aegis of a legal opinion from Linklaters in London and approved by Lehman

Examiner (March 11, 2010) Volume 3 at 732 (footnote 2847) and 755 (footnote 2922). See also, P C Harding and C A Johnson, *A Practical Guide to Using Repo Master Agreements* (2017) 5.

117 Chapter 11 Case No. 08-13555 (JMP) In re *Lehman Brothers Holdings INC., et al.,* Report of Anton R Valukas, Examiner (March 11, 2010) Volume 3 at 732-733 and 746.

118 In the first quarter of 2008, Lehman Brothers managed to reduce its balance sheet by USD 49.1bn and USD 50.38bn in the second quarter of 2008. On this see, Chapter 11 Case No. 08-13555 (JMP) In re *Lehman Brothers Holdings INC., et al.,* Report of Anton R Valukas, Examiner (March 11, 2010) Volume 3 at 739.

119 Chapter 11 Case No. 08-13555 (JMP) In re *Lehman Brothers Holdings INC., et al.,* Report of Anton R Valukas, Examiner (March 11, 2010) Volume 3 at 733.

120 US Financial Accounting Standards No. 140.98 as per Chapter 11 Case No. 08-13555 (JMP) In re *Lehman Brothers Holdings INC., et al.,* Report of Anton R Valukas, Examiner (March 11, 2010) Volume 3 at 755 and 793. See also, M J Merced and J Werdigier, "The Origins of Lehman's 'Repo 105'" (March 12, 2010) *The New York Times*; P C Harding and C A Johnson, *A Practical Guide to Using Repo Master Agreements* (2017) 5.

Brothers' independent auditor Ernst & Young.[121] Accordingly, if USA based Lehman Brothers entities wished to engage in a Repo 105 transaction, they transferred their securities to Lehman Brothers International Europe in London, in order for Lehman Brothers International Europe to conduct the transaction on their behalf. This meant that Repo 105 transactions could be treated as outright sales under English law, thus allowing assets to drop off their balance sheet before the quarter end financial reporting statements were due.[122] Repo 105 transactions were entered into between Lehman Brothers International Europe and "other financial institutions" in exchange for "substantial fees" – once the quarter end financial statements were published, the transaction would be immediately unwound to be repeated at the end of the next quarter and so on.[123]

Yet financial markets are inherently unpredictable and given its precarious financial position, Lehman Brothers did encounter several problems, which resulted in its collapse. According to Gary Gorton, Lehman Brothers was ultimately allowed to fail because it "did not have the collateral to justify a loan from the Fed of sufficient size to save them".[124] The fact that Lehman Brothers filed for bankruptcy shortly after the Repo 105 saga, demonstrated that a significantly important financial institution was being allowed to fail by the government, despite other equally troubled and significant institutions being deemed 'too big to fail'.[125] It was the abuse and manipulation of Repo 105 transactions and the like that led the financial system into broader systemic threat and ultimately a full blown Global Financial Crisis, which undermined investor confidence leading to consequent panic runs and taxpayer bailouts of costs exceeding € 1.5tn in the EU alone.[126]

4.2 Beyond Lehman Brothers

The Global Financial Crisis, which started as a monetary and interbank market liquidity seizure, quickly morphed into a global economic catastrophe, argued

121 Chapter 11 Case No. 08-13555 (JMP) In re *Lehman Brothers Holdings INC., et al.,* Report of Anton R Valukas, Examiner (March 11, 2010) Volume 3 at 764. See also, J Baer and H Sender, "Valukas report finds few heroes" (12 March, 2010), available at: https://www.ft.com/content/09d2f184-2d6d-11df-a262-00144feabdc0.

122 Harding and Johnson (n 116) 5.

123 C Hill and R W Painter, "Of the Confidential Fee as a Response to Lawyers" (2011) *1 AM.U.Bus.L.Rev.* 42 at 48.

124 G Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* (2012) 148.

125 For example, Bear Stearns, The Royal Bank of Scotland, Barclays Bank, Merrill Lynch to name but a few.

126 B S Bernanke, "Causes of the Recent Financial and Economic Crisis" (2 September, 2010) *Board of Governors of the Federal Reserve System*, available at: https://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm.

to be the worst since the Great Depression.[127] According to the International Monetary Fund, rapid growth in the supply of credit coupled with sustained asset prices led to an accumulation of risk within the financial markets.[128] A low interest rate environment underpinned by loosely accommodating monetary policies not only ensured that credit was relatively cheap; it also encouraged a search for yield that led investors to continually invest in riskier investments.[129]

The shadow banking sector in particular facilitated and satisfied investor demand by creating and developing instruments, such as collateralised debt obligations, which were supposed to offer high yields in a low-risk environment.[130] Instead, however, collateralised debt obligations that were backed by sub-prime mortgages turned out to be toxic securities that contributed and amplified the Global Financial Crisis:[131]

> *"Non-bank financial institutions, most notably hedge funds but also pension and mutual funds and insurance companies… had causal primacy in the financial crisis. It was primarily these institutions that forced the accelerated rate of production of CDOs to a scale of sufficient proportions as to be able to cause the money markets to go into cardiac arrest".*[132]

Investors, regulators, banks and credit ratings agencies misjudged the aggregate risks residing in the shadow banking sector's securitised products.[133] Specifically, the credit rating agencies' mispricing of risk gave rise to many investors entering into unrestrained risk taking.[134] The systemic importance of the rapid increase in correlation between the prices of different securitised products and prices on underlying collateral assets were not internalised by market parti-

127 P Lysandrou and A Nesvetailova, "The Shadow Banking System and the Financial Crisis" (2015) *Financialisation, Economy, Society and Sustainable Development Working Paper* 1 at 3. See also, Y Nersisyan and L Randall-Wray, "The Global Financial Crisis and The Shift to Shadow Banking" (2010) *587 The Levy Economics Institute Working Paper* 1 at 3.

128 O Blanchard, J Caruana and R Moghadam, "Initial Lessons of the Crisis" (6 February, 2009) *International Monetary Fund*, available at: https://www.imf.org/external/np/pp/eng/2009/020609.pdf.

129 The Economist, "Six Years of Low Interest Rates in Search of Some Growth" (6 April, 2013), available at: http://www.economist.com/news/briefing/21575773-central-banks-have-cushioned-developed-worlds-economy-difficult-period-they-have-yet.

130 E P Stringham, *Private Governance: Creating Order in Economic and Social Life* (2015) 170-172.

131 D O Beltran, L Cordell and C P Thomas, "Asymmetric Information and the Death of ABS CDOs" (2013) *1075 The Federal Reserve Board International Finance Discussion Papers,* available at: https://www.federalreserve.gov/pubs/ifdp/2013/1075/ifdp1075.htm.

132 Lysandrou and Nesvetailova (n 127) at 3.

133 Pozsar *et al* (n 4) at 3.

134 Technical Committee of the International Organization of Securities Commissions, "Mitigating Systemic Risk: A Role for Securities Regulators" (2011) 1 at 19, available at: http://www.iosco.org/library/pubdocs/pdf/IOSCOPD347.pdf.

cipants. This resulted in a low probability, negative tail event[135] in the shadow banking sector as housing prices fell across the USA and beyond.[136]

Models deployed by credit rating agencies relied on information and assumptions correlated to the underlying loan pools and their contractual elements.[137] Loan defaults, which were argued to have a low correlation, proved to be incorrect, especially in the case of subprime loans.[138] As a result, investors quickly realised that statistical models failed to predict the delinquency and default rates that materialised, which in turn ensured loss of confidence in the credit ratings system. Indeed, the complex features of the various structured financial instruments coupled with the opaque nature of the shadow banking sector created significant uncertainty within the financial system as investors were uncertain of the true value of their investments.[139]

Consequently, debt instruments that appeared safe in the past were instead fraught with both liquidity and price risk. Liquidity evaporated not only in markets related to subprime housing loans, but also in completely unrelated markets, such as asset-backed commercial paper markets, money market funds, repo markets, derivatives and securities lending. Such an outcome triggered a panic run as funding quickly became scarce, the price of collateral assets decreased, consequently leading to increased and unsustainable margin calls, which consequently had adverse effects on the real economy.[140]

4.3 The Need for Regulation

Financial regulation is in place to govern one of the most important systems in the economy – the financial system.[141] The primary purpose of financial regulation is not only to preserve financial stability and mitigate systemic risk,

135 A tail risk event identifies a class of investment outcomes that occur with very low probabilities but are accompanied by negative and very large losses, should or indeed when they materialise. See generally, N Barberis, "The Psychology of Tail Events: Progress and Challenges" (2013) *103 (3) American Economic Review* 611 at 611-616. See also, A Greenspan, *The Map and the Territory: Risk, Human Nature, and the Future of Forecasting* (2013).

136 Claessens *et al* (n 109) 1 at 13.

137 J Coval, J Jurek and E Stafford, "Re-Examining the Role of Rating Agencies: Lessons from Structured Finance" (2008) 1 at 5. See also, I Hardie and D MacKenzie, "The Lemon-Squeezing Problem: Analytical and Computational Limitations in CDO Evaluation" (2014) *The University of Edinburgh* 1 at 6.

138 R Dodd and P Mills, "Outbreak: U.S. Subprime Contagion" (2008) 45 (2) *International Monetary Fund Finance and Development*.

139 O Canuto and S Ghosh, *Dealing with the Challenges of Macro Financial Linkages in Emerging Markets* (2013) 83. See also, G Tett and P J Davie, "Out of the Shadows" (17 December, 2007) *Financial Times*, available at: http://www.ft.com/cms/s/0/7abee0b0-ac41-11dc-82f0-0000779fd2ac.html?ft_site=falcon&desktop=true#axzz4Dr7SrtVE.

140 See generally D Sanches, "Shadow Banking and the Crisis of 2007-08" (2014) *Q2 Federal Reserve Bank of Philadelphia Business Review* 7 at 7-13.

141 Armour *et al* (n 9) 3.

but also to prevent market failures.[142] Financial regulation is therefore in place to determine the legal and regulatory framework best suited to maintaining the stability and efficiency of the financial system.[143]

Yet financial regulation itself is also susceptible to failure. The Global Financial Crisis, which exposed fundamental (and unidentified) weaknesses in the financial system, is a case in point. The Global Financial Crisis illustrated that when asset prices fall, margin levels increase and highly leveraged financial institutions are forced to deleverage, causing market participants to "rush to the exits" in advance of other credit providers motivated to do exactly the same thing.[144] US economist Paul Krugman has argued that because the "shadow banking sector expanded to rival or even surpass conventional banking in importance… Politicians and government officials should have realised that they were re-creating the kind of financial vulnerability that… [makes financial crises] possible – and they should have responded by extending regulations and the financial safety net to cover these new" shadow banking activities.[145] Unsurprisingly, a failure of financial regulation, which was largely outmanoeuvered by financial markets and institutions, is widely cited as "the core of what happened to cause" and proliferate the crisis.[146]

4.3.1 Systemic risk and financial stability

> *"Whenever credit, maturity transformation and leverage are supplied by entities not regulated as banks and without access to lender of last resort facilities, everyone is entitled to be concerned about risks in relation to financial stability".*[147]

The mitigation of systemic risk and the preservation of financial stability are key concerns for the financial system – becoming increasingly important as a result of the Global Financial Crisis. Financial stability can be "defined as the ability of the financial system to facilitate economic processes, manage risk, and absorb shocks" and is therefore tantamount to preserving the bene-

142 Systemic risk, financial stability and market failures will be explored in greater detail below.
143 Armour *et al* (n 9) 51.
144 H McVea, "Targeting hedge funds and 'repo runs'", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 177 at 195.
145 Krugman (n 114) 162-163.
146 Armour *et al* (n 9) 3.
147 J Benjamin, G Morton and M Raffan, "The future of securities financing" (2013) 7 Law and Financial Markets Review 4 at 4. However, while there is no explicit "access to lender of last resort facilities" in the shadow banking sector, two important developments should be considered as outlined above in section 3.2.1.3. While the general consensus is that the shadow banking sector has no access to lender of last resort facilities, on the views outlined above, it could be implied that there is, actually, some form of last resort facility, albeit implied.

ficial aspects of that system.[148] Systemic risk, on the other hand, can be defined as an event "whose impact and transmission effects are wide and deep enough to severely impair, with high probability, the allocation of resources and risks throughout the financial system" and economy as a whole.[149]

4.3.2 Market failures

Financial regulation is not just about preserving financial stability and mitigating systemic risk, it is also in place to correct market failures. Economists describe a market failure as: "the failure of markets to achieve economically efficient outcomes with which they are generally associated".[150] For example, a market failure occurs when market participants act in what they believe to be rational self-interest without taking into consideration the wider implications of their actions. As a result, their actions may produce a less than optimal or economically inefficient outcome that adversely affects the broader financial system and economy as a whole.[151] There are several forms of market failures but for the purpose of this study, negative externalities will be discussed.[152]

4.3.2.1 Negative externalities

From an economics perspective, the procyclical nature of margin in a collateral transaction results in a market failure in the form of a negative externality.[153] A negative externality occurs when an economic event, such as the Global Financial Crisis, imposes a negative effect on an unrelated third party. In other words, a negative externality occurs when the social costs exceed the private costs.[154] For instance, the losses associated with a run on the shadow banking sector rarely "lie where they fall".[155] In good times when market participants loosen credit terms and set *ex-ante* margin levels, more often than not they do not take into account the expansionary impact of their actions on the broader economy. Similarly, as the cycle turns, market participants do not take into account the *ex-post* contractionary impact of abruptly tightening credit

148 D Heremans and A Pacces, "Regulation of banking and financial markets" in *Regulation and Economics* (2012) R J Van Den Bergh and A M Pacces (eds) 558 at 571. See also, A G Balmer, *Regulating Financial Derivatives: Clearing and Central Counterparties* (2018) 5.

149 Group of Ten, "Report on Consolidation in the Financial Sector" (January, 2001) 1 at 125-127, available at: https://www.bis.org/publ/gten05.pdf. See also, A G Balmer, *Regulating Financial Derivatives: Clearing and Central Counterparties* (2018) 6-7.

150 Armour *et al* (n 9) 51-52.

151 *Ibid.*

152 Other forms of market failure include: imperfect competition, public goods and biases in individual decision making.

153 The term 'procyclicality' will be discussed in greater detail in subsequent chapters. See also generally, D Longworth, "Warding Off Financial Market Failure: How to Avoid Squeezed Margins and Bad Haircuts" (2010) *135 C.D. Howe Institute Backgrounder* 1.

154 Armour *et al* (n 9) 57-59.

155 McVea (n 144) 177 at 181.

terms and rising margins on the broader economy.[156] In essence, the collective actions of what is reasonable behaviour at the market participant level allow for the materialisation of bad outcomes for the financial system and economy as a whole.[157]

A tangible example of a negative externality is the cost imposed on society, such as unemployment, poverty, social welfare and potential death. The impact of those losses associated with a run on the shadow banking sector are rarely internalised by market participants as the social consequences can be (and often are) devastating.[158] While everyone is affected by a crisis in one way or another, the adverse social consequences can (and do) transform the lives of many families and individuals beyond imagination. Financial crises, therefore, tend to come at a great cost to society at large:[159]

> *"The woman was from Patmos. Her husband had lost his job and came back to the island to be with their two children and find work. After he failed and she fell ill with cancer, they ran out of money. The bank seized their house; they could not afford the electricity bill. She was ashamed… she needed help".*[160]

5 Conclusion

To conclude, the EU shadow banking sector "operates within the legal perimeter, yet outside the confines of prudential" regulation.[161] In this regard, the shadow banking sector remains subject to less stringent regulation. Thrown into the shadow banking 'bucket' are a number of divergent entities, activities and transactions. Such a broad outlook, coupled with the 'pejorative' shadow banking title, makes it very difficult to effectively define shadow banking. Despite various attempts to replace the original title, the term 'shadow banking', which is now arguably ingrained into the financial system, continues to be used. In terms of defining shadow banking, a broad approach is inadequate;

156 Longworth (n 153) 1 at 4-5.

157 Committee on the Global Financial System, "The role of margin requirements and haircuts in procyclicality" (2010) *36 CGFS Papers* 1 at 11.

158 McVea (n 144) 177 at 181.

159 I Otker-Robe and A M Podpiera, "The Social Impact of Financial Crises: Evidence from the Global Financial Crisis" (2013) *6703 Policy Research Working Paper.*

160 The Economist, "The euro and Greece – Postcard from the edge" (11 August, 2012), available at: http://www.economist.com/node/21560312. Another example is stated in Otker-Robe and Podpiera (n 159) 1 at 3 where it is noted that: *"When financial institutions fail to manage the risks they retain, they can create severe financial crises with devastating social and economic effects, especially for the world's most vulnerable people. Crises can hit hard the weakest members of society, particularly the poor, elderly, young, and women, who are not well-equipped to cope with the consequences of rising prices, eroding savings and asset values, loss of jobs, and reduction in public services, such as social welfare, health care, and education".*

161 Spence (n 16).

while useful for monitoring and surveillance purposes, it is not suitable for a workable definition. Instead, a narrow definition that is constructed in relation to the purpose for which shadow banking is used, particularly via collateral transactions, is far more appropriate.

Shadow banking is a sector that is functionally equivalent to the traditional banking sector. The shadow banking sector has therefore risen in prominence and there are numerous reasons for this. In particular, the shadow banking sector has risen in parallel to the traditional banking sector primarily due to the introduction of strict prudential regulation, such as rules under the Basel Accords. Incoming prudential rules have arguably caused the profitability of the traditional banking sector to be negatively impacted, which has resulted in the exploitation of regulatory arbitrage thereby facilitating financial innovation.

At the epicentre of the Global Financial Crisis lay collateral transactions conducted in the shadow banking sector, which exposed catastrophic consequences – not only economically, but also socially. It is a crisis that has affected many people in one way or another. Given the central role collateral transactions played in the crisis, it is important to ensure that these events do not re-appear, albeit under a different guise. This argument becomes particularly acute when collateral and margin, which are central components of collateral transactions within the shadow banking sector, have become key drivers for financial instability in recent times. There are therefore concerns that without regulatory intervention, collateral (and the reciprocal 'margin') could be central to the next financial crisis, if, or indeed when, it arrives.[162]

162 European Systemic Risk Board, "Liquidity risks arising from margin calls" (June 2020) 1 at 2-4, available at: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report200608_on_Liquidity_risks_arising_from_margin_calls_3~08542993cf.en.pdf. See also, Bank for International Settlements, "Containment Measures: Policy Interventions" (June, 2020) *Annual Economic Report* 1 at 44, available at: https://www.bis.org/publ/arpdf/ar2020e.pdf.

3 Financial collateral[1]

1 INTRODUCTION

> *"The functioning of the wholesale financial markets is entirely dependent upon the existence of efficient means for providing financial collateral as security. The management of risk would be impossible without it. It is therefore essential to have legal rules which make the grant of such security simple and its consequences predictable".*[2]

The Global Financial Crisis was a watershed for the way in which the financial sector functions. One of the most significant changes post Global Financial Crisis is the flight to security. The future of modern finance has indeed become a "collateral-based banking system" where the plumbing of the financial sector is lubricated with cash or cash equivalent financial collateral, such as highly liquid fungible[3] securities in lieu of cash to settle intra-day debits, credits and other obligations.[4]

Being the source of secured funding with market counterparties, financial collateral underpins various financial transactions within the EU shadow banking sector, namely repos, securities lending and derivatives transactions –

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1 The chapter contains and builds upon the following work previously published by the author: R A Spence, "Corporate Finance and the Role of Lawyers" (2017) 3 (2) *Edinburgh Student Law Review* 102-113. Also, R Spence, "The Vulnerabilities of Debt in the Shadow Banking Sector" (28-29 October, 2019) *Financial Stability Conference Paper, Berlin* 1-33, available at: http://financial-stability.org/wp-content/uploads/2019/11/2019_FSC-WS_PAPER_Spence_Vulnerabilities-of-debt-in-the-shadow-banking-sector.pdf; K Parchimowicz and R Spence, "Basel IV Postponed: A Chance to Regulate Shadow Banking?" (2020) 13 (2) *Erasmus Law Review*.

2 The Rt Hon Lord Hoffmann, PC, The Law of Financial Collateral (2016) Foreword v.

3 The term 'fungible' relates to the interchangeable nature of the securities used as financial collateral.

4 Bank of England, "Centre for Central Banking Studies" (2018) 1 at 14, available at: https://www.bankofengland.co.uk/-/media/boe/files/ccbs/ccbs-prospectus-2018.pdf?la=en&hash=CC52F29880CDDAE54988A3F24065123B0EB633F5. See also, P Mehrling, Z Pozsar, J Sweeney and D Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central banking, and the Future of Global Finance" (2012) *Institute for New Economic Thinking* 1 at 4 – the authors state that modern finance or the shadow banking system can also be termed the "collateral-based credit system"; see generally, J Benjamin, G Morton and M Raffan, "The future of securities financing" (2013) 7 (1) *Law and Financial Markets Review.*

often collectively referred to as "collateral transactions".[5] Liquid and safe financial collateral is now the main 'currency' used within the shadow banking sector,[6] and, as a driver of credit creation that is equally as important as money itself, several commentators now describe financial collateral as the "lifeblood of the modern economy".[7]

With the progress of financial innovation, the use of financial collateral has become an integral component of the global financial system.[8] The heightened use of financial collateral is a response to the need for high quality and liquid money like claims that are exchangeable at par and on demand with central bank money. Consequently, financial collateral is now one of the main building blocks upon which the financial markets are constructed.[9]

There are many reasons why financial collateral plays a central role within the EU shadow banking sector. As an important hedging mechanism, the use of financial collateral is employed as one of the most widespread counterparty credit risk mitigation techniques. Depending on the quality of the financial collateral and the credit risk of the counterparty, financial collateral is also used as a benchmark for applying 'margin', adding a further layer of security to the transaction.[10] Margin is the price difference between the market value of the securities posted as financial collateral and the value of the contracted for assets/cash. Financial collateral is the underpinning mechanism that

5 M Haentjens (ed), Y Diamant, J Siena, R Spence and A Zacaroli, *Financial Collateral: Law and Practice* (2020) 89. See also, M Haentjens and P de Gioia-Carabellese, *European Banking and Financial Law* (2020) 229. See also, the Financial Collateral Directive, 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements as amended by Directive 2009/44/EC of the European Parliament and of the Council of 6 May 2009 amending Directive 98/26/EC on settlement finality in payment and securities settlement systems and Directive 2002/47/EC on financial collateral arrangements as regards linked systems in credit claims ("FCD"), where the term "collateralised finance arrangements" is used to describe the types of financial collateral that fall within the scope of the FCD. In addition, the term "securities financing transactions" is often used to describe repurchase agreements and securities lending transactions – on this see generally the Securities Financing Transactions 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 ("SFTR"). For the sake of convenience and consistency, the term "collateral transactions" will be used for the remainder of this thesis unless otherwise stated.

6 J Wilmot, J Sweeney, M Klein, A Plant, J Schwartz, Z Shi and W Zhao, "When collateral is king" (15 March, 2012) *Market Focus: Global Strategy Research* 1 at 1-3.

7 *Ibid* at 1-3. See also, M Singh, "Collateral flows and balance sheet(s) space" (2016) *5 (1) Journal of Financial Market Infrastructures* 65 at 66.

8 J Cullen, "The repo market, collateral and systemic risk: in search of regulatory coherence", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 85 at 85-92.

9 B Aydin, "Evolution of collateral 'management' into collateral 'optimisation'" (2016) 8 (3) *Journal of Securities Operations & Custody* 259-271.

10 A levels and J Capel, "Is collateral becoming scarce? Evidence for the euro area" (2012) *1 (1) Journal of Financial Market Infrastructures* 29 at 29-31. The use of margin will be explored in greater detail in the subsequent chapter.

facilitates collateral transactions as a source of secured funding through hedging and margining techniques.[11] Equally important with regard to financial collateral is liquidity. Financial collateral in the form of highly liquid fungible securities ensures the financial system remains "awash with liquidity", which is fundamental to lending and enabling growth in the economy.[12] Yet financial collateral is not solely beneficial; it is also a source of systemic risk, and is a key contributor to financial instability in recent times.[13] As such, good or bad, the significance of financial collateral to the economy as a whole cannot be overemphasised.

This chapter deals with the use of financial collateral within collateral transactions in the EU shadow banking sector and will be structured as follows. Section 2 will answer the question of: what is financial collateral? In order to answer this question, it is first important to explore the significance of the term 'collateral'. It is then necessary to ask: what is added by collateral being 'financial'? Drawing a comparison between collateral and financial collateral will prove essential in understanding the role that financial collateral now plays within collateral transactions in the EU shadow banking sector. Section 3 will explore the scope of the Financial Collateral Directive and its significance in relation to the types of assets used as financial collateral. Section 4 will introduce the various types of transactions with which financial collateral is used. In particular, repos, securities lending and derivatives transactions will be briefly analysed. These collateral transactions are not only key to the efficient functioning of the shadow banking sector, they are also the source for providing alternative funding to that offered by the traditional banking sector. The penultimate section will discuss the velocity of financial collateral from a market perspective. The velocity of financial collateral is a measure of re-use and is important from an efficient and liquid market perspective. However, the velocity of financial collateral also poses significant risk, especially in relation to contagion and potential default. Section 6 concludes.

11 Singh (n 7) 65 at 66. See also, M Singh, *Collateral and Financial Plumbing* (2016) 1-14; Committee in the Global Financial System, "Collateral in wholesale financial markets: recent trends, risk management and market dynamics" (2001) *Bank for International Settlements* 1 at 2, available at: https://www.bis.org/publ/cgfs17.pdf.

12 This is elaborated further in this chapter, see section 2.3 below: "Liquidity and Safety". See also, M Brunnermeier, "Financial Crises: Mechanisms, Prevention and Management" in M Dewatripont, X Freixas and R Portes (eds.) *Macroeconomic Stability and Financial Regulation: Key Issues for the G20* (2009) 91 at 92.

13 H Nabilou and M Pacces, "The Law and Economics of Shadow Banking", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 7 at 25.

2 DEFINING FINANCIAL COLLATERAL

2.1 Collateral

In order to explore financial collateral, it is useful to take a step back and generically examine what is meant by the term 'collateral'. Taking collateral as security to mitigate counterparty credit risk has been common practice for centuries in money lending, pawn-broking and from the nineteenth century, housing finance.[14] In the *Merchant of Venice* for example, which William Shakespeare wrote over 400 years ago, Shylock and Antonio agreed upon a "pound of flesh" as collateral to secure their loan.[15] While such collateral is arguably socially sub-optimal in today's marketplace, theoretically, there is a wide range of more 'optimal' property that can be used as collateral.

In its most basic form, collateral is a type of property, which the collateral giver offers to the collateral taker as a way to secure performance so that if the collateral giver fails to fulfil its obligations under the agreement with the collateral taker, the collateral taker may fall back and rightfully claim the collateral security. Tangibles such as residential or commercial property, motor vehicles and other property can all be provided as collateral. Intangible property can also be used, for instance, intellectual property rights or financial securities in the form of either debt or equity. Whatever form of property is utilised, whether it be tangible or intangible, the core purpose of collateral is that it hedges default risk by financially underpinning the obligation. Should the collateral giver fail to fulfil its obligations under the agreement with the collateral taker, the collateral taker has a legal right to liquidate the collateral to recoup any losses incurred and return to the position they would have been, had the transaction been concluded. Upon any potential default, the collateral taker is legally able to liquidate the collateral because it has acquired a property law right, such as a security interest or title transfer right, in the posted collateral.[16]

2.2 What is Financial Collateral?

What, then, is so special about *financial* collateral and why is it a distinct category? The core use of financial collateral is no different to any other form of collateral, in that it is a mechanism designed to hedge default risk. However,

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14 P C Harding and C A Johnson, *Mastering ISDA Collateral Documents: A Practical Guide for Negotiators* (2012) 4.

15 W Shakespeare, *The Merchant of Venice* (1596) Act IV, Scene 1.

16 Issues relating to property law, such as 'security interest' and 'title transfer' rights will be discussed in this chapter in greater detail below, see section 3.4.2.2 "*Property law*". See also, L Gullifer, "What Should We Do about Financial Collateral" (2012) 65 *Current Legal Problems* 377 at 379-380.

there is one distinct attribute that financial collateral securities possess, that other forms of ordinary collateral do not; that attribute is liquidity.[17]

> *"In monetary theory, 'liquidity' is a quality of assets. The liquidity of an asset relates to its usefulness in meeting liabilities. It is its degree of 'moneyness', the degree to which it approximates, or the ease with which it can be turned into, money defined as a generally accepted means of payment".*[18]

This would imply that collateral, without the *financial* element, is 'illiquid' in the sense that the asset cannot be readily turned into money. Money, which has three functions, can be defined as something that holds its value over time (store of value); can be easily translated into prices (unit of account); and, is widely accepted (medium of exchange).

In a situation where a collateral giver and collateral taker enter into a securities lending transaction for example, the collateral giver posts collateral in the form of tangible residential property to the collateral taker. However, prior to maturity the collateral giver defaults. In such a scenario, the collateral taker could find itself in a situation where it is very difficult to readily liquidate the collateral. This could be due to external factors, such as the residential property being overpriced, is occupied, a slow market or lack of interested buyers – these can all contribute to a delay in the collateral taker recovering funds.[19]

Now imagine the same situation where the collateral giver and collateral taker enter into a securities lending transaction but instead use AAA rated government bonds rather than residential property as financial collateral. AAA rated government bonds are deemed 'safe' and 'liquid' because there is a genuine economic demand for the assets and upon any potential default, the AAA government bonds can be traded at 'high frequency' with orders being executed in seconds.[20] A safe asset, therefore, has money like equivalence because of the promise of cash immediacy. Financial collateral is such an asset because it is designed to make good on the promise even if there is default. Such promises require the financial collateral to be 'liquid' and liquidity implies that the financial collateral can be readily turned into cash without losing its value.[21] While virtually any asset can be used as collateral in a collateral

17 Liquidity is defined and elaborated upon in this chapter below, see section 2.3 "Liquidity and Safety". See also, Gullifer (n 16) 377 at 380.

18 H W Arndt, "The Concept of Liquidity in International Monetary Theory" (1947-1948) 15 (1) The Review of Economic Studies 20 at 21.

19 Illiquid assets can also relate to automobiles, jewellery and collectibles – the list is not exhaustive. See also, D J Elliott, "Market Liquidity: A Primer" (2015) *Economic Studies at Brookings* 1 at 3.

20 Singh *Financial Plumbing* (n 11) 35.

21 Nabilou and Pacces (n 13) 7 at 15-16.

transaction, generally, financial collateral is more liquid than other forms of collateral, and will therefore be the focus of this research.

2.3 Liquidity and Safety

2.3.1 Introduction

The concepts of liquidity and safety, while independent factors, are interrelated. Liquidity, which encompasses funding liquidity and market liquidity,[22] is a term used to describe how easy and quickly it is to convert an asset into cash. The term safety, in relation to the assets used as financial collateral refers to the "full protection from credit, market, inflation, currency and idiosyncratic risks… permitting investors to liquidate positions easily" with the promise of cash immediacy.[23] However, in truth no financial asset meets these criteria and the best that can be hoped for is 'ultra-safe' in relation to the invulnerability of the issuer of the asset class.[24] The asset class deemed as 'ultra-safe' "may include government debt, AAA corporate debt, bank debt… among others".[25] An 'ultra-safe' asset is equally a liquid asset because upon any potential default, non-defaulting parties will arguably always be able to readily recoup their investment – this is because financial collateral "is typically easy to transfer, value, and realize, all of which are aspects of liquidity".[26] Therefore, liquidity is a crucial safety component in any collateral transaction because the more liquid the asset, the safer that asset will be due to the promise of cash immediacy. Yet the opposite is also true. An illiquid asset is deemed an unsafe asset because if there is default, the non-defaulting party does not have the promise of cash immediacy due to the difficulty in readily converting that asset into cash.[27]

2.3.2 Market liquidity

Market liquidity relates to the ability of buyers and sellers of securities to transact speedily and efficiently without causing drastic change in the price

22 Funding liquidity and market liquidity will be discussed in this chapter in greater detail below, see respective sections 2.3.2 "*Market liquidity*" and 2.3.3 "*Funding liquidity*".

23 P O Gourinchas and O Jeanne, "Global Safe Assets" (2012) *399 BIS Working Paper* 1 at 4.

24 Cullen (n 8) 85 at 91.

25 A Gelpern and E F Gerding "Inside Safe Assets" (2016) *33 Yale Journal on Regulation* 363 at 363. See also, Cullen (n 8) 85 at 87 (footnote 12).

26 T Keijser, G Morton and M Peeters, "Financial Collateral: From Private to Regulatory Law Reform" in T Keijser (ed), *Transnational Securities Law* (2014) 27 at 29. See also, M Haentjens, T Keijser and G Morton, *Transnational Securities Law* (forthcoming 2nd edition) Chapter 2.

27 Safe and unsafe assets will be discussed in greater detail in Chapter 6 "The Role of Debt in the EU Shadow Banking Sector".

of the assets. From a safety perspective, market liquidity is critical in relation to investors relying on liquidating their position easily and efficiently with no delays. Yet when market liquidity is 'low', that is, when it becomes difficult to raise money by selling the asset, 'unsafety' becomes an issue. For instance, market freezes (illiquidity) take place precisely because market participants are uncertain about the safety of the assets circulating the financial system. There are three sub-forms of market liquidity:

1. Market resiliency: indicates the length of time it will take for prices that have temporarily fallen/declined in value to bounce back;
2. The bid-ask spread: measures the value traders can lose if they sell one unit of an asset and then immediately buy it back; and,
3. Market depth: shows how many units traders can buy or sell at the current bid or ask price without moving the price.[28]

2.3.3 *Funding liquidity*

Funding liquidity describes the ease by which market participants can obtain/raise funding. When funding liquidity is high (in good times), financial markets can be described as 'liquid' because of the relative ease in raising money. When funding liquidity is high, safety is implied in that market participants would not readily trade on illiquid and unsafe assets. Typically, when parties, such as the collateral giver and the collateral taker enter into a collateral transaction, the collateral taker will, more often than not, use the asset posted as financial collateral and borrow against it. However, the collateral taker will not be able to borrow against the entire price of the financial collateral. The difference between the price of the asset and of the financial collateral, the margin, must be financed by the collateral taker's own equity capital. Funding liquidity risk can take on three forms:

1. Redemption risk: the risk that equity holders of hedge funds or demand depositors of banks, for example, withdraw funds;
2. Margin/haircut risk: the risk that haircuts/margin will change; and,
3. Rollover risk: the risk that it will be expensive, more costly and/or impossible to roll-over (renew) short-term borrowing.[29]

2.3.4 *Liquidity risk*

Financial markets are inherently unpredictable, which is why risk management plays a crucial role in finance, especially in relation to liquidity. As mentioned in Chapter 2, liquidity has the potential to suddenly 'evaporate' and the mechanisms that explain why liquidity can suddenly evaporate operate

28 M K Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007-2008" (2009), *23 (1) Journal of Economic perspectives* 77 at 92.

29 *Ibid* at 91-92.

through the interaction of funding liquidity and market liquidity. Through this interaction, a relatively small shock can cause liquidity to dry up suddenly and carry the potential for a full-blown financial crisis.

Consider a collateral giver who enters into a securities lending transaction and borrows € 10 million worth of assets on 10% margin from the collateral taker. The 10% margin component means that the collateral giver has to finance € 1 million from its own capital (10% of € 10 million) and borrows € 9 million. This means that the collateral giver posts € 10 million worth of financial collateral but only receives € 9 million worth of assets in return. Now, suppose that the value of the financial collateral depreciates to € 9.5 million. The collateral giver, who posted financial collateral worth € 10 million has now lost € 500,000 and has only € 500,000 of its own capital remaining. Holding the 10% margin level means that the collateral giver will most probably have to reduce its overall position, which means selling assets exactly when the price is low in order to maintain the 10% margin. These sales depress the price further, thereby inducing more selling. The loss spiral arises as an equilibrium because the same asset class will face similar constraints at the same time.[30]

There is another consequence – rising margin levels. When the asset class as described above declines, margins rise. This is because the collateral taker is essentially going to want to make sure it gets paid. By raising the margin level means that the burden of risk shifts more to the collateral giver. However, as margins rise, the collateral giver has to find funding from somewhere in order to honour the obligation with the collateral taker, which is not always straightforward. It has been argued that unexpected price shocks leading to rising margin levels can be a catalyst for future volatility.[31] In addition, rising margin levels leads market participants to become overly cautious about which assets will be accepted as eligible financial collateral if they fear they might receive a particularly bad deal. The problem is that, market participants want to be able to quickly liquidate the financial collateral to avoid loss; if they receive potentially 'toxic' assets, it would very difficult to avoid making a loss.[32]

2.4 Financial Collateral Securities

Various forms of securities can be used as financial collateral. It is therefore useful at this stage to explore the types of securities used as financial collateral within the EU shadow banking sector. Depicted in *Table 3* below is an overview of the types of financial collateral used within collateral transactions in the

30 M K Brunnermeier and L H Pedersen, "Market Liquidity and Funding Liquidity" (2008) *The Society for Financial Studies* 1 at 1 – 7.

31 Brunnermeier (n 28) 77 at 94.

32 *Ibid* at 94.

EU shadow banking sector. However, it should be noted that given the severe lack of granular data in the EU shadow banking sector, *Table 3* is merely a depiction of the information available and is by no means an exhaustive overview.

Table 3: Financial Collateral Securities[33]

<table>
<tr><th colspan="2">Type of Security used as Financial Collateral</th><th>Repurchase Agreement</th><th>Securities Lending</th><th>Collateralisation of Derivatives</th></tr>
<tr><td colspan="2">Cash</td><td>N/A</td><td>25% in the EU</td><td>Predominant</td></tr>
<tr><td colspan="2">Government Bonds</td><td>81% in the EU</td><td>Predominant non-cash FC</td><td>Predominant but limited to high quality issuers</td></tr>
<tr><td>High Grade</td><td>Sovereign Supra-national Agency</td><td><5% in the EU</td><td>65%-75% in the EU</td><td rowspan="5"></td></tr>
<tr><td rowspan="4">Credit</td><td>Equity
Investment Grade Non-Financial Institutions
Investment Grade Financial Institutions</td><td><5% in the EU</td><td><5% in the EU</td></tr>
<tr><td>Covered Bonds</td><td><10% in the EU</td><td rowspan="3">Little use as FC</td></tr>
<tr><td>RMBS
CMBS</td><td><5% in the EU</td></tr>
<tr><td>ABS
CDO & CLO
Credit Claims</td><td><1% in the EU</td></tr>
</table>

The types of security used as financial collateral in the EU shadow banking sector can vary significantly and the level of margin applied to the transaction depends on, *inter alia*, what type of security is used. Equally important are issue size, market microstructure, size of investor base, complexity, initial term to maturity and the age of the asset. For instance, equities included in market indexes can trade in the tens of thousands every day, reflecting higher price transparency and smaller issue size. Major credit worthy government bonds can be traded on a substantial level many times a day, which reflects high liquidity, strong supply and demand, market-maker support and superior creditworthiness. Senior investment grade corporate bonds, such as those rated BBB or above, tend to be traded in the millions every few days, reflecting

33 R Comotto, "Shadow Banking – Minimum Haircuts on Collateral" (2013) European Parliament Economic and Monetary Affairs 1 at 23. The term "High Grade" and "Investment Grade" relates to securities that are BBB rated or above.

narrower investor bases, tailored structures, smaller issue size and lower credit worthiness.[34]

Within each category of security, there are considerable differences in liquidity. For example, there will be a significant difference in liquidity between government bond markets. The government bond markets of small countries or lower creditworthy governments, such as Greece tend to be much less liquid than those of larger countries, such as the UK or the Netherlands, even if the government bonds are of comparable credit quality. Nevertheless, there is a broad concentration of financial collateral in more liquid assets. The range of financial collateral is wider in collateral transactions markets (repos, securities lending and derivatives), as these are financing markets and all dealer and leveraged investor transactions require financing.[35]

3 THE FINANCIAL COLLATERAL DIRECTIVE

The Financial Collateral Directive is an important statute when it comes to categorising financial collateral. Notwithstanding the limited scope of the Financial Collateral Directive,[36] financial collateral under the Financial Collateral Directive can constitute: "cash", "financial instruments" and/or "credit claims".[37] Each of these financial collateral categories will be discussed in turn.

3.1 Cash

In practice, 'cash' is the most sought-after form of financial collateral. It is widely regarded as the safest and most liquid when compared with financial instruments and credit claims. In particular, US dollars are a highly liquid and sought-after source of financial collateral. This is because US dollars are the most frequently used currency in the world, and is also the global reserve currency that is held by nearly every central bank around the globe.[38] How-

34 *Ibid* 1 at 22.

35 Comotto (n 33) 1 at 22-23.

36 The scope of the FCD will be discussed in greater detail in this chapter below, see section 3.4 "Scope of the Financial Collateral Directive".

37 Article 2 (4) (c) FCD. See also, G Yeowart, R Parsons, E Murray and H Patrick, *The Law of Financial Collateral* (2016) 50.

38 Official statistics of December 2016 show that the Euro is the second most traded currency in world, which is followed by the Japanese Yen, GBP Sterling, Australian Dollar, Canadian Dollar and the Swiss Franc. On this see Bank for International Settlements, "Triennial Central Bank Survey" (11 December, 2016 (accessed 20 Janaury, 2021)) 1 at 10, available at: https://www.bis.org/publ/rpfx16fx.pdf.

ever, a point to note, the term 'cash', for the purpose of providing financial collateral is not tangible bank notes and coins, but, intangible cash balances.[39]

Under Article 2 (1) (d) of the Financial Collateral Directive, 'cash' is defined as "money credited to an account in any currency, or similar claims for the repayment of money, such as money market deposits".[40] As a source of financial collateral, the term 'cash' was discussed in *Private Equity Insurance Group SIA v Swedbank AS*, where the Court of Justice of the European Union ("CJEU") held that 'cash', when 'credited to an account', includes monies deposited in accounts used in payment and securities settlement systems as well as monies deposited in a bank account.[41]

For the purpose of providing financial collateral, the term 'cash' can also include various types of claims. For instance, cash can include claims for the repayment of money, such as loans, provided that these loans are indicated in an accounting entry or governed by standard accounting practice and principles. Cash can also include sums due in connection with a close-out netting provision or sums due in relation to a collateral transaction. Cash can also be "money market deposits" as these types of deposits represent a similar claim to that of money because they are deemed easily convertible into cash.[42] It should also be noted that 'cash' cannot include every claim for the repayment of money because, if it did, the express extension of the Financial Collateral Directive to include 'credit claims' would have been unnecessary.[43]

Although cash is the most sought-after form of financial collateral due to its high liquidity, cash is equally finite. In many circumstances the collateral giver will not be in a position to post cash as financial collateral, and fortunately for the collateral giver, not every collateral transaction requires them to do so. An example of this is a repo transaction where financial instruments are generally posted.

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39 Article 2 (1) (d) FCD. See also, Yeowart *et al* (n 37) 51.

40 Virtual currencies do not currently fall under the financial collateral umbrella, although this is not an inconceivable idea. This was recently discussed in a lecture in London by Y Mersch, "Virtual or virtueless? The evolution of money in the digital age" (February, 2018) *The European Central Bank*. Additionally, it has also been argued that virtual currencies should be regarded as a medium of exchange, on this see generally, J Perkins and J Enwezor, "The legal aspect of virtual currencies" (November, 2016) *JIBFL* 569. This may be an interesting topic for future research.

41 Case C-156/15 at paragraphs 33-35, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32002L0047. See also, L Hingston, "Possession/control of financial collateral – ECJ takes narrow interpretation (Private Equity Insurance Group SIA v Swedbank AS)" (21 December, 2016) *LexisPSL Restructuring and Insolvency* 1 at 3.

42 Recital 18 and Article 2 (1) (d) FCD. See also, R Dodd, "What Are Money Markets?" (2012) 49 (2) *Finance & Development* 46 at 46-47;

43 Yeowart *et al* (n 37) 51-54. Credit claims will be discussed in this chapter in greater detail below, see section 3.3 "Credit Claims".

3.2 Financial Instruments

Financial instruments are deemed an attractive source of financial collateral because these instruments are generally listed on an official market or exchange and are "negotiable on the capital market".[44] Trading prices are therefore readily available allowing for reliable, accurate and timely mark-to-market pricing. In addition, 'listed' securities are generally liquid in the sense that the asset can be bought and sold without delay and at a reasonable market price.

Financial instruments are specific types of instruments that are explicitly defined in both the Financial Collateral Directive and the Markets in Financial Instruments Directive II ("MiFID II"). Both Directives overlap in their definitions, however MiFID II goes further by introducing derivatives as a type of financial instrument. Under MiFID II, "financial instruments"[45] are defined as:

1. "Transferable securities":[46] which are securities that are "negotiable on the capital market",[47] such as "shares in companies and other securities equivalent to shares in companies",[48] debt instruments including "bonds or other forms of securitised debt"[49] and "any other securities… giving rise to a cash settlement";[50]
2. "Money-market Instruments":[51] Which are classes of instruments dealt with on the money market, namely "treasury bills, certificates of deposit and commercial papers";[52]
3. "Units in collective investment undertakings";[53]
4. Derivative contracts, including the transfer of credit risk, options, forwards, futures and swaps;[54]
5. "Financial contracts for differences";[55] and,
6. "Emissions allowances" complying with the requirements of Directive 2003/87/EC.[56]

44 Article 2 (1) (e) FCD and Article 4 (1) (44) of Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU ("MiFID II").
45 Article 4 (1) (15) and Section C of Annex I MiFID II.
46 Article 4 (1) (15) and Section C of Annex I MiFID II.
47 Article 4 (1) (44) MiFID II.
48 Article 4 (1) (44) (a) MiFID II.
49 Article 4 (1) (44) (b) MiFID II.
50 Article 4 (1) (44) (c) MiFID II.
51 Section C of Annex I MiFID II.
52 Article 4 (1) (17) MiFID II.
53 Section C of Annex I MiFID II.
54 Section C of Annex I MiFID II.
55 Section C of Annex I MiFID II.
56 Section C of Annex I MiFID II.

Under Article 2 (1) (e) of the Financial Collateral Directive, "financial instruments" are defined as company shares or equivalent securities; negotiable capital market debt instruments, such as bonds; and, other securities which give the right to acquire such shares, bonds or other securities by exchange, purchase or which give rise to a cash settlement, such as money market instruments and units in collective investment undertakings.

3.2.1 The debt and equity dichotomy

In practice the most sought-after form of financial instrument used as financial collateral within a collateral transaction in the EU shadow banking sector is predominantly in the form of debt instruments, such as government bonds.[57] In contrast to equity securities, for instance company shares, government bonds are deemed to be safer and of higher quality. Take for example a Dutch government bond, which is a debt instrument with a AAA credit rating issued by the Dutch government.[58] There are four reasons why this Dutch government bond is a highly sought-after source of financial collateral.

Firstly, the Dutch Government bond has a AAA rating; this rating reflects the country's minimal credit risk based on various due diligence procedures performed by external credit rating agencies. Secondly, a Dutch government bond is issued by the Dutch government. The risk of the bond defaulting is, therefore, further minimised because the Dutch government bond is underpinned by a 'put' to the safety net. A 'put' to the safety is a "risk absorption capacity external to the shadow banking activity".[59] In other words, there is reliance upon, for example, the lender of last resort in that there is financial intervention by a credible government should a problem occur. One *caveat* – government bonds are not immune to default and the risk of a government bond defaulting is directly attached to the country issuing the debt instrument.[60] Thirdly, the Dutch government bond will be listed on an official market or exchange. Trading prices are therefore generally accurate and readily available. Lastly, depending on the property law right attached to the financial collateral, the Dutch government bond may be used as a further means of

57 Debt instruments can also include corporate bonds and other forms of debt instruments as long as these are tradeable on the capital market.

58 At the time of writing, 24 January 2021, A Dutch government bond has a credit rating of Aaa, see Moody's, Government of Netherlands credit rating, available at: https://www.moodys.com/credit-ratings/Netherlands-Government-of-credit-rating-543005.

59 S Claessens and L Ratnovski, "What Is Shadow Banking?" (2014) *WP/14/25 International Monetary Fund* 1 at 5.

60 J Politi and K Allen, "Italian market turmoil deepens as president picks new premier" (Tuesday 29 May, 2018) *Financial* Times 1 at 1. It is an obvious point – however it is always important to assess the risk of the government bond as it applies to the country issuing the debt. Where there is political, sovereign and economic unrest in any given country, it could potentially lead to problems. Greece, for example, was particularly affected by the European Sovereign Debt Crisis and Italy has mounting debt problems.

trading within the marketplace, which would ultimately enhance both funding and market liquidity.[61]

There is therefore a significant dichotomy between debt and equity. Equity in the form of a company share is highly volatile; it is subject to frequent and unpredictable intraday market price fluctuations, whereas government bonds are generally not subject to extreme intraday fluctuations. While equity is an important source of financial collateral, fluctuations can of course cause problems. If the financial collateral plummets in value, it will subsequently lead to the obligation to post additional financial collateral and higher margin ratios. The domino effect of this volatility may lead to panic runs, which in turn paves the way for fire sales, downward price spirals and ultimately future crises.[62]

3.2.2 Other securities which give rise to cash settlement

The demand for high quality financial collateral often exceeds supply and increasingly, the use of lesser quality forms of financial collateral is often relied upon. As described previously, it is clear that high quality financial collateral, which is both stable and liquid, is the most sought after. However, it is not always possible to post investment grade financial collateral, such as AAA government bonds. Financial collateral in the form of financial instruments can also be "other securities… which give rise to a cash settlement".[63] Despite these securities being less liquid and stable, in most cases it will still satisfy the demands of the collateral taker. According to the European Commission, this form of financial collateral is "all kinds of securities held in fungible form or as bearer securities… whether in book entry form or directly held".[64] These sorts of securities may include securities which are convertible into equity, such as a contingent convertible bond ("CoCo"). A CoCo is essentially a fixed income debt instrument that is convertible into equity if a pre-specified trigger event occurs. The general idea is that as long as there is a market for the financial instruments, and as long as the parties are in agreement about what are deemed 'acceptable', the financial collateral can be used as 'cash equivalent'.[65]

61 Brunnermeier (n 28) 77 at 91-96. See also generally, Brunnermeier and Pedersen (n 30).
62 Wilmot *et al* (n 6) 1 at 1-3.
63 Article 2 (1) (d) FCD.
64 Working Document on Collateral from the Commission to relevant bodies for consultation: First preliminary draft proposal for a Directive, C4/PND (2000), 15 June 2000, 1 at 10. See also, Yeowart *et al* (n 37) 60 (footnote 39).
65 Yeowart *et al* (n 37) 64-65. See also, M Singh, "Collateral Reuse and Balance Sheet Space" (2017) *IMF Working Paper* 1 at 5.

3.3 Credit Claims

Credit claims are a less liquid form of financial collateral. Under Article 2 (1) (o) of the Financial Collateral Directive, "credit claims are pecuniary claims arising out of an agreement whereby a credit institution… grants credit in the form of a loan".[66] As a form of financial collateral, the credit claim category, which can only be granted by a credit institution,[67] was introduced after the Global Financial Crisis due to the decline of the securitisation market. Credit institutions had various financial receivables and business assets on their balance sheets and these assets essentially became stagnant due to the decline of the securitisation market.[68] By extending the scope of the Financial Collateral Directive to credit claims, it has been suggested by the European Commission that credit institutions would be able to provide lending on a more efficient basis and investors would be able to access funds more readily.[69] As a consequence, a level playing field would be created among credit institutions and cross-border use of credit claims as a form of financial collateral would be stimulated.[70] It is interesting to note that whereas bonds only qualify as financial collateral under the Financial Collateral Directive if they are "negotiable" on the capital market, there is no requirement that credit claims should be tradeable (although they often will be).[71]

3.4 Scope of the Financial Collateral Directive

While the categories: "cash", "financial instruments" or "credit claims"[72] are sources of financial collateral and governed by the Financial Collateral Directive, not every collateral transaction will enjoy the protection afforded by the Financial Collateral Directive, due to its limitations in scope. Protection with regard to financial collateral under the Financial Collateral Directive ensures that the financial collateral is backstopped by the European Central Bank

66 Article 2 (1) (o) FCD. See also J Diamant, "An Alternative Approach to the Requirement of Possession or Control under the EU Collateral Directive" (2013) *Presentation at the Society for Legal Scholars Conference;* European Central Bank, "The Use of Credit as Collateral for Eurosystem Credit Operations" (2013) *No. 148 Occassional Paper Series* 1 at 5.

67 Article 4 (1) (1) of Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending regulation (EU) No 648/2012 (OJ L 176) Capital Requirements Regulation ("CRR").

68 This information was received during a meeting with interviewee #2 on Thursday 3 May, 2018 at the offices of Shepherd and Wedderburn Solicitors, Exchange Crescent, Edinburgh, UK.

69 European Commission Green Paper, "Building a Capital Markets Union" (2015) 1 at 23.

70 Yeowart *et al* (n 37) 68.

71 Article 2 (1) (e) FCD. See also, Yeowart *et al* (n 37) 68-71.

72 Article 2 (4) (c) FCD. See also, Yeowart *et al* (n 37) 50.

("ECB"). A backstop functions as a form of insurance and is the act of providing last-resort financial support in the event that something goes wrong. The scope of the Financial Collateral Directive is determined by personal scope and material scope, each will be discussed in turn.

3.4.1 Personal scope

In order to be protected under the Financial Collateral Directive, Article 1 (2) of the Financial Collateral Directive holds that the collateral giver *and* the collateral taker must fall into one of the following categories:

a) "public authority";[73]
b) "central bank";[74]
c) "financial institution subject to prudential supervision";[75]
d) "central counterparty, settlement agent or clearing house";[76] or,
e) any other legal person "other than a natural person, including unincorporated firms and partnerships, provided the other party" belongs to the preceding institutions as outlined in (a) – (d) above.[77]

One objective of the Financial Collateral Directive is that the personal scope of the application of the Financial Collateral Directive should also cover entities that are "unincorporated".[78] However, Member States, under their national law, may limit eligibility to the aforementioned institutions by 'opting out' of Article 1 (2) (e) of the Financial Collateral Directive. The 'opt-out' provision under Article 1 (3) of the Financial Collateral Directive, allows Member states to remain more restrictive in scope and application by excluding parties mentioned in Article 1 (2) (e) of the Financial Collateral Directive. There is, therefore, an attraction to conduct business in certain Member States over others. Spain is one such example. Spain has widened the personal scope of the Financial Collateral Directive to cover entities not mentioned in the Financial Collateral Directive, whereas Austria has exercised the full opt-out under Article 1 (3) of the Financial Collateral Directive.[79]

Entities outside the five categories outlined under Article 1 (2) (a) – (e) of the Financial Collateral Directive, that is to say a private repo transaction between two high net worth individuals or a securities lending transaction between two hedge funds (provided neither is prudentially regulated) for example, would not be covered by the Financial Collateral Directive.

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73 Article 1 (2) (a) FCD.
74 Article 1 (2) (b) FCD.
75 Article 1 (2) (c) FCD.
76 Article 1 (2) (d) FCD.
77 Article 1 (2) (e) FCD.
78 Article 1 (2) (e) FCD.
79 Yeowart *et al* (n 37) 42-43. Other Member States who have widened the scope include, Belgium, Italy and Estonia to name a few.

3.4.2 Material scope

The material scope of the Financial Collateral Directive relates to three different categories, namely types of financial collateral, property law rights and possession and control – each will be discussed.

3.4.2.1 Types of financial collateral

As previously described, the types of financial collateral circulating the EU can include "cash", "financial instruments" or "credit claims".[80] The scope of the Financial Collateral Directive does not extend to other forms of collateral that are not considered *financial*, such as commercial property, plant and machinery and residential property.

3.4.2.2 Property law

Most collateral transactions involve the transfer of assets from one party to another party. The entitlement of the parties in relation to how the financial collateral can be used is especially important not only with regard to whether the financial collateral can be used for recovery or tradability reasons, but also in default and potential insolvency situations. The underlying legal mechanisms in relation to the transfer of assets as financial collateral from one party to another party can come in three different forms, which are all catered for in the Financial Collateral Directive (as well as the respective master agreements[81]).

1. Title transfer: the Financial Collateral Directive defines 'title transfer' as a "title transfer financial collateral arrangement… under which a collateral provider transfers full ownership of, or full entitlement to, financial collateral to a collateral taker for the purpose of securing or otherwise covering the performance of relevant financial obligations".[82] This provision of the Financial Collateral Directive ensures that the collateral taker acquires full title to the financial collateral and, as the new owner of the financial collateral, the collateral taker is allowed to utilise it as he sees fit.

   The only obligation the collateral taker has to the collateral giver is to return *equivalent fungible* securities upon maturity.[83] After the financial collateral has changed hands via a title transfer arrangement and has subsequently been reused by the collateral taker, it is not obligatory for the collateral taker to return the exact securities to the collateral giver. A very simplistic example is a € 100 Dutch government bond, with a serial number of 1234. If this Dutch government bond is posted by the collateral

80 For a deeper analysis on these three categories of financial collateral, see above section 3 "The Financial Collateral Directive". See also, Article 2 (4) (c) FCD; Yeowart *et al* (n 37) 50.

81 The respective master agreements will be explored in greater detail under Chapter 5 "Collateral Transactions in Practice".

82 Article 2 (1) (b) FCD.

83 Haentjens and de Gioia-Carabellese (n 5) 231-233.

giver to the collateral taker as financial collateral, it is not necessary for exactly the same Dutch government bond, with serial number 1234, to be returned. It is enough that the returned financial collateral is *equivalent fungible* securities of the same value and type, i.e. a Dutch government bond with serial number 5678 with a value of € 100.[84]

2. Security Interest: the Financial Collateral Directive defines 'security interest' as a "security financial collateral arrangement… under which a… [collateral giver] provides financial collateral by way of a security to or in favour of a… [collateral taker], and where the full or qualified ownership of, or full entitlement to, the financial collateral remains with the… [collateral giver] when the security right is established".[85] Under a traditional security interest structure, the collateral taker is only allowed to dispose of the financial collateral upon the default of the collateral giver.
3. Security Interest with a right of use: to enhance the tradeability of the financial collateral in a traditional security interest structure, the collateral taker can be explicitly granted a 'right of use'.[86] A 'right of use', as defined under the Financial Collateral Directive, is "the right of the collateral taker to use and dispose of financial collateral provided under a security financial collateral arrangement as the owner of it in accordance with the security financial collateral arrangement".[87] A security interest with a 'right of use' in the financial collateral allows the collateral giver to retain full title in the financial collateral. However, as soon as the financial collateral is re-used by the collateral taker, the arrangement transforms into a full title transfer.

Out of the three legal mechanisms outlined above, the most practicable option is title transfer. The predominant reason for entering into a collateral transaction is the performance of another obligation in a completely separate transaction. Therefore, a key purpose of acquiring financial collateral is to transfer ownership to a third party. In order to transfer ownership, the collateral taker clearly must be the owner of the financial collateral, which is done through a title transfer.[88]

3.4.2.3 Possession and control

One of the driving forces behind the Financial Collateral Directive was to tackle the conflict of laws[89] by creating an EU wide framework that harmonised the various legal systems in relation to the provision of financial collateral. In

84 Singh *Financial Plumbing* (n 11) 2.
85 Article 2 (1) (c) FCD.
86 Singh *Financial Plumbing* (n 11) 3. See also, Haentjens and de Gioia-Carabellese (n 5) 229-230.
87 Recital 19 and Article 2 (1) (m) FCD.
88 Haentjens and de Gioia-Carabellese (n 5) 229-230.
89 'Conflict of laws' will be discussed in this chapter below, see section 3.5 "Conflict of Laws".

particular, the Financial Collateral Directive was, amongst other things, designed to facilitate the use of collateral transactions in order to "contribute to the integration and cost efficiency of the financial market as well as to the stability of the financial system" within the EU.[90] The Financial Collateral Directive provides a common regime of minimal formalities for the creation of qualifying collateral transactions enabling the rapid and non-formalistic enforcement of such arrangements, which are free from restrictive provisions of national insolvency proceedings throughout the EU.[91] The Financial Collateral "Directive makes it clear that in order to limit the administrative burden on parties using financial collateral" with a security interest, the only perfection requirement is that of 'possession or control'.[92] Therefore, a collateral arrangement may be classified as a collateral transaction within the Financial Collateral Directive only if the "provided"… "financial collateral is delivered, transferred, held, registered or otherwise designated so as to be in the possession or under the control of the collateral taker".[93]

However, the Financial Collateral Directive does not contain a precise definition of 'possession' or 'control'. It is therefore extremely difficult, if not impossible, to confine the concepts 'possession' or 'control' with sharp definitive boundaries. The main perception is that there can be different forms of control as well as different forms of possession depending on the type of security involved and/or the contractual agreement entered into by the parties. Some commentators argue that possession or control is confined to the idea of 'exclusive and absolute dominion' over the specified securities[94] – yet this leads to the question: how does one have 'exclusive and absolute' dominion over intangible securities? Another argument put forward is that these terms are deliberately 'flexible' to reflect the dynamic nature of financial markets by accommodating the needs of the parties' property law rights in a collateral transaction.[95] Other commentators remain more objective.[96] Yet such arguments, while thought provoking, say nothing conducive about the precise definition of 'possession' or 'control' under the Financial Collateral Directive.

On a more authoritative level, the issue of 'control' under the Financial Collateral Directive has been discussed by Hugh Beale,[97] who draws a distinction with 'negative control' and 'positive control'. Beale describes 'negative

90 Recital 3 FCD.
91 Articles 7 and 8 FCD.
92 Article 2 (2) FCD. See also C Werner, "Are you in possession or control of your clients' financial collateral?" (2013) *Lexology*.
93 Article 2 (2) FCD.
94 E McKendrick, *Goode on Commercial Law* (2009) 689-719. See also, E C Zaccaria, "An inquiry into the meaning of possession and control over financial assets and the effects on third parties" (2017) *Journal of Corporate Law Studies* 217 at 218; G L Gretton, A J M Steven, *Property, Trusts and Succession* (2017) 162.
95 Zaccaria (n 94) 217-246.
96 Yeowart *et al* (n 37) 166-167.
97 Professor of contract and commercial law at the University of Warwick.

control' as a form of control under which the collateral taker can prevent the collateral giver from dealing with the financial collateral. 'Positive control' is where the collateral taker has the practical and legal ability to take or dispose of the financial collateral without any further involvement of the collateral giver. Both forms of control are now part of the UNIDROIT Convention on Substantive Rules for Intermediated Securities.[98] In order to satisfy the requirements under Article 2 (2) of the Financial Collateral Directive, Beale argues that the collateral taker has to at least have 'negative control'.[99]

Beale's view has strong parallels with that of the Opinion of Advocate General Szpunar in the CJEU case of *Private Equity Insurance Group* SIA v Swedbank AS.[100] The Opinion of Advocate General Szpunar referred to the difficulties encountered with the terminology 'possession' and 'control' and noted that the collateral taker must have 'legal' control over the financial collateral for the arrangement to fall within the scope of the Financial Collateral Directive.[101] The Advocate General took the view that the requirement of the financial collateral being 'in the possession' or 'under the control' of the collateral taker for the purposes of the Financial Collateral Directive would become entirely ineffective if it were interpreted as covering a situation where the collateral giver is able to continue to dispose of the financial collateral freely.[102] As a result, the Financial Collateral Directive "meaning of 'provided' must be interpreted to the effect that the provision of financial collateral" requires the collateral taker having the legal right to limit the use of the financial collateral in so far as is necessary to guarantee the relevant obligations.[103] In other words, there has to be "dispossession" in that the collateral giver cannot "freely dispose" of the financial collateral[104] – that is to say that in a collateral transaction with a security interest attached, the collateral giver has to be "prevented from disposing" of the financial collateral.[105]

98 H Beale, M Bridge, L Gullifer and E Lomnicka, *The Law of Security and Title Based Financing* (2012) para 3.37. See also, the UNIDROIT Convention on Substantive Rules for Intermediated Securities, Chapter 19, Part E.3.

99 D Sheehan, *The Principles of Personal Property* Law (2017) 272; see also Yeowart *et al* (n 37) 174-175.

100 Opinion of Advocate General Szpunar, Case C-156/15 Private Equity Insurance Group SIA v Swedbank AS, delivered on 21 July, 2016, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62015CC0156.

101 Ibid at paras 46-47.

102 Ibid at paras 41-51. See also, Article 5 FCD; Diamant (n 66) 1 at 10-12.

103 Ashurst, "Court of Justice of the European Union for the first time decided questions of scope of the Financial Collateral Directive" (24 November, 2016) Securities and Derivatives Briefing Group, available at: https://www.ashurst.com/en/news-and-insights/legal-updates/coj-of-the-eu-financial-collateral-directive/. See also, Opinion of Advocate General Szpunar (n 100) at para 51.

104 Recital 10 FCD. See also, Private Equity Insurance Group SIA v Swedbank AS, Case C-156/15 at paras 40, 43 and 52.

105 Ibid at paragraphs 44-54 and 68.

3.5 Conflict of Laws

Given the global nature of financial markets, most collateral transactions travel across jurisdictions, which mean that securities come in contact with different laws. In particular, financial collateral posted in the form of "book entry securities", which are securities that "consist of financial instruments, title to which is evidenced by entries in a register or account maintained by or on behalf of an intermediary".[106] 'Book entry securities' are indirectly held securities whose ownership is recorded electronically. Because technology is a global phenomenon, one can envisage the financial collateral constantly transiting through numerous jurisdictions, which becomes particularly problematic when determining the precise location of the financial collateral. To illustrate, a prudentially regulated Dutch bank could enter into a repo transaction with a hedge fund in London who then enters into another repo transaction with an investment fund in Malta who enters into another repo transaction with a pension fund in New York and so on and so forth. From a practical perspective it is unclear as to which jurisdiction has legal authority over the financial collateral.

Article 9 of the Financial Collateral Directive seeks to mitigate this conflict by holding that "book entry securities collateral shall be governed by the law of the country in which the relevant account is maintained".[107] The term 'relevant account' relates to "the register or account… which the entries are made by which that book entry securities collateral is provided to the" collateral taker.[108] It is, of course, crucial that parties to the transaction are aware of the applicable law in relation to the financial collateral, as legal certainty is key component within the financial collateral framework. Article 9 of the Financial Collateral Directive overlaps with the so-called Place of Relevant Intermediary Approach ("PRIMA") principle under the Hague Convention. PRIMA is a principle that subjects the financial collateral to the law of a single jurisdiction notwithstanding its transitory nature.[109]

3.6 Shadow Banking and the Financial Collateral Directive

Given that virtually any institution operating in the financial sector can perform shadow banking activities one way or another, the type of financial

106 Articles 2 (1) (g) and 9 (1) FCD.

107 Article 9 (1) FCD.

108 Article 2 (1) (h) FCD. See also, G Spindler, "Fintech, digitalization, and the law applicable to proprietary effects of transactions in securities (tokens): a European perspective" (2019) 24 (4) Uniform Law Review 724-737.

109 See Article 2 and 4 of the Hague Convention of 5 July on the Law Applicable to Certain Rights in Respect of Securities held with an Intermediary, available at: https://assets.hcch.net/docs/3afb8418-7eb7-4a0c-af85-c4f35995bb8a.pdf.

collateral circulating the EU, whether covered by the Financial Collateral Directive or not, generally remains the same. For example, collateral transactions conducted within the shadow banking sector can equally utilise cash, financial instruments and credit claims as sources of financial collateral. The only difference is that certain entities performing specific transactions are not afforded protection under the Financial Collateral Directive. Rather, "privately created" transactions are generally governed by the respective master agreements, which cater for, amongst other things, financial collateral and margin.[110] As long as the financial collateral is mark-to-market, underpinned by the respective master agreement and the parties are in agreement about what constitutes acceptable financial collateral, the financial collateral can generally be used to secure the transaction.[111]

4 COLLATERAL TRANSACTIONS

It is pertinent at this stage to briefly orientate ourselves by exploring the kinds of transactions in which financial collateral is used. Within the EU shadow banking sector, financial collateral is utilised in various collateral transactions, such as repos, securities lending and derivatives transactions.[112] Entities participating in the shadow banking sector tend to concurrently perform many collateral transactions with one another. Because of the size and scale of these transactions, exposure to market risk and credit risk between the parties is constantly fluctuating. Along with the use of margin,[113] liquid financial collateral is therefore essential in managing these exposures.[114]

4.1 Repurchase Agreement

4.1.1 What is a repurchase agreement?

Under Article 3 (9) of the Securities Financing Transactions Regulation ("SFTR"),[115] a repo is defined as a transaction where a party sells an asset

110 Cullen (n 8) 85 at 112.
111 Singh (n 65) 1 at 5.
112 Repos, securities lending and derivatives transactions will only be briefly outlined here. For a deeper discussion on this, please see generally Chapter 5 "Collateral Transactions in Practice".
113 The use of margin will be discussed in greater detail in subsequent Chapter 4 "Margin".
114 Gullifer (n 16) 377 at 382.
115 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 ("SFTR").

to another party and commits to repurchase the asset back from that party for a different price upon maturity.

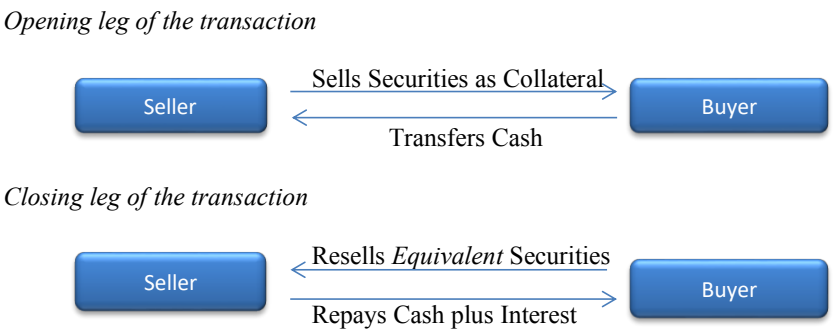


Figure 4: Repo

Figure 4 above demonstrates that in the opening leg of the repo transaction, the seller (collateral giver) sells securities as financial collateral to the buyer (collateral taker); in return, and based on the agreed haircut, the buyer transfers a certain amount of cash to the seller. In the closing leg of the repo transaction, there is a commitment by both the buyer and the seller to repurchase equivalent property.[116] Consequently, the seller repays the cash to the buyer, plus interest; simultaneously, the buyer resells *equivalent* securities back to the seller.

Within the EU, the securities posted as financial collateral at the outset of the repo are sold by means of a true sale; this position can be contrasted with the USA where a repo is classed as a secured loan.[117] A true sale is the legally binding transfer of asset ownership from the seller to the buyer, meaning that the assets are no longer the liability of the seller.[118] However, upon maturity of the repo transaction, the seller has a commitment to buy back *equivalent* financial collateral. Consequently, the buyer has only temporary use and possession of the financial collateral, while the seller has only temporary use and possession of the cash. Therefore, a repo transaction within the EU behaves economically akin to a secured loan, yet the transaction is, in fact, structured legally as a sale and repurchase.

116 Most repos are concluded after a specific period of time. For instance, 'overnight' repos are concluded after one night; 'intra-day' repos are concluded within the same day; Repos can also be 'rolling' in that although there is a fixed maturity date, the contract can specify that this date may be extended by one or both parties; repos can also be classed as 'open' or 'term', and are concluded with or without a fixed maturity date.

117 Haentjens and de Gioia-Carabellese (n 5) 230-233. See also, M Haentjens (ed), Y Diamant, J Siena, R Spence and A Zacaroli, "Financial Collateral: Law & Practice" (2020) 108-109.

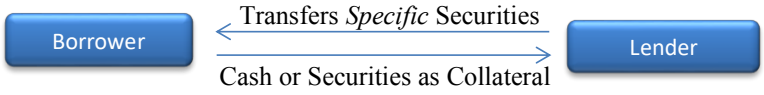
118 P Wood, Law and Practice of International Finance (2011) 452-453. In particular, Phillip Wood writes in the context of securitisation, however the concept of 'true sale' remains the same with regard to a repo transaction.

4.2 Securities Lending

4.2.1 What is securities lending?

Under Article 3 (7) of the SFTR, securities lending is defined as "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" lender.

Opening leg of the transaction



Closing leg of the transaction

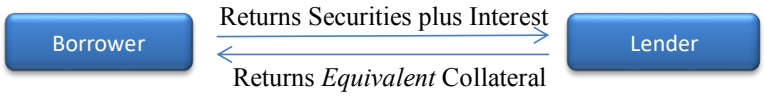


Figure 5: Securities Lending

Figure 5 above demonstrates that in the opening leg of the securities lending transaction, there is a temporary transfer of specific securities by one party, the lender (collateral taker), to another party, the borrower (collateral giver), for a pre-agreed period of time. The lender is not going to enter into this transaction on an unsecured basis, therefore, the borrower is required to provide financial collateral to the lender, plus the agreed upon initial margin. In the closing leg of the securities lending transaction, the borrower returns equivalent securities, plus interest to the lender; simultaneously, the lender returns equivalent financial collateral to the borrower.

Legally, a securities lending transaction is the transfer of specific securities against an irrevocable undertaking to return equivalent securities upon maturity of the transaction. This means that the securities posted as financial collateral, such as government bonds, will be transferred out of the lender's name into that of the borrower's name and then registered back upon maturity of the transaction.[119] The property law right ascribed to the financial collateral, for instance a title transfer or security interest, will dictate what legal right of use the lender and borrower have in the respective property.

119 International Securities Lending Association, "Securities Lending: A Guide for Policymakers" (accessed 17 May, 2020) 1 at 3 (footnote 1), available at: https://www.isla.co.uk/system/files/2017-10/sl_aGuide_for_Policy_makers.pdf.

4.3 Derivatives

4.3.1 What is a derivative?

A derivative is a product that derives its value from an underlying asset class.[120] The derivative itself is a contract between two or more parties based upon the underlying asset and its value is determined by fluctuations in that underlying asset. The asset that underlies the derivative transaction is the benchmark used to calculate the value of the derivative contract.[121] The purpose of entering into a derivative transaction is either to 'hedge' or to 'speculate'. To 'speculate' is the hope of receiving a financial benefit from the variation of the specific underlying asset. To 'hedge' is to seek protection against financial loss or other adverse circumstances.[122]

While a derivatives transaction can refer to a wide range of financial products, such as futures, options and swaps, not all of these products represent a collateral transaction. In the context of collateralised finance, a derivatives transaction, predominantly a 'swap', will only apply if there is a Credit Support Annex attached to the transaction, which is catered for under the International Swaps and Derivatives Association ("ISDA") master agreement.[123] Credit Support Annexes are used in documenting financial collateral/margin posted by the parties that trade on over-the-counter ("OTC") derivative transactions. The main purpose of a Credit Support Annex is, therefore, to set forth and govern the rules in relation to the posting of financial collateral/margin.[124]

Figure 6 below shows that in the opening leg of the transaction, a typical currency swap is a transaction in which the borrower borrows GBP Sterling from, and simultaneously lends Euros to, the lender. Throughout the lifecycle of the transaction, and as a result of the currency fluctuating in price, both the borrower and lender commit themselves to a periodical exchange of interest payments received on the swapped currencies.[125] If such a periodical exchange did not take place, then one party would always be 'in-the-money' and the other would be 'out-of-the-money', which becomes particularly problematic in the event of default. Consequently, the respective currencies are

120 A G Balmer, Regulating Financial Derivatives: Clearing and Central Counterparties (2018) 14.

121 F J Garcimartin and S Sanchez, "Derivatives in a cross-border context: a conflict-of-laws analysis" in M Haentjens (ed), Nederlands Internationaal Privaatrecht: Special Issue on Private international law and finance (2018) 72 at 73.

122 See generally, S M Bartman, "Corporate hedging and speculation with derivatives" (2017) Journal of Corporate Finance.

123 The Credit Support Annex, and the provisions therein, will be explored in greater detail below, see generally Chapter 5 "Collateral Transactions in Practice". See also, Garcimartin and Sanchez (n 121) 72 at 73; Haentjens and de Gioia-Carabellese (n 5) 233-234.

124 J Hull and A White, "Collateral and Credit Issues in Derivatives Pricing" (2014) Journal of Credit Risk 1 at 14-15.

125 Haentjens and de Gioia-Carabellese (n 5) 233-234.

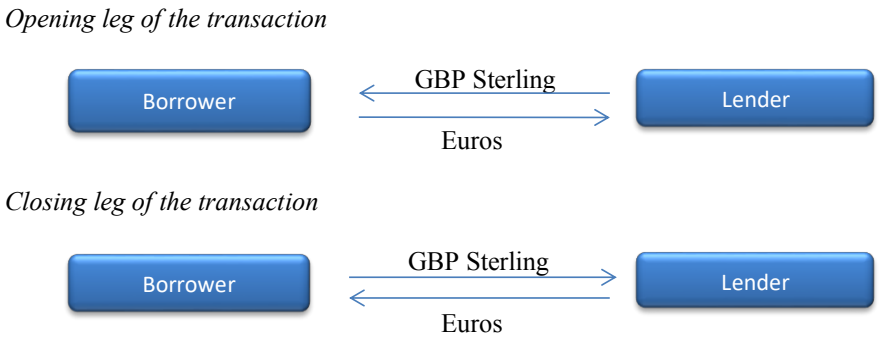


Figure 6: Derivatives

regularly valued mark-to-market for the lifecycle of the transaction where the borrower would pay the lender/lender would pay the borrower depending on the currency fluctuation trajectory. Upon maturity of the transaction, the parties agree that they will repay equivalent principal amounts in the original currency.[126]

OTC derivatives are inherently risky, primarily because the value of the derivative contract is derived from the underlying asset, which can cause the value of the derivative contract to substantially fluctuate. Although there is a 'reciprocal payment obligation', parties often seek financial collateral as a form of credit support in order to mitigate risk. The Credit Support Annex seeks to mitigate this risk through the inherent collateral management process. This management process involves the posting of financial collateral, in the form of initial margin often by both parties, followed by the subsequent application of margin in the form of 'variation margin'.[127]

Property law plays an important role when determining what right the collateral taker has in the posted financial collateral. For example, the ISDA Credit Support Deeds for English law and the New York law Credit Support Annexes, which operate with a pledge/security interest structure can allow financial collateral to be re-used.[128] On the other hand, the English law Credit Support Annex (both the 1995 and 2016 versions) are title transfer agreements where full legal rights are passed from one party to the other party.[129] This means that the collateral taker has a free choice as to how the financial col-

126 Garcimartin and Sanchez (n 121) 72 at 73.
127 For a more in-depth analysis of margin, see below section 4.4 and subsequent Chapter 4 "Margin".
128 Paragraph 1 (b), 1994 ISDA New York Law CSA and Paragraph 1 (b), 2016 New York Law CSA for Variation Margin.
129 Footnote 1 and Paragraphs 5 (a) and (b), 1995 ISDA English Law CSA and footnote 1 and Paragraphs 5 (a) and (b), 2016 English Law CSA for Variation Margin.

lateral will be used – sold, stored, lent out or re-used.[130] In practice, most financial collateral is utilised to meet incoming margin calls; often the financial collateral is reinvested and if it is well managed, profits can be made.[131] Yet it has been noted that in recent years, given the larger volumes of liquid financial collateral currently sought in the marketplace following the Global Financial Crisis, the associated cost of funding collateralised exposures is leading firms to focus more on the optimisation of financial collateral.[132]

4.4 Margin

While 'margin' will be discussed in greater detail in the subsequent chapter, it is worth a brief mention at this juncture. It is common practice for parties involved in a collateral transaction to *ex-ante* implement a margin component in the form of a 'haircut' or 'initial margin'. A haircut or initial margin is the price difference between the market value of the securities posted as financial collateral and the value of the contracted property – often referred to as the "price differential".[133] The purpose of applying a haircut/initial margin is to overcollateralise the transaction thereby hedging risk on any downward price fluctuation of the securities posted as financial collateral. The size of the haircut/initial margin, which is determined by various factors, namely market risk, credit risk of the counterparty and the quality of assets, determines the amount of funding that can be obtained. To simplify this point, the higher the haircut/initial margin, the less funding available, and the lower the haircut/initial margin, the more funding available. In other words, haircuts/initial margins can limit the amount of leverage a market participant can obtain.

'Variation margin' is an *ex-post* control and is a mechanism that refers to the mark-to-market movements in the value of the posted financial collateral. In practice, valuations are often conducted on a daily (or intra-day) basis to determine if there is any uncollateralised exposure. If there is exposure as a result of the financial collateral fluctuating in price, a margin call will be made to cover this exposure. Margin is, therefore, a risk mitigation tool that provides the parties with an important safety net designed to take account of unintended price fluctuations in the financial collateral.[134]

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130 Paragraph 7, 1995 ISDA English Law CSA and Paragraphs 7, 2016 English Law CSA for Variation Margin.

131 P C Harding and A J Harding, A Practical Guide to the 2016 ISDA Credit Support Annexes for Variation Margin (2018) 11-27.

132 International Swaps and Derivatives Association, "2013 Best Practices for the OTC Derivatives Collateral Process" (23 October, 2013), available at: https://www.isda.org/a/l0iDE/2013-isda-best-practices-for-the-otc-derivatives-collateral-process-final.pdf.

133 Yeowart et al (n 37) 461-512.

134 Margin is only briefly touched upon in this chapter. For a comprehensive overview of 'margin', see subsequent Chapter 4 "Margin".

4.5 Master Agreements

The legal apparatus governing repos, derivatives and securities lending transactions in the EU shadow banking sector is generally in the form of the so-called industry standard 'master agreements'.[135] Master agreements are standardised documents providing contractual terms and clauses allowing parties to quickly negotiate agreements and transactions. In practice, each type of collateral transaction is governed by a different master agreement. For instance, a securities lending transaction is generally governed by the GMSLA; a repo transaction is generally governed by the GMRA; and, a derivatives transaction is generally governed by the Credit Support Annex under the ISDA master agreement. Parties usually enter into umbrella master agreements to contractually govern their relationship for the lifecycle of the transaction. However, it should be noted that while the aforementioned master agreements are the most widely accepted legal documentation underpinning collateral transactions in the EU shadow banking sector, it should also be noted that the master agreements are not the only option available to parties.[136] It is still possible for parties to rely upon other legal underpinnings such as domestic or specific company documentation or even ad hoc agreements, which may be more suited to the particular transaction.[137]

5 The velocity of financial collateral

The velocity of financial collateral within the EU shadow banking sector refers to the use of the same financial collateral asset several times over. In a typical collateral transaction, market participants pledge, sell, or, more generally transfer an asset they have received from one market participant and transfer it to another market participant. Yet financial collateral does not flow in a vacuum, it requires collateral transactions and balance sheet space to move within the EU shadow banking sector.

135 The master agreements will only be briefly referred to in this chapter. For an extensive overview as to how the master agreements operate in practice, see Chapter 5 "Collateral Transactions in Practice".

136 Other 'master agreement' options available to the parties in the EU include the European Master Agreement, the German DRV and the French FBF. On this see, D Longworth, "The role of margin requirements and haircuts in procyclicality" (March, 2010) CGFS Papers 1 at 5. For the purpose of this study, the pertinent master agreements are the GMRA, the GMSLA and the Credit Support Annex under the ISDA master agreement

137 Haentjens and de Gioia-Carabellese (n 5) 234-235.

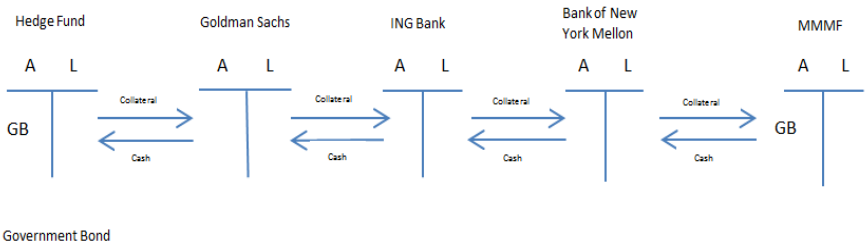

Figure 7: Re-use of Financial Collateral

Figure 7 above visually depicts one of the many examples of a typical intermediation chain and demonstrates how financial collateral can be re-used several times over. This diagram shows multiple repo transactions where the same government bond is re-used as financial collateral. The re-churning of the same asset leads to long chains of intermediation, which harbours both benefits and risk. Along the intermediation chain, a single financial institution can be involved in multiple repos, securities lending or derivatives transactions.

From an economic perspective, the velocity of financial collateral serves many useful functions. The re-use of financial collateral is the functional equivalent to the creation of money that takes place in the traditional banking sector through the process of deposit taking and loan making. In a repo transaction for example, market participants raise cash to purchase securities, which in turn, are used in other transactions to raise more cash to buy more securities and so on and so forth.[138] The chain of intermediation is a "money multiplier" and in theory, the financial collateral underpinning the collateral transaction may be constantly re-used – mathematically, the cumulative intermediation chain "can be infinite".[139] Another key benefit of financial collateral having velocity is that it mechanically increases the supply of available securities to the marketplace, which can then be used for clearing, settlement and financing purposes. The velocity of financial collateral has indeed become an essential component of modern finance because it not only provides an alternative source of funding, it also facilitates liquid and efficient markets.[140]

However, the velocity of financial collateral also poses significant risk and often comes under the regulatory spotlight from a financial stability perspect-

138 Bank for International Settlements, "Repo Market Functioning" (2017) 59 CGFS Papers 1 at 6, available at: https://www.bis.org/publ/cgfs59.htm.

139 Cullen (n 8) 85 at 94-95.

140 See generally, P Mehrling, Z Pozsar, J Sweeney and D H Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance" (2013) Institute for New Economic Thinking.

ive.[141] The long chains of intermediation often lack transparency and therefore heightened risk, particularly in relation to the amplification of contagion. The re-use of the same financial collateral security increases the interconnectedness among market participants thereby contributing to the formation of contagion and potential spill-over effects. As such, the longer the intermediation chain, the more interconnected the parties will become. The re-use of the same financial collateral security can, therefore, create systemic contagion, particularly if an entity within the chain experiences financial distress. Because it is often unclear as to the cumulative build-up of exposures along the intermediation chain, default would automatically activate a number of competing claims against the same financial collateral security, which would potentially lead parties within the intermediation chain from being able to reclaim any losses leading to subsequent additional fails.[142] In addition, the intermediation chain can also exacerbate movements in margins. If haircuts/margins rise, the money multiplier as described above works in reverse and causes a deleveraging effect – the cumulative haircuts/margins on re-used financial collateral essentially becomes more sizeable. In periods of market stress, there will be simultaneous demands for the return of securities and the re-use of financial collateral will undermine these demands on a timely basis, incentivising parties to run.[143]

5.1 Two Functions of Financial Collateral

The velocity of financial collateral is important because it highlights two important functions that financial collateral fulfils within collateral transactions in the EU shadow banking sector. Firstly, collateral, whether financial or not and whether liquid or not, fulfils a *recovery* function and plays an important role in case of enforcement/close-out netting. The recovery function serves the purpose of recourse in the event that the collateral giver fails to fulfil its obligations to the collateral taker.[144] The collateral backs the obligation and is the source of payment should default occur. Secondly, financial collateral also serves a *tradability* function. Financial collateral therefore goes further than other forms of collateral precisely because financial collateral is predominantly liquid. Provided that there is a 'title transfer' right or a 'security interest' with a 'right of use' attached to the financial collateral, the tradability function can ensure that financial collateral has 'velocity' in the sense that the financial

141 See generally, Financial Stability Board (n 126). See also, Financial Stability Board, "Transforming Shadow banking into Resilient Market-based Finance – Non-Cash Collateral Re-Use: Measures and Metrics" (25 January, 2017); Article 15 SFTR.

142 Financial Stability Board, Re-Use: Measures and Metrics (n 141) 1 at 7.

143 Cullen (n 8) 85 at 86. See also, Autorité des Marches Financiers, "The Reuse of Assets: Regulatory and Economic Issues" (9 November, 2016) 1 at 2; M Singh, "Velocity of Pledged Collateral: Analysis and Implications" (2011) IMF Working Paper 1 at 22.

144 Haentjens and de Gioia-Carabellese (n 5) 229-230.

collateral can be further traded and re-used multiple times over. More often than not, financial collateral is not only viewed as a hedging mechanism if the payment liability between the collateral giver and the collateral taker is not met, but also as a tradeable and profitable instrument effected by the liquidity attribute inherent in the financial collateral.[145]

The recovery and tradability functions play an important role in determining what property law right is attached to the financial collateral. For example, if the financial collateral can only be used for recovery reasons, then the holder of the financial collateral cannot further trade with the financial collateral because of the limited security interest entitlement. Yet if the collateral taker is able to further trade with the financial collateral, then there will be a title transfer provision or a security interest with a right of use attached to the financial collateral; it is the *tradability* function that gives velocity to financial collateral.

5.2 The Scarcity of Financial Collateral

The Global Financial Crisis has been a key benchmark for numerous trends within the financial markets and has profoundly affected the supply of, and demand for, financial collateral. Commentators have suggested that post Global Financial Crisis, incoming rules have been a key driver in not only limiting the supply of financial collateral, but paradoxically creating a demand for financial collateral. Jay Cullen refers to it as a "paradox", because despite there being demand for high quality financial collateral, there is equally a compounding of financial collateral through regulatory reforms.[146] Such a paradox has essentially created a scarcity problem.[147] This view has been echoed at EU level, where the European Commission has stated that "the fluidity of collateral throughout the EU is currently restricted, preventing markets from operating efficiently. Since the financial crisis, the demand for collateral has increased, driven by market demand for more secured funding as well as new regulatory requirements, such as"[148] the Basel III reforms,[149] the Capital Requirements Regulation[150] and EMIR.[151]

145 Gullifer (n 16) 377 at 380.
146 Cullen (n 8) 85 at 87-88.
147 Autorité des Marches Financiers (n 143) 1 at 13-14.
148 European Commission Green Paper (n 69) 1 at 23.
149 See generally, Basel Committee on banking Supervision, "High-level summary of Basel III reforms" (December, 2017) available at: https://www.bis.org/bcbs/publ/d424_hlsummary.pdf.
150 Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending regulation (EU) No 648/2012 (OJ L 176) Capital Requirements Regulation ("CRR").

The incoming post Global Financial Crisis rules that affect the supply of, and demand for financial collateral, start with the decline of the unsecured money market. In particular, the Global Financial Crisis highlighted that the money markets have led to an increased demand for high quality financial collateral. After the default of Lehman Brothers in September 2008, the demand for financial collateral increased as market participants were required by the market to provide more high-quality liquid financial collateral to secure their loans within the money markets.[152] Moreover, many financial transactions are now secured rather than unsecured and, in OTC markets, EMIR has introduced mandatory central counterparty clearing for many OTC derivative transactions, which also requires financial collateral to secure the transaction.[153] However, not all OTC derivative transactions are subject to mandatory central clearing and, in such a case, there is a market demand for participants in the financial sector to post high quality liquid financial collateral to mitigate risk.[154]

In addition, the 'liquidity coverage ratio' and 'net stable funding ratio' (as both referred to in chapter 2) under the Basel III framework have also given impetus to the scarcity problem. In particular, rules under the liquidity coverage ratio and net stable funding ratio require credit institutions to hold a certain percentage of high-quality liquid securities in reserve as a safety mechanism should problems occur. The securities held in reserve are essentially locked away and thus prevented from being utilised within the broader financial system. As noted by Levels and Capel:

> *"There is now a demand for large quantities of liquid assets – principally government bonds… to be locked away. It's not clear there are enough bonds to go round, and nobody knows how the system will function when it's less well lubricated".*[155]

It has been suggested by numerous commentators that these 'locked away' assets could otherwise be used for financial collateral thus providing an important source of liquidity to the marketplace.[156] Having such assets locked away would provide a further layer of stability to the traditional banking sector, which is the objective of the liquidity coverage ratio and net stable

151 Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivative, central counterparties and trade repositories ("EMIR"). See also, Autorité des Marches Financiers (n 143) 1 at 9-13.

152 Autorité des Marches Financiers (n 143) 1 at 13. See also, levels and Capel (n 10) 29 at 30.

153 Article 4 EMIR.

154 Articles 11 (15) (a) and 46 (3) (a) EMIR. See also, Autorité des Marches Financiers (n 143) 1 at 13.

155 levels and Capel (n 10) 29 at 30. See also, McKinsey & Company, "Basel" IV: What's next for banks" (2017) *Global Risk Practice* 1 at 16-18.

156 Levels and Capel (n 10) 29 at 30. See also, M Ferrari, C Guagliano and J Mazzacurati, "Collateral scarcity premia in euro area repo markets" (October, 2017) *European Systemic Risk Board No 55 Working Paper Series;* Singh (n 65) 1 at 12.

funding ratio, however, on the other hand, it may lead to inefficiencies and potential liquidity problems within the broader financial system.[157]

Given that there is not a never-ending supply of high-quality liquid financial collateral, it has been noted that financial collateral is now 'scarce'. Without liquid financial collateral circulating the financial system, blockages within the financial plumbing may be significant given that a key lubricant for the efficient functioning of the financial markets is, indeed, financial collateral.[158] One way of mitigating the scarcity problem is to give financial collateral 'velocity' in the sense that the same security posted as financial collateral can be re-used several times over. However, as noted previously, the velocity of financial collateral does not come without problems.

5.3 Defining the Market Practice of Collateral 'Velocity'

Under the collateral velocity umbrella, many legal and economic commentators refer to the terms 're-hypothecation', 're-use', 'use', 'title transfer', 'security right' and 'right of use' interchangeably without making any clear distinction between these concepts. As a reader, it is very difficult to decipher the true meaning of such terms given their significance.[159] One can immediately relate to Louise Gullifer's comment that one of the most "complicated and intractable" areas of academic discussion relates to issues surrounding the law and economics of financial collateral.[160]

One of the reasons why these different yet equivocal terms have become conflated is because the language used in relation to the velocity of financial

157 See generally, Ferrari *et al* (n 156). See also, Singh (n 65) 1 at 12; levels and Capel (n 10) 29 at 30.

158 See generally Singh *Financial Plumbing* (n 11).

159 Singh *Financial Plumbing* (n 11) 2-3. See also, Basel Committee on Banking Supervision and Board of the International Organization of Securities Commission, "Margin requirements for non-centrally cleared derivatives" (March, 2015) *Bank for International Settlements* 1 at 19; Autorité des Marches Financiers (n 143) 1 at 3; Recital 35 and Article 20 (1) of Commission Delegated Regulation (EU) 2016/2251 of 4 October 2016 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories with regard to regulatory technical standards for risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty; Recital 49 and Articles 15 (4), 23 (1) (a) and (5) (a), 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 ("AIFMD"); T Keijser, "Financial collateral arrangements in the European Union: current state and the way forward" (2017) *22 Unif. L. Rev.* 258 at 275-284.

160 L Gullifer, "Compulsory Central Clearing of OTC Derivatives: The Changing Face of the Provision of Collateral" in L Gullifer and S Vogenauer (eds), *English and European Perspectives on Contract and Commercial Law: Essays in Honour of Hugh Beale* (2014) 379 at 379-380. See also, Keijser (n 159) 258 at 275.

collateral can relate to literature regarding either law or economics. Given that there are numerous touch points where financial collateral is used and re-used, arguably adds to the confusion – for instance:[161]

1. The AIFMD uses the terms "use" and "re-use";[162]
2. The Geneva Securities Convention refer to the terms "use" and "right of use";[163]
3. EMIR contains provisions on "re-use"[164] and "right of use";[165]
4. The FCD utilises the terms "title transfer",[166] "security interest"[167] and "right of use";[168]
5. The SFTR[169] and the UCITS Directive both opt for the term "re-use";[170]
6. MiFID II refers to the term "use";[171] and,
7. The Financial Stability Board ("FSB"), International Monetary Fund and several other economic commentators explicitly refer to the terms "rehypothecation" and "re-use".[172]

In an effort to streamline this complicated area, it may be beneficial to unpack and categorise the relevant terms in order to provide clarity, notwithstanding that the above terms can have alternative meanings depending on the context. For the purpose of this section however, the economic language will be explored particularly in relation to the respective property law right.[173]

On an economic analysis, the functional economic equivalent to 'title transfer' and 'security interest' with a 'right of use' are the market practices of 'collateral re-use' and 're-hypothecation'. Both terms are often used

161 Keijser (n 159) 258 at 275-282.
162 Recital 49 and Articles 15 (4), 23 (1) (a) and (5) (a) AIFMD.
163 Article 34 (1) UNIDROIT Convention on Substantive Rules for Intermediated Securities.
164 Article 52 (1) EMIR.
165 Articles 39 (8) and 53 (2) EMIR.
166 Article 2 (1) (b) FCD.
167 Article 2 (1) (c) FCD.
168 Recital 19 and Article 2 (1) (m) FCD.
169 Under Recitals 23-25 SFTR, some reflections are noted to try and ensure consistency with terminology: "In order to promote international consistency of terminology, the use of the term 'reuse' in this Regulation is in line with the FSB Policy Framework. This should not, however, lead to inconsistency within the Union *acquis* and, in particular, should be without prejudice to the meaning of the term 'reuse' employed in Directives 2009/65/EC (UCITS) and Directive 2011/61/EU (AIFMD)".
170 Recital 19 and Article 22 (7) of Directive 2014/91/EU 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 depository functions, remuneration policies and sanctions.
171 Article 16 (9) MiFID II.
172 Singh *Financial Plumbing* (n 11) 15-34. See also generally, Financial Stability Board, Potential financial stability issues (n 141); S Claessens, L Ratnovski and M Singh, "Shadow Banking: Economics and Policy" (4 December, 2012) *IMF Staff Discussion Note* 1 at 14-17.
173 The legal analysis is described in this chapter above, see section 3.4.2 "*Material scope*".

interchangeably, however, each term has a very specific and slightly different meaning.[174] Each will be discussed in turn.

1. Collateral re-use: according to the FSB, collateral re-use occurs "when a market participant, such as a bank, receives securities as collateral in one transaction, and subsequently sells… or transfers this collateral, in a second transaction".[175] The re-use of financial collateral means that the collateral taker has a property law right to re-use the financial collateral in its own name and the practical effect is economically equivalent to title transfer. For example, in a typical collateral transaction with re-use rights, the financial collateral posted by the collateral giver to the collateral taker can be further traded in a completely separate transaction with a third party. Therefore, collateral re-use encompasses full ownership of the financial collateral and is an inherent characteristic of a title transfer arrangement because ownership changes as the financial collateral is re-used.

   It should also be noted that the SFTR plays an important role with regard to the re-use of financial collateral. The starting point is that the SFTR follows the same definition as the FSB in relation to collateral re-use: "the term 'reuse' in this Regulation is in line with the FSB Policy Framework".[176] Within the SFTR framework, there are certain conditions that must be met before the financial collateral can be re-used. For instance, the collateral giver must be informed by the collateral taker in writing on the risks and consequences of allowing re-use either under a security collateral arrangement or a title transfer collateral arrangement.[177] In addition, the collateral giver must "grant its prior express consent, as evidenced by a signature, in writing or in a legally equivalent" agreement.[178]
2. Re-hypothecation: the FSB defines the term 're-hypothecation' as "any use of a client asset by a financial intermediary, including use in a sale, pledge, transfer, investment or performance of transactions".[179] Re-hypothecation rights are only activated if there is agreement between the parties that the financial collateral has a 'security interest' with a 'right of use'. Under a re-hypothecation agreement, the collateral taker has a security interest in the financial collateral and will enjoy rights of re-hypothecation only if a 'right of use' is explicit under the respective master agreement.[180]

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174 Singh *Financial Plumbing* (n 11) 2.

175 Financial Stability Board, Re-Use: Measures and Metrics" (n 141) 1 at 3. See also, Autorité des Marches Financiers (n 143) 1 at 9-14.

176 Recital 25 SFTR.

177 Article 15 (1) (a) (i) (ii) SFTR.

178 However, as will be discussed in Chapter 7, it is not entirely clear why a market participant has to give consent to re-use the financial collateral when ownership rights pass in a title transfer arrangement. See also, Article 15 (1) (b) SFTR; Autorité des Marches Financiers (n 143) 1 at 7-14.

179 Financial Stability Board, Potential financial stability issues (n 141) 1 at 3. See also, Autorité des Marches Financiers (n 143) 1 at 7-13.

180 Wilmot *et al* (n 6) 1 at 5. See also, Singh *Financial Plumbing* (n 11) 2-3.

6 Conclusion

To conclude, the primary function of collateral, in all forms, is to hedge default risk. Financial collateral goes further as it also facilitates liquid and efficient markets because it is an instrument that can be, subject to certain conditions, re-used multiple times over. Financial collateral is therefore a liquid and tradeable instrument used in collateral transactions that lubricates the plumbing of the EU shadow banking sector – it has money like equivalence and as such, has become one of the main building blocks upon which collateral transactions in the shadow banking sector are constructed.

Financial collateral is utilised by entities operating in the shadow banking sector through various collateral transactions, such as repos, securities lending and derivatives transactions. The performance of these transactions are crucial to efficient markets and providing the economy with an alternative source of funding to traditional banking channels. Financial collateral, as categorised by the Financial Collateral Directive, can come in the form of 'cash', 'financial instruments' and/or 'credit claims'. Cash is arguably the most widely sought-after form of financial collateral; however, it is equally finite. Therefore, government bonds are often used in collateral transactions because this form of debt instrument is underpinned by the country issuing the debt. However, financial collateral is not solely restricted to the Financial Collateral Directive given that the Financial Collateral Directive is limited in scope. Within a collateral transaction, financial collateral can essentially be any asset as long as it is mark-to-market, underpinned by the respective master agreement and provided there is consensus between the parties, then the financial collateral can be used as cash equivalent.

The velocity of financial collateral refers to the same security being re-used several times over. This velocity can act as a 'money multiplier', and coupled with the inherent tradability function, gives financial collateral money like equivalence. However, financial collateral can only have velocity if specific property law rights are attached, such as title transfer or a security interest with a right of use. Yet the increasing use of financial collateral has led to a scarcity problem. Commentators suggest that regulation, which requires assets to be stockpiled away, has indeed increased the scarcity of highly liquid securities. Velocity arguably attempts to mitigate this scarcity problem, but this does not come without risk.

4 Margin

1 INTRODUCTION

In the context of collateral transactions (within the EU shadow banking sector), there are various mechanisms that are designed to mitigate risk. Two such mechanisms within a collateral transaction are financial collateral and margin, both of which perform important and complementary risk mitigation functions. As noted in chapter 3, financial collateral serves as security and is intended to hedge default risk; margin is in place to hedge the risk arising from the unintended price fluctuations on a security used as financial collateral.[1]

Upon accepting financial collateral as security in exchange for the contracted property (cash or securities), there is always a danger that the value of the financial collateral will fall. If the value of the financial collateral falls below the value of the cash or securities, there is incentive for the collateral giver to default. The reverse is also the case – on the other side of the transaction; if the value of the financial collateral increases, it is in the collateral taker's interest to default. Another concern is that one of the parties to the collateral transaction becomes insolvent prior to the end of the contract and so fails to perform its obligations, thereby causing the non-defaulting party to suffer loss. Margin is therefore applied to a collateral transaction to mitigate these risks by providing the parties with a loss absorbing financial buffer.[2]

Margin is a mechanism that is both precise and dynamic. It is precise in the sense that at the point of trade, each collateral transaction generally has its own designated *ex-ante* margin requirement to cover future potential losses. Margin is also dynamic through *ex-post* margining controls, where the financial collateral is periodically valued mark-to-market to take account of gains and/or losses on an open position.[3] Mark-to-market entails tracking the current market value of the financial collateral so that gains and losses on an open position can be calculated. One of the main reasons for applying the mark-to-market technique is to ensure that market participants adhere to *ex-post* controls by

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1 M Choudhry, *An Introduction to Repo Markets* (2007) 42. See also, P C Harding and C A Johnson, *A Practical Guide to Using Repo Master Agreements* (2017) 169.

2 Harding and Johnson (n 1) 65.

3 Basel Committee on Banking Supervision and the Board of the International Organization of Securities Commissions, "Margin requirements for non-centrally cleared derivatives" (March, 2015) 1 at 4, available at: https://www.bis.org/bcbs/publ/d317.pdf.

providing sufficient margin to reflect any change in the value of the financial collateral. Such techniques ensure that the risk inherent in open positions can be regularly monitored, managed and adjusted to mitigate net exposures.

Part of the inherent risk mitigation attribute that margin encompasses is its ability to limit the amount of leverage (or debt) a financial institution can obtain.[4] The fact that margin represents the share of a security that requires the collateral giver to draw upon its own equity at the point of trade, means that margin requirements applied to a collateral transaction determines the maximum amount a party can borrow when using a given security as financial collateral.[5] For instance, the lower the margin requirement, the more that can be borrowed and the higher the margin requirement, the less that can be borrowed. Margin is, therefore, a risk mitigation tool capable of controlling the build-up of excessive leverage.[6]

The focus of this chapter is 'margin' and will be structured as follows. Section 2 will address the question – "what is margin?". In order to answer this question, it is important to explore the rationale behind applying margin to a collateral transaction. Section 3 discusses the application of *ex-ante* margin requirements by way of a 'haircut' or by way of 'initial margin'. Both these concepts perform the same function, resulting in overcollateralisation – the only difference being the arithmetic used in the calculation process. Section 4 analyses *ex-post* margining controls. Financial collateral is susceptible to price fluctuations, resulting in either gains or losses on an open position. The margining process seeks to mitigate this risk by marking the financial collateral to market on a frequent basis. Section 5 focuses on the issue of leverage. Margin has the ability to limit the amount of leverage a financial institution can obtain. Because leverage has been at the heart of many past financial crises, it is an issue of systemic importance especially given the negative externalities that could arise from potential future crises.[7] Section 6 concludes.

4 Leverage will be discussed in this chapter in greater detail below, see section 5 "Leverage" and subsequent Chapters 6, 7 & 8.

5 M K Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007 - 2008" (2009) 23 (1) *Journal of Economic Perspectives* 77 at 91. See also, J Walmsley, *Macmillan Dictionary of International Finance* (1985) 136; European Systemic Risk Board, "The macroprudential use of margins and haircuts" (2017) 1 at 25.

6 V Constancio, "Margins and haircuts as a macroprudential tool" (6 June, 2016) Vice-President of the ECB, at the *ESRB international conference of the macroprudential use of margins and haircuts*, available at: https://www.esrb.europa.eu/news/speeches/date/2016/html/sp160606.en.html.

7 K Knot, "Rethinking Financial Stability; Evaluating regulatory prime concerns a decade on from the financial crisis" (3 December, 2018) *DeNederlandscheBank* 1 at 8-9.

2 WHAT IS MARGIN?

Within a collateral transaction in the EU shadow banking sector, the posted financial collateral and the contracted for property, such as cash in a repo transaction or securities in a securities lending transaction, will usually not be of equal value. The price difference between the market value of the financial collateral and the value of the contracted for property is often referred to as the 'margin', which is *ex-ante* financed by the collateral giver's own equity.[8] Marcia Stigum and Anthony Crescenzi note that in practice, margin is posted by the collateral giver at the point of trade because the collateral taker is providing the contracted for property, such as cash or specific securities. Therefore, the collateral taker is in a position to demand financial collateral and extra security in the form of margin in order to protect its position.[9]

Margin is applied to the transaction to account for the risk of the market value of the financial collateral declining. The concern is that, the cash realised by the liquidation of the financial collateral may turn out to be of less value than the contracted for property, which may ultimately result in an actual loss for the collateral taker.[10] To mitigate the risk that the financial "collateral falls below the notional amount of the transaction, the market standard" is to overcollateralise the transaction such that the additional financial collateral, in the form of 'margin', covers net exposures from a collateral transaction with a given counterparty.[11] By applying margin at the point of trade, the collateral taker (or both parties in the case of a derivatives transaction) is/are ensured a financial buffer against the downward price fluctuation of the security posted as financial collateral.[12]

Parties to a collateral transaction generally negotiate and agree upon an appropriate margin level at the point of trade. Once agreed, margin securities are posted to reflect the agreed margin level.[13] Eligible margin securities often consist of high quality and liquid securities, such as cash (cash margin) or cash like instruments (margin securities).[14] To account for the risk that the value

8 G Yeowart, R Parsons, E Murray and H Patrick, *The Law of Financial Collateral* (2016) 465-466; see also, Brunnermeier (n 5) 77 at 91; Walmsley (n 5) 136; European Systemic Risk Board (n 5) 1 at 25.

9 M Stigum and A Crescenzi, *Stigum's Money Market* (2007) 534-535.

10 Harding and Johnson (n 1) 65-66. See also, European Systemic Risk Board (n 5) 1 at 22.

11 European Systemic Risk Board, "ESRB opinion to ESMA on securities financing transactions and leverage under Article 29 of the SFTR" (October, 2016) 1 at 4.

12 R Steiner, *Mastering Repo Markets* (1997) 79.

13 N Battistini, M Grill, P Marmara and K van der Veer, "A case for macroprudential margins and haircuts" (May, 2016) *Financial Stability Review – special features* 110 at 110.

14 It should be noted however, that eligible margin can vary significantly, depending on the agreement between the counterparties and transactions involved. See, European Systemic Risk Board (n 5) 1 at 22. See also, P C Harding and A J Harding, *A Practical Guide to the 2016 ISDA Credit Support Annexes for Variation Margin* (2018) 27-28; Annex 1 of the GMRA 2011.

of the financial collateral fluctuates, the margin level is generally set *ex-ante* and maintained through *ex-post* controls for the lifecycle of the transaction through various margining techniques.[15]

There are, therefore, two touchpoints by which margin is applied in a collateral transaction, and there is a distinction between margin being applied at the point of trade and margin being applied during the lifecycle of the transaction. At the point of trade, margin can be applied either by way of 'initial margin' or by way of a 'haircut'. These are applied and set *ex-ante* to cover future exposures that could arise from losses as a result of the market value of the financial collateral falling.[16]

Margin can also be exchanged *ex-post*, on a periodic basis and during the lifecycle of the transaction to "cover current exposures arising from the gains or losses on an open transaction".[17] Because the haircut or initial margin level is generally set for the lifecycle of the transaction, and because the value of the financial collateral can fluctuate, margin is often exchanged periodically during the transaction to mitigate risks arising from one party having a net exposure over the other.[18] Each of the margin components outlined above will be explained in greater detail below.

3 Haircuts and initial margins

Haircuts and initial margins in a collateral transaction perform the same function, they both typically overcollateralise the lender in a securities lending transaction, the buyer in a repo transaction and/or the exposed party in the collateralisation of a derivatives transaction.[19] Haircuts and initial margins are two alternative manifestations of overcollateralistion in that the value of the financial collateral will always be higher than the value of the contracted for property.[20] As is demonstrated below, the key difference between haircuts and initial margins is arithmetical.[21]

15 For a more in-depth analysis of these margining techniques, see below in this chapter, section 4 "Margining". See also Chapter 5, section 3.3.4 "Margin" for a graphic illustration of how these margining techniques operate in practice.

16 Choudhry (n 1) 42.

17 European Systemic Risk Board (n 5) 1 at 4. See also, *Ibid* at 41.

18 European Systemic Risk Board (n 5) 1 at 28.

19 Walmsley (n 5) 108.

20 However, as noted below in this chapter, section 3.1 "Haircut" - haircuts can also result in under-collateralisation.

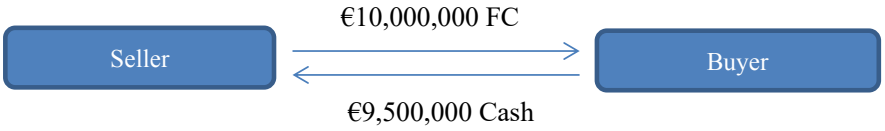
21 R Comotto, "Shadow Banking – Minimum Haircuts on Collateral" (2013) *European Parliament Economic and Monetary Affairs* 1 at 13.

3.1 Haircut

A 'haircut' is a discount deducted from the market value of the security posted as financial collateral.[22] In a repo transaction, for example, a haircut is expressed as the percentage difference between the market value of the security posted as financial collateral ("FC") and the purchase price. The formula for calculating a haircut is:[23]

$$\text{Haircut} = \frac{\text{market value of FC} - \text{purchase price}}{\text{market value of FC}} \quad \text{X } 100$$

A working example would perhaps be beneficial in demonstrating how a haircut is calculated in practice. At the point of trade in a repo transaction, the seller sells € 10 million of financial collateral to the buyer, who in return transfers € 9.5 million of cash to the seller.



The exact haircut percentage calculation of the above example is:

1. € 10,000,000 – € 9,500,000 = € 500,000
2. € 500,000/€ 10,000,000 = 0.05
3. 0.05 x 100 = 5
4. Haircut = 5%

There are two ways by which this 5% haircut can be applied in practice and both will be explained:[24]

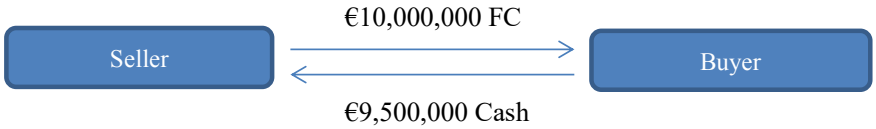
1. A haircut of 5% means that financial collateral worth € 10 million can be repoed out for a cash purchase price of € 9,500,000. The calculation for determining the cash purchase price is done by multiplying the market value of the financial collateral by one minus the haircut:

22 In a repo transaction in the EU, 'Margin Percentage' is the formal terminology found under the Global Master Repurchase Agreement ("GMRA") 2011. However, in practice the term 'haircut' is almost always used. On this, see paragraph 2 (aa) GMRA 2011. See also, Harding and Johnson (n 1) 156; Comotto (n 21) 1 at 13.

23 Comotto (n 21) 1 at 13.

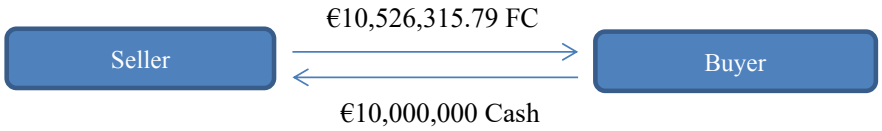
24 R Comotto, "A Guide to Best Practice in the European Repo Market" (December, 2017) *ICMA European Repo and Collateral Council* 1 at 50.

€10,000,000 x (1 – 0.05) = €9,500,000



2. A repo transaction with a cash purchase price of € 10,000,000, which is subject to a 5% haircut, would require the financial collateral to be valued at € 10,526,315.79. The calculation for determining the valuation of the financial collateral is done by dividing the cash purchase price by one minus the haircut:

$$\frac{€10{,}000{,}000}{(1 - 0.05)} = €10{,}526{,}315.79$$



Importantly, it is often assumed that haircuts applied to collateral transactions result in overcollateralisation. Consequently, in a repo transaction (for example), the value of the financial collateral received by the buyer will be higher than the value of the cash received by the seller. However, this is not necessarily always the case. In the repo market, where there is concern over the creditworthiness of a particular counterparty seeking to invest cash, haircuts can be negative resulting in *under-collateralisation*. In short, this means that the cash being sold by the buyer to the seller *exceeds* the market value of the financial collateral. The cash in this situation is, in fact, collateralising the financial collateral as negative haircuts are intended to ensure the restoration value of the financial collateral rather than its liquidation value. *Under-collateralisation* is rare and negative haircuts were last applied during the Japanese Banking Crisis of the 1990s and proposed, but never applied, during the 2007/2008 Global Financial Crisis.[25]

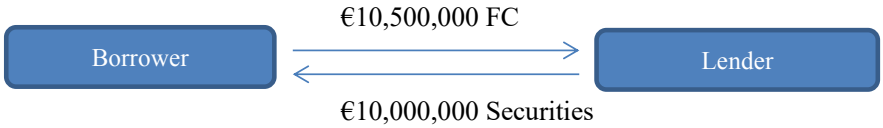
25 It has been noted that under-collateralisation does not arise in securities lending or the collateralisation of derivatives because lenders are inherently risk-averse and are reluctant to deal with risky counterparties. On this see Comotto (n 21) 1 at 14.

3.2 Initial Margin

Initial margin can be defined as a ratio, or as a percentage premium added to the market value of the security posted as financial collateral. In percentage form, the formula for calculating initial margin is as follows:

$$\text{Initial margin \%} = \frac{\text{market value of FC}}{\text{cash or market value of loaned security}} \text{ X } 100$$

A working example will demonstrate how an initial margin is calculated in practice. At the point of trade in a securities lending transaction, the borrower lends € 10.5 million of financial collateral to the lender, who in return transfers € 10 million worth of securities to the borrower.



The exact initial margin calculation in percentage form is:

1. € 10,500,000/€ 10,000,000 = 1.05
2. 1.05 x 100 = 105
3. Initial margin = 105%

In percentage form, initial margin is expressed relative to 100% (where an initial margin of 100% is a zero margin). In ratio form, the formula for an initial margin is as follows:

$$\text{Initial margin ratio} = \frac{\text{market value of FC}}{\text{cash or market value of loaned security}}$$

The ratio calculation of an initial margin is:

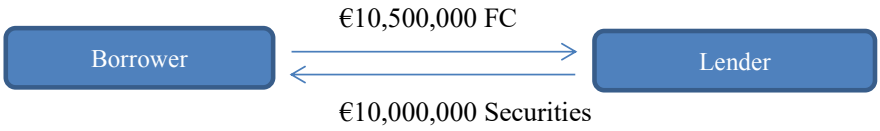
1. € 10,500,000/€ 10,000,000 = 1.05
2. Initial margin ratio = 1.05

There are two ways that this initial margin (either in percentage or ratio form) can be applied in practice and both will be explained:[26]

26 Comotto (n 21) 1 at 12-13. See also, Comotto (n 24) 1 at 49.

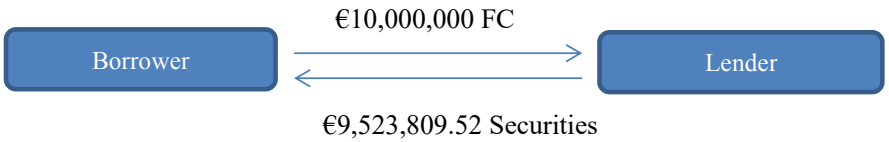
1. A securities lending transaction with an initial margin of 105% or 1.05 means that the specific securities worth € 10 million can be borrowed against financial collateral valued at € 10,500,000. The calculation for determining the valuation of the financial collateral is done by multiplying the value of the securities by 105% or 1.05.

$$€\,10{,}000{,}000 \times 105\% = €\,10{,}500{,}000$$



2. Financial collateral valued at € 10,000,000 with a 105% or 1.05 initial margin applied to the transaction would require the specific securities to be valued at € 9,523,809.52. The calculation for determining the value of the securities is done by dividing the value of the financial collateral by 105% or 1.05.

$$\frac{€\,10{,}000{,}000}{1.05} = €\,9{,}523{,}809.52$$



In the case of a derivatives transaction, such as a swap, initial margin is posted by both parties to the transaction and held in such a way as to ensure that the margin collected is immediately available in the event of counterparty default. Initial margin is therefore "a broader measure of a party's current and potential risk exposure between its last margin" transfer and the liquidation of positions following that party's default or insolvency.[27] In a derivatives transaction, initial margin can therefore be viewed as a collateral buffer; a haircut can subsequently be applied to the initial margin/collateral.[28]

27 A Harding, "Is it time to start planning for initial margin regulatory requirements?" (30 May, 2018) *Derivatives Documentation Blog*, available at: https://www.derivsdocu.com/blog/2018/05/30/is-it-time-to-start-planning-for-initial-margin-regulatory-requirements. See also, Basel committee on Banking Supervision (n 3) 1 at 5.

28 Haircuts applied to a derivatives transaction will be discussed in subsequent Chapter 5, section 5.2.2.6 "*Haircut*". See also, Harding and Harding (n 14) 25 and 28.

3.3 Determining Margin at the Point of Trade

There is no industry guidance on best practice with regard to the application of appropriate *ex-ante* margin levels applied to a collateral transaction. An unsurprising outcome of this is the wide variation in market practice when applying margin. In practice, it has been noted that market participants generally prefer individual calibration of haircuts/initial margins rather than a one-size fits all approach.[29] Therefore, the size of the margin applied is a reflection of the quality/liquidity of the financial collateral, the creditworthiness of the counterparty, the volatility of the market, the duration of the transaction and the existence or absence of a legal agreement – all of which are unique to that particular transaction.[30] When determining the appropriate *ex-ante* margin levels, market participants do have a series of possible approaches:

1. Some market participants are guided by official schedules, such as those published by the Basel Accords, the FSB and/or BCBS/IOSCO.[31] Since the Global Financial Crisis, greater attention has been paid to margins and haircuts applied by market participants in relation to the financial collateral they accept in their market operations and the standard supervisory haircut schedules under the Basel Accords, FSB and/or BCBS/IOSCO. As one example, the official Basel Accord haircut schedule is reproduced and depicted in *Table 4* below.

29 Harding and Johnson (n 1) 66-67.

30 Choudhry (n 1) 42.

31 Other schedules include those published by the Basel committee on Banking Supervision (n 3) 1 at 26-27 and the Financial Stability Board, "Regulatory Framework for haircuts on non-centrally cleared securities financing transactions" (2015) 1 at 8, available at: https://www.fsb.org/wp-content/uploads/P190719-1.pdf.

Table 4: Basel Accord Haircut Schedule

Issue Rating for Debt Securites	Residual Maturity	Sovereigns	Other Issuers	Securitisation Exposures
AAA to AA-/A-1	<1 year	0.5	1	2
	>1 year - <3 years	2	3	8
	>3 years - <5 years		4	
	>5 years - <10 years	4	6	16
	>10 years		12	
A+ - BBB-/A-2/A-3/P-3 and unrated bank securities	<1 year	1	2	4
	>1 year - <3 years	3	4	12
	>3 years - <5 years		6	
	>5 years - <10 years	6	12	24
	> 10 years		20	
BB+ to BB-	All	15	N/A	N/A
Main Index Equities	20			
Other Equities	30			
UCITS and Mutual Funds	Highest Haircut Applicable to any Security			
Cash in the same currency	0			

Source: BCBS[32]

2. When applying margin at the point of trade, many market participants have traditionally agreed on a standard round number approach, such as 2% for foreign/domestic liquid government bonds and between 5% – 10% for less liquid securities. In the securities lending market, initial margin of 102% and 105% were, and to some extent remain, industry practice for good quality fixed income securities.[33] In the EU repo market, haircuts and initial margins are often compiled by a pre-determined round numbered percentage, relating to country of issue, currency, term to maturity and rating or asset type.[34]

3. Quantitative methodologies are also common approaches used in determining the appropriate margin levels at the point of trade. The Value-at-Risk ("VaR") method is one example where a statistical technique is used to measure the level of financial risk within a firm or portfolio of securities over a specific period of time. Using historical data, the VaR method seeks to measure and quantify financial risk using various techniques running from statistical behaviour models of financial collateral price volatility to linear extrapolation.[35]

32 Basel Committee on Banking Supervision, "Basel III: Finalising post-crisis reforms" (December, 2017) *Bank for International Settlements* 1 at 47, available at: https://www.bis.org/bcbs/publ/d424.pdf.

33 Harding and Johnson (n 1) 60-67.

34 *Ibid* at 60-67.

35 Linear extrapolation is a process by which the value of the financial collateral is estimated beyond the specific/observed range.

4 MARGINING

As previously mentioned, initial margins and haircuts are *ex-ante* agreed at the point of trade. Once agreed, the haircut or initial margin level is generally 'maintained' for the lifecycle of the transaction through *ex-post* margining controls.[36] The market value of the financial collateral is susceptible to price fluctuations and without margining, the cash realised by the liquidation of the financial collateral may turn out to be significantly different from what was originally contracted for.[37]

To ensure that the net exposure is kept in check, regular adaptions to changes in the market value of the financial collateral are taken into consideration by marking the financial collateral to market. The phrase 'mark-to-market' means that the posted financial collateral in a collateral transaction is valued based on the current market price and this value is then compared with the original/last valuation.[38] Marking to market is an *ex-post* control and is customarily done at the end of each business day, or as agreed between the contracting parties.[39] If the value of the posted financial collateral has decreased, then a margin call will be made by the collateral taker requiring the collateral giver to post additional margin securities. On the other hand, if the value of the posted financial collateral has increased, then a margin call will be made by the collateral giver requiring the collateral taker to deliver margin securities back to the collateral giver.[40] The fluctuation of the value of the financial collateral may result in only a very small movement in the price. In such a case, and to avoid administrative burdens and costs, the parties generally agree a margin threshold or "Minimum Transfer Amount"[41] – above which changes in the value of the financial collateral triggers a margin call.[42]

The GMRA, the GMSLA and the Credit Support Annex[43] under the ISDA master agreement all set out margining methods to take the unintended price fluctuations of the posted financial collateral into account.[44] It should be noted, however, that while margining does mitigate risk, it is not a watertight solution. Market participants could still find themselves short of a sufficient amount of financial collateral due to adverse market movements between the

36 Choudhry (n 1) 43. See also, Comotto (n 24) 1 at 50-51.
37 M Haentjens and P de Gioia-Carabellese, *European Banking and Financial Law* (2020) 237-239.
38 A G Balmer, *Regulating Financial Derivatives: Clearing and Central Counterparties* (2018) 49-50.
39 Steiner (n 12) 79.
40 Haentjens and de Gioia-Carabellese (n 37) 238.
41 The Mimimum Transfer Amount will be discussed in greater detail in subsequent Chapter 5, section 4.2.2.5 "*Minimum Transfer Amount*". See also, Paragraphs 2 (a), (b), 10 and 11 (b) (i) (A), (B), 1995 ISDA English Law CSA and Paragraphs 2 (a), (b) 10 and 11 (c) (i) (A), (B), 2016 English Law CSA for Variation Margin.
42 Steiner (n 12) 79.
43 ISDA 2016 Credit Support Annex for Initial Margin and ISDA 2016 Credit Support Annex for Variation Margin.
44 Comotto (n 24) 1 at 50-51.

last mark-to-market valuations. In addition, there may also be an element of concentrated risk associated with illiquid issues, where the collateral taker holds a high proportion of assets from the same asset class, which subsequently become illiquid and, therefore, difficult to realise.[45] The following will give a very brief overview of the various margin techniques found in repos, securities lending and derivatives transactions.[46]

4.1 Repurchase Agreements

Under Paragraph 4 of the GMRA 2011, different methods of 'margin maintenance' in a repo can be distinguished. These methods are 'margin transfers', 'repricing' and 'adjustment'; each will be briefly discussed in turn.[47]

4.1.1 Margin transfers

Margin transfers are designed to reduce counterparty credit risk by requiring the parties to a repo transaction to transfer financial collateral to each other, in the form of securities or cash, on a periodic basis. Each party's 'Net Exposure'[48] is calculated periodically, using the mark-to-market technique, and the party who has a Net Exposure to the other is entitled to request, by way of a margin call, that the other party makes a margin transfer to it.[49] Depending upon market conditions, the Net Exposure may fluctuate from day to day and it is not a given which party will have a Net Exposure; the collateral taker may have the Net Exposure to the collateral giver on a certain day, whereas the collateral giver may have the Net Exposure to the collateral taker on another day.[50]

4.1.2 Repricing and adjustment

Margin transfers are not always the most appropriate method of margin maintenance, especially if the posted financial collateral undergoes a significant change in value. The GMRA 2011 accounts for this possibility by way of repricing and adjustment.[51] If margin is to be repriced then the original trans-

45 Choudhry (n 1) 50.
46 For a more in-depth overview of the precise margining techniques used in repos, securities lending and the collateralisation of derivatives, see generally subsequent Chapter 5 "Collateral Transactions in Practice".
47 These margin maintenance methods will be explored on a deeper level in the subsequent Chapter 5, section 3.3.4 "Margin".
48 Paragraphs 2 (ff) and 4 (c) GMRA 2011.
49 Paragraphs 4 (c) and (d) GMRA 2011.
50 Paragraphs 4 (a)-(h) GMRA 2011.
51 Paragraph 4 (j) GMRA 2011. See also, Haentjens and de Gioia-Carabellese (n 37) 238.

action will be terminated, and a new transaction is simultaneously entered into.[52] In this way, the original financial collateral is maintained, but the purchase price of the new transaction is re-set at a new market value of cash/securities.[53] In the case of margin adjustment, the parties agree that the original collateral should be replaced with a different kind and amount of collateral, thus terminating the original transaction and entering into a new one.[54] The new securities used as financial collateral will be transferred at market value at the point of trade, with due consideration of the original haircut/initial margin previously agreed between the parties.[55]

4.2 Securities Lending

Under Paragraphs 5.4 and 5.5 of the GMSLA 2000, margin maintenance provisions comparable to margin transfers found in the GMRA 2011 are in place.[56] This means, if there is a fluctuation in price between the market value of the lent securities and the market value of the posted financial collateral, one of the parties will be obliged to make a margin transfer. For example, if the mark-to-market value of the financial collateral *exceeds* the aggregate required financial collateral in respect of the loan, the lender is obliged to transfer margin to the borrower to eliminate the excess.[57] The same is also true on the other side of the transaction. If the mark-to-market value of the posted financial collateral plummets in value, the borrower is obliged to transfer margin to the lender to eliminate the deficiency.[58]

4.3 Derivatives

In terms of margining requirements for derivatives transactions, initial margin and variation margin play a key role.[59] In a derivatives transaction, it is often the case that both parties pledge initial margin at the point of trade with daily

52 Paragraphs 4 (k) (i) and (ii) GMRA 2011.
53 Paragraph 4 (k) (v) GMRA 2011. See also, Comotto (n 23) 1 at 64. See also, Haentjens and de Gioia-Carabellese (n 36) 238-239.
54 Paragraph 4 (l) (i) GMRA 2011.
55 Paragraph 4 (l) (ii) GMRA 2011. See also, Haentjens and de Gioia-Carabellese (n 36) 239; T Keijser, *Financial Collateral Arrangements* (2006) 31-32.
56 P C Harding and C A Johnson, *Mastering Securities Lending Documentation* (2002).
57 Paragraphs 5.4 (ii) and 5.5 (ii) GMSLA 2000.
58 Paragraphs 5.4 (iii) and 5.5 (iii) GMSLA 2000. See also, Keijser (n 55) 28; Haentjens and de Gioia-Carabellese (n 37) 238-239.
59 Paragraphs 1 and 10 of the ISDA 2016 Credit Support Annex for Variation Margin.

variation margin being pledged as necessary in response to mark-to-market moves in the value of the financial collateral and/or underlying asset.[60]

5 LEVERAGE

5.1 Introduction

The optimal amount of leverage (debt) held by a commercial firm is indeed a hotly debated moot point in corporate finance literature.[61] There are significantly opposing views in relation to the effect of leverage on commerical firms and, more broadly, the economy as a whole. Some commentators argue that debt heightens systemic risk, while others argue that overall, debt is beneficial for the economy.[62] The fact remains however, that in good times leverage magnifies gains and in bad times, leverage amplifies losses.[63]

The EU shadow banking sector can build up leverage via the use of collateral transactions. In a collateral transaction, leverage is obtained through the use of borrowed capital or the use of borrowed financial securities, to be repaid with interest, as an investment source in order to sustain continuing operations and to facilitate prospective growth. The ratio of debt in the financing structure is a measure of the institution's financial leverage; a higher debt ratio indicates a higher leverage and a lower debt ratio indicates a lower leverage.[64]

Yet the reciprocal of leverage is margin.[65] This means that in practice, leverage comes up against a significant problem – margin. Margin requirements applied to any given collateral transaction ensures that leverage can be limited – this holds true provided that market participants cannot fund their margin requirements through unsecured borrowing.[66] Markus Brunnermeier notes that because the collateral giver must finance margin with its own capital, it is not possible to borrow the amount equal to the market value of the financial collateral.[67] For instance, when a financial institution, such as a hedge fund enters into a repo transaction and uses AAA rated government

60 Harding and Harding (n 14) 25. See also, Basel committee on Banking Supervision (n 3) 1 at 11-12; P Madigan, "Sec lending key to overcoming margin test" (2017) *Securities Lending Times* 1 at 28-30.

61 J Loughrey, *Corporate Lawyers and Corporate Governance* (2011) 14-15.

62 H Nabilou, *The Law and Economics of Hedge Fund Regulation* (2014) 94-95.

63 As to how leverage can magnify gains in good times and amplify losses in bad times will be discussed in Chapter 6, section 5 "The Vulnerabilities of Debt".

64 K D'Hulster "The Leverage Ratio: A Binding New Limit on Banks" (2009) *11 World Bank Policy Brief* 1 at 1-2. See also, R A Spence, "Corporate Finance and the Role of Lawyers" (2017) *Volume III 2 Edinburgh Student Law Review* 102 at 105-106.

65 J Geanakoplos, "The Leverage Cycle" (2010) *1715R Cowles Foundation Discussion Paper* 1 at 1-2.

66 European Systemic Risk Board (n 5) 1 at 25.

67 Brunnermeier (n 5) 77 at 91-92. See also, European Systemic Risk Board (n 5) 1 at 25.

bonds as financial collateral, it must negotiate, *inter alia*,[68] the amount of cash that it can ultimately borrow.[69] For example, if the posted financial collateral is worth € 100 and the cash received is € 80, then the initial margin/haircut is 120%/20%, the loan to value ratio is € 80/€ 100 = 80% and the leverage ratio 5:1. These ratios are all synonymous. To put it another way, margin requirements determine the maximum amount that a party can borrow when using a given security as financial collateral.[70]

5.2 Procyclicality and Leverage

Despite the ability to limit leverage through the application of margin, leverage lies at the heart of many past financial crises. The common denominator of the Wall Street Crash of 1927-1929, the Japanese Banking Crisis of 1991 and the more recent 2007 Global Financial Crisis, was leverage.[71] These crises demonstrate that rising asset prices, rising leverage and the concentration of assets in the hands of fewer or different buyers are all suggestive of a possible bubble. If the prevailing margin requirements are not large enough to cover a price drop equal in size to the rising prices, then the market could be heading into dangerously leveraged territory prone to systemic consequences.[72]

Margin requirements are a determinant of the build-up of leverage via collateral transactions, and are strongly interlinked with the procyclicality of that leverage. The term 'procyclicality' can be defined as the "mutually reinforcing mechanism that amplifies fluctuations in financial markets, which, in turn, may result in negative feedback loops with the real economy" – financial collateral and the use of margin are part of these mutually reinforcing mechanisms.[73] While financial collateral and the use of margin are important

68 For example, the interest rate.

69 Or any other form of shadow bank, such as an insurance company, pension fund, investment fund etc.

70 Constancio (n 6). In addition, this paragraph contains and builds upon the following sections of work previously published by the author: R Spence, "The Vulnerabilities of Debt in the Shadow Banking Sector" (28-29 October, 2019) *Financial Stability Conference Paper, Berlin* 1 at 32-33, available at: http://financial-stability.org/wp-content/uploads/2019/11/2019_FSC-WS_PAPER_Spence_Vulnerabilities-of-debt-in-the-shadow-banking-sector.pdf;K Parchimowicz and R Spence, "Basel IV Postponed: A Chance to Regulate Shadow Banking?" (2020) 13 (2) *Erasmus Law Review* 13 at 27.

71 M Schularick and A M Taylor, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870 - 2008" (2012) *102 (2) American Economic Review* 1029-1061. Other crises where leverage played a central role include the financial derivatives crisis in 1994 that bankrupted Orange County in California and the 1998 emerging markets mortgage crisis that collapsed Long-Term Capital Management.

72 As noted in Chapter 8, section 4 "Recommendation 3: Countercyclical Margin add-ons" – countercyclical margin-add-ons are one potential way to mitigate these systemic consequences.

73 European Systemic Risk Board (n 5) 1 at 31.

risk mitigation techniques, they are equally both a central element of past economic cycles and are therefore a significant contributor to systemic risk.[74] If there is a lesson to be learned (again) from previous crises, it is that highly leveraged institutions pose systemic risk to the financial system. Systemic crises tend to erupt when highly levered financial institutions are forced to de-leverage, due to rising margin requirements, thereby sending the economy into recession.[75]

6 Conclusion

To conclude, the rationale for the application of margin in a collateral transaction is twofold. First, margin provides an important risk mitigation mechanism by hedging the price fluctuation of the financial collateral. By overcollateralising the transaction by way of a haircut or initial margin, parties are ensured a financial buffer. In addition, this overcollateralisation is monitored and managed through regular mark-to-market valuations on the financial collateral.

Second, the application of margin in a collateral transaction ensures leverage is limited. The higher the margin the lower the leverage and the lower the margin the higher the leverage. By limiting the amount of debt a financial institution can obtain has important financial stability implications. It should be noted, however, that margin is a mechanism that not only mitigates risk and limits leverage but it is paradoxically a mechanism that can amplify systemic risk. The procyclical effects of margin can, in good times allow for the build-up of leverage through low margin requirements. However, in bad times when margin levels rise, highly leveraged financial institutions are forced to de-leverage, which has systemic consequences. Because this leverage cycle is a recurring phenomenon, which has been at the heart of past financial crises, it is unfortunate that this issue has yet to be substantially tackled.[76]

74 J Geanakoplos and L H Pedersen, "Monitoring Leverage" in M Brunnermeier and A Krishnamurthy (eds) *Risk Topography: Systemic Risk and Macro Modeling* (2014) 113 at 114.

75 Interviewee #3 shared the views of the potential risks relating to leverage and procyclicality – this interview was conducted over the telephone on 17 June, 2019. See also, Harding and Johnson (n 1) 66. See also, Geanakoplos and Pedersen (n 74) 113 at 114.

76 Knot (n 7) 1 at 8-9.

5 Collateral transactions in practice[1]

1 INTRODUCTION

Since the Global Financial Crisis, liquid and safe financial collateral is used extensively throughout the financial system. To an important extent, this is the consequence of more stringent requirements that have been promulgated since the crisis so as to prevent financial institutions from falling insolvent. The calculation of these requirements is done on the basis of, *inter alia*, exposure to counterparty credit risk, market risk and liquidity risk. High quality and liquid securities, i.e. financial collateral that is exchangeable at par, and on demand, with central bank money is therefore now in high demand[2] and the use of financial collateral has evolved to become an "integral component" of the global financial system.[3] Consequently, the demand for (high quality) financial collateral is not likely to decrease in the near future given that it is now one of the main building blocks upon which collateral transactions in the EU shadow banking sector are constructed.[4] One reciprocal, and therefore significant aspect of financial collateral is margin. Margin is a mechanism that hedges the risk on the financial collateral and is a tool designed to provide a further layer of safety to the transaction. According to Jonathan Wilmot and others, if margin and financial collateral are central transactional components of the EU shadow banking sector, then understanding these sorts of transactions are key.[5]

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1 The chapter contains and builds upon the following work previously published by the author: M Haentjens (ed), Y Diamant, J Siena, R Spence and A Zacaroli, "Financial Collateral: Law & Practice" (2020) 89-134.

2 B Aydin, "Evolution of Collateral "management" into Collateral "optimisation"" (2016) *8 (3) Journal of Securities Operations & Custody* 259 at 271.

3 J Cullen, "The repo market, collateral and systemic risk: in search of regulatory coherence", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 85 at 85-92.

4 J Wilmot, J Sweeney, M Klein, A Plant, J Schwartz, Z Shi and W Zhao, "When collateral is king" (15 March, 2012) *Market Focus: Global Strategy Research* 1 at 1-3. See also, M Singh, "Collateral flows and balance sheet(s) space" (2016) *5 (1) Journal of Financial Market Infrastructures* 65 at 66.

5 Wilmot *et al* (n 4) 1 at 2-3. See also, Aydin (n 2) 259 at 259-271; P C Harding and C A Johnson, *Mastering ISDA Collateral Documents: A Practical Guide for Negotiators* (2012) 9; Singh (n 4) 65 at 66.

Being the backbone of secured funding with market participants, financial collateral and margin underpin a variety of financial transactions within the EU shadow banking sector, such as repos, securities lending and derivatives transactions. In order to legally underpin a collateral transaction, parties to the transaction generally enter into the applicable master agreement – which will be a standard template document created and maintained by the relevant industry association. As noted in Chapter 3, these include the GMRA for repos, the GMSLA for securities lending transactions and the Credit Support Annex under the ISDA master agreement for derivatives transactions. The master agreements are standardised contracts in effect setting out the rights and obligations of the parties to relevant transactions.[6] These contracts provide market participants with substantial standardisation, efficiency, predictability, legal certainty and flexibility in respect of legal and commercial aspects of transactions. In essence, these contracts are so widely used and with so little derogations, that they function as *lex mercatoria* or the international law that applies to certain transactions between certain market participants.[7]

This chapter analyses the practical operation of collateral transactions in the EU shadow banking sector from the perspective of the relevant master agreement, focusing particularly on financial collateral and margin. The ensuing narrative will therefore be structured as follows. Section 2 outlines the parties typically involved in a collateral transaction. Section 3 discusses the role that repo transactions play in practice from a GMRA perspective. The fact that repos provide an efficient source of funding and are consequently a central component of modern finance, it is important to understand how such a transaction operates, particularly in relation to risk mitigation measures such as the application of margin. Section 4 relates to securities lending transactions from the position of the GMSLA. Repos and securities lending play a functionally similar role and this is also the case when discussing the role of margin. Section 5 will analyse the collateralisation of a derivatives transaction from the perspective of the Credit Support Annex. While the ISDA Credit Support Annex is crucial from a legal perspective, since the Global Financial Crisis there is now significant interplay between the ISDA Credit Support Annex and EMIR and the accompanying Regulatory Technical Standards ("RTS").[8] Section 6 concludes.

6 M Choudhry, *The Repo Handbook* (2010) 126.

7 For a more extensive discussion on the *lex mercatoria*, see Chapter 7, section 3.2 "Self-Regulation: *Lex Mercatoria*.

8 Commission Delegated Regulation (EU) 2016/2251 of 4 October 2016 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories with regard to regulatory technical standards for risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty ("RTS").

2 PARTIES INVOLVED

The following is a non-exhaustive outline of the main parties involved when entering into a collateral transaction in the EU shadow banking sector:[9]

Investors (the "buy-side"): private individuals, hedge funds, pension funds, fund managers, corporate treasuries, local authorities, insurance companies, multinational corporations and investment funds.

Financial institutions (the "sell-side"): investment banks, securities and brokerage firms and commercial, retail and central banks.

Intermediaries: inter-dealer brokers, custodian banks such as Deutsche Bank, JP Morgan Chase and Bank of New York Mellon, and international clearing organisations such as Euroclear and Clearstream.

2.1 The Significance of Intermediaries

Intermediaries play an important role in collateral transactions. Market participants often use intermediaries, such as custodian banks or entities offering collateral management services, to manage their transactions. There are several reasons for this, such as expertise, efficiency or where a counterparty to the collateral transaction lacks the internal resources to monitor and manage its own obligations. Intermediaries are equally an important provider of valuable services, such as supplying liquidity, credit enhancement and comprehensive administrative services covering collateral eligibility, margin requirements, mark-to-market calculations, custody of securities, daily reporting, inter-account transfers and dealing with dividends. Given the size and scale of the collateral transaction typically entered into, parties are going to want to ensure that their transaction is properly managed and regularly monitored to guarantee the sufficient coverage of collateral and margin in order to minimise risk.[10]

3 REPURCHASE AGREEMENTS

Repos have become a key source of money market liquidity and have "evolved from what was essentially a back-office activity in the 1990s, to become an

9 Choudhry (n 6) 6. It should also be noted that Governments and Central Banks play a crucial role in collateral transactions by means of implementing monetary policy, however this issue goes beyond the scope of this study and as such, will not be discussed further.

10 P C Harding and C A Johnson, *Mastering Securities Lending Documentation* (2011) Chapter 1.

integral component" of the global financial system.[11] In practice, repo transactions are now generally effected by front-office dealers who may either sit on the government bonds desk, money market desk or the Treasury desk. The front-office monitors and manages the trading book and will take a view on the short-term yield curve at the point of trade. Trades are subsequently settled by the operations area of the bank or financial institution.[12] In most repo transactions, legal documentation by way of the GMRA underpins the transaction.

The GMRA, jointly published by the International Capital Market Association ("ICMA")[13] and the Securities Industry and Financial Markets Association ("SIFMA"),[14] is the market standard model legal agreement for documenting repos in the domestic and cross-border arena. There are several versions of the GMRA, the most recent version of which was published in 2011. This recent version mainly purported to achieve a closer alignment with other master agreements, including the ISDA Master Agreement and the GMSLA, and to reflect changes in market practice and general legal developments since 2000.[15] While the GMRA is the most widely accepted legal documentation underpinning repo transactions and is the focus of this section, it should be noted that the GMRA is not the only option available to parties to document a repo in the EU shadow banking sector. As noted in Chapter 3, It is still possible for parties to rely on other forms of arrangements such as domestic or specific company documentation or even ad hoc agreements which may be more suited to the repo transaction.[16]

3.1 Structure of the GMRA

The structure of the GMRA consists of a pre-printed master agreement, containing standard provisions accompanied by a set of explanatory notes, plus a number of Annexes. Annex I, titled "Supplemental Terms or Conditions", sets out specific choices for the parties to elect such as the minimum delivery periods, and fields where parties can record supplemental information. Parties often seek to tailor the GMRA to reflect internal practices and policies or to

11 Cullen (n 3) 85 at 85-92.
12 Choudhry (n 6) 160-161.
13 The ICMA is the body representing the bond and repo markets in the EU and is formerly referred to as the International Securities Markets Association.
14 The SIFMA is the body representing repo markets in the US and is formerly referred to as the Public Services Association and the Bond Markets Association.
15 Choudhry (n 6) 343-344. See also the website of the ICMA, available at: www.icmagroup.org; P C Harding and C A Johnson, *A Practical Guide to Using Repo Master Agreements* (2017) 143; G Yeowart, R Parsons, E Murray and H Patrick, *The Law of Financial Collateral* (2016) 462-463.
16 M Haentjens and P de Gioia-Carabellese, *European Banking and Financial Law* (2020) 234-235.

reflect relative credit strengths of the counterparty; Annex I is therefore designed to allow for customisation by the parties of the GMRA to reflect the special terms and conditions of their business relationship.[17] The master agreement and Annex I thus serve as the umbrella terms and conditions applicable between the parties, under which one or multiple repo transactions can be concluded.

Annex II of the GMRA, which is a model template titled "Form of Confirmation", sets out the specific commercial and economic particulars of a single transaction, such as identifying the seller, the buyer, the notional amount, details of the collateral, margin, the tenor, etc. Parties are expected to refrain from unduly complicating the Form of Confirmation with provisions bearing more generally on the trading relationship: such all-encompassing provisions are expected to be included in Annex I.[18]

A number of other Annexes to the GMRA deal with transaction-specific issues. These include Russian, Italian, Netherlands and Canadian Annexes, which deal with legal issues of relevance to the respective countries, a Bills Annex, an Equities Annex dealing with specific securities, an Annex to document Buy/Sell-back transactions and, finally, an "Agency" Annex and Addendum. The parties decide which Annexes are applicable to the respective transaction: in practice, these Annexes are not normally amended or negotiated.[19]

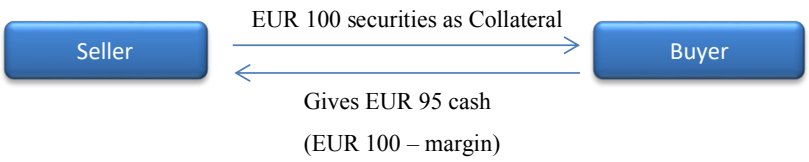
3.2 *Modus Operandi* of a Repo

The following outlines the *modus operandi* of a repo transaction highlighting the relevant elements of the GMRA that give it legal effect. As already noted in Chapter 3, a repo is a transaction where one party sells an asset to another party and at the same time commits to repurchase the asset back from that party for a different price upon maturity.[20] As demonstrated below under *Figure 8*, a *classic* bilateral repo consists of two transactions.[21] In the opening leg of the transaction, on the "Purchase Date",[22] the seller sells EUR 100 worth of "Securities"[23] as financial collateral to the buyer, subject to *inter alia* the seller's agreement to repurchase "Equivalent Securities" from the buyer on

17 Harding and Johnson (n 15) 143.
18 Yeowart *et al* (n 15) 462-463.
19 Harding and Johnson (n 15) 144. See also, Haentjens and de Gioia-Carabellese (n 16) 235-236.
20 Article 3 (9) of 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 ("SFTR").
21 As will be discussed in this chapter below, there are various types of repo transactions, see section 3.2.2 "*Types of repo*".
22 Paragraph 2 (mm) of the Global Master Repurchase Agreement ("GMRA") 2011.
23 Paragraph 2 (v) GMRA 2011.

a subsequent "Repurchase Date".[24] The repurchasing of 'Equivalent Securities' means that it is not necessary for the seller to repurchase exactly the same securities from the buyer. It suffices that the repurchased securities are of a similar value and type. In practice, 'Equivalent Securities' are often referred to as 'fungible' due to the interchangeable nature of the securities. In return, and based upon the agreed margin, the buyer transfers EUR 95 to the seller, referred to as the "Purchase Price" under the GMRA.[25] On the Repurchase Date, the transaction is closed with seller paying the "Repurchase Price" to the buyer, which is EUR 95.50 (consisting of the repayment of cash, plus the "Pricing Rate" (interest or in practice the 'repo rate'));[26] Simultaneously, the buyer resells Equivalent Securities worth EUR 100 back to the seller.[27]

Opening transaction (Purchase Date)



Closing transaction (Repurchase Date)

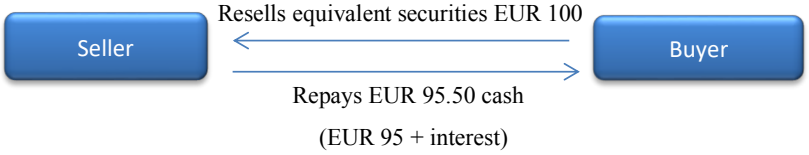


Figure 8: Modus Operandi of a Repo[28]

3.2.1 Rationale for entering into a repo

The buyer's and the seller's economic rationales for entering into a repo transaction are described respectively below.

24 Paragraphs 2 (u) and (qq) GMRA 2011.
25 Paragraphs 1 (a) and 2 (nn) GMRA 2011.
26 Paragraph 2 (ll) GMRA 2011. The difference between the Purchase Price and Repurchase price is known as the "Price Differential" – on this see, Paragraphs 2 (kk), (ll) and (rr) GMRA 2011.
27 Paragraphs 1 (a), 2 (ll) and (rr) GMRA 2011. See also, Yeowart *et al* (n 15) 462-464.
28 A M Pacces, *The Future of Law and Finance* (2013) 20-22.

3.2.1.1 Seller's perspective

Sellers are incentivised to enter into repo transactions in order to 'raise' cash quickly and – typically – on a short-term basis (in the case of a reverse repo – it is the buyer who would be raising cash). While there are many reasons a seller would need cash, often the cash obtained from a repo is used to fund and cover positions that have been created to trade, hedge or arbitrage against opposite positions in another transaction. An investment fund manager (e.g., an investment manager acting for a UCITS or Alternative Investment Fund) may require cash to fund redemption requests from the fund. In this sense, a repo can be seen as a tool to manage short-term cash needs, i.e., liquidity.

Repo transactions are also a relatively cheap method of financing. Given that repo transactions behave like a secured loan, the financial collateral posted, i.e. delivered, by the seller ensures only temporary use and possession of those assets by the buyer. Because of this, the seller has access to cash without the need to liquidate its positions in securities that it holds while also receiving the economic benefit in the value of the financial collateral increasing as well as any coupon payments.[29]

Repos can also be entered into by the seller to finance "long" positions in securities, i.e., a position taken in certain securities on the assumption that their prices will rise. A seller could enter into a repo transaction to finance the purchase price of the underlying financial collateral that it transfers to the buyer on the same settlement day as the purchase: In other words, the cash received from the buyer for the financial collateral is used by the seller to pay for the financial collateral, which it has purchased from someone else.[30]

Another reason that a seller enters into a repo transaction is to obtain leverage. Repos facilitate leverage by "enabling financial institutions to borrow cash to make leveraged bets on an already leveraged instrument".[31] To build such positions, the Bank for International Settlements has noted that in a repo transaction, "market participants use cash raised through an initial repo transaction to buy securities which, in turn, are repoed out to raise more cash to buy more securities and so on… [*ad infinitum*]".[32] With each transaction leverage increases because the cash raised – as form of borrowing – is used to purchase securities which in turn can be repoed in order to raise more

29 Haentjens and de Gioia-Carabellese (n 16) 231. See also, Choudhry (n 6) 148.

30 Choudhry (n 6) 156.

31 Cullen (n 3) 85 at 93-94.

32 Bank for International Settlements, "Repo Market Functioning" (2017) *CFGS Paper No. 59* 1 at 6. See also, Cullen (n 3) 85 at 93-94; European Systemic Risk Board, "ESRB opinion to ESMA on securities financing transactions and leverage under Article 29 of the SFTR" (October, 2016) 1 at 5.

'borrowed' funds. Leverage thus allows parties to take larger positions in the financial markets, which can amplify systemic risk.[33]

3.2.1.2 Buyer's perspective

From the perspective of the buyer, a repo is a profit-making activity in which a return can be earned on the principal cash amount paid to the seller. For example, there is a difference between the cash sum given by the buyer to the seller at the start of the repo and the price the buyer receives from the seller on maturity of the repo. It is the 'Pricing Rate' (interest) component that determines the amount of the return that the buyer can expect to earn. The largest buyers are generally banks who have surplus liquidity arising from their customer deposits: repos are a commonly used tool in order to ensure otherwise 'uninvested' cash earns a return greater than regular overnight or demand deposit rates of interest.

The wider the range of financial collateral the buyer is willing to accept, the higher the potential Pricing Rate and commensurate rate of return. In addition, provided that the financial collateral is sufficiently liquid, the buyer can finance its own activities during the lifecycle of the repo through re-use/rehypothecation of the financial collateral, i.e., by trading on the financial collateral as its owner.[34] The buyer would, of course, have to buy back equivalent financial collateral in order to fulfil his obligation with the original seller[35] to return equivalent financial collateral. This activity – and the attendant risks – became a focus of public authorities' attention following the Global Financial Crisis in view of the potential risks to the financial system it could create if left unchecked.

Another reason why a buyer enters into a repo is because it needs a safe place to house its capital. Demand deposits are generally of no practical use to market participants operating in the EU shadow banking sector and often, the buyer enters into a repo because it requires a safe place to house its capital.[36] The fact that entities often 'deposit' large amounts of money for short periods of time ensures that the European Deposit Guarantee Scheme threshold – found in the traditional banking sector – would quickly be exceeded. Any amount of cash deposited that exceeds this threshold (EUR

33 J Geanakoplos, "The Leverage Cycle" (2010) *1715R Cowles Foundation Discussion Paper* 1 at 10. See also, J Geanakoplos and lender H Pedersen, "Monitoring Leverage" in M Brunnermeier and A Krishnamurthy (eds) *Risk Topography: Systemic Risk and Macro Modeling* (2014) 113 at 117-118.

34 See Chapter 3, section 5 "The Velocity of Financial Collateral" for a more extensive discussion on reuse/rehypothecation.

35 Yeowart *et al* (n 15) 42-43.

36 A Krishnamurthy, "How Debt Markets Malfunctioned in the Crisis" (2010) *24 (1) Journal of Economic Perspectives* 3 at 9-10.

100,000 in the EU) would be uninsured and subject to bail-inable claims[37] – meaning that an entity could face a capital loss should the deposit bank face difficulties.[38] Repo provides an alternative to demandable debt not subject to prudential regulation and credibly backed by a direct claim on liquidity – demand deposits are backed by the European Deposit Guarantee Scheme (but only if the amount deposited is below the thresholds just mentioned) as repo contracts are backed by financial collateral.[39]

The buyer will often enter into repo transactions to cover 'short' positions. A short position is one in which a party will sell specific securities for delivery at a future date ('settlement date') without actually having the securities in its possession at the time the sale is agreed ('trade date') with the intention of buying them at a future date and at a cheaper rate in time to deliver on settlement date. Buyers often enter into repo transactions to meet such settlement obligations by buying financial collateral in order to meet their short positions.[40]

3.2.2 Types of repo

A significant variety of uses for repos – and the means by which they are employed – have emerged in the EU shadow banking sector whilst maintaining essentially the same legal and core contractual underpinnings. The repo lexicon now includes: reverse repo, tri-party repo, equity repo, general collateral repo, special repo, cross-currency repo and buy/sell back transactions. Like the

37 See Article 44 (2) (a) of the Bank Recovery and Resolution Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council ("BRRD"). A recent example of unsecured deposits being written down to zero was on 5 October, 2015 where the Danish Bank 'Andelskassen JAK Slagelse' applied the BRRD – on this see the European Parliament, "Bail-ins in recent banking resolution and State aid cases" (7 July, 2016) available at: http://www.europarl.europa.eu/RegData/etudes/IDAN/2016/574395/IPOL_IDA%282016%29574395_EN.pdf. See also the FDIC website: https://www.fdic.gov/deposit/deposits/faq.html; see generally, F Restoy "Bail-in in the new bank resolution framework: is there an issue with the middle class?" (March, 2018) available at: https://www.bis.org/speeches/sp180323.htm.

38 D Gabor and J Vestergaard, "Towards a theory of shadow money" (2016) *Institute for New Economic Thinking Working Paper* 1 at 10.

39 For a more in-depth discussion, see generally Chapter 6 "The Role of Debt in the EU Shadow Banking Sector". See also, E Perotti, "The roots of shadow banking" (2013) 69 *CEPR Policy Insight* 1 at 1.

40 Choudhry (n 6) 156.

classic repo transaction outlined above, each of the aforementioned repo transactions generally are governed by the GMRA.[41]

3.3 The Interaction between the GMRA and Market Practice

3.3.1 Maturity

Most repos are undertaken for a specific period of time and this is documented at the point of trade under Annex II of the GMRA. For instance, 'overnight' repos are concluded after one night; 'intra-day' repos are concluded within the same day; repos can also be 'rolling' in that although there is a fixed maturity date, the contract can specify that this date may be extended by one or both parties; repos can also be classed as 'term' or 'open', and are concluded with or without a fixed maturity date respectively.

In practice, the "maturity of the majority of repo transactions are between overnight and three months"; although longer trades, between six months and one year (or longer) are not uncommon. In 2016, just over 61% of repos transactions were for a period of less than one month.[42] Consequently, repos often are characterised as relatively safe 'money market instruments' – an important designation – because the financial collateral typically is composed of government securities, such as highly rated government bonds (although corporate bonds and equities can also be used, albeit to a lesser extent).[43]

Repos with longer maturity, however, usually are considered higher risk. During a longer tenor, factors such as repurchaser (seller) creditworthiness and interest rate fluctuations are more likely to impact the assessed value of the repurchased asset. In other words, the longer the term of the repo, the more likely that the value of the financial collateral will fluctuate prior to the repurchase and the longer period of time during which the buyer relies on the repurchaser's (seller's) ability to fulfil the contract.[44] In the end, counterparty credit risk is deemed the primary risk associated with repos. As with any loan, it is the creditor who bears the risk that the debtor will not be able to repay the principal, but this risk is intended to be effectively obviated with

41 It goes beyond the scope of this study to analyse each type of repo transaction available. This thesis will focus on a classic bilateral repo transaction unless otherwise stated.

42 Choudhry (n 6) 150-172. See also, Harding and Johnson (n 15) 2-3.

43 A money market instrument is a debt product issued with between one day and one year to maturity. This position can be contrasted with 'capital market instruments', which are debt instruments with a maturity greater than one year. On this see, Choudhry (n 6) 5.

44 P Hordahl and M R King, "Developments in repo markets during the financial turmoil" (2008) *BIS Quarterly Review* 37 at 37-38.

(in the usual case) very safe, highly liquid financial collateral that is expected to hold its value over time.[45]

3.3.2 Financial collateral

The GMRA does not contain a list of which types of assets are deemed acceptable as financial collateral but in managing risk the quality and the liquidity of financial collateral are key considerations for the buyer. Financial collateral secures the seller's repayment obligations under the repo, thereby neutralising default risk as much as possible. In this respect, the 'liquidity' of the financial collateral is important: the more liquid the financial collateral, the more likely it is that its value can be realised quickly: in other words, liquidity is a proxy for the ease with which an asset can be turned into money (defined as a generally accepted means of payment).[46] Counterparties unsurprisingly seek to ensure the financial collateral is of sufficient quality to be able provide appropriate liquidity under all scenarios.

Under the Form of Confirmation in Annex II of the GMRA 2011, the type of securities used as financial collateral to secure the transaction are documented at the point of trade. In theory, a wide range of assets may be used as financial collateral but, in practice, the most widely used and sought-after financial collateral in the repo markets are predominantly debt instruments, such as government bonds.[47] This reflects an emphasis on safety, liquidity and price stability. A Dutch government bond, for example, maintains a Moody's Aaa credit rating.[48] The Aaa rating reflects an assessment by the rating agency of the Netherlands' minimal credit risk. It should be noted however that government bonds are not immune to default: the prospect has been taken seriously in connection with the recent weakness in the banking sectors and associated instability and concerns over sovereign debt in certain Eurozone countries.[49] Liquidity in turn is a function of an available market

45 Examples of such financial collateral are highly rated government bonds, such as Treasuries, Gilts, German Bunds etc.

46 H W Arndt, "The Concept of Liquidity in International Monetary Theory" (1947 -1948) 15 (1) *The Review of Economic Studies* 20 at 21.

47 Debt instruments can also include corporate bonds and other forms of debt instruments as long as these are tradeable on the capital market, but government bonds issued by a credible government are the most sought-after.

48 At the time of writing, 15 December, 2020, A Dutch government bond has a credit rating of Aaa, see Moody's, Government of Netherlands credit rating, available at: https://www.moodys.com/credit-ratings/Netherlands-Government-of-credit-rating-543005.

49 *The Economist*, "Repo-market ructions were a reminder of the financial crisis" (26 September, 2019); see also, G Tett, "The repo markets mystery reminds us that we are flying blind" (19 September, 2019) *Financial Times,* available at: https://www.ft.com/content/35d66294-dadc-11e9-8f9b-77216ebe1f17; R Foroohar, "How the virus became a credit run" (16 March 2020) *Financial Times* 1 at 17; J Politi and K Allen, "Italian market turmoil deepens as president picks new premier" (Tuesday 29 May, 2018) *Financial* Times 1 at 1.

to sell the instrument. Like shares, after issuance in the primary market, bonds are traded between investors in the secondary market. However, unlike shares, most bonds are not traded in the secondary market via exchanges. Rather, bonds are traded OTC. An OTC trade is executed directly between two parties and is not overseen by or subject to the rules of major exchanges. Nevertheless, highly rated government bonds are relied upon due to their perceived safety and liquidity, including in times of crisis and market illiquidity.[50]

It should be noted that virtually any asset can be used as financial collateral in a repo. So long as there is a market for the asset, and so long as the parties are in agreement about 'acceptability', the financial collateral can be used as 'cash equivalent'.[51] That said, equity securities are considered more vulnerable to market price fluctuations, including intraday, whereas government bonds generally are not. The prospect of increased volatility translates to higher margin ratios and more financial collateral being required to secure against increased downside risk, taking into account the impact of potential extreme market events, which have in the past led to downward liquidity, downward price spirals, fire sales and full-blown financial crises.[52]

3.3.3 The significance of the repo rate

When central banks purchase securities from commercial banks, they do so at a discounted rate (the "repo rate"), which are set by central banks. This process is utilised to control the amount of available funds in the economy, thereby regulating the money supply. A decrease in repo rates encourages banks to sell securities back to the government in return for cash, which increases the money supply available to the general economy. Conversely, by increasing repo rates, central banks can effectively decrease the money supply by discouraging banks from reselling these securities.[53]

3.3.4 Margin

To address the level of risk taken by the buyer, parties to a GMRA are likely to negotiate the appropriate levels of 'margin'. Margin is the price difference between the market value of the securities used as financial collateral and the purchase price. The purpose of margin is to hedge market risk arising from

50 M K Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007-2008" (2009), *23 (1) Journal of Economic perspectives* 77 at 91-96. See also generally, M K Brunnermeier and L H Pedersen, "Market Liquidity and Funding Liquidity" (2008) *The Society for Financial Studies*.

51 Yeowart *et al* (n 15) 64-65. See also, M Singh, "Collateral Reuse and Balance Sheet Space" (2017) *IMF Working Paper* 1 at 5.

52 Wilmot *et al* (n 4) 1 at 1-3.

53 See the website of the International Capital Market Association ("ICMA"), available at: www.icmagroup.org.

the unintended price fluctuations on a security used as financial collateral,[54] where cash realised by the liquidation of the financial collateral may be less than the contracted-for purchase price.[55] To mitigate the risk that the financial "collateral falls below the notional amount of the transaction, the market standard" is to overcollateralise the transaction such that 'excess' financial collateral ('margin') covers net exposures from a repo with a given counterparty.[56] By requiring margin at the point of trade, the buyer hopes to ensure a financial buffer against downward price fluctuations of the security posted as financial collateral.[57]

At the point of trade, the market practice is to apply 'margin' either by way of a 'haircut' or by way of 'initial margin'; the correct terminology for both these concepts under the GMRA 2011 are "Margin Percentage"[58] and "Margin Ratio"[59] respectively.[60] As noted in Chapter 4, a 'haircut' is a discount deducted from the market value of the security posted as financial collateral and is expressed as the percentage difference between the market value of the security posted as financial collateral and the Purchase Price. Initial margin can be defined as a ratio, or as a percentage, and should be considered a premium added to the market value of the security posted as financial collateral.[61] Both initial margins and haircuts perform the same function by 'overcollateralising' the buyer's position in a repo transaction.[62]

As noted above, because the market value of the financial collateral is susceptible to price fluctuations, without margining, the cash realised by the liquidation of the financial collateral may turn out to be significantly different from what was originally contracted for, potentially resulting in actual loss for one of the parties.[63] It should be noted, however, that while margining does mitigate risk, it is paradoxically not a watertight solution. The buyer or seller could still find itself short of a sufficient amount of financial collateral due to adverse market movements since the last mark-to-market valuations.[64]

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54 M Choudhry, *An Introduction to Repo Markets* (2007) 42. See also, Harding and Johnson (n 15) 169.

55 Harding and Johnson (n 15) 65-66. See also, European Systemic Risk Board, "The macroprudential use of margins and haircuts" (2017) 1 at 22.

56 European Systemic Risk Board (n 32) 1 at 4. See also, Paragraphs 2 (aa) and (bb) GMRA 2011.

57 R Steiner, *Mastering Repo Markets* (1997) 79.

58 Paragraph 2 (aa) GMRA 2011.

59 Paragraph 2 (bb) GMRA 2011.

60 Harding and Johnson (n 15) 156 and 169-170.

61 R Comotto, "Shadow Banking – Minimum Haircuts on Collateral" (2013) *European Parliament Economic and Monetary Affairs* 1 at 12 - 13. See also, R Comotto, "A Guide to Best Practice in the European Repo Market" (December, 2017) *ICMA European Repo and Collateral Council* 1 at 49.

62 Comotto *Shadow Banking* (n 61) 1 at 13.

63 Comotto, *A Guide to Best Practice* (n 61) 1 at 50-51. See also, Haentjens and de Gioia-Carabellese (n 16) 238.

64 Choudhry (n 54) 50.

To ensure that party exposure is kept in check, regular adaptations to changes in the market value of the financial collateral are taken into consideration by marking the financial collateral to market. The phrase 'mark-to-market' means that the posted financial collateral in a repo is valued based on the current market price of the assets that constitute the financial collateral and this value is then compared with the original/last valuation.[65] Marking to market is customarily done at the end of each business day, or as agreed between the contracting parties.[66] If the value of the posted financial collateral has decreased, then a margin call will be made by the buyer requiring the seller to post additional margin securities. On the other hand, if the value of the posted financial collateral has increased, then a margin call will be made by the seller to require the buyer to deliver margin securities back to the seller.[67] Given that the value of the financial collateral fluctuates, there may only be a very small movement in the price; in such a case, and to avoid administrative burdens and costs, in practice the parties generally agree a margin threshold – above which changes in the value of the collateral triggers a margin call. The specific threshold is documented in Annex I of the GMRA 2011.[68]

Initial margins and haircuts are agreed and set out contractually at the point of trade. Once agreed, the haircut or initial margin level is generally 'maintained' for the lifecycle of the transaction through certain margining techniques[69] known as "Margin Maintenance"[70] and "Substitution".[71] Under Paragraph 4 of the GMRA 2011, the methods of Margin Maintenance include 'margin transfers', 'repricing' and 'adjustment' – each will be discussed.

3.3.4.1 Margin transfers

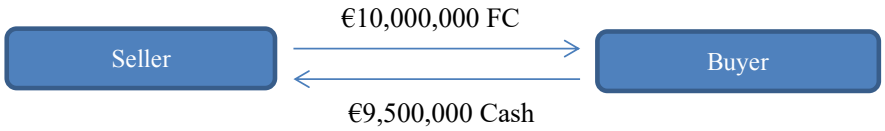
Margin transfers are designed to reduce counterparty credit risk by requiring the parties to a repo to transfer financial collateral to each other, in the form of securities or cash, on a periodic basis. Each party's 'Net Exposure'[72] is periodically calculated mark-to-market, and the party who has a Net Exposure to the other is entitled to request, by way of a margin call, that the other party makes a margin transfer to it.[73] Depending upon market conditions, the Net Exposure may fluctuate from day to day and it is not a given which party will have a Net Exposure; the buyer may have the Net Exposure to the seller

65 A G Balmer, *Regulating Financial Derivatives: Clearing and Central Counterparties* (2018) 49-50.
66 Steiner (n 57) 79.
67 Haentjens and de Gioia-Carabellese (n 16) 238.
68 Steiner (n 57) 79. See also, Harding and Johnson (n 15) 170.
69 Choudhry (n 54) 43. See also, Comotto, *A Guide to Best Practice* (n 61) 1 at 50-51.
70 Paragraph 4 GMRA 2011.
71 Paragraph 8 GMRA 2011.
72 Paragraphs 2 (ff) and 4 (c) GMRA 2011.
73 Paragraphs 4 (c) and (d) GMRA 2011.

on a certain day, whereas the seller may have the Net Exposure to the buyer on another day.[74]

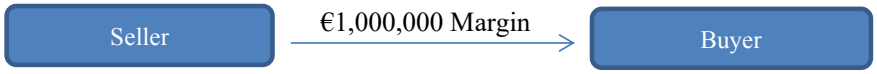
The transfer of margin between both the collateral taker and collateral giver may happen multiple times throughout the lifecycle of the transaction and at the end of the transaction, equivalent margin must be retransferred.[75] In terms of monitoring the Net Exposure, imagine the following working example where a buyer and seller enter into a 3-day repo transaction:

Day 1 – The Point of Trade



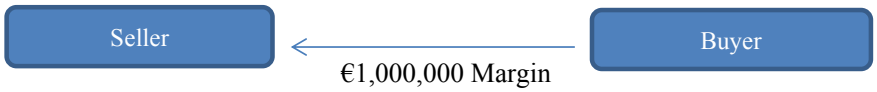
At the start of a repo transaction, the seller receives € 9,5000,000 from the buyer in exchange for financial collateral worth a total value of € 10,000,000.

Day 2 – Mark-to-Market Valuation



On day 2 of the transaction, the mark-to-market valuation of the posted financial collateral has dropped to € 9,000,000. This means the transaction is now *under-collateralised* and as such, the seller has a Net Exposure over the buyer. Because the transaction has to be overcollateralised and the margin maintained at € 500,000, the buyer will make a margin call requiring the seller to transfer margin securities worth € 1,000,000.

Day 3 – Mark-to-Market Valuation



On day 3 of the transaction, the mark-to-market valuation of the posted financial collateral has increased to € 11,000,000. This means that the transaction is back to being overcollateralised, giving the buyer a Net Exposure over the seller. Because margin needs to be maintained at € 500,000, the seller will make a margin call requiring the buyer to transfer margin securities worth

74 Paragraph 4 (a) – (h) GMRA 2011.
75 Haentjens and de Gioia-Carabellese (n 16) 237-239.

€ 1,000,000. At the end of the transaction, equivalent margin must be returned and this ensures that the parties are in an economically equal position again.[76]

3.3.4.2 Repricing and adjustment

As noted in Chapter 4, margin transfers are not always the most appropriate method of margin maintenance, especially if the posted financial collateral suffers a significant change in value. The GMRA 2011 accounts for this possibility by way of repricing and adjustment.[77] If margin is to be repriced then the original transaction will be terminated, and a new transaction is simultaneously entered into.[78] The idea is that the original financial collateral is maintained, but the purchase price of the new transaction is set equal to the new market value of the cash/securities.[79]

In the case of margin adjustment, the parties agree that the original financial collateral should be replaced with a different kind and amount of financial collateral as a means to mitigate market/credit risk thus terminating the original transaction and entering into a new transaction.[80] The new securities used as financial collateral will be transferred at market value at the point of trade, with due consideration of the original haircut/initial margin previously agreed between the parties.[81]

3.3.4.3 Substitution

Under Paragraph 8 of the GMRA 2011, "Substitution" can be agreed between parties. Consent for substitution can be given at the point of trade (in the Form of Confirmation found in Annex II of the GMRA 2011) or during the lifecycle of the transaction as agreed by the parties. Substitution allows the seller to substitute the original securities used as financial collateral for other acceptable securities.[82] Substitution and adjustment appear, on the face of it, to be the same or very similar. However, adjustment takes account of changes in the market value of the securities originally posted as financial collateral whilst substitution involves the seller replacing the original securities used as collateral with other types of securities, sometimes because the seller requires the original securities for use in another transaction elsewhere.[83] It is important to note that in practice, substitution cannot be agreed upon without the consent

76 T Keijser, *Financial Collateral Arrangements* (2006) 28-31. See also, Haentjens and de Gioia-Carabellese (n 16) 238.
77 Paragraph 4 (j) GMRA 2011. See also, Haentjens and de Gioia-Carabellese (n 16) 238.
78 Paragraphs 4 (k) (i) and (ii) GMRA 2011.
79 Paragraph 4 (k) (v) GMRA 2011. See also, Comotto, *A Guide to Best Practice* (n 61) 1 at 64. See also, Haentjens and de Gioia-Carabellese (n 16) 238-239.
80 Paragraph 4 (l) (i) GMRA 2011.
81 Paragraph 4 (l) (ii) GMRA 2011. See also, Haentjens and de Gioia-Carabellese (n 16) 239; Keijser (n 76) 31-32.
82 Paragraph 8 (a) GMRA 2011.
83 Keijser (n 76) 34-35. See also, Haentjens and de Gioia-Carabellese (n 16) 238-239.

of the counterparty. Right of substitution can be problematic because if not provided for carefully and in accordance with national law, so-called 're-characterisation risk' could arise, which stem from undermining title transfer aspects provision of the transaction and leaving the buyer, who is holding the securities, without legal ownership.[84]

3.3.5 Event of Default

Under the GMRA 2011, Events of Default can trigger termination of either a single transaction or of the entire contractual relationship existing between the parties. There are ten standard events under the GMRA 2011, which give rise to an Event of Default in relation to the seller or the buyer; these are:[85]

1. The buyer fails to pay the Purchase Price on the applicable Purchase Date or, the seller fails to pay the Repurchase Price on the applicable Repurchase Date[86]; or,
2. The seller fails to deliver the Purchased Securities on the Purchase Date or the buyer fails to deliver Equivalent Securities on the Repurchase Date – it should be noted that this sub-paragraph must be expressly included in Annex I of the GMRA 2011[87]; or,
3. The seller or the buyer fails to pay the sum owed when due[88]; or,
4. The seller or the buyer fails to either make a Margin Transfer within the minimum period; fails to provide margin; or, fails to pay any amount or transfer any Securities[89]; or,
5. The seller or the buyer fails to comply with Income Payments under Paragraph 5 GMRA 2011[90]; or,
6. An Act of Insolvency defined under Paragraph 2 (a) GMRA 2011 occurs in respect of the seller or the buyer[91]; or,
7. Any representations that are made by the seller or the buyer and are incorrect or untrue when made[92]; or,
8. The seller or the buyer admits to the other that it intends not to, or is unable to, perform its obligations under the contract[93]; or,
9. The seller or the buyer being declared in default or being expelled from membership of, or participation in, any securities exchange, or suspended

84 Harding and Johnson (n 15) 184-187.
85 Paragraphs 2 (w) and 10 GMRA 2011.
86 Paragraph 10 (a) (i) GMRA 2011.
87 Paragraph 10 (a) (ii) GMRA 2011.
88 Paragraph 10 (a) (iii) GMRA 2011.
89 Paragraphs 10 (a) (iv) (A), (B) and (C) GMRA 2011.
90 Paragraph 10 (a) (v) GMRA 2011.
91 Paragraph 10 (a) (vi) GMRA 2011.
92 Paragraph 10 (a) (vii) GMRA 2011.
93 Paragraph 10 (a) (viii) GMRA 2011.

or prohibited from dealing in securities by any Competent Authority[94]; or,

10. The seller or the buyer fails to perform any other of its obligations hereunder and does not remedy such a failure within 30 days after notice is given.[95]

An Event of Default is, of course, a serious matter and in practice, the non-"Defaulting Party"[96] will often carefully consider whether or not it wishes to trigger an Event of Default by issuing a "Default Notice"[97] indicating an "Early Termination Date" to the Defaulting Party.[98] Under the GMRA 2011, an Event of Default will not trigger close-out unless and until the non-Defaulting Party issues a Default Notice with an Early Termination Date to the Defaulting Party. Moreover, parties can choose, in Annex I of the GMRA 2011, whether they want the aforementioned events to lead to a so-called "automatic early termination".

In practice, the GMRA is often referred to as a "master netting agreement", which allows parties to enter into multiple transactions.[99] As a result, on default by one of the contracting parties, the entire agreement can be 'closed out', with all outstanding exposures netted, giving rise to the term 'close-out netting'.[100] Crucially, in this manner, parties may also circumvent automatic insolvency stays that typically are imposed so as to prevent – temporarily – creditors from realising contract rights on default of the insolvent party, by applying the close-out netting provision in the GMRA.[101] The purpose of close-out netting is to reduce the exposures on all open contracts should a party default or become insolvent during the lifecycle of the contract. Close-out netting provisions thus provide for the solvent party to terminate all contracts between parties, calculate the losses and gains on each contract, and then set them off so that a single balance is owed, i.e. the 'net' amount.[102]

94 Paragraph 10 (a) (ix) GMRA 2011.
95 Paragraph 10 (a) (x) GMRA 2011.
96 Paragraphs 2 (l) and 10 GMRA 2011.
97 Paragraphs 2 (n) and 10 (b) GMRA 2011.
98 Paragraphs 2 (r) and 10 (b) GMRA 2011.
99 Choudhry (n 6) 339-348.
100 Close-out netting will be explored in greater detail in Chapter 7, section 3.4 "Financial Collateral Directive".
101 Articles 7 and 8 of the FCD. It should be noted, however, that the European Commission published amendments to its Bank Recovery and Resolution Directive ("BRRD 2") on 23 November, 2016, which are intended to harmonise the use of moratoria powers by resolution authorities in the EU. See, ISDA, "Challenges with Expanding BRRD Moratoria Powers" (August, 2017). See also, European Parliament legislative resolution of 16 April on the proposal for a directive of the European Parliament and of the Council amending Directive 2014/59/EU (16 April, 2019).
102 Close-out netting can be distinguished from 'set-off'. 'Set-off' refers to a settlement of mutual debt between a creditor and a debtor through offsetting transaction claims.

There are arguably five significant consequences for market participants as a result of an Event of Default. First, all open positions are immediately accelerated.[103] Second, margin securities held by the Defaulting Party must be returned to the non-Defaulting Party. Cash Margin, plus accrued interest, becomes immediately repayable.[104] Third, each party's open transactions are accelerated, valued and crystallised in monetary terms, meaning that each party's obligations to redeliver equivalent securities is replaced with an obligation to pay cash.[105] Fourth, the monetary amounts referenced previously are set-off against each other, with a resulting net balance amount. The net balance is paid by the party owing a higher amount over the other.[106] Lastly, the Defaulting Party is liable to pay the expenses of the non-Defaulting Party, plus interest, in connection with an Event of Default.[107]

3.3.6 Property functions of a repo

In the European repo market, the securities posted as financial collateral in the opening leg of the repo are sold by means of a true sale/title transfer; this position can be contrasted with the USA where a repo is classed as a secured loan. A true sale/title transfer is the legally binding transfer of ownership or legal title of assets from the seller to the buyer, meaning that the assets are no longer the liability of the seller.[108] However, on maturity of the repo transaction, the seller has a commitment to buy back *equivalent* financial collateral. Economically, therefore, a repo serves a function akin to a collateral-supported interest-bearing loan. The buyer acts as a lender, the seller acts as a borrower, and the securities being 'sold' serve as the financial collateral for the loan. It is important to note that although ownership of the financial collateral passes to the buyer, the economic benefits of ownership and market risk remain with the seller. This means that if the value of the financial collateral plummets in value during the lifecycle of the repo, it is the seller who will initially suffer a capital loss. After all, it is the seller who has to provide additional securities (from its own equity) to the buyer by way of a margin call, resulting in a capital loss to the seller. In addition, if the posted financial collateral is a bond, and there is a subsequent coupon payment during the term of the trade, this coupon payment remains the benefit of the seller; although the buyer has received the payment of the coupon, it must be handed back to the seller.[109] This reflects the fact that although ownership of the

103 Paragraph 10 (c) GMRA 2011.
104 Paragraph 10 (d) (i) GMRA 2011.
105 Paragraph 10 (d) (i) GMRA 2011.
106 Paragraph 10 (d) (iii) GMRA 2011.
107 Paragraph 10 (e) (v) GMRA 2011. See also, Harding and Johnson (n 15) 189-190.
108 Paragraphs 6 (e), (f) and 9 (h) GMRA 2011. See also, P Wood, *Law and Practice of International Finance* (2011) 452-453.
109 Paragraphs 5 (a) and (b) GMRA 2011.

collateral passes to the buyer, economic costs and benefits remain with the seller. Consequently, the buyer has only temporary use and possession of the financial collateral, while the seller has only temporary use and possession of the cash. Therefore, a repo transaction within the EU behaves economically akin to a secured loan, yet the transaction is, in fact, structured legally as a sale and repurchase.[110]

In practice, lawyers, tax advisers and accountants have quite different perspectives in relation to repo transactions. A very important characteristic of repos is that they may be treated one way for legal purposes and another for tax and accounting purposes. Despite similarities to secured loans, repos for legal purposes (depending on applicable national private law) are considered actual purchases and sales, with the buyer having (generally) short-term ownership of the collateral. For tax and accounting purposes, however, repos are often treated as loans, not as purchases and sales. Characterisation of repos as one form of transaction or another will depend on factors that can vary depending on applicable laws and tax requirements and accounting practices.[111]

4 SECURITIES LENDING

The GMSLA, published by the International Securities Lending Association ("ISLA"), is the market standard master agreement for securities lending transactions in domestic and cross-border markets.[112] The first GMSLA, published in May 2000, sought to consolidate in one document various standard market agreements used in the market at the time. ISLA revised this nine years later with the publication of GMSLA 2009. This version was not welcomed by market participants due to its treatment of certain key elements (pre-collateralisation of manufactured dividends on Income Record Date and manufactured dividends[113]), leading to a quick revocation. The current revised version of the GMSLA was published on 20 January 2010, superseding the 2009 version. The 2010 version (as well as the 2009 version) reflects lessons learned from

110 Haentjens and de Gioia-Carabellese (n 16) 231. See also, Choudhry (n 6) 116-117.

111 J R Martinez-Resano, "Repo Markets" (2010) *World Bank* 1 at 40-57.

112 The GMSLA has largely replaced the Overseas Securities Lending Agreement ("OSLA"), the Gilt-Edged Stock Lending Agreement ("GESLA") and the Master Equity and Fixed Interest Stock Lending Agreement ("MEFISLA"). On this see Yeowart *et al* (n 15) 467 (footnote 17).

113 A 'manufactured dividend' is a payment that is received by a securities lender for a dividend distributed on a specific loaned security. By agreement, the borrower sends to the lender any dividends, interest or other distributions obtained from the securities during the lifecycle of the transaction. 'Income Record Date' is defined in Paragraph 2.1 GMSLA 2010 as: "the date as of which holders of such securities are identified as being entitled to payments of Income. This is relevant to manufactured payments under paragraph 6".

the 2007 Global Financial Crisis, in particular, default remedies which proved lacking for many market participants during the Global Financial Crisis.[114]

4.1 Structure of the GMSLA

The GMSLA is similar in some respects both to the GMRA that is used for repo transactions and the ISDA Master Agreement that is used for derivatives. Like the other standard documents, the GMSLA provides a standardised framework by which two parties may enter into multiple individual transactions. The GMSLA can be divided into two parts. The first part of the GMSLA is the standardised form, which sets out the legal and credit terms of the agreement, namely warranties, collateral, margin requirements, events of default and netting provisions. The second part of the GMSLA is the Schedule, which allows parties to modify or provide further specificity about aspects of the first part of the agreement. The first part of the GMSLA is never directly modified; instead, all modifications are identified and documented in the Schedule, similar to the way in which Annex I is used in the GMRA framework and the way in which the Schedule is used in the ISDA Master Agreement framework.

The GMSLA also consists of an attached Confirmation, pledge structure document, Addendum and Annex. The Confirmation sets out the particular commercial terms of the individual securities lending transaction. The Confirmation, which is similar to that used with Annex II of the GMRA for repo transactions, is to be read in conjunction with the GMSLA and accordingly, each transaction between the parties to the GMSLA will be governed by the terms of the respective Confirmation (as supplemented by the GMSLA and the Schedule).

Negotiations between parties in respect of the 2010 GMSLA focus on the content of the Schedule, rather than on the text of the master agreement itself. The GMSLA is premised on the possibility that either party could be the borrower or the lender, however, in practice the sell-side tends to act as borrower since it is they who will need securities in the manner afforded by the GMSLA.

4.2 *Modus Operandi* of Securities Lending

In practice, credit departments of institutions participating in lending arrangements will approve dealing lines for individual counterparties based on due diligence procedures and counterparty creditworthiness. Credit departments will also approve eligible financial collateral from borrowers. Traditionally, securities lending transactions are negotiated over the telephone between

114 Harding and Johnson (n 10) Chapter 4.

counterparties with subsequent electronic confirmation. The borrower typically initiates the transaction contacting the lender or its agent (usually by telephone) with a borrowing request. Today, bilateral and multilateral automated lending arrangements increasingly are used: these broadcast as securities as available for lending at particular rates through electronic channels; where lending terms are pre-agreed between the parties, automatic matching can take place – this is referred to as 'contract and compare'.[115] The following discussion outlines the *modus operandi* of a securities lending transaction, highlighting the legal underpinnings of the GMSLA along the way.

4.2.1 What is securities lending?

> *"Securities lending is an established practice by which a party holding securities, such as a pension fund, insurance company or sovereign wealth fund, or the like, lends them out to another party, such as a bank or hedge fund, against collateral and in return for a lending fee".*[116]

Securities lending refers to the market practice by which "securities are transferred from one party (the lender) to another party (the borrower), with the borrower contractually obliged to redeliver to the lender at a time securities which are equivalent in number and type".[117] As depicted below in *Figure 9* below, a securities lending arrangement consists of two transactions. In the opening leg of the transaction, the lender lends specific securities to the buyer on an open (indeterminate) basis or for an agreed period of time. In return, taking into account the agreed 'margin' to secure the transaction, the borrower transfers cash or securities as financial collateral to the lender or its agent.[118]

In the closing leg of the transaction, the borrower returns the specific securities, plus a fee to the lender;[119] simultaneously, the lender returns cash or securities used as financial collateral to the borrower.[120] Each party has a contractual obligation to return equivalent securities, cash or the financial collateral itself to its counterparty. 'Equivalent', in this context, means a security that is economically, but not necessarily legally, identical. Therefore, like repos, securities lending transactions involve the temporary transfer of assets. Also, like repos, there is in securities lending transactions commonly a transfer

115 Harding and Johnson (n 10) Chapter 1.
116 *Forsta AP-Fonden v Bank of New York Mellon SA/NV and Ors* [2013] EWHC 3127 (Comm), *per* Blair J at 33. This judgement was noted in Yeowart *et al* (n 15) 466.
117 *Beconwood Securities Pty Ltd v Australia and New Zealand Banking Group Ltd* [2008] FCA 594, *per* Finkelstein J at 4-6. This judgement was noted in Yeowart *et al* (n 15) 465. See also, Paragraph 1.1 GMSLA 2010; Article 3 (7) SFTR.
118 Paragraph 2 GMSLA 2010.
119 Paragraphs 7.1 and 7.2 GMSLA 2010.
120 Paragraph 2 GMSLA 2010.

of securities (in securities lending transactions: the loan, in repos: the financial collateral) against the transfer of cash (in securities lending transactions: the financial collateral, in repos: the loan). The main difference between the two types of standardised collateral transactions is that in securities lending transactions it is the transferee of securities, i.e. the borrower, who initiates the transaction as she is in need of securities, whilst in repos, it is the transferor of the securities, i.e. the seller, who initiates the transaction as she is in need of cash. This difference is reflected in the fee: in securities lending transactions, it is paid by the transferee of securities, i.e. the borrower, whilst in repos, it is paid by the transferor of the securities, i.e. the seller.

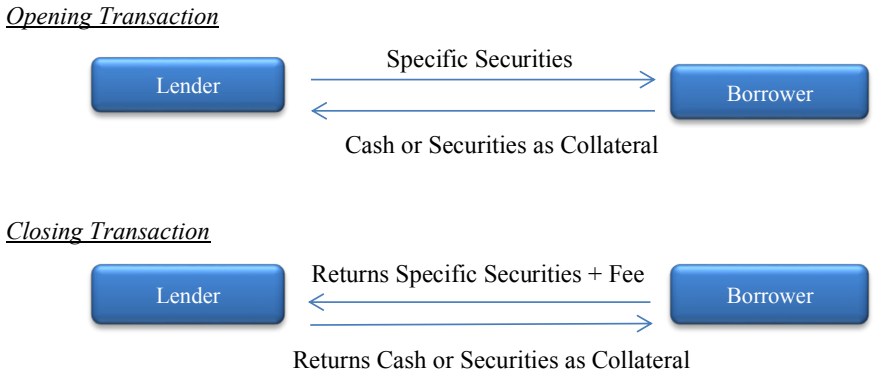


Figure 9: Securities Lending

4.2.2 *Maturity*

In a securities lending transaction, loans can either be 'open' or 'fixed' term. Open loans have no fixed maturity date; in practice, these are the most common securities lending transactions. Lenders often wish to preserve the flexibility to be able to sell at any time by simply recalling the securities when and as needed. Fixed term loans provide less flexibility in this respect.

4.2.3 *Fees, interest and rebates*

The borrower pays an agreed fee, quoted as an annualised percentage of the value of the loaned securities on a monthly basis. Calls by the lender and returns of financial collateral may take place during the life of the loan but have no effect on the fee. However, lenders can review their portfolios during the lifecycle of the loan and if a security is in high demand, the lender can negotiate a higher fee with the borrower for the remainder of the loan, or,

the lender can alternatively recall the security.[121] In addition, the borrower would receive interest from the lender on any cash posted as financial collateral. To increase returns, the lender or its agent can reinvest the cash so that it remains invested in (typically) money market instruments or other assets as agreed by the parties.

4.2.4 Financial collateral

The parties may designate suitable financial collateral in the GMSLA 2010 Schedule. As a general rule, as long as the financial collateral is liquid and the parties are in agreement regarding mutually acceptable financial collateral, the financial collateral may be considered cash equivalent pursuant to Paragraph 5 of the GMSLA 2010.[122] As mentioned above, cash that is provided as financial collateral typically may be reinvested in cash-equivalent and possibly other liquid securities depending on the agreement of the parties. Often securities lending agents will manage cash reinvestment vehicles for this purpose on behalf of the relevant parties on a pooled basis: the assets, investment objectives and liquidity policies of such vehicles often approximate those of money market funds.[123]

The financial collateral is designated in Paragraph 1.2 of the Schedule to the GMSLA 2010.[124] The parties can also elect whether the financial collateral is to be provided on the basis of individual loans or on an "aggregated" basis pursuant to Paragraphs 5.4 and 5.5 of the GMSLA 2010. In practice, aggregation of all loans is the more common option.[125] Paragraph 5.3 of the GMSLA 2010, providing for "Substitutions of Collateral", allows parties to agree that the borrower may substitute new acceptable securities for the securities currently posted as financial collateral (if and when it is securities and not cash that is provided as financial collateral). Borrowers often will pursue this option where they may require securities currently used as financial collateral for other transactions elsewhere.[126]

121 Harding and Johnson (n 10) Chapter 1.

122 Provided that the posted financial collateral is not cash.

123 See generally, N Foley-Fisher, S Gissler and S Verani, "Over-the-Counter Market Liquidity and Securities Lending" (2019) *768 BIS Working Papers.* See also, F M Keane, "Securities Loans Collateralized by Cash: Reinvestment Risk, Run Risk, and Incentive Issues" (2013) *19 (3) Current Issues in Economics and Finance: Federal Reserve Bank of New York.* See also, ICMA website: www.icma.org.

124 The specific table outlined in Paragraph 1.2 of the Schedule to the GMSLA 2010 also provides for margin, which will be discussed below.

125 J Haines and J Knight, "Securities Lending: 2010 Global Master Securities Lending Agreement" (2019) *Practical Law* 1 at 28.

126 Keijser (n 76) 34-35. See also, Haentjens and de Gioia-Carabellese (n 16) 238-239.

4.2.5 Margin

Similar to a repo transaction, required margin is a function of the price difference between the market value of the financial collateral and the contracted for assets, such as the securities that have been lent. Market practice varies regarding whether the margin will be subject to a 'haircut' or provided as 'initial margin': the net result in either case is overcollateralisation in excess of the value of lent securities. In practice, initial margin is usually set at 110% of the market value of equity securities and between 102% and 105% for government bonds. Since the collapse of Lehman Brothers in 2008, institutions have increased their margin levels on collateral in order to further mitigate risk.

The GMSLA 2010 margin maintenance provisions are comparable to margin transfer requirements set out in the GMRA 2011:[127] if the difference between the market value of lent securities and the market value of the posted financial collateral changes, one of the parties will be obliged to make a margin transfer.[128] If the mark-to-market value of the financial collateral *exceeds* the aggregate required financial collateral in respect of a loan measured against the value of the lent market securities, the lender is obliged to transfer margin to the borrower to eliminate the excess.[129] Conversely, if the mark-to-market value of the posted financial collateral declines in value in comparison to the market value of the lent securities, the borrower is obliged to transfer margin to the lender to eliminate the deficiency.[130]

4.2.6 Property aspects of securities lending

A curiosity of securities lending transaction is the use of terminology premised on the concept of "lending".[131] At least under English law, securities lending transactions contemplate the transfer of title in securities in return for an irrevocable undertaking to return equivalent securities upon maturity of the transaction. Similarly, any cash or securities posted as financial collateral will be transferred on a title transfer basis (under English law) from the borrower to the lender, to be returned on maturity of the transaction.[132] As a con-

127 See Paragraphs 5.4 and 5.5 of the GMSLA. On the issue of 'margin transfers', please see this chapter above, section 3.3.4.1 "*Margin Transfers*". See also generally, Harding and Johnson (n 10).

128 See this chapter above, section 3.3.4.1 "*Margin transfers*".

129 Paragraphs 5.4 (b) and 5.5 (b) GMSLA 2010.

130 Paragraphs 5.4 (c) and 5.5 (c) GMSLA 2010. See also, Keijser (n 76) 28; Haentjens and de Gioia-Carabellese (n 16) 238-239.

131 Yeowart *et al* (n 15) 465. See also, D Turing, "Securities Lending" (2012) *Practical Law* 1 at 1.

132 International Securities Lending Association, "Securities Lending: A Guide for Policymakers" (accessed 18 February, 2019) 1 at 3 (footnote 1), available at: https://www.isla.co.uk/system/files/2017-10/sl_aGuide_for_Policy_makers.pdf.

sequence of transfer of ownership, the borrower can subsequently sell, pledge, redeem or otherwise dispose of the securities it has borrowed as if they belong to her or him and the lender can do likewise with respect to the lender.[133]

New York law governed GMSLAs, by contrast, contemplate "pledge" arrangements in which title to lent securities and financial collateral are not – under the law – transferred to the other party. However, right of re-use in respect of pledged assets is possible – so long as this is adequately addressed and agreed contractually between the parties – under the relevant provisions of the Uniform Commercial Code as adopted in New York. As a practical matter both English law and New York law governed arrangements permit the same use of the relevant assets by both lenders and borrowers, however, important distinctions do arise, in particular potential accounting and tax treatment.

4.2.7 Event of default

Under the GMSLA 2010, each of the following nine events constitutes an "Event of Default", provided that the "Non-Defaulting Party" gives written notice to the "Defaulting Party" (subject to Paragraph 10.1 (d)).[134]

1. Failure by the lender or the borrower to deliver cash collateral or other financial collateral at the outset of the loan or to deliver or redeliver cash collateral; or failure to deliver further collateral when called pursuant to the margining provisions under Paragraph 5.4 and 5.5 of the GMSLA 2010.[135]
2. Failure to pay manufactured dividends on their due date and not remedying such a failure within three business days after the Non-Defaulting party has issued a written notice.[136]
3. The lender or the borrower fails to pay any sum due under Paragraph 9.1 (b) (mini close-outs), 9.2 (b) (buy-ins) or 9.3 (related direct expenses) upon the due date.[137]
4. An Act of Insolvency by the lender or the borrower.[138]
5. Warranties made by the lender or the borrower which are materially untrue or incorrect.[139]
6. The intention of the borrower or the lender not to perform its obligations under the GMSLA 2010.[140]

133 Paragraphs 2.3 and 4.2 GMSLA 2010.
134 Paragraphs 10.1 and 10.2 GMSLA 2010.
135 Paragraph 10.1 (a) GMSLA 2010.
136 Paragraph 10.1 (b) GMSLA 2010.
137 Paragraph 10.1 (c) GMSLA 2010.
138 Paragraph 10.1 (d) GMSLA 2010.
139 Paragraph 10.1 (e) GMSLA 2010.
140 Paragraph 10.1 (f) GMSLA 2010.

7. The transfer of most or all of either party's assets to a trustee by order of its regulator following applicable law.[141]
8. The borrower or the lender being in breach of securities exchange rules or being suspended from membership of a securities exchange or being forbidden by a regulator, resulting in failure to meet the appropriate standards.[142]
9. Failure by the borrower or the lender to remedy any other breach under the GMSLA 2010 within a 30-day cure period following notice.[143]

In each of the cases outlined above, except for the appointment of a liquidator or the presentation of a petition for winding up pursuant to Paragraph 10.1 (d) of the GMSLA 2010, where automatic termination has been elected under Section 1.5 of the Schedule to the GMSLA 2010, the Non-Defaulting Party must serve notice on the Defaulting Party to trigger an Event of Default.[144] The underlying event must be *continuing* (as opposed to have just occurred) to be permitted to give the default notice.[145]

As noted in relation to other types of transactions, close-out netting has the effect of reducing the aggregate gross exposures of each party to the other across all transactions to an amount that nets the respective exposures of each of the parties against the other, thus reducing counterparty credit risk and, for prudentially regulated financial institutions such as banks, thereby reducing associated regulatory capital requirements.[146]

Paragraph 11.2 of the GMSLA 2010 sets out four significant consequences for the parties on the occurrence of an Event of Default. First, delivery and payment obligations are accelerated to the Termination Date. Second, the parties' obligations to deliver securities are valued and converted into a cash obligation. Third, the cash obligation is converted into one currency. Finally, all cash obligations are set-off or netted against each other to produce a single net sum that one party has to pay to the other.[147]

4.2.8 The significance of intermediaries

Intermediaries play an important role in securities lending transactions. Many lenders and borrowers regard securities lending as ancillary to their core business and prefer to use intermediaries ("lending agents"), such as custodian banks, who lend as agent certain securities they hold for institutional investors.

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141 Paragraph 10.1 (g) GMSLA 2010.
142 Paragraph 10.1 (e) GMSLA 2010.
143 Paragraph 10.1 (f) GMSLA 2010.
144 Paragraph 10.2 GMSLA 2010.
145 Haines and Knight (n 125) 1 at 21. See also, Harding and Johnson (n 10) Chapter 4.
146 Close-out netting will be explored in greater detail in Chapter 7, section 3.4 "Financial Collateral Directive".
147 Paragraph 11.2 GMSLA 2010.

Intermediaries typically provide facilitating services, such as supplying liquidity, credit enhancement and comprehensive administrative services covering collateral eligibility, mark-to-market calculations, margin, custody of securities, daily reporting, inter account transfers and dealing with dividends.

Arrangements are formalised in agency lending agreements among the borrower, the lender and the lending agent. Under this kind of arrangement, the lending agent receives the eligible financial collateral from the borrower, holding and maintaining it in a separate account to the order of the lender or on a pooled basis for all lenders participating in its lending programme. The lending agent will maintain continuous dialogue with borrowers, either electronically or telephonically, who identify their borrowing needs, which the lending agent can continually reconcile against securities potential lenders are willing to make available in the programme.

Custodians' lending clients gain from the economies of scale and established relationships with borrowers that the custodians can make available as lending agents. Borrowers benefit from these same economies of scale by obtaining a relatively reliable source of liquidity in needed securities. Lending agents will also conduct credit reviews and due diligence on borrowers pursuant to pre-determined criteria agreed with lenders in the programme. Lenders often will impose limits on which counterparties can borrow its securities and in what amounts. Lenders will also specify acceptable financial collateral and the level of required margin.[148] Where cash is delivered as financial collateral, lenders often will "reinvest" it on behalf of lenders, either on a segregated or pooled basis, with returns being subjected to sharing arrangements. Such reinvestment usually will approximate the investment strategy of an appropriately liquid money market fund, but this, too, is subject to negotiation.

4.3 Rationale for Securities Lending

> *"The modern securities lending markets [have] developed principally to accommodate two growing needs: first, to avoid settlement failure and, secondly, to accommodate short selling… broadly speaking, [securities lending] can be divided into two markets, one that is defined by the motive of the borrower (the 'securities driven' market) and the other by the motive of the lender (the 'cash driven' market)"*[149].

148 Harding and Johnson (n 10) Chapter 1.

149 *Beconwood Securities Pty Ltd v Australia and New Zealand Banking Group Ltd* [2008] FCA 594, *per* Finkelstein J at 4-6. This judgement was noted in Yeowart *et al* (n 15) 465.

4.3.1 The borrower's perspective

A borrower often may have an open contract elsewhere and require specific securities in order to fulfil a delivery obligation to settle. A borrower may also need to "cover" a short position, or "short sale". A short sale broadly defined is the sale of an asset (shares) the seller does not own. The main advantage of a short sale is that it allows the short seller to profit from a price decrease: short sellers therefore aim to sell shares "short" while the price is high and then buy them later in order to fulfil their obligations to return the securities they have borrowed after the price has dropped.[150] Short selling therefore is considered a 'directional' strategy, i.e., speculating that the price of a particular security will fall rather than constituting a part of a wider trading strategy.[151] Brokers typically borrow the shares for short sale transactions either from lenders directly or through lending agents.

Market makers play a key role in providing liquidity for securities in markets around the world. Securities lending contributes to allowing them to fulfil this role by being able to readily borrow securities to settle 'buy orders' from customers and to facilitate two-way pricing.[152] The ability to make markets in illiquid securities is sometimes impeded by poor access to borrowing: some specialist borrowers in less liquid securities have put in place special arrangements to gain access to such securities, including guaranteed exclusive bidding arrangements with lenders.[153]

Securities may also be borrowed in order to cover a short position which has been taken as a hedge on a long position. By way of example, index arbitrage involves the simultaneous purchase and sale of the same commodities or stocks in two different markets in order to profit from price differentials between those markets: if indices in these markets don't move as expected, hedging through borrowing arrangements may serve to neutralise losses that would otherwise result.

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150 "Naked short selling" can also occur when an investor shorts a stock without first borrowing it. In 2008, the SEC banned naked short selling for the purpose of driving down share prices and creating negative momentum – a form of market manipulation. Failing to deliver a stock and naked short selling are not illegal, however, regulatory authorities have for some time looked on the practice with suspicion. In Europe, the practice has been actively discouraged through imposition of so-called "financial transaction tax" in certain EU Member States (see, e.g., Italy and France).

151 *Beconwood Securities Pty Ltd v Australia and New Zealand Banking Group Ltd* [2008] FCA 594, *per* Finkelstein J at 4-6. This judgement was noted in Yeowart *et al* (n 15) 465.

152 'Two-way pricing' is a quote that provides both the bid and the ask price of security, informing potential traders of the current price at which they could buy or sell the security.

153 Harding and Johnson (n 10) Chapter 4.

4.3.2 *Lender's perspective*

Lenders of securities are often large institutions, such as pension funds, insurance companies, investment funds and the like, who generally have large quantities of securities available to lend. In order to put these securities to productive use and enhance return, the securities may be lent in order to make a profit through the lending fees and potential returns on investment of the collateral. In addition, a lender may seek "access to cash, often for the purpose of equity financing at interest rates which are better than the uncollateralised borrowing rate".[154]

4.4 Differences between Repo and Securities Lending

Repos and securities lending transactions share many of the same characteristics, e.g. outright transfer of title, margining and the transfer of collateral to secure transactions. However, there are also some key differences.

4.4.1 *Scope of collateral*

In a repo transaction, cash is paid by the buyer in return for (more often than not) government bonds as financial collateral. In a securities lending transaction, by contrast, securities or cash are posted as financial collateral, which may be in the form of cash, bonds, equities, certificates of deposit or letters of credit. There is therefore a greater range of financial collateral used in the context of securities lending.

4.4.2 *Right of recall*

Because securities lending transfers not only the legal ownership of equities, but also the attached voting rights and corporate actions, it has become convention in the securities lending market for loaned securities (both bonds and equities) to be subject to a right of recall by the lender, so that it can recover securities if it wishes to exercise its voting rights or respond to corporate actions. In contrast, unless a right of substitution is specifically agreed between the parties, repo does not allow a seller to recall his or her securities during the life of a transaction.

4.4.3 *Type of securities*

With a repo, the precise identity of the securities transferred as financial collateral is of secondary importance. In the case of a securities lending trans-

154 *Beconwood Securities Pty Ltd v Australia and New Zealand Banking Group Ltd* [2008] FCA 594, *per* Finkelstein J at 4-6. This judgement was noted in Yeowart *et al* (n 15) 465.

action however, the borrower will often require specific securities because it usually needs them to settle a transaction with a third party (e.g., in covering a short sale).

4.4.4 Payment & income

In a repo, the seller pays a repo rate (interest) to the buyer for his or her cash, which is accounted for on the repurchase date. In a securities lending transaction, the borrower pays a fee to the lender for the use of the securities based on their value. It is usually paid monthly in arrears. Interest is paid on any cash collateral.

4.4.5 Maturity

Most repos are for a fixed term even if only overnight. Most securities lending transactions are open or on demand.

5 DERIVATIVES

5.1 Introduction

Market participants seek to mitigate risk by collateralising derivatives (contractual) exposure by taking cash or cash equivalent securities as financial collateral from counterparties. ISDA has provided a contractual framework in the form of the Credit Support Annex, which is designed to ensure legally enforceable rights in favour of secured parties located in different jurisdictions.[155]

5.2 Evolution of the ISDA Credit Support Annexes

The use of financial collateral in derivative transactions began in the USA in the mid-1980s. The process until then was highly manual and labour intensive, with valuation of financial collateral and calculation of risk exposures taking place weekly or monthly at best. In the EU, the use of financial collateral in derivatives transactions started in the early 1990s, with the process being equally manual and laborious. During this period, collateral arrangements securing derivatives transactions largely consisted of individually negotiated pledge documentation, involving lengthy and detailed negotiations. The most

155 See generally, P C Harding and C A Johnson, *Mastering Collateral Management and Documentation: A Practical Guide for Negotiators* (2002).

sought-after forms of financial collateral tended to be government securities denominated in local currencies .[156]

In an attempt to standardise collateral documentation, ISDA published its first Credit Support Annex in 1994 (governed by New York law) and another Credit Support Annex in 1995 (governed by English law). A Credit Support Annex regulates the rules governing the posting of financial collateral in support of a derivatives transaction. As a supplementary document, it is one of four parts that make up the ISDA Master Agreement suite of documents. The Credit Support Annex is not mandatory: it is possible to enter into an ISDA Master Agreement unsecured without a Credit Support Annex, but a Credit Support Annex would not be entered into without an ISDA Master Agreement.[157]

5.2.1 2009 G20 Pittsburgh Summit

Financial collateral had been recognised as an important risk-reduction tool prior to the Global Financial Crisis. The 1997 Asian crisis triggered by the collapse of the Thai Baht, the 1998 crisis stemming from Russian Ruble devaluation and debt default and the – not unrelated – failure of the major hedge fund Long Term Capital Management in 1998 all called attention to the importance of "tighter credit controls and ... credit risk reduction techniques such as taking collateral" as security.[158] However, the effectiveness of any lessons learned are questionable in view of the fact that both derivatives and financial collateral were central to events leading to the 2008 Global Financial Crisis.

Following on the heels of the Global Financial Crisis, the Pittsburgh Summit of September 2009[159] concluded with a *communique* that included a commitment by the G20 to reform the OTC derivatives market in order to reduce systemic risk:

> *"All standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties… OTC derivative contracts should be reported to trade repositories. Non-centrally cleared contracts should be subject to higher capital requirements".*[160]

So as to implement the Pittsburgh's conclusions, by July 2010, President Obama signed into US law the 2300-page Wall Street Reform and Consumer Protection Act (the Dodd-Frank Act) and by 16 August 2012 the EMIR entered into force

156 Harding and Johnson (n 5) 4.
157 J Hull and A White, "Collateral and Credit Issues in Derivatives Pricing" (2014) *Journal of Credit Risk* 1 at 14-15.
158 Harding and Johnson (n 5) 5.
159 *Ibid* at 10.
160 G20 Leaders' Statement, The Pittsburgh Summit (September 24-25, 2009).

in the EU,[161] with the RTS taking effect by 2016 by means of a Delegated Regulation.[162]

In addition, the Working Group on Margining Requirements, formed under the auspices of the Basel Committee on Banking Supervision ("BCBS") and the International Organization of Securities Commissions ("IOSCO"), was created to reduce systemic risk by developing a consistent global standard of margin requirements for OTC derivative transactions not subject to central clearing. Because standardised OTC derivatives are more suitable for central clearing, increased standardisation of financial collateral agreements and more consistent methodologies for the calculation of initial and variation margin would make it easier for uncleared OTC derivatives to transition to clearing houses in the future.[163]

The Working Group on Margining Requirements initiative concluded with a policy framework entitled "Margin requirements for uncleared derivatives", which was published jointly by the BCBS and IOSCO in September 2013 and revised in March 2015, March 2019 and April 2020.[164] Regulators in various jurisdictions have since set about creating rules governing the use of financial collateral based on these global policy recommendations.[165]

The regulatory framework that has developed since the global financial crisis has called attention to differences between derivatives that are suited to central clearing and those that are not.[166] Financial collateral mechanisms are more flexible in OTC arrangements since they can be negotiated bilaterally. More than 90% of uncleared derivatives transactions that are collateralised now utilise the ISDA Credit Support Annex.[167]

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161 Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivative, central counterparties and trade repositories ("EMIR").

162 Commission Delegated Regulation (EU) 2016/2251 of 4 October 2016 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories with regard to regulatory technical standards for risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty (Delegated Regulation 2016/2251).

163 Basel Committee on Banking Supervision and the Board of the International Organization of Securities Commissions, "Margin Requirements for non-centrally cleared derivatives" (March, 2015), available at: https://www.bis.org/bcbs/publ/d317.pdf.

164 Basel Committee on Banking Supervision and the Board of the International Organization of Securities Commissions, "Margin Requirements for non-centrally cleared derivatives" (September, 2013), available at: https://www.bis.org/publ/bcbs261.pdf; various revisions include: March 2015, available at: https://www.bis.org/bcbs/publ/d317.pdf, March 2019, available at: https://www.bis.org/bcbs/publ/d317_summarytable.pdf; and, April 2020, available at: https://www.bis.org/bcbs/publ/d499.pdf.

165 P C Harding and A J Harding, *A Practical Guide to the 2016 ISDA Credit Support Annexes for Variation Margin* (2018) 11.

166 M Singh, "Collateral Netting and Systemic Risk in the OTC Derivatives Market" (2010) 1 at 9. See also, International Monetary Fund, "Making Over-the-Counter Derivatives Safe: the Role of Central Counterparties" (2010) 1 at 11.

167 ISDA, "ISDA Margin Survey Full Year 2017" (April, 2018) *Research Study*. See also, Harding and Johnson (n 5) 5.

5.2.2 ISDA credit support documentation

Before the publication of the various 2016 ISDA credit support documents, four main ISDA collateral documents were used, namely:[168]

- 1994 ISDA CSA under New York Law
- 1995 ISDA CSA under English Law
- 1995 ISDA Credit Support Deed under English Law
- 1995 ISDA CSA under Japanese Law[169]

Three other ISDA collateral documents may be utilised but, in practice, they are used far less frequently:

- 2001 ISDA Margin Provisions
- 2014 ISDA Standard CSA under English Law
- 2014 ISDA Standard CSA under New York Law

ISDA's current widely used credit support documentation includes:[170]

- 2016 ISDA CSA under English Law for Variation Margin
- 2016 ISDA CSA under New York Law for Variation Margin
- 2016 ISDA CSA under Japanese Law for Variation Margin
- 2016 ISDA CSA under Irish Law for Variation Margin
- 2016 ISDA CSA under French Law for Variation Margin
- 2016 ISDA Credit Support Deed under English Law for Initial Margin
- 2016 ISDA CSA under New York Law for Initial Margin
- 2016 ISDA/Clearstream Collateral Transfer Agreement for Initial Margin
- 2017 ISDA/Euroclear Collateral Transfer Agreement for Initial Margin
- 2019 ISDA Security Agreement governed by Irish Law
- 2019 Clearstream CTA Additional French Provisions
- 2019 Multi-Law CTA Additional French Provisions

Parties for the most part have used (and still use) the 1994 ISDA New York law Credit Support Annex and the 1995 ISDA English law Credit Support Annex to document financial collateral arrangements. However, since the Global Financial Crisis, market participants have had to contend with additional strict regulations beyond the scope of the Credit Support Annexes prior to the 2016 versions, such as in the EU: EMIR and its RTS, and in the USA the Dodd-Frank Act. The 2016 Credit Support Annexes accommodate new margin

168 See the ISDA website: https://www.isda.org/.

169 Due to language constraints, the Japanese CSA will not be discussed.

170 ISDA has also published Irish and French documentation. Due to space and the fact that these are currently not widely used, they will not be discussed. For a more extensive overview, see the ISDA website: https://www.isda.org/.

requirements under post-financial crisis legislation, some of which is only coming into effect for certain market segments as of this writing.[171]

5.2.3 Structure of the Credit Support Annex

The English law Credit Support Annex (both the 1995 and 2016 version) consists of eleven paragraphs. Parties negotiate standard pre-printed terms set out in Paragraphs 1-10 in order to specify further how financial collateral will be provided, received, maintained and otherwise operate in the context of and for the duration of the transaction: agreed particulars are set out in Paragraph 11. The New York law Credit Support Annex (both the 1994 and 2016 version) by contrast, consists of thirteen paragraphs. Parties negotiate the standard pre-printed terms set out in Paragraphs 1-12 and make certain elections and modifications of the terms in Paragraph 13.[172]

5.2.4 Property law functions of the Credit Support Annex

The distinction between the Credit Support Annex for English law and the Credit Support Annex for New York law is predominantly legal in nature. While these instruments use much the same terminology, on property rights and entitlements, each party makes a "Representation"[173] to the other party that depends on applicable law. Under the English law Credit Support Annex, full legal title is transferred from the collateral giver to the collateral taker[174] while the New York law Credit Support Annex operates on the basis of a pledge/security interest arrangement that permits the collateral to be "re-used" by the collateral-taker.[175] The distinction in legal effect between title transfer under English law and pledge/security interest under New York law is signalled by the English law version's characterisation of the provision of financial collateral as a "Transaction"[176] and the New York law version's characterisation as "Credit Support".[177]

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171 Due to the reduced thresholds, many buy-side counterparties will have been forced to put ISDA and Credit Support Annex arrangements in place for the first time, posing challenges for smaller investment managers in particular.

172 Harding and Johnson (n 5) 103 and 253. See also, Harding and Harding (n 165) 42.

173 Paragraph 7, 1995 ISDA English Law CSA and Paragraph 7, 2016 English Law CSA for Variation Margin. See also, Paragraph 9, 1994 ISDA New York Law CSA and Paragraph 9, 2016 New York Law CSA for Variation Margin.

174 Footnote 1 and Paragraphs 5 (a) and (b), 1995 ISDA English Law CSA and footnote 1 and Paragraphs 5 (a) and (b), 2016 English Law CSA for Variation Margin.

175 Paragraph 1 (b), 1994 ISDA New York Law CSA and Paragraph 1 (b), 2016 New York Law CSA for Variation Margin.

176 See the opening paragraphs of the 1995 ISDA English Law CSA and the 2016 English Law CSA for Variation Margin.

177 See the opening paragraphs of the1994 ISDA New York Law CSA and the 2016 New York Law CSA for Variation Margin.

5.3 *Modus Operandi* of the Collateralisation of Derivatives

5.3.1 What is a derivative?

> *"A derivative is a risk transfer agreement, the value of which is derived from a value of an underlying asset".*[178]

A transaction in a derivative instrument takes the form of a contract between two or more parties. Any 'value' in rights conveyed under the instrument is, as noted above, based on a value 'derived' from another asset specified in the contract. The derivative's value therefore fluctuates with that of the underlying asset. For example, in a currency swap transaction, the referenced currencies would be considered the 'underlying assets'.[179]

A financial derivative refers to a wide range of financial products which can be as complex and sophisticated as the imagination of the parties permits. Certain derivative instruments have become widespread in financial markets, such as futures, options and swaps. An option is a price guarantee that can, but does not have to, result in a future sale. To compensate for the fact that the option will only be exercised if it is of benefit to the party purchasing the option, the purchaser must pay the seller who 'writes' the option a premium up-front. A forward contract obliges a party to buy the agreed upon asset (typically a commodity or security) and for the other party to sell that asset at an agreed upon price on a specified future date. A swap contract is an agreement between parties to exchange some value in different currencies or subject to different interest rates, or some other assets.

The purpose of entering into a derivative transaction is either to 'hedge' or to 'speculate'. To 'speculate' is to transact in the hope of receiving a financial benefit derived from the change in value of a particular asset. To 'hedge' is to seek protection against financial loss or other adverse circumstances – a loss that might be also be derived from the change in value of a particular asset.[180]

The following are typical examples of the kinds of products that could be covered under a Credit Support Annex agreement:[181]

- Interest rate swaps
- Cross currency swaps
- Currency options
- Bond options

178 See the ISDA website: https://www.isda.org/.

179 F J Garcimartin and S Sanchez, "Derivatives in a cross-border context: a conflict-of-laws analysis" in M Haentjens (ed), *Nederlands Internationaal Privaatrecht: Special Issue on Private international law and finance* (2018) 72 at 73. See also, Balmer (n 65) 14.

180 See generally, S M Bartman, "Corporate hedging and speculation with derivatives" (2017) *Journal of Corporate Finance*.

181 Harding and Johnson (n 5) 3-4.

- Equity derivatives
- Commodity derivatives
- Credit derivatives
- Forward foreign exchange
- Forward rate agreements

The following is an example of how collateralisation operates in practice (in this case, the example provided is a currency swap):

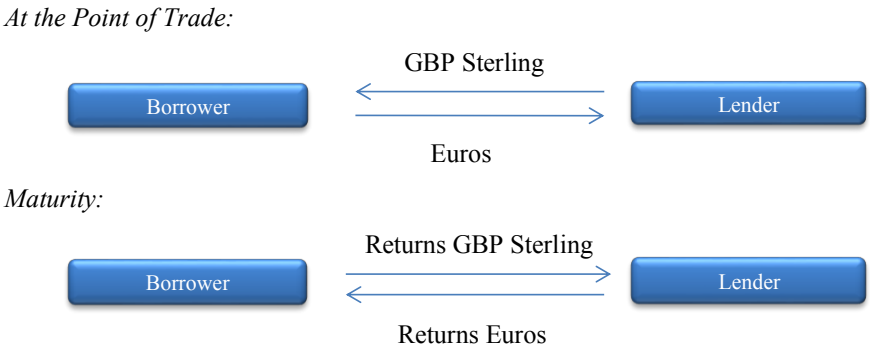

Figure 10: Derivatives

Figure 10 above shows that a typical currency swap is a transaction in which the borrower borrows GBP Sterling from, and simultaneously lends EUR Euros to, the lender. Throughout the lifecycle of the transaction, and as a result of the currency fluctuating in price, both the buyer and the lender commit themselves to a periodic exchange of collateral payments.[182] As a matter of principle, the aim of the transaction is that the Sterling and Euro payment obligations remain neutral in value, so that the value of the amount to be paid in GBP equals the value of the amount to be paid in EUR. In case either one of the currencies fluctuates in value, one of the parties is thus exposed to a credit risk against her counterparty. If in our example, the value of the Euro would decrease, the lender is exposed to the following credit risk: should the buyer not be able to return the amount in Sterling at maturity date of the transaction, the lender has received an amount in Euro that is of less value than the amount in Sterling she initially transferred to the buyer. The difference between the two values is the credit risk run by the lender on the buyer. This credit risk is addressed by the provision of collateral, so that the party whose payment obligation is lower in value than the value of the amount received must provide collateral to her counterparty.

182 Haentjens and de Gioia-Carabellese (n 16) 233-234.

If such a reciprocal payment of collateral obligations did not take place, then one party would be 'in-the-money' and the other would always be 'out-of-the-money', which may become more problematic over time – without a 'true-up' neutralising the parties' exposures to each other – and especially in the event of default. Consequently, the respective currencies are regularly valued mark-to-market for the lifecycle of the transaction in which buyer pays lender or lender pays buyer depending on the relative changes in value of the currencies. On maturity of the transaction, the parties agree that they will repay equivalent principal amounts in the original (designated) currency.[183]

On a more general note, derivatives transactions are inherently risky, primarily because the value of the derivative contract is derived from the underlying asset, which can cause the value of the derivative contract to substantially fluctuate. The Credit Support Annex seeks to mitigate this risk through the collateral management process where parties often seek financial collateral as a form of credit support to mitigate this risk. Financial collateral posted in a derivatives transaction typically is referred to as 'margin', which takes the form of either (or both) initial margin, which is applied *ex-ante*, and/or variation margin, which is applied *ex-post*. In practice, variation margin is the most commonly relied upon method of collateralisation, whereas initial margin is less commonly relied upon. However, since the Global Financial Crisis it has been noted that initial margin will take a more prominent role.[184] As mentioned above, initial margin is, at the time of writing (January, 2021), still being phased-in – it is therefore possible that ISDA will issue further Credit Support Annexes, Deeds and Collateral Transfer Agreements with regard to initial margin.

5.3.2 Setting up a collateralised relationship

The following are elements to consider when using a Credit Support Annex to collateralise a derivatives transaction.

5.3.2.1 Eligible collateral

Since the Global Financial Crisis, parties increasingly have taken measures to improve the liquidity of financial collateral. A credit department will generally liaise closely with a parties' collateral management group in determining acceptability of financial collateral. To ensure that the assets posted as financial collateral for initial and variation margin purposes can be liquidated quickly and efficiently, the BCBS, IOSCO and RTS have helpfully provided market parti-

183 Garcimartin and Sanchez (n 179) 72 at 73.
184 Balmer (n 65) 48.

cipants with a non-exhaustive financial collateral matrix, outlining the most liquid and safest forms of financial collateral:[185]

- Cash
- High-quality government and central bank securities
- High-quality corporate bonds
- High quality-covered bonds
- Equities included in major indices
- Gold

For financial collateral to be considered 'eligible', it must meet "Eligible Credit Support" criteria negotiated in the agreement, e.g., specifying which currencies the financial collateral may be denominated in, what types of bonds/assets are allowed, and which haircuts are to be applied. Generally, cash in the form of USD, GBP and EUR, and AAA government bonds are the most liquid and therefore the most sought-after forms of financial collateral. The type(s) of assets used as financial collateral and the applied haircuts are documented under the respective provision of the Credit Support Annex.[186] Depending on the form of assets used as financial collateral, the general rule is that so long as the financial collateral is liquid, the parties are in agreement and the financial collateral can be valued mark-to-market, then the asset can generally be considered effectively cash equivalent.[187]

5.3.2.2 Initial margin

Initial margin is a predetermined, fixed value cash or non-cash financial collateral with the objective of protecting the contracting parties from non-performance. It is posted at the point of trade and can either be a unilateral arrangement or a bilateral arrangement. A unilateral arrangement is common with supranational institutions entering into a transaction with a smaller institution, such as a corporate/hedge fund. This means that financial collateral flows one-way to the supranational institution. However, since the Global Financial Crisis and the default of Lehman Brothers in 2008, there is a greater trend to focus on bilateral arrangements, which is driven by industry bodies and regulators alike. A bilateral arrangement involves the mutual posting of collateral as initial margin by both parties to the transaction.[188]

185 Basel Committee on Banking Supervision (n 163) 1 at 17-18. See also Article 4 of the RTS, which provides a comprehensive list of eligible collateral types.

186 Paragraphs 3 (a) and 11 (b) (ii), 1995 ISDA English Law CSA and Paragraph 3 (a) and 11 (c) (ii), 2016 English Law CSA for Variation Margin. See also, Paragraphs 3 and 13 (b) (ii), 1994 ISDA New York Law CSA and Paragraphs 3 and 13 (c) (ii), 2016 New York Law CSA for Variation Margin.

187 Yeowart *et al* (n 15) 64-65. See also, Singh (n 51) 1 at 5.

188 Harding and Johnson (n 5) 79.

In practice, initial margin is commonly applied to cleared transactions but is currently not commonly applied in uncleared derivative transactions.[189] The distinction between initial margin in cleared and uncleared transactions arises mainly due to central counterparties requiring the mutual posting of initial margin at the point of trade to account for the risk that the respective party brings to the central counterparty by having its trade cleared there.[190] According to ISDA, the reason initial margin is employed in the derivatives market is to provide an additional financial buffer that insulates both the central counterparty and the surviving party against further losses following a default.[191]

5.3.2.3 Variation margin

Despite financial collateral needing to satisfy certain criteria intended to reduce volatility in value, the market value of the financial collateral may still decline. Furthermore, the creditworthiness of a counterparty may shift or the riskiness of a particular contract increase. Variation margin addresses these shifts in valuation and are a payment from one party to either the central counterparty or the counterparty to maintain sufficient levels of financial collateral depending upon the market risk exposure. To ensure that the exposure does not increase unexpectedly owing to changes in the creditworthiness of the participant or the value of the asset provided as financial collateral, regular adaptions to changes in the market exposure are taken into consideration by marking the risk to market. Similar to repo and securities lending transactions, the posting of financial collateral is subject to certain valuation thresholds, below which no collateral needs to change hands.

In practice, variation margin is the most commonly used method to collateralise a derivatives transaction. Variation margin operates in a manner similar to margin transfers under the GMRA and the margining techniques under the GMSLA. In a derivatives transaction, against the risk that the value of the underlying asset fluctuates in value, regular mark-to-market valuations of the underlying asset are conducted in order to mitigate exposure from one party (who is considered 'out of the money') to the other (who is considered 'in the money'). Variation margin is put in place to mitigate this risk of exposure by

189 As previously mentioned, initial margin is still being phased in and will play a much more prominent role in the future. See ISDA, "Initial Margin for Non-centrally Cleared Derivatives: Issues for 2019 and 2020" (July, 2018), available at: https://www.isda.org/a/D6fEE/ISDA-SIFMA-Initial-Margin-Phase-in-White-Paper-July-2018.pdf. See also, Financial Conduct Authority, "Margin requirements for uncleared derivatives" (2017), available at: https://www.fca.org.uk/markets/emir/margin-requirements-uncleared-derivatives.

190 D Domanski, L Gambacorta and C Picillo, "Central clearing: trends and current issues" (2015) *BIS Quarterly Review* 59 at 60-61.

191 See the ISDA website: https://www.isda.org/tag/initial-margin/. For an overview of CCP clearing, see Chapter 7, section 4.1 EMIR: Central Counterparty Clearing.

ensuring sufficiently liquid financial collateral is delivered to the in-the-money party pending the next mark-to-market date when the process repeats itself.[192]

As regulatory requirements changed to place significant new demands on counterparties entering into uncleared transactions, new Credit Support Annexes covering variation margin were developed for market participants in 2016 (the 2016 Credit Support Annex). It was decided that it would be simpler to introduce a new precedent Credit Support Annex – replacing previous forms (such as the 1994/1995 versions) entirely rather than trying to amend or revise the old forms.[193] Like the 1994/1995 Credit Support Annex, the 2016 Credit Support Annex serves as an Annex to the ISDA Master Agreement.[194]

5.3.2.4 Independent amount

Depending upon the wording used in the 1994/1995 ISDA Credit Support Annex, the term "Independent Amount" can confusingly mean either initial margin or variation margin. The 2001 ISDA Margin Provisions more helpfully differentiate between the two Independent Amount terms by calling them "Lock-Up Margin" (Initial margin) and "Additional Margin Amount" (variation margin). Independent Amounts can either be set for individual transactions or calculated on an entire portfolio of trades. In practice, Independent Amounts are typically defined by the risk department and are also defined in the respective Credit Support Annex at the point of trade.[195] When set at the point of trade by way of initial margin, the Independent Amount is either a fixed sum or a percentage of the notional amount of the underlying transaction(s).[196]

5.3.2.5 Minimum transfer amount

The "Minimum Transfer Amount" is a monetary figure agreed between the parties at the point of trade below which a call for collateral cannot be made.[197] Under the EMIR RTS (i.e. Delegated Regulation 2016/2251), the mini-

192 Paragraphs 2 (a), (b), 10 and 11 (b) (i) (A), (B), 1995 ISDA English Law CSA and Paragraphs 2 (a), (b) 10 and 11 (c) (i) (A), (B), 2016 English Law CSA for Variation Margin. See also, Paragraphs 3 (a), (b), 12 and 13 (b) (i) (A), (B), 1994 ISDA New York Law CSA and Paragraph 3 (a), (b), 12 and 13 (c) (i) (A), (B), 2016 New York Law CSA for Variation Margin.

193 Harding and Harding (n 165) 42 and 105.

194 See the ISDA website: https://www.isda.org/book/2016-credit-support-annex-for-variation-margin-english-pdf/.

195 Paragraphs 10 and 11 (b) (iii) (A), 1995 ISDA English Law CSA. See also, Paragraphs 12 and 13 (b) (iv) (A), 1994 ISDA NY Law CSA.

196 Harding and Johnson (n 5) 15-16.

197 Paragraphs 2 (b), 10 and 11 (b) (iii) (C), 1995 ISDA English Law CSA and Paragraph 11 (c) (vi), 2016 English Law CSA for Variation Margin. See also, Paragraphs 3 (b), 12, 13 (b) (iv) (C), 1994 ISDA NY Law CSA and Paragraphs 12 and 13 (a) (vii), 2016 New York Law CSA for Variation Margin.

mum transfer amount figure is set at a maximum of EUR 500,000.[198] This means that if the minimum transfer amount exceeds EUR 500,000, the entire financial collateral/margin amount is due – not the excess.[199] The minimum transfer amount provision represents the unsecured risk exposure parties to the transaction are prepared to accept. The rationale behind minimum transfer amount is to avoid administrative costs and burdens. For example, suppose that party A and party B agree that the minimum transfer amount is EUR 500,000. On day 1 of the transaction, party A is 'in the money' by EUR 250,000. Based on the agreement at the point of trade by both parties, no call for collateral will be made. Now suppose that on day 2 of the transaction, the mark-to-market valuation of the underlying demonstrates that Party B is now 'in the money' by EUR 600,000 as a result of the collateral fluctuating in price. Party A is, therefore, entitled to make a call for collateral for the entire EUR 600,000. In practice, this precise figure is a result of the "Rounding" convention applied in derivatives transactions.[200] Rounding is applied to avoid the transfer of uneven amounts of collateral (e.g. EUR 599,561.73). Typically, such amounts are rounded to provide a more accurate/precise assessment. It should also be noted that if a minimum transfer amount is not explicitly stated under the respective Credit Support Annex, then the minimum transfer amount would be zero.[201]

5.3.2.6 Haircut

A haircut is a discount applied to the market value of the financial collateral to cover the worst expected price movements over the mark-to-market frequency period and a holding period if the financial collateral needs to be liquidated following a default. While initial margin tries to deal with the volatility of risk exposure, 'haircuts' deal with the volatility of price movements between the time the financial collateral is called and its receipt.

> *"[In a derivatives transaction,] haircuts provide an extra cushion to protect the collateral value between Valuation Dates or during a liquidation period. They are highly correlated to the tenor and price volatility of the… collateral".*[202]

198 Article 25 (1) and (4) RTS.

199 Harding and Harding (n 165) 90.

200 Paragraph 11 (b) (iii) (D), 1995 ISDA English Law CSA and Paragraph 11 (c) (vi), 2016 English Law CSA for Variation Margin. See also, Paragraph 13 (b) (iv) (D), 1994 ISDA NY Law CSA and Paragraph 13 (a) (vii) (B), 2016 New York Law CSA for Variation Margin.

201 Paragraphs 2 (b), 10 and 11 (b) (iii) (C), 1995 ISDA English Law CSA and Paragraph 11 (c) (vi), 2016 English Law CSA for Variation Margin. See also, See also, Paragraphs 3 (b), 12, 13 (b) (iv) (C), 1994 ISDA NY Law CSA and Paragraphs 12 and 13 (a) (vii), 2016 New York Law CSA for Variation Margin; Harding and Harding (n 165) 28-29 and 90.

202 Harding and Johnson (n 5) 80.

The ISDA Credit Support Annexes use the term "Valuation Percentage" – the reciprocal term is 'haircut'. For instance, if the real value of the financial collateral asset is 100 and the agreed Valuation Percentage is 97%, then the haircut is 3%. Typical haircuts in derivatives transactions include 0% for cash, 1%-5% for highly rated government securities of up to ten years' remaining maturity. Corporate bonds normally attract a 5%-10% haircut depending upon the tenor and equities reach up to a 40% haircut. A haircut, being a discount on the value of the security used as financial collateral, means that more financial collateral has to be posted to cover risk exposure. For instance, with a 10% haircut, 110% of the value of the financial collateral value needs to be given to cover the risk exposure and in practice, the longer the maturity or the more volatile the financial collateral is, the higher the haircut should be.[203] Helpfully, the BCBS and IOSCO have published a haircut schedule that echoes the percentages outlined in this paragraph.[204] It should be noted, however, that this schedule is merely a guide but nonetheless provides market participants with an important benchmark.[205]

5.3.2.7 Reuse of collateral

Property law plays an important role in determining what rights the collateral taker has in the financial collateral. Under the English law Credit Support Annex, title to the financial collateral is passed from the collateral giver to the collateral taker[206] under a so-called "title transfer collateral arrangement" pursuant to English law.[207] Because title has transferred, the collateral taker is free to use the financial collateral for its own purposes. Under the New York law Credit Support Annex, even though title is not transferred to the collateral taker, a right of reuse can be granted in the transaction documentation,[208] resulting in the collateral taker being able to use the financial collateral in its own business as if it were his or her own. Given the larger volumes of liquid financial collateral currently sought in the marketplace following the Global

203 Harding and Johnson (n 5) 80. See also, Harding and Harding (n 165) 13.

204 The Haircut Schedule is depicted in Chapter 7, section 4.2.7 "*Haircut*".

205 Basel Committee on Banking Supervision (n 163) 1 at 27. For an overview of how haircuts are adapted both in terms of the value of the financial collateral rising and falling, see this chapter above, section 3.3.4.1 "*Margin transfers*". While section 3.3.4.1 relates to repos, the principle remains the same for both derivatives and securities lending transactions. On this see ISDA, "Whitepaper: Collaboration and Standardization Opportunities in Derivatives and SFT Markets" (October, 2020) 1 at 34-38, available at: https://www.isda.org/a/wVrTE/Collaboration-and-Standardization-in-Derivatives-and-SFT-Markets.pdf.

206 Footnote 1 and Paragraphs 5 (a), (b), 1995 ISDA English Law CSA and footnote 1 and Paragraphs 5 (a), (b), 2016 English Law CSA for Variation Margin.

207 See Financial Conduct Authority, available at: https://www.handbook.fca.org.uk/handbook/glossary/G3557t.html?date=2018-01-03.

208 Paragraph 1 (b) 1994 ISDA New York Law CSA and Paragraph 1 (b) 2016 New York Law CSA for Variation Margin.

Financial Crisis, the associated cost of funding collateralised exposures is leading firms to focus more of the optimisation of financial collateral.[209]

5.3.2.8 Substitution of collateral

Similar to repo and securities lending transactions, a collateral giver may request, by providing notice to the collateral taker, so-called "substitution"[210] of all (or part) of the financial collateral originally posted in exchange for new acceptable forms of financial collateral. Substitution is generally used by the collateral giver to fulfil another obligation elsewhere.[211]

5.3.2.9 Event of default

If an "Event of Default" occurs, an "Early Termination Date" will be triggered. An important aspect of the interaction between the Credit Support Annex and the ISDA Master Agreement is the so-called "Single Agreement" clause found in Section 1(c) of the 2002 ISDA Master Agreement – giving effect to "close-out" netting. Pursuant to close-out netting, on an Early Termination Date all transactions entered into between the parties form a Single Agreement and all open transactions are valued and aggregated against each other to provide a single net monetary amount owed by one party to the other.[212] This is intended to preclude so-called 'cherry picking' (i.e. making payments on specific favourable transactions as opposed to not making payments to less favourable transactions) by insolvency administrators.[213]

5.3.2.10 Intermediaries and Valuation Agent

As in repos and securities lending transactions, derivatives counterparties may use intermediaries, such as custodian banks or other entities offering collateral

209 ISDA, "2013 Best Practices for the OTC Derivatives Collateral Process" (23 October, 2013), available at: https://www.isda.org/a/l0iDE/2013-isda-best-practices-for-the-otc-derivatives-collateral-process-final.pdf.

210 The term "substitution" is used under the New York law CSA in comparison to the term "exchanges", which is used under the English law CSA.

211 Paragraphs 3 (c) (i), 10 and 11 (b) (ii), 1995 ISDA English Law CSA and Paragraphs 3 (c) (i), 10 and 11 (b) (ii), 2016 English Law CSA for Variation Margin. See also, Paragraphs 4 (d) (i), 12 and 13 (e), 1994 ISDA New York Law CSA and Paragraphs 4 (d) (i), 12 and 13 (f), 2016 New York Law CSA for Variation Margin. Additionally, please also see, ISDA, "2013 Best Practices for the OTC Derivatives Collateral Process" (23 October, 2013), available at: https://www.isda.org/a/l0iDE/2013-isda-best-practices-for-the-otc-derivatives-collateral-process-final.pdf.

212 Paragraphs 4 (b) and 6, 1995 ISDA English Law CSA and Paragraphs 4 (b) and 6, 2016 English Law CSA for Variation Margin. See also, Paragraph 7, 1994 ISDA New York Law CSA and Paragraph 7, 2016 New York Law CSA for Variation Margin; Sections 5 (a) (i) and (iii) (1), 2002 ISDA Master Agreement.

213 T James and P C Fusaro, *Energy and Emissions Markets: Collision or Convergence?* (2006) 148. See also, R Lichters, R Stamm and D Gallacher, *Modern Derivatives Pricing and Credit Exposure Analysis: Theory and Practice of CSA and XVA Pricing, Exposure Simulation and Backtesting* (2015) 260.

management services, to maintain financial collateral for the parties. There are several reasons for this, including expertise, efficiency or in case a counterparty lacks the internal resources to monitor and manage its own financial collateral obligations. Rather than appointing the larger contracting party to be a valuation agent, parties generally prefer to have a third-party intermediary involved given the size and scale of the transactions generally entered into. Assuming that both parties to the transaction want to use an intermediary, in practice both counterparties will enter into an ISDA master agreement together with the respectively applicable Credit Support Annex. In addition, they will also enter into a third-party agreement with the intermediary.[214]

Instead of appointing a third-party intermediary, the parties to the transaction could agree (as many do) that one of them should act as a "Valuation Agent". The Valuation Agent under the Credit Support Annex is responsible for determining whether financial collateral is to be delivered or received on mark-to-market.[215] 'Sell-side' firms and large financial institutions typically take on this role, especially where the counterparties are smaller 'buy-side' firms or corporates. Under the terms of the Credit Support Annex documentation and under common law principles, the Valuation Agent, it should be noted, is expected to act in "good faith and in a commercially reasonable manner".[216]

6 Conclusion

Within the EU shadow banking sector, collateral transactions are predominantly underpinned by the respective master agreements (and the Credit Support Annex in the case of a derivatives transaction). While these legal underpinnings are important for a number of reasons, the monitoring and management of financial collateral and the application of margin to mitigate risk are arguably the most significant.

Within a collateral transaction, there are three operational steps that are noteworthy in relation to margin requirements. The first operational step is the *ex-ante* application of margin either by way of initial margin or a haircut, at the point of trade. In repos and securities lending transactions, the haircut or initial margin is *ex-ante* set for the lifecycle of the transaction whereas in a derivatives transaction, the initial margin can be recalibrated.[217] Initial

214 Harding and Johnson (n 5) 33.

215 Paragraphs 2, 4, 5 (c), 10 and 11 (c) (i), 1995 ISDA English Law CSA. See also, Paragraphs 3, 5, 6 (d), 13 and 13 (c) (i), 1994 ISDA NY Law CSA.

216 Paragraph 9 (b), 1995 ISDA English Law CSA and Paragraph 9 (b), 2016 English Law CSA for Variation Margin. See also, Paragraph 11 (d), 1994 ISDA New York Law CSA and Paragraph 11 (d), 2016 New York Law CSA for Variation Margin.

217 Of course, repricing, adjustment and/or substitution can occur during the transaction, which will often affect the margin/haircut level.

margins and haircuts are applied at the point of trade to provide the collateral taker with a further layer of security should a problem occur.

The second operational step is with reference to margin being applied *ex-post* during the lifecycle of a transaction. Because the property used in a transaction, such as the financial collateral or contracted for assets can fluctuate in price – without margining techniques, the cash realised by any potential liquidation may turn out to be substantially less than what was originally contracted for, ultimately resulting in actual loss for one of the parties. In order to mitigate this risk, regular mark-to-market valuations are conducted to determine the net exposure one party has over the other and crucially the need, if any, to post margin to mitigate this exposure. In a derivatives transaction such a technique is referred to as variation margin, in a repo transaction the correct terminology is margin maintenance (margin transfers, re-pricing and adjustment) and in a securities lending transaction the technique is similar to margin transfers found under the GMRA. The final operational step relates to the maturity of the transaction, where equivalent property (including margin) should be returned.

In the securities lending and repo market, margin is largely dictated by market practice. There is no overarching matrix outlining applicable margin levels or eligible securities used for financial collateral/margin purposes. This position is in contrast to the derivatives market where, as a result of post Global Financial Crisis reforms, there is now significant legal interplay between the EMIR/RTS and the ISDA Credit Support Annexes. Such interplay ultimately requires in-scope entities to comply with mandatory margin requirements when collateralising their derivatives transactions. Such a move has undoubtedly created a safer and more transparent marketplace for derivatives and importantly, may set an important precedent for the repo and securities lending sectors in the future.

6 The role of debt in the EU shadow banking sector[1]

1 INTRODUCTION

An essential pillar of collateral transactions in the shadow banking sector is the creation of 'safe' debt by way of maturity transformation – transforming long term risky assets (for example bonds) into short term, safe ones (for example cash). Traditionally, only credit institutions could create safe debt by way of demand deposits but demand has now grown. The shadow banking sector has therefore managed to successfully replicate the functions of the traditional banking sector by creating a variant of demandable debt, which is short-term, not subject to deposit insurance and credibly backed by a direct claim on liquidity.[2]

However, the shadow banking sector cannot produce 'riskless' debt. Because debt in the shadow banking sector is not riskless, it is vulnerable to not being rolled-over when market participants begin to suspect problems with the underpinning assets used for financial collateral including margining. This makes shadow banking sector produced debt 'runnable'. In the shadow banking sector, a run is systemic event and generally a precursor to crises. When runs happen, asset prices crash, margin levels increase and fire sales ensue resulting in a cumulative downward spiral. The situation becomes particularly precarious when highly leveraged financial institutions are forced to de-leverage precisely at a time when market volatility is high and asset prices are low.

This chapter will be structured as follows. Section 2 will discuss debt – what it is and its rationale. The fact that the origin of debt is rooted in the traditional banking sector, it is useful to first provide a tangible illustration of its operation therein before going on to discuss debt as it operates in the EU shadow banking sector. Section 3 will explore the information sensitivities

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1 The chapter contains and builds upon the following work previously published by the author: R Spence, "The Vulnerabilities of Debt in the Shadow Banking Sector" (28-29 October, 2019) *Financial Stability Conference Paper, Berlin* 1-33, available at: http://financial-stability.org/wp-content/uploads/2019/11/2019_FSC-WS_PAPER_Spence_Vulnerabilities-of-debt-in-the-shadow-banking-sector.pdf. Also, R Spence, "The Role of Shadow Banking in the Capital Markets Union" (2019) in *Major Trends in Banking Union and Capital Markets Union: Jean Monnet Project – Reform of Global Governance of EMU* 75-101.

2 See generally, J Benjamin, G Morton and M Raffan, "The future of securities financing" (2013) *7 Law and Financial Markets Review.*

of debt. Information *insensitive* debt holds that the assets used for financial collateral and margining purposes must be high quality, liquid and thus 'safe'. This position can be contrasted with a share, which by design is *sensitive* to information. Section 4 highlights the importance of liquidity. All financial market transactions depend upon the ability to obtain funding, which can only happen if markets are liquid. Funding liquidity and market liquidity are, therefore, tantamount to maintaining the safety of debt contracts. Section 5 analyses the vulnerabilities of debt. Debt is designed to be safe, however, the flipside is that debt is also extremely vulnerable. Section 6 concludes.

2 DEBT

2.1 What is Debt?

It is a truism of finance that banks, whether shadow or traditional, are in the money creation business by producing safe and liquid short-term debt by offering deposits. The creation of debt is indeed an essential function of banking and such debt is special in the sense that it is immune to adverse selection (asymmetric/secret information) by privately informed market participants. In particular, this kind of debt is special due to its liquid and stable nature and can be traded at (negligible) par without fear that secret information will alter its value. Banks create debt in order for people and firms to transact – it is the "technology for conducting trade", which is a necessity for an economy to function efficiently.[3] There is an obvious demand for money by households and firms, and banks/shadow banks are the entities who cater for this demand by supplying money through a debt contract – it is an essential feature of market economies.

In its simplest form, debt is an obligation that follows from a financial contract under which the borrower promises to repay a certain amount at an agreed future date to the lender. The leading and most tangible illustration of debt in the shadow banking sector is collateral transactions where the collateral taker sells/lends money or assets and in return the collateral giver promises to repay upon maturity of the contract. In other words, a collateral transaction is merely an 'IOU' – a private contract pursuant to which one party agrees to deliver cash or assets to another party in the future. Historically, only the traditional banking sector created debt through demand deposits, but demand has now grown and the shadow banking sector has, in fact, successfully replicated the functions of debt originally found in the traditional banking sector.[4] Before going on to discuss the role debt plays in the shadow banking sector, it is worthwhile to briefly explore the role of debt as it operates

3 G B Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* (2012) 45-46.
4 P Mehrling, *The New Lombard Street: How the Fed Became the Dealer of Last Resort* (2011) 72-77.

in the traditional banking sector. This will prove useful in not only understanding debt but crucially how collateral transactions in the shadow banking sector have mimicked the unique ability of the traditional banking sector to credibly promise liquidity on demand.

2.1.1 Traditional banking sector

Within the traditional banking sector, the vast majority of demand deposits do not sit idle in a vault. Instead, they are redeployed into loans and other forms of credit "to keep the wheels of industry and agriculture turning".[5] Consequently, the actual cash reserves held by a bank typically amount to a small proportion of their outstanding deposits – hence the concept: 'fractional reserve banking system'. Banks, then, actually augment the money supply by creating deposits that are not backed by cash and economists often use the term 'money multiplier' to refer to this phenomenon – the ratio of bank depository obligations in relation to cash reserves. Banks in the EU multiply each Euro they hold into many more Euros through deposit taking and loan making. To say that banks create money is another way of saying that demand deposits function as money and thus serve as a common substitute for legal tender.[6]

Banks attract demandable debt by giving depositors a short-term, safe and insured option to house their capital, whilst promising at par liquidity on demand.[7] Depositors willingly take advantage of banks' unique ability to credibly promise at par liquidity on demand because funds are insured up to €100,000 through the European Deposit Guarantee Scheme.[8] From the perspective of the depositor, its funds are completely safe (even if there is a bank run).[9] With the advent of the European Deposit Guarantee Scheme, banks

5 Speech by President Franklyn Roosevelt, "The Banking Crisis" (12 March, 1933). See also, Gorton (n 3) 115.

6 M Ricks, "Regulating Money Creation After the Crisis" (2011) *1 Harvard Business Law Review* 75 at 76.

7 C W Calomiris and C M Kahn, "The Role of Demandable Debt in Structuring Optimal Banking Arrangements" (1991) *The American Economic Review* 497 at 497. See also, Gorton (n 3) 45.

8 Despite the deposits not being fully backed by equal amounts of currency in the banks' vault. See also, Recitals 21 and 23 and Article 6 (1) and (2), Directive 2014/49/EU of the European Parliament and the Council of 16 April 2014 on Deposit Guarantee Schemes ("DGSD"). Under the newly formed European Banking Union, the third pillar, titled the European Deposit Insurance Scheme ("EDIS"), is not yet operational. However, EDIS will take over from the current national Deposit Guarantee Scheme. On this, see Commissioner Lord Hill at the Press Conference on the EDIS Proposal at the European Parliament on 24 November, 2015 in Strasbourg, available at: http://europa.eu/rapid/press-release_SPEECH-15-6154_en.htm. See also, E Perotti, "The roots of shadow banking" (2013) 69 *CEPR Policy Insight* 1 at 1.

9 Similar to that experienced by Banco Popular in 2017. On this see, M Arnold, "Banco Popular faced eurozone's first large-scale bank run, ECB says" (8 June, 2017) *Financial Times*, available at: https://www.ft.com/content/467b56e8-1bff-3034-83a4-c91bb5f8ed24. See also,

operating in the traditional banking sector are, according to Gary Gorton, able to produce 'riskless' debt.[10] Yet this thesis remains sceptical about the term 'riskless'. This term implies that there is no risk and given that finance is inherently unpredictable, if the broader institutions underpinning the European Deposit Guarantee Scheme fail, intuitively, the consequences could be cataclysmic. In addition, there is also the issue of 'payout' risk – the time lag before depositors are fully reimbursed. While insured deposits imply safety, if depositors have to wait a period of time, for example seven days, the obvious outcome is an *en-masse* bank run – which in itself is a risk. In this regard, payout risk appears to be a major chink in the armour of the European Deposit Guarantee Scheme given that payout is not instantaneous.[11]

Figure 11 below depicts the traditional banking sector and illustrates the standard way that banks issue debt, which subsequently becomes a 'money multiplier' through deposit taking and loan making.

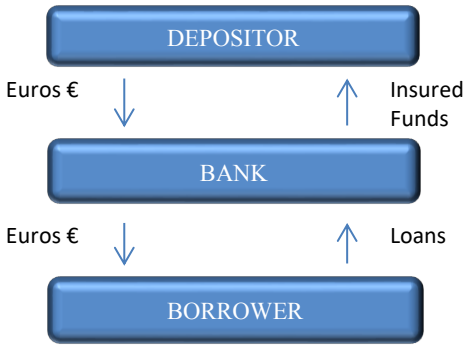

Figure 11: Traditional Banking Sector

Figure 11 illustrates that there is a depositor who deposits money with a bank. The bank uses this money by lending funds to a borrower who, for instance, requires money for a mortgage. In return, the claim the bank will receive, which will be collected upon over time, is the loan itself. The bank, therefore,

Single Resolution Board, "Banco Popular" (7 June, 2018) available at: https://srb.europa.eu/en/content/banco-popular.

10 The primary purpose of deposit insurance is to ensure that successful commerce can be maintained because there is a credible monetary system and such credibility requires that bank deposits be made secure. In other words, the primary purpose of deposit insurance is to ensure that deposits are traded at par. See also, G Gorton, "Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007" (2009) *Federal Reserve Bank of Atlanta* 1 at 4, 7, 9 and 43; see also generally, Gorton (n 3).

11 See generally, M Gerhardt and K Lannoo, "Options for reforming deposit protection schemes in the EU" (2011) *European Credit Research Institute Policy Brief No. 4.*

receives a recurring income stream for the lifecycle of the loan. The depositor receives a deposit account which ensures that the deposited funds are insured and redeemable at par upon demand.[12] Therefore, the borrower has a long-term debt to the bank and the bank has a short-term debt to the depositor. This is the standard way banks create money in the traditional banking sector.[13]

2.1.2 Shadow banking sector

Demand deposits are of no practical use to institutions and private individuals operating in the shadow banking sector.[14] The fact that these entities often 'deposit' large amounts of money for short periods of time ensures that the European Deposit Guarantee Scheme threshold would be exceeded and anything above € 100,000 is uninsured (and subject to bail-in[15]). Meaning that an entity depositing more than € 100,000 in the traditional banking sector could face a capital loss should the bank face difficulties.[16]

Most market participants understandably prefer risk free liquid claims. As such, the shadow banking sector has created an alternative of demandable debt not subject to prudential regulation and credibly backed by a direct claim on liquidity.[17] Within the shadow banking sector, when market participants want a safe place to house their capital, raise funds or borrow securities, they generally do so through the use of collateral transactions. The shadow banking sectors' distinctive liquidity guarantee arises from their issuing of collateralised financial credit in repo, securities lending and derivatives transactions.[18] As

12 R Buckley, "The Changing Nature of Banking and Why it Matters", in R Buckley, E Avgouleas and D Arner (eds), *Reconceptualising Global Finance and its Regulation* (2016) 9 at 9-20.

13 Ricks (n 6) 75 at 76-78.

14 A Krishnamurthy, "How Debt Markets Malfunctioned in the Crisis" (2010) *24 (1) Journal of Economic Perspectives* 3 at 9-10.

15 The European Deposit Guarantee Scheme only insures deposits of up to EUR €100,000 in the EU. Therefore, anything above this amount that is deposited within a credit institution becomes 'unsecured' and subject to a 'bail-inable' claim should the bank fall into trouble. On this see Article 44 (2) (a) of the Bank Recovery and Resolution Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council ("BRRD"). A recent example of unsecured deposits being written down to zero was on 5 October, 2015 where the Danish Bank 'Andelskassen JAK Slagelse' applied the BRRD – on this see the European Parliament, "Bail-ins in recent banking resolution and State aid cases" (7 July, 2016) available at: http://www.europarl.europa.eu/RegData/etudes/IDAN/2016/574395/IPOL_IDA%282016%29574395_EN.pdf.

16 D Gabor and J Vestergaard, "Towards a theory of shadow money" (2016) *Institute for New Economic Thinking Working Paper* 1 at 10.

17 Perotti (n 8) 1 at 1.

18 See generally, Benjamin *et al* (n 2).

illustrated by *Figure 12* below, the shadow banking sector is functionally equivalent to the traditional banking sector because debt contracts in the shadow banking sector are backed by financial collateral just as debt contracts in the traditional banking sector are backed by the European Deposit Guarantee Scheme.

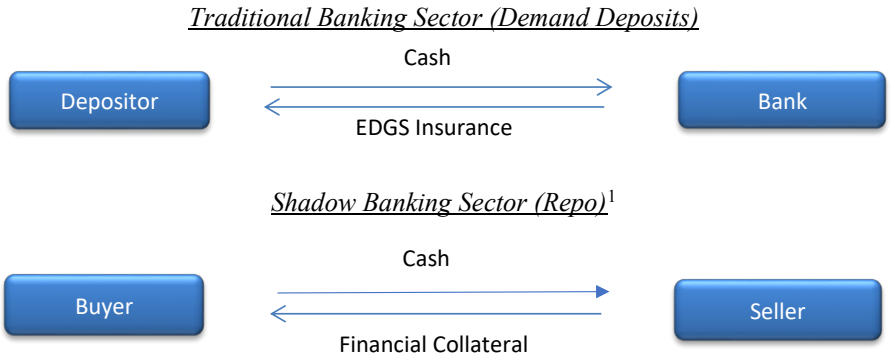

Figure 12: Functional Equivalence of Traditional Banking and Shadow Banking

In both transactions outlined above in *Figure 12*, debt is designed to be safe. In a repo transaction, for example, generally the maturity of a repo is short-term with the debt contract rolled over (renewed) on a daily (or short-term) basis.[19] This infers a confidence in immediacy due to its short maturity as it is routinely rolled over.[20] In addition, AAA government bonds are often used as financial collateral to secure the repo and the safety of the debt contract is dependent upon the quality of the financial collateral (and the applicable level of margin). AAA government bonds are deemed the highest quality, most liquid and therefore safest form of financial collateral as they are underpinned by a credible government. As such, it is generally unnecessary for market participants to do any due diligence on, or to determine the provenance of, the government bond because its value is known and accepted by all.

19 International Capital Markets Association, "what is the role of repo in the financial markets" (accessed 1 November, 2019), available at: https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/icma-ercc-publications/frequently-asked-questions-on-repo/3-what-is-the-role-of-repo-in-the-financial-markets/. In addition, A repo transaction is used here as an example but it could also be a cash driven securities lending transaction or a derivatives currency swap transaction, to name a few.

20 The opposite is also the case where the buyer in the repo can demand cash back by not rolling over the repo. See Perotti (n 8) 1 at 1.

2.1.2.1 Trading at par

Trading at par is trading at 'equal to face value'. Within the shadow banking sector, the market practice of 'trading at par' encompasses three concepts: mark-to-market, margin maintenance and margin. These three mechanisms combined maintain the market value of the financial collateral at a fixed exchange in relation to the debt. For instance, a typical collateral transaction is mark-to-market (generally daily). Should the value of the financial collateral rise or fall, a margin call will be made requiring the respective party to post additional securities or cash to maintain the fixed 'at par' exchange of the transaction.[21]

2.1.2.2 The creation of shadow money

> *"Everyone can create money, the problem is to get it accepted".*[22]

The use of financial collateral and leverage are central to the creation of shadow money. For instance, it is common practice for a collateral giver, such as a hedge fund, to spend € 100,000 from its own equity reserves to buy an asset worth 10 times as much (€ 1million).[23] Collateral transactions facilitate these sorts of transactions through the reuse of financial collateral, which enables financial institutions to leverage their position using an already leveraged instrument.[24] For instance, market participants raise cash through a repo transaction and this cash is used to buy securities, which are subsequently repoed out in return for more cash, which is used to buy more securities and so on.[25] With every transaction the leverage ratio increases because the reuse of financial collateral is a "money multiplier" allowing market participants to recursively leverage their positions.[26] This is the standard way that money is created in the shadow banking sector.[27]

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21 Gabor and Vestergaard (n 16) 1 at 11-12.

22 H Minsky, *Stabilizing an unstable economy* (1986) 228.

23 This means that the hypothetical transaction has a 10% margin: €1million/€100,000 = 10 (or a leverage ratio of 10:1).

24 J Cullen, "The repo market, collateral and systemic risk: in search of regulatory coherence", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 85 at 93-94.

25 Bank for International Settlements, "Repo Market Functioning" (2017) *CFGS Paper No. 59* 1 at 6. See also, Cullen (n 25) 85 at 93-94; European Systemic Risk Board, "ESRB opinion to ESMA on securities financing transactions and leverage under Article 29 of the SFTR" (October, 2016) 1 at 5; P C Harding and C A Johnson, *A Practical Guide to Using Repo Master Agreements* (2017) 14.

26 Cullen (n 25) 85 at 94-95. See also, P Mehrling, Z Pozsar, J Sweeney and D H Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance" (2013) *Institute for New Economic Thinking*.

27 See generally, Gabor and Vestergaard (n 16).

2.1.2.3 The role of margin

Margin is applied to the transaction to add a further layer of safety.[28] There are two reasons for this. Firstly, trading in a debt contract that is sufficiently overcollateralised (i.e. an appropriate level of margin) is a cheap and effective way to avoid adverse selection – that is, neither party to the transaction has superior private information over the other. For instance, when all parties to the collateral transaction know that there is enough financial collateral, more precise information about the financial collateral becomes irrelevant and does not impair liquidity in the market. The key idea is that the collateral taker is confident that should default occur, the financial collateral can be liquidated to make good on the initial promise.[29] The margin (overcollateralisation) component is crucial because it acts as a time horizon financial buffer thus taming uncertainty.

Secondly, margin limits leverage. While leverage levels can theoretically be infinite, it is important to note that although leverage is a multiplier of gains, the flipside is, leverage is also a multiplier of losses. Margin is therefore applied to the transaction to reduce leverage levels. The way it works is as follows: A hedge fund who buys an asset worth € 1million with 10% margin means that the hedge fund must fund the transaction with € 100,000 of its own equity.[30] The hedge fund is then able to buy an asset worth € 1million for € 100,000.[31] The fact that this debt contract is generally backed by safe financial collateral and the transaction is sufficiently overcollateralised, gives the collateral taker a sufficient level of safety. The margin level determines this safety in that the higher the margin, the more that has to be funded by the collateral giver's own equity and vice versa. In practice, it is up to the parties to decide on the appropriate level of margin but as a general rule, the higher the quality of the financial collateral (such as AAA government bonds) the lower the margin and, conversely, the lower the quality of the financial collateral (such as shares) the higher the margin. The fact that the margin is first to be absorbed in a stressed situation, gives the collateral taker time to liquidate the financial collateral to recoup the principal. It should however be noted that while margin is principally in place to mitigate risk, as illustrated below, it is a mechanism that also amplifies risk.

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28 Gorton (n 10) 1 at 30.

29 B Holmstrom, "Understanding the role of debt in the financial system" (2015) *479 BIS Working Papers* 1 at 5. This was also point raised in Krishnamurthy (n 14) 3 at 8 where it is stated that lenders will typically set the margin high enough to avoid any detailed analysis.

30 G Gorton, T Laartits and A Metrick, "The Run-on Repo and the Fed's Response" (2018) 1 at 2-3.

31 J Geanakoplos, "Solving the Present Crisis and Managing the Leverage Cycle" (2010) *FRBNY Economic Policy Review* 101 at 102-103.

3 INFORMATION SENSITIVITIES OF DEBT

> *"Debt exists because it minimizes secrets. Bank debt is designed to be secret-proof, and thus liquid; that is, debt that can be traded easily, at… [negligible] par, without worrying about a loss to a counterparty that has private information. But a small shock to the economy can cause market participants to think that others know secrets, as they lose confidence in the debt's invulnerability to secrets. This creates a crisis when much of the banking system is leveraged with debt that is thought to be liquid but turns out not to be".*[32]

3.1 Information Insensitive Debt and Safe Assets

> *"Debt is designed to be… information insensitive"*[33]

In order for the shadow banking sector to produce safe and liquid debt, the assets used for financial collateral and margining purposes to secure the transaction must be 'information insensitive'. The term 'information insensitive' in this context, refers to an asset, such as cash or AAA government bonds, that is safe and maintains a stable value in the face of new information and/or bad news.[34] When all parties to the transaction know that there are no secrets to be known, markets can be said to be liquid. The situation where there is nothing to know or nothing worth knowing – no secrets – is desirable and allows for efficient transactions. Thousands of collateral transactions take place every day. The reason this number is so high is because parties do not do any due diligence on the assets and are not required to because the assets are above suspicion – they are safe – and thus 'information insensitive'.[35]

The term 'information insensitive' is not the same as 'risk free', however. Think of a government bond of a stable country. If the country issuing the debt defaults (Greece 2012),[36] the country previously considered 'safe', suddenly is not. This is a rare occurrence and according to Gary Gorton, Europe has a very saleable product, namely "safe debt".[37] Yet, when an asset moves from being information *insensitive* (safe – but not risk free) to one where market participants begin to question the safety of the asset – it becomes information *sensitive* (unsafe)[38]. The transition from information *insensitivity* to information

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32 Gorton (n 3) 58.
33 *Ibid* at 137.
34 Holmstrom (n 29) 1 at 9.
35 As to how a Aaa Dutch government bond (or equivalent) is a safe asset was discussed in Chapter 3, section 3.2.1 "*The debt and equity dichotomy*". See also, C Garcia, "Misunderstanding Financial Crises, A Q&A with Gary Gorton" (25 October, 2012) *Financial Times Alphaville.*
36 Or Ukraine in 2016 or Venezuela in 2017.
37 Garcia (n 35).
38 Information sensitive assets will be discussed in the chapter in greater detail below, see section 3.2 "Information sensitive debt".

sensitivity can be damaging because as speculators learn of secret information, they will take advantage of the less informed in a trade.[39] This is why debt contracts in the shadow banking sector are 'runnable' – *en-masse* demands by holders of debt for cash.[40]

3.2 Information Sensitive Debt

> *"Debt is contaminated by the secrets problem".*[41]

While much of the discussion thus far has focused on AAA government bonds and cash as a source of financial collateral, it should be noted that there is not an infinite supply of safe assets. Often, other forms of riskier financial collateral are relied upon to secure a transaction.[42] These include lower graded debt (corporate bonds) and equity (shares). For example, equity in the form of a company share, used for financial collateral and margining purposes, is volatile; it is subject to frequent and unpredictable intraday market price fluctuations, precisely because such an asset is *sensitive* to information. The fact that information is relevant for the price of a share,[43] the importance of price discovery in stock markets is synonymous with the traders' incentive to acquire information – there is therefore a big incentive to learn secrets, legally or otherwise.[44]

While equity is an important source of financial collateral, fluctuations can and do cause problems. If the financial collateral plummets in value, it will subsequently lead to the obligation to post additional financial collateral and higher margin requirements. This position becomes precarious when highly leveraged financial institutions are forced to deleverage in order to fulfil contractual obligations. The domino effect of this liquidity and leverage spiral directly translates into liquidity drying up as market participants become overly cautious. This situation creates panics and runs, which in turn paves the way for fire sales, downward spirals and future crises.[45]

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39 Holmstrom (n 29) 1 at 15. See also, Gorton (n 10) 1 at 3-4 and 7.

40 Runnable debt has been described by several commentators as an important precursor to crises. In its simplest form, runnable debt is produced by the traditional banking sector, in the form of demand deposits. As to how shadow banking sector created runnable debt is discussed in this chapter above, see section 2.1.2.2 "*The creation of shadow money*". See also, Gorton (n 3) 9.

41 Gorton (n 3) 51.

42 M Singh, *Collateral and Financial Plumbing* (2016) 1.

43 A continuous flow of information is brought into the stock market, maintaining the relevance and accuracy of prices. The Efficient Markets Hypothesis posits that information will be reflected rapidly in share prices.

44 Holmstrom (n 29) 1 at 5-7.

45 J Wilmot, J Sweeney, M Klein, A Plant, J Schwartz, Z Shi and W Zhao, "When collateral is king" (15 March, 2012) *Market Focus: Global Strategy Research* 1 at 1-3.

4 LIQUIDITY

4.1 Introduction

"Liquidity is tantamount to shiftability".[46]

A characteristic of collateral transactions is the implied liquidity of the financial collateral/margin underpinning the obligation, which ensures the debt contract remains information *insensitive*.[47] According to John Maynard Keynes an asset is liquid if its value is "more certainly realizable at short notice without loss".[48] If the financial collateral cannot be quickly realised then it loses its 'moneyness' and parties to the transaction do not want to trade with it. Understanding the properties of money is, therefore, a useful starting point in determining liquidity. If the financial collateral/margin is to have "money like equivalence" then it must be a medium of exchange to facilitate transactions; it must be a store of value, which assumes that the collateral holds its value over time; and, unit of account, which ensures that the collateral can be easily translated into prices.[49]

As noted in Chapter 3, the reciprocal of money is liquidity. Liquidity encompasses both funding liquidity and market liquidity, and is a term used to describe how easy and quickly it is to convert an asset into cash; this implies 'safety' in relation to the "full protection from credit, market, inflation, currency and idiosyncratic risks… permitting investors to liquidate positions easily" with the promise of immediacy.[50] However, in truth no financial asset fully meets these criteria and the best that can be hoped for is 'near riskless'. In order to maintain stability, margin is applied to the transaction to act as a time horizon financial buffer to ensure that if counterparties cannot make good on their liquidity promise, the collateral taker has a sufficient amount of time to liquidate the financial collateral.

4.2 Market Liquidity and Funding Liquidity

Collateralised financial credit has become a primary source of funding, which is crucial for creating and maintaining liquid markets. All transactions are, indeed, dependent upon the availability of funding and such funding can only be obtained if markets are liquid.[51] Secondary markets are considered liquid

46 H G Moulton, "Commercial Banking and Capital Formation" (1918) *Journal of Political Economy* 726.
47 Gorton (n 3) 47.
48 J M Keynes, *A Treatise on Money – Volume 2* (1930) 67.
49 See generally, Mehrling (n 4).
50 P O Gourinchas and O Jeanne, "Global Safe Assets" (2012) *399 BIS Working Paper* 1 at 4.
51 Krishnamurthy (n 14) 3 at 9.

if a market participant can quickly execute a significant quantity of assets at a price close to (or as close as possible to) fundamental value. Market liquidity is of great importance as it allows market participants to enter and exit trading positions and rebalance portfolios efficiently. For market participants to be able to provide liquidity in the secondary markets however, they generally need to raise capital (secured with financial collateral) in the primary market – this is often referred to as funding liquidity.[52] When market participants obtain funding and post high quality assets for funding liquidity and margining purposes, financiers will understandably be more willing to lend. Thus, the quality of asset serving as security plays a pivotal role in the smooth functioning of the markets. Therefore, market liquidity affects, and is dependent upon, funding liquidity – and vice versa.[53]

4.2.1 Funding liquidity

As noted in Chapter 3, funding liquidity describes the ease with which market participants can raise funding. In good times, when funding liquidity is high, markets can be said to be liquid due to the "ability to settle obligations with immediacy".[54] Leveraged market participants raise money through a collateral transaction by securing the transaction with financial collateral, which is reused in subsequent transactions to raise more funds *ad infinitum.*

In order to facilitate liquid and efficient markets, funding liquidity should generally operate at an optimal level, which is done by the 'rolling-over' (renewing) of debt contracts. An inability to roll-over debt signals a potential market problem. This will induce the collateral taker to either become unwilling to extend new funding or, alternatively, enter into a new master agreement with updated terms, such as with higher margin requirements.[55] Either way, the collateral taker restricts funding resulting in liquidity 'drying up'.

Funding liquidity risk manifests itself in three forms and all are interrelated. The first form is margin risk, which involves increasing margin levels to take account of falling financial collateral values. When margin levels increase, it is a systemic indicator. Increasing margins have, indeed, been noted

52 A M Pacces, "shadow banking", in A Marciano and GB Ramello (eds.), *Encyclopedia of Law and Economics* (2018) 1 at 3-4. See also, M K Brunnermeier and L H Pedersen, "Market Liquidity and Funding Liquidity" (2008) *The Society for Financial Studies.*

53 K Boudt, E C S Paulus and D W R Rosenthal, "Funding liquidity, market liquidity and TED spread: A two-regime model" (2017) *43 Journal of Empirical Science* 143 at 143-144. See also, Mehrling (n 4) 110; M K Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007 - 2008" (2009) 23 (1) *Journal for Economic Perspectives* 77 at 91.

54 M Drehmann and K Nikolaou, "Funding Liquidity Risk: definition and measurement" (2009) *1024 ECB Working Paper Series* 1 at 10. See also generally, Brunnermeier and Pedersen (n 52); Brunnermeier (n 54) 77 at 77-79.

55 Gorton (n 10) 1 at 1.

to being a precursor to crises.[56] The second form is rollover risk. Funding liquidity is usually high when debt contracts are routinely rolled-over (when the promised debt is due, they are simply rolled over to a future date[57]), thereby ensuring confidence and supporting long term lending.[58] However, when it becomes too costly or indeed impossible to roll-over the debt, problems can (and generally do) occur. Market participants no longer rolling-over their credit lines are essentially pulling funding from the marketplace – this is the final form of risk, known as redemption risk – *"with no credit, there is no investment, and there is a recession"*[59].

4.2.2 Market liquidity

Market liquidity was also discussed in Chapter 3 and relates to the ability of buyers and sellers of assets to transact speedily and efficiently without causing drastic change in the price of the assets. The essential characteristic of a liquid market is that there will always be 'ready and willing' buyers and sellers. From a safety perspective, market liquidity is critical in relation to investors relying on liquidating their position easily and efficiently with no costs or delays. This can only occur if market liquidity is 'high' – when the selling of an asset does not require its value to be altered. Yet the opposite can also occur – market liquidity is 'low' when the selling of an asset requires its value to be substantially reduced.[60] Low market liquidity causes issues such as market freezes (illiquidity), where market participants are uncertain about the safety of the assets circulating the financial system and therefore act cautiously.

There are three important sub forms of market liquidity, all of which play an important role in determining whether or not market liquidity is 'high' or 'low'. The first is the bid/ask spread, which measures how much market participants will lose if they sell one asset unit and immediately buy it back. The bid/ask spread is a *de facto* measure of market liquidity.[61] The lower the bid/ask spread the higher the market liquidity and, the higher bid/ask spread, the lower the market liquidity.[62] For example, cash is the most liquid of assets and its bid/ask spread is very low (i.e. measured in fractions of Euro cents). Shares, on the other hand, are less liquid assets, and therefore have a much higher bid/ask spread due to the asset being more volatile in nature.

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56 See generally, G Gorton. "Financial Crises" (30 January, 2018) *Annual Review of Financial Economics.*

57 Mehrling (n 4) 68.

58 Perotti (n 8) 1 at 1.

59 Gorton (n 3) 176-177.

60 Keynes (n 49) 67-68.

61 P Feldhutter and T K Poulsen, "What Determines Bid-Ask Spreads in Over-the-Counter Markets?" (2018) *Copenhagen Business School* 1 at 1.

62 Brunnermeier (n 53) 77 at 92.

The second is market depth, which shows how many units market participants can buy or sell at the current bid or ask price without the price being affected. Markets are deemed as 'deep' when there is a sufficient volume of bid/ask orders, which typically prevents larger orders from significantly moving the price. The measurement of market depth provides an indication of market liquidity. For example, the higher the number of bid/ask orders the deeper the market and therefore the more liquid the market because of demand and supply.[63]

The final sub form of market liquidity is market resiliency. Market resiliency indicates the speed by which fallen asset prices bounce back. A resilient market is a stable market signifying that market liquidity is high. In a market that lacks resiliency, trading will generally incur large price movements, which can last for long periods of time creating market uncertainty.[64]

4.3 The Interaction between Market Liquidity and Funding Liquidity

High market and funding liquidity are a signal of 'good times'. However, liquidity has the potential to suddenly 'evaporate' and the mechanisms that this operates through are the mutually reinforcing interaction between funding and market liquidity. Through their interaction, the market illiquidity of assets leads to a decrease of funding opportunities. This causes liquidity to dry up and carries the potential for crises.[65]

5 THE VULNERABILITIES OF DEBT

5.1 The Two Faces of a Debt Contract

The problem with collateral transactions in the EU shadow banking sector is debt and its vulnerability. Debt relationships in the shadow banking sector are organised via marketable securities. What happens when those securities decline in value? When asset prices decline, "risk is pushed into the tail" and market liquidity and funding liquidity deteriorate.[66]

> *"What is the harm in expanding credit? It will be asked. Credit stimulates business and lively business means good times and prosperity. Yes, but credit also means speculation and an ultimate collapse followed by years of depression and hard times. Too much credit*

63 J Muranaga, "Dynamics of market liquidity" (2000) *Bank for International Settlements* 1 at 2-3. See also, Brunnermeier (n 54) 77 at 92.

64 N S Alin, J Hua, L Peng and R A Schwartz, "Stock Resiliency and Expected Returns" (2015) *Working Paper Baruch College* 1 at 3-7.

65 Pacces (n 52) 1 at 3-4 and 6. See also generally, Brunnermeier and Pedersen (n 52).

66 Pacces (n 52) 1 at 15.

> *is like a dose of morphine, the effect of which is fine while it lasts but it is followed by the inevitable reaction".*[67]

Within the shadow banking sector, market participants make a business out of managing the daily inflow and outflow of cash on their balance sheets. The daily cash flow, both in and out, is the crucial interface that connects with the larger financial system. This interface provides financial institutions with cash that makes it possible to obtain credit coupled with the burden of future debt obligations. Debt and credit are, therefore, two faces of the same coin.[68]

The two faces of debt show themselves not only at the level of the individual financial institution, but also at the level of the system as a whole; one financial institution's cash inflow is another's cash outflow. If the allure of credit induces a financial institution to increase spending, the immediate result is income elsewhere in the system. Similarly, if the burden of debt induces a financial institution to decrease spending, the immediate result is reduced income elsewhere, and thus reduced spending.[69] The interaction of balance sheets is the source of what monetary economist Ralph Hawtrey described as the "instability of credit".[70]

According the Hawtrey, the 'instability of credit' originates from credit financed spending, which creates income for others, not only directly but also indirectly by pushing asset prices up. The capital gain for holders of these assets tends to stimulate additional spending, in part to buy ahead of rising demand in order to earn additional profit from rising prices in the future. The feedback loop of rising asset prices and credit expansion is the source of the 'instability of credit' emphasised by Hawtrey.[71]

Credit is required in order for production and consumption. New technologies can be implemented and real things are built, resulting in growth and expansion. Yet growth is coupled with instability and the difficulty lies in identifying whether the growth should be allowed to continue or whether the speculative bubble (instability) should be reined in? The reason this question is difficult to answer is because a credit fuelled boom[72] typically involves both aspects – "if you don't catch the bubble early, it may be impossible to do anything".[73] This is why regulation, particularly in relation to margin (and the reciprocal leverage), is crucial. The fact that margin limits the amount of credit an institution can obtain and the fact that leverage has been at the heart

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67 Earl Dean Howard, "What Currency Reform Means to the Businessman" (15 September, 1906) 726. See also, Gorton (n 3) 73.

68 Mehrling (n 4) 11.

69 Mehrling (n 4) 12.

70 R G Hawtrey, *Currency and Credit* (1923).

71 Mehrling (n 4) 15.

72 A credit fuelled boom can be defined as a period when private credit grows abnormally faster than private gross domestic product ("GDP"). On this, see Gorton (n 3) 59.

73 Mehrling (n 4) 12-13 and 15.

of many past financial crises, it is disappointing that margin is a mechanism that is largely overlooked by regulators.[74]

5.2 The Leverage and Liquidity Spiral

Financial markets are inherently unpredictable. What happens to the financial system when highly leveraged financial institutions run out of liquidity? In other words, what happens *"when prosperity merges into crisis"?*.[75] In a credit fuelled boom, if firms are obtaining large amounts of credit with ease and make efficient and effective investments, then output goes up. Credit expansion facilitates the funding of new capital investments, and new spending tends to drive up the general level of prices. Higher prices bring improved profitability and hence also improved creditworthiness, which creates incentive for further credit expansion. This is a cumulative upward spiral.[76]

Both market liquidity and funding liquidity are high because assets are easily bought and sold – even if those assets are not thoroughly investigated. In such cases market participants without good financial collateral will still be able to borrow, increasing the output of the economy. Output is going up, and so is fragility. More and more firms are obtaining credit without investigating the quality of the financial collateral backing the transaction. Greater leverage for the economy as a whole allows greater investment – at the price of greater fragility.[77]

As a general rule, margin requirements tend to be low when conditions in the financial markets are relatively benign – perceived low risks and minimal volatility in asset prices lead to low margin requirements. Low margin requirements allow for the build-up of excessive leverage because market participants have more financial collateral to borrow against. The flipside is that increasing levels of leverage increases the asset owners' vulnerability, especially against the backdrop that most collateral transactions are subject to funding and market liquidity risk.[78]

When the good times of low margins, high leverage and liquid markets inevitably start to deteriorate, the cycle shifts. Trigger points are: when the

74 Strong credit growth has been observed before many famous crises, such Argentina in 1980, Sweden, Norway and Finland in 1997 and the most recent Global Financial Crisis. In fact, one of the most useful indicators of the likelihood of a financial crisis is a measure of credit creation. Moreover, Gary Gorton states that in particular, bank debt has been at the root of every one of the 124 systemic crises around the world from 1970-2007. On this, see Gorton (n 3) 45.

75 Gorton (n 3) 75.

76 Mehrling (n 4) 7.

77 Gorton (n 3) 179.

78 J Geanakoplos and L H Pedersen, "Monitoring Leverage" in M Brunnermeier and A Krishnamurthy (eds) *Risk Topography: Systemic Risk and Macro Modeling* (2014) 113 at 117.

credit fuelled bubble bursts, asset prices decline and there is an abrupt increase in margin requirements. While margin is primarily an important risk mitigation mechanism, it is also destabilising – leading financial markets to become further distressed and volatile. In such cases it does not take a significant asset price shift to make a material impact. With the slightest downward asset price fluctuation, leveraged positions can lose substantially.[79]

A credit fuelled boom exacerbates the situation. If new information signals an imminent downturn, holders of debt contracts, fearing possible losses, will 'run'. The more market players who receive the same information will see the same implications, resulting in a run.[80]

> *In the modern era… A [run] is an event where holders of short-term debt issued by financial intermediaries withdraw en-masse.*[81]

Runs are not irrational events. They are caused by the arrival of bad news about the economy. Bad news causes debt contracts to become *sensitive* to information. For example, if parties to the collateral transaction begin to question the financial collateral backing the transaction, they can and are entitled to demand cash. If a large proportion of market participants do this, a system wide panic ensues.[82] A defining feature of a run is that a large number of market participants act at more or less the same time, making substantial demands for cash that the financial system is unable to meet demands for liquid assets. In other words, liquidity promises can no longer be honoured and this leads to solvency problems. In this sense, the financial system is insolvent; it cannot honour its contractual obligations.[83] When asset prices crash due to runs from the shadow banking sector, market liquidity and funding liquidity shrink simultaneously.[84] Moreover, the downward price fluctuations of the asset disproportionately fall on the leveraged buyers, redistributing wealth away from those who value the assets the most to those who value them the least. When leveraged buyers lose wealth, they consequently often lose the ability to borrow resulting in less marketplace liquidity.[85]

During the crisis stage of the leverage cycle, there tend to be many defaults and these defaults often lead to a chain reaction of events with contagious consequences. For market participants in this position, declining asset prices can result in margin calls and the consequent de-leveraging of leveraged

79 Brunnermeier and Pedersen (n 52) 1 at 1 and 3-8.
80 Gorton (n 3) 74.
81 *Ibid* at 43 *(emphasis added).*
82 *Ibid* at 6.
83 *Ibid* at 33.
84 Pacces (n 52) 1 at 6.
85 European Systemic Risk Board, "The macroprudential use of margins and haircuts" (2017) 1 at 5.

financial positions. Often bad news comes with increased volatility of economic fundamentals and the very vulnerability of the buyers creates more uncertainty. As a result, a vicious cycle can emerge where lenders raise margin levels thereby demanding more financial collateral, forcing de-leveraging and more asset sales at fire sale prices and thus further price declines, eventually generating a downward leverage and liquidity spiral.[86] This is what Gary Gorton and Andrew Metrick called "the run-on repo" during the Global Financial Crisis.[87] The aftermath of the leverage and liquidity cycle results in a long period where many investors are close to insolvency, and thus unable to borrow and equally unwilling to make productive investments.[88] *Figure 13* below provides a visual depiction of the various stages in the leverage spiral.

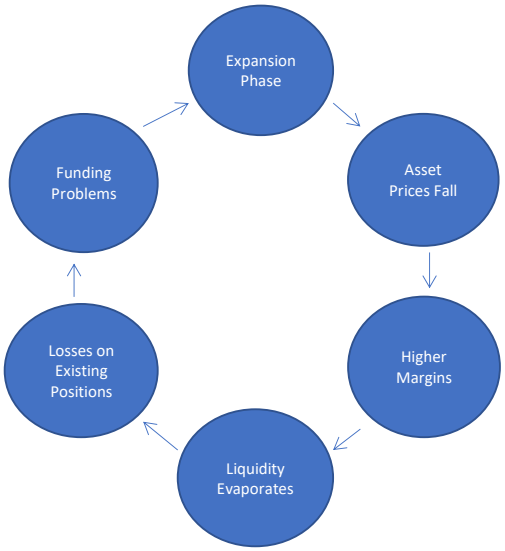

Figure 13: Leverage and Liquidity Spiral[89]

86 V Constancio, "Margins and haircuts as a macroprudential tool" (6 June, 2016) Vice-President of the ECB, at the *ESRB international conference of the macroprudential use of margins and haircuts*, available at: https://www.esrb.europa.eu/news/speeches/date/2016/html/sp160606.en.html; R Comotto, "Repo: guilty notwithstanding the evidence?" (25 April, 2012) *International Capital Markets Association*, available at: https://www.icmagroup.org/assets/documents/Maket-Practice/Regulatory-Policy/Repo-Markets/Comotto%20-%20repo%20haircuts%20April%202.pdf.

87 G B Gorton and A Metrick, "Securitized Banking and the Run-on Repo" (2009) *15223 NBER Working Paper Series*. See also, G B Gorton and A Metrick, "Who Ran on Rep?" (2012) *18455 NBER Working Paper Series*.

88 J Geanakoplos, "The Leverage Cycle" (2010) *1715R Cowles Foundation Discussion Paper* 1 at 10. See also, Geanakoplos and Pedersen (n 79) 113 at 117 -118.

89 This diagram is similar to, but slightly different from, that published by Brunnermeier and Pedersen (n 52) 1 at 4.

6 CONCLUSION

To conclude, debt is an essential function of collateral transactions in the shadow banking sector – it is the 'technology for conducting trade' and is a necessity for an economy to function effectively. The origins of debt lie in the traditional banking sector but given the growing demand, the shadow banking sector has created a functionally equivalent debt contract to that found in the traditional banking sector. The shadow banking sector does this through the use of collateral transactions where long-term securities, such as government bonds, are used as financial collateral to secure short-term funding. The tenor of the collateral transaction is generally short-term, albeit routinely rolled-over, so there is confidence in immediacy. Margin is applied to the transaction to provide a time horizon financial buffer thereby adding a further layer of security.

In order for shadow banking sector produced debt to be 'safe', the assets used for financial collateral and margin must be 'information insensitive'. The key idea is that the asset has a credible underpinning. This mitigates the costly production of information given there is nothing (or minimal) information worth knowing. However, such assets are not completely riskless and the transition from information *insensitivity* to information *sensitivity* can be extremely damaging. Of course, the transition of an information *insensitive* government bond becoming information *sensitive* is very rare, but not inconceivable. Moreover, the fact that safe assets are now 'scarce', other forms of riskier assets are often relied upon to secure the debt contract. One way to mitigate the information *sensitivities* of debt is to apply higher margins at the point of trade.

Synonymous with information *insensitivity* is liquidity. The assets used for financial collateral and margin have to be liquid if they are to be information insensitive. An asset that is liquid has money like equivalence in that it can be easily bought and sold in the marketplace without loss. When it is easy to raise funds in the market, funding liquidity is 'high', which means that markets are liquid. Indeed, more intermediation by the shadow banking sector results in more credit to the economy, which is important for production and consumption. In good times, when credit levels are high and market and funding liquidity are at an optimal, leverage levels are also high. The flipside is that more credit increases vulnerability. The fact that firms are highly leveraged directly translates into potential solvency problems if/when there is a shock to the system. If asset prices crash, the result is that market and funding liquidity simultaneously shrink. This means that market participants may find difficulty in raising funds to fulfil their obligations. The fact that margin levels will also rise to mitigate collateral takers' losses, means that collateral givers will have to fund a higher proportion of the transaction with its own capital, which it may, or may not, be able to do. In this sense, margin can be destabilising.

7 The regulation of margin in the EU shadow banking sector

1 INTRODUCTION

It is interesting to note that the procyclical effect posed by margin was identified as a source of systemic risk long before the Global Financial Crisis. At that time, commentators argued that the build-up of systemic risk in the financial cycle directly pointed to self-reinforcing feedback mechanisms.[1] Yet such suspicions were largely ignored by regulators and many market participants and it was only after the effects were felt by the Global Financial Crisis, that regulatory discourse in relation to mandatory margin requirements in the EU shadow banking sector started to gain prominence.[2]

Importantly, the crisis demonstrated that the procyclicality of margin requirements in the shadow banking sector posed (and continues to pose) a significant challenge to financial stability. This view was corroborated by various policy makers who concluded that margin requirements in collateral transactions are a source of systemic risk and recommended stabilising these practices in order to "dampen financial booms and busts".[3]

However, it has been over ten years since the crisis and regulatory progress in the EU shadow banking sector to limit systemic risk within collateral trans-

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1 C Borio, C Furfine and P Lowe, "Procyclicality of the financial system and financial stability: issues and policy options" (2001) *BIS Papers No 1*; A Crockett, "Marrying the micro- and macro-prudential dimensions of financial stability" (2000) *Bank of International Settlements* 1 at 4; J Danielsson, P Embrechts, C Goodhart, C Keating, F Muennich, O Renault and H S Shin, "An Academic Response to Basel II" (2001) *LSE Financial Markets Group Special Paper Series No. 130.*

2 M Thiemann, M Birk and J Friedrich, "Much Ado About Nothing? Macro-Prudential Ideas and the Post-Crisis Regulation of Shadow Banking" (2018) *Kolner Zeitschrift fur Soziologie und Sozialpsychologie* 259 at 264. See also, V Constancio, "Margins and haircuts as a macro-prudential tool" (6 June, 2016) Vice-President of the ECB, at the *ESRB international conference of the macroprudential use of margins and haircuts*, available at: https://www.esrb.europa.eu/news/speeches/date/2016/html/sp160606.en.html; Financial Stability Board, "Global Monitoring Report on Non-Bank Financial Intermediation 2018" (4 February, 2019) 1 at 25, available at: https://www.fsb.org/wp-content/uploads/P040219.pdf.

3 D Longworth, "Warding Off Financial Market Failure: How to Avoid Squeezed Margins and Bad Haircuts" (2010) *135 C.D. Howe Institute Backgrounder* 1 at 1. See also, BIS Committee on the Global Financial System, "The role of margin requirements and haircuts in procyclicality" (March, 2010) *36 CGFS Papers* 1 at 1; European Systemic Risk Board, "ESRB report on the efficiency of margining requirements to limit pro-cyclicality and the need to define additional intervention capacity in this area" (28 July, 2015) 1 at 7-8.

actions is still not adequately addressed. Currently, there are no EU wide legal or regulatory instruments to tame the uncertainty of margin or indeed limit the build-up of leverage across the EU shadow banking sector. Yet despite no comprehensive legal framework being in place, EU wide measures are nevertheless practiced in certain parts of the legal and regulatory framework and will be the focus of this chapter.

This chapter will therefore proceed by mapping the current state of the legal and regulatory framework regarding margin within the EU shadow banking sector. Section 2 will trace the post-crisis policy responses. These responses provide important insight into the systemic consequences of the crisis and as such, have played (and continue to play) an important role in the regulatory reform agenda that followed (and continues to follow) the crisis. Section 3 explores the role margin plays within EU private law, both from a self-regulation perspective as well as statutory private law. Section 4 will map the existing public law framework, via regulations and directives, in relation to margin within the EU shadow banking sector. Section 5 concludes.

2 TRACING POST-CRISIS POLICY REPONSES

Setting aside the contribution made by countless other mitigating factors, the procyclical effect of margin was at the very heart of the 2007/2008 Global Financial Crisis.[4] Substantial resources have therefore been devoted to framing, implementing and calibrating meaningful reforms to "transform shadow banking into a resilient market based financial system".[5] For instance, in 2008 the Bank for International Settlements argued that the procyclical impact of margin requirements exacerbated systemic risk within the financial system.[6] This view was followed in 2009 by the Turner Review, which put the procyclical effects of margin, as a source of systemic risk, firmly center stage.[7] In 2010, the Committee on the Global Financial System concluded that margin requirements in collateral transactions are a source of procyclicality and

4 M Schularick and A M Taylor, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870 - 2008" (2012) *102 (2) American Economic Review* 1029-1061. See also, K Knot, "Rethinking Financial Stability; Evaluating regulatory prime concerns a decade on from the financial crisis" (3 December, 2018) *DeNederlandscheBank* 1 at 8-9; J Geanakoplos and L H Pedersen, "Monitoring Leverage" in M Brunnermeier and A Krishnamurthy (eds) *Risk Topography: Systemic Risk and Macro Modeling* (2014) 113 at 114.

5 Financial Stability Board (n 2) 1 at 25.

6 Bank for International Settlements, "Addressing financial system procyclicality: a possible framework" (1 September, 2008) 1 at 8-9, available at: https://www.fsb.org/wp-content/uploads/r_0904e.pdf.

7 A Turner, "The Turner Review: A regulatory response to the global banking crisis" (March, 2009) 1 at 22 and 111, available at: https://webarchive.nationalarchives.gov.uk/20090320232953/http://www.fsa.gov.uk/pubs/other/turner_review.pdf. See also, Thiemann *et al* (n 2) 259 at 269.

recommended stabilising these practices to dampen the build-up of leverage during good times and soften the system-wide effects during bad times.[8] In addition, supervisory bodies such as the Financial Stability Board,[9] European Securities and Markets Authority,[10] the European Systemic Risk Board[11] and others[12], have incrementally introduced numerous publications on this issue.

However, despite numerous publications identifying margin as a source of systemic risk, it is an area still to be substantially tackled.[13] Yet this is a view not shared conclusively by all.[14] There is an argument that policy responses in relation to the role of margin within collateral transactions have taken one of two routes. The first route relates to derivatives transactions, which have arguably made substantial legal and regulatory progress in relation to meaningful reforms. The second route relates to policy responses regarding repos and securities lending transactions. Sadly, the same level of engagement to that achieved with derivatives has yet to be reached with repos and securities lending transactions. This section will proceed by looking at these two routes in greater detail and by mapping the most relevant policy responses.

2.1 Derivatives

2.1.1 BCBS and IOSCO

As noted in Chapter 5, section 5.2.1, A key policy goal of the 2009 Pittsburgh Summit, where G20 members met to discuss the state of the global financial markets, was a commitment to reform the OTC derivatives market in order

8 BIS Committee on the Global Financial System (n 3).

9 There have been a whole host of publications by the Financial Stability Board in relation to the shadow banking sector, the most recent is the Financial Stability Board (n 2) 1 at 1.

10 ESMA has also introduced numerous publications on shadow banking, for the most recent (for the purpose of this thesis) see: "ESMA reports on shadow banking, leverage and pro-cyclicality" (2016), available at: https://www.esma.europa.eu/press-news/esma-news/esma-reports-shadow-banking-leverage-and-pro-cyclicality.

11 The most recent ESRB publication on shadow banking is: European Systemic Risk Board, "Mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions" (2020), available at: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report_200109_mitigating_procyclicality_margins_haricuts~0f3e9f9e48.en.pdf.

12 For example, the European Central Bank, Bank for International Settlements, Basel Committee on Banking Supervision and the International Organization of Securities Commissions.

13 Constancio (n 2). See also, Financial Stability Board (n 2) 1 at 25; D Heremans and A Pacces, "Regulation of banking and financial markets" in *Regulation and Economics* (2012) R J Van Den Bergh and A M Pacces (eds) 558 at 560; M Raffan and J Benjamin, "Wholesale markets and the limits of regulation" (2014) *International Financial Law Review* 1 at 1; Thiemann *et al* (n 2) 259 at 259.

14 M Carney, "Ten years on: fixing the fault lines of the global financial crisis" (21 April, 2017) *21 Financial Stability Review.*

to reduce systemic risk.[15] In particular, "non-centrally cleared contracts should be subject to higher capital requirements", namely through the introduction of mandatory margin requirements.[16]

The G20's conclusions resulted in the formation of the Working Group on Margining Requirements, with the objective of reducing systemic risk by developing a consistent global standard for margin requirements for uncleared OTC derivative transactions.[17] In particular, the view adopted by the Working Group on Margining Requirements was to impose stringent rules requiring eligible counterparties to post higher margin requirements for uncleared OTC derivatives transactions than previously existed.[18] Given that only standardised OTC derivatives are suitable for central clearing, the intention was to standardise terms in collateral agreements and introduce consistent methodologies for the calculation of initial and variation margin so as to make it easier for uncleared OTC derivatives to transition to clearing houses in the future and create a more liquid market.[19] However, it should be observed that not all derivative transactions are suitable for central clearing and some trades will always remain uncleared and will be required to be collateralised separately.[20]

The Working Group on Margining Requirements initiative has ultimately led to the publication, in September 2013 on "Margin requirements for non-centrally cleared derivatives" as a global policy framework – jointly published by the Basel Committee on Banking Supervision ("BCBS") and the International Organization of Securities Commissions ("IOSCO").[21] The pertinent BCBS/IOSCO policy recommendations for the purpose of this study can be summarised as follows:[22]

15 P C Harding and C A Johnson, *Mastering ISDA Collateral Documents: A Practical Guide for Negotiators* (2012) 10.

16 G20 Leaders' Statement, The Pittsburgh Summit (September 24-25, 2009), available at: http://www.g20.utoronto.ca/2009/2009communique0925.html.

17 P C Harding and A J Harding, *A Practical Guide to the 2016 ISDA Credit Support Annexes for Variation Margin* (2018) 11 and 23-24.

18 G20 Leaders' Statement (n 16).

19 Central Counterparty Clearing ("CCPs") will be elaborated upon in this chapter below, see section 4.1 "EMIR: Central Counterparty Clearing". See also, BCBS and IOSCO, "Margin Requirements for non-centrally cleared derivatives" (March, 2015), available at: https://www.bis.org/bcbs/publ/d317.pdf.

20 Harding and Harding (n 17) 11.

21 BCBS and IOSCO, "Margin Requirements for non-centrally cleared derivatives" (September, 2013), available at: https://www.bis.org/publ/bcbs261.pdf; various revisions include: March 2015, available at: https://www.bis.org/bcbs/publ/d317.pdf, March 2019, available at: https://www.bis.org/bcbs/publ/d317_summarytable.pdf and April 2020, available at: https://www.bis.org/bcbs/publ/d499.pdf.

22 *Ibid* 1 at 5.

- Appropriate margining practices should be in place for all derivative transactions not subject to central clearing;
- All financial firms and systemically important non-financial firms must, as a way to mitigate risk, exchange initial margin and variation margin as appropriate;
- The calculation of both initial margin and variation margin should be consistent to ensure that exposure to risk is covered;
- Assets collected as margin should be highly liquid and should be able to hold their value in times of stress;
- Initial margin that is exchanged by both parties should be held in such a way to ensure that it is immediately available upon counterparty default;
- From an international perspective, regulatory regimes should be consistent to avoid a duplication in standards when taking margin; and,
- Margin requirements should be phased in over an appropriate period of time and once set, margin requirements should be reviewed to ensure overall efficacy.

Regulators in various jurisdictions have since set about implementing margin requirements based on these policy recommendations.[23] As such, it is no coincidence that in order to make derivative markets safer and more transparent, the European Market Infrastructure Regulation ("EMIR") was adopted,[24] followed by the 2016 EU Regulatory Technical Standards ("RTS").[25]

2.2 Repurchase Agreements and Securities Lending Transactions

> *"There is no explicit mandate for the use of margins or haircuts in securities financing transactions".*[26]

2.2.1 Financial Stability Board

To strengthen supervision and regulation, a key policy goal of the Financial Stability Board is to "transform shadow banking into a resilient market-based financial system" by introducing "minimum standards for haircut practices"

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23 This will be further elaborated upon in subsequent sections of this chapter. See also, Harding and Harding (n 17) 11.

24 Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivative, central counterparties and trade repositories ("EMIR").

25 Commission Delegated Regulation (EU) 2016/2251 of 4 October 2016 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories with regard to regulatory technical standards for risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty ("RTS").

26 The European Systemic Risk Board, "The macroprudential use of margins and haircuts" (February, 2017) 1 at 4-6. See also, European Systemic Risk Board (n 11) 1 at 30.

in order to limit the amount of leverage a financial institution can obtain.[27] In order to achieve this goal, and as set out by the G20 in October 2011 at the Cannes Summit,[28] the Financial Stability Board set up a dedicated Workstream to mitigate systemic risk, prevent runs and "dampen… pro-cyclical incentives associated with" repos and securities lending transactions.[29]

Such a policy goal has led to numerous published policy reports. For example, in 2013 two important European Parliament publications[30] argued that there is an insufficient amount of granular 'margin' data to strike "an optimal balance between dampening pro-cyclicality and the build-up of excessive leverage on the one hand and maintaining the efficiency and liquidity of the market on the other".[31] In August 2013, the Financial Stability Board published: "Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos", which set out various recommendations to mitigate the systemic risk posed by margins and haircuts.[32] On 14 October 2014, the publication: "Regulatory Framework for Haircuts on Non-centrally Cleared Securities Financing Transactions" was introduced, which included recommendations for standard haircut methodologies when entering into a

27 Financial Stability Board, "Transforming Shadow Banking into Resilient Market-based Finance: Regulatory framework for haircuts on non-centrally cleared securities financing transactions" (12 November, 2015), available at: https://www.fsb.org/wp-content/uploads/P190719-1.pdf. See also, Financial Stability Board, "Shadow Banking: Scoping the Issues" (12 April 2011) available at: https://www.fsb.org/wp-content/uploads/r_110412a.pdf; Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking" (18 November, 2012) 1 at 12; G B Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* (2012) 9; J Cullen, "The repo market, collateral and systemic risk: in search of regulatory coherence", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 85 at 85-116.

28 Although it was at the November 2010 Seoul Summit where G20 leaders identified systemic issues in relation to financial sector (shadow banking) regulation that warranted attention. On this see, Financial Stability Board 2011 (n 27).

29 Financial Stability Board, "Securities Lending and Repos: Market Overview and Financial Stability Issues: Interim Report of the FSB Workstream on Securities Lending and Repos" (27 April 2012) available at: https://www.fsb.org/wp-content/uploads/r_120427.pdf. See also, Financial Stability Board, "Consultative Document – Strengthening Oversight and Regulation of Shadow Banking: An Integrated Overview of Policy Recommendations" (18 November 2012) 1 at 3, available at: https://www.fsb.org/wp-content/uploads/r_121118.pdf; Financial Stability Board 2015 (n 27) 1 at 2; Financial Stability Board 2011 (n 27); see generally, Thiemann *et al* (n 2) 259 at 269.

30 P Paech, "Shadow Banking: Legal issues of collateral assets and insolvency law" (June, 2013) *European Parliament Economic and Monetary Affairs* 1. See also, R Comotto, "Shadow Banking – Minimum Haircuts on Collateral" (July 2013) *European Parliament.*

31 Comotto (n 30) 1 at 45. See also, Paech (n 30) 1 at 26-27.

32 Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos" (29 August, 2013), available at: https://www.fsb.org/wp-content/uploads/r_130829b.pdf. See also, European Commission, "Green Paper on Shadow Banking – Frequently asked questions" (19 March, 2012) available at: https://ec.europa.eu/commission/presscorner/detail/en/MEMO_12_191.

collateral transaction.[33] In addition, the Financial Stability Board annually publishes a "Global Monitoring Report on Non-Bank Financial Intermediation", which seeks to highlight current vulnerabilities residing within the shadow banking sector.[34]

2.2.2 The European Systemic Risk Board

The Financial Stability Board is not the only policymaker to introduce recommendations and reforms with regard to repos and securities lending transactions. There are a whole host of other examples. The European Systemic Risk Board, for instance, has set up an Expert Group on Margins and Haircuts which is explicitly designed to revisit and analyse procyclical risks associated with margins and haircuts.[35] In July 2016 the Expert Group published: "Assessing shadow banking – non-bank financial intermediation in Europe", where risks relating to leverage and procyclicality were, albeit briefly, discussed.[36] In February 2017 a more substantive publication, titled: "The macroprudential use of margins and haircuts" was introduced.[37] This was followed by a more recent 2020 paper, titled: "Mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions".[38] Amongst other things, these publications have led to three important (and not yet implemented) recommendations, in particular:[39]

1. Macroprudential policies be implemented to mitigate systemic risk associated with excessive leverage and procyclicality in collateral requirements;
2. Margins and haircuts be calibrated as macro-prudential tools; and,
3. The practical challenges of such implementations be identified.

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33 Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: Regulatory framework for haircuts on non-centrally cleared securities financing transactions" (14 October, 2014) available at: https://www.fsb.org/wp-content/uploads/r_141013a.pdf. See also, Cullen (n 27) 85 at 97-98.

34 The most recent is the Financial Stability Board (n 2) 1.

35 See Annex 1 (Attachment 1) of the Recommendation of the European Systemic Risk Board of 4 April 2013 on intermediate objectives and instruments of macro-prudential policy ESRB/2013/1 OJ C 170/1. See also, European Systemic Risk Board, Press Release: The General Board of the European Systemic Risk Board held its 35th regular meeting on 26 September (2 October, 2019) available at: https://www.esrb.europa.eu/news/pr/date/2019/html/esrb.pr191002~8efb305920.en.html.

36 L Grillet-Aubert, J B Haquin, C Jackson, N Killeen and C Weistroffer, "Assessing shadow banking – non-bank financial intermediation in Europe" (July, 2016) *10 European Systemic Risk Board*. See also generally, M Hodula, "Monetary Policy and Shadow Banking: Trapped between a Rock and a Hard Place" (2019) *5 Working Paper Series Czech National Bank.*

37 European Systemic Risk Board (n 26). See also, the most recent ESRB publication on shadow banking, European Systemic Risk Board (n 11).

38 See generally, European Systemic Risk Board (n 11).

39 European Systemic Risk Board (n 11) 1 at 3-5. See also, European Systemic Risk Board (n 26) 1 at 4.

Policies introducing margins and haircuts as a macroprudential regulatory tool are aimed at ensuring the stability of the entire financial system.[40] Because margin is procyclical and therefore a source of systemic risk, macroprudential policies are geared towards mitigating the systemic effects of margin during financial booms and busts.[41] However, it should be noted that while the macroprudential approach is laudable, the flipside is that macroprudential "policy tools and instruments have only been slowly forthcoming… which has brought about only minimal [regulatory] change" in the EU shadow banking sector.[42] 'Macroprudential' regulation can be contrasted with 'microprudential' regulation, which focuses on the safety and soundness of individual financial institutions, rather than the financial system as a whole.[43]

2.2.3 *The European Securities and Markets Authority*

On 4 October 2016, the European Securities and Markets Authority published its "Report on securities financing transactions and leverage in the EU". The main concern was:

> *"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* is one example of this"[44] (emphasis added).

As a result of this statement, it was recommended that:[45]

- Qualitative standards on the methodology used to calibrate and calculate margins and haircuts be employed;
- The procyclicality of collateral haircuts be addressed; and,
- Numerical haircut floors for non-centrally cleared transactions be introduced.

40 L Quaglia, "Financial Regulation" (2015) *2 (9) International Encyclopedia of the Social & Behavioral Sciences* 191 at 191.

41 D Aikman, J Bridges, A Kashyap and C Siegert, "Would Macroprudential Regulation Have Prevented the Last Crisis" (2019) *33 (1) Journal of Economic Perspectives* 107 at 108-110. See also, S G Hanson, A H Kashyap and J C Stein, "A Macroprudential Approach to Financial Regulation" *25 (1) Journal of Economic Perspectives* 3 at 6-7.

42 Thiemann *et al* (n 2) 259 at 261.

43 K Yilla and N Liang, "What are macroprudential tools" (11 February, 2020) *Brookings* 1 at 1-2.

44 European Securities and Markets Authority, "Report on securities financing transactions and leverage in the EU" (4 October, 2016) 1 at 4.

45 *Ibid* at 5-6.

2.2.4 From ideas to action – some observations

It has been over a decade since the Global Financial Crisis and despite numerous publications identifying margin as a source of systemic risk in repurchase agreements and securities lending transactions, it is unfortunate regulators are not tackling this problem head on.[46] The results to date have indeed been no greater than piecemeal solutions. There are, however, arguably two important reasons for such timid intervention.

Firstly, there is currently a severe lack of granular data at EU level. This has proven to be a significant barrier to a clearer understanding of this area. It has been argued that "one important lesson from the… financial crisis is that authorities with responsibility for monitoring and mitigating risks to financial stability need more timely and comprehensive visibility into risky trends and developments in financial markets".[47] In order to achieve this, "authorities need to augment their data collection so as to capture more granular and timely information on securities lending and repo exposures between financial institutions, including on the composition and evolution of the underlying" assets used for financial collateral and margining purposes.[48] One empirical study corroborates this view arguing that given the lack of knowledge regulators have, coupled with the difficulty in assessing what the effects may be because of bad data, regulators are ultimately uneasy about imposing new regulatory measures that would have a detrimental impact on the financial sector and the economy more broadly.[49] Therefore, in order to design and calibrate potential and effective (margin) regulation, it is essential that the relevant authorities are provided with the necessary granular data.

Secondly, it has been argued that intervention has been timid because the market has noted the possible unintended consequences of reform relating to market illiquidity.[50] The fact that repo and, to a lesser extent securities lending markets provide a valuable funding source, various commentators have suggested against reforming margin as it may result in impairing market liquidity.[51] It is said that any reform would result in higher margins, which would automatically impair the amount of credit a market participant could obtain.[52] The upshot of such reforms would ultimately be "a lower level of market liquidity… [which] could increase the fragility of the financial system" leading to less liquid and efficient markets.[53]

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46 Constancio (n 2). See also, Financial Stability Board (n 2) 1 at 25; Heremans and Pacces (n 13) 558 at 560; Raffan and Benjamin (n 13) 1 at 1; Thiemann *et al* (n 2) 259 at 259.
47 Financial Stability Board (n 32).
48 *Ibid.*
49 Thiemann *et al* (n 2) 259 at 270.
50 BIS Committee on the Global Financial System (n 3) 1 at 4.
51 Thiemann *et al* (n 2) 259 at 269-271.
52 BIS Committee on the Global Financial System (n 3) 1 at 4.
53 Thiemann *et al* (n 2) 259 at 269 - 271.

3 PRIVATE LAW

3.1 Introduction

When one maps the current state of the legal and regulatory framework regarding 'margin' within the EU shadow banking sector, the starting point is to view the sector as a whole. The EU shadow banking sector, and in particular the role of margin within collateral transactions, is regulated by rules stemming from various sources of law, namely public law, private law and self-regulation – each will be briefly discussed in turn.

Firstly, public law is a set of mandatory rules that govern the relationships between the state and general population in pursuit of public interest and distributive justice.[54] Public law relates to government-enforced regulation, principally through EU directives and regulations.[55] Secondly, because financial law is a "functional, pragmatic and non-dogmatic" area of law, EU financial law encompasses rules stemming from European legislative instruments, which have traditionally fallen under the public law umbrella.[56] Within this context, EU private law is often titled "regulatory private law".[57] However, regulatory private law does not start from the traditional position of freedom of contract or party autonomy,[58] but instead "is designed for achieving, fostering or managing" financial market objectives where the legal person functions in a pre-designed and regulatory autonomous role. One pertinent example is the Financial Collateral Directive,[59] which is an EU directive that is implemented into national private laws. Lastly, while legislative instruments originating from the public sector play an important role within the EU shadow banking sector, there also exist private sector rules, often argued to being a *Lex Mercatoria*[60] – a type of self-regulation, which is influenced by the regulat-

54 Public law is the topic of section 4 below. See also, M Hesselink, "The Structure of the New European Private Law" (2002) *6.4 Electronic Journal of Comparative Law*, available at: http://www.ejcl.org/64/art64-2.html; O Cherendnychenko, "Rediscovering the public/private divide in EU private law" (2019) *Eur Law J.* 1 at 1-2.

55 Although as will be shown, private law can also utilise legislative instruments. See also, Article 288 of the Treaty of the Functioning of the European Union 2012/C 326/01 OJ. C 326.

56 See generally, Hesselink (n 54).

57 H W Micklitz, "Administrative Enforcement of European Private Law" in R Brownsford, H W Micklitz and L Niglia, *Foundations of European Private Law* (2011) 563 at 563-564.

58 However, party autonomy and contractual freedom are the starting point for self-regulation, which will be discussed in greater detail below, see section 3.2 "Self-Regulation: *Lex Mercatoria*".

59 Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements ("FCD"). See also, Paech (n 30) 1 at 7.

60 Paraphrasing Anglo-German legal scholar Clive Schmitthoff, the Lex Mercatoria exists within the confines of the principle of party autonomy within private international law. The law of contract is based on party autonomy, therefore, no (advanced) legal system can object to parties making their contractual agreement 'self-regulatory'. See C Schmitthoff, "The

ory framework developed by, amongst others, EU authorities.[61] The primary example of this type of self-regulation are industry standard master agreements, including the GMRA for repos, the GMSLA for securities lending transactions and the Credit Support Annex under the ISDA master agreement for derivatives transactions.[62]

This section will therefore proceed by exploring the role of margin within the EU shadow banking sector in the context of self-regulation and regulatory private law – each will be explored in greater detail as follows.[63]

3.2 Self-Regulation: *Lex Mercatoria*

At the core of self-regulation lies the value that parties are free to pursue their goals and make their own choices without the need for government intervention. In other words, there is an element of *laissez nous faire* ('let us do it') when market participants enter into a private contractual relationship.[64] Such a system was discussed in the *Wealth of Nations* by Adam Smith in 1776, who uses the "invisible hand" metaphor to describe individuals' self-interested pursuit of wealth against the backdrop of minimal state intervention.[65] However, as noted by 21st Century commentators, such a system does not come without limits on economic liberties, which are those imposed by the government to prevent systemic risk and mitigate market failures, particularly negative externalities.[66]

In today's financial marketplace, there are indeed strong parallels with private sector rules and *laissez nous faire* via self-regulatory customs and practices. Self-regulation originated in the medieval period and, in many jurisdictions around the world, effective self-regulation existed before statutory regulation. A pertinent example is the *Lex Mercatoria*, where a form of com-

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Law of International Trade, its Growth, Formulation and Operation" (1964) in C Schmitthoff (ed) *The Sources of the Law of International Trade* 3 at 33. The *Lex Mercatoria* (self-regulation) will be discussed in this chapter further below, see section 3.2 "Self-Regulation: *Lex Mercatoria*".

61 This is particularly true in relation to the EMIR, which heavily interacts with the ISDA Credit Support Annex, as discussed below. See also, T Keijser, "Financial collateral arrangements in the European Union: current state and the way forward" (2017) 22 Unif. L. Rev. 258 at 260. See also, H Eidenmuller, "Lex Mercatoria, The ISDA Master Agreement, and Ius Cogens" (2015) in S Grundmann, F Moslein and K Riesenhuber (eds), *Contract Governance: Dimensions in Law and Interdisciplinary Research* (2015) 407 at 408-409.

62 'Self-regulation' and 'master agreements' will be explored further below. See also, M Haentjens and P de Gioia-Carabellese, European Banking and Financial Law (2020) 235.

63 Public law will be the focus of section 4 below.

64 J S Mill, Principles of Political Economy (1848).

65 A Smith, An Inquiry into the Nature and Causes of the Wealth of Nations (1776) 12-15, 400-401 and 436-437.

66 S Freeman, "Liberal and Illiberal Libertarianism" (2018) in J Brennan, B van der Vossen and D Schmidtz, The Routledge Handbook of Libertarianism, Chapter 8.

mercial law was used by merchants throughout Europe during the medieval period. It emphasised a system of custom and best practice based on freedom of contract, party autonomy and alienability of property.[67] During this period, it was recognised that those who were most familiar with the customs and practices of a particular sector were best suited to create, enforce and resolve those rules without government intervention.[68]

In the modern era, industry associations, such as the International Capital Markets Association ("ICMA"),[69] the International Securities Lending Association ("ISLA")[70] and the ISDA[71] provide important rules. They have a specialised and thorough knowledge of the inner workings of the financial markets and are responsible for developing self-regulatory customs and practices.[72] In particular, the industry associations "have been relatively successful in achieving certain degrees of standardisation in the design, governance, and regulation" of collateral transactions in the shadow banking sector by way of the master agreements.[73] In addition, market participants operating in the shadow banking sector have considerable business incentive to operate in a competitive, financially sound and fair marketplace. Competition and reputation and are powerful motivating forces for proper and sustained behaviour, especially in today's globalised environment where market participants have virtually immediate access to a range of competing markets and products. The threat of potential expulsion from an industry association for breach of its voluntary code is indeed an effective enforcement technique.[74] According to Anglo-German legal scholar, Clive Schmitthoff, self-regulation "in the context of international financial markets amounts in effect to recognition of the need to respect the *Lex Mercatoria*, in the form of standardised documenta-

67 J Matonis, "Lex Mercatoria: The Emergence of a Self-regulated Bitcoin" (28 May, 2012) Forbes.

68 G P Calliess, "Lex Mercatoria: A Reflective Law Guide to An Autonomous Legal System" (2001) 2 German Law Journal. See also, IOSCO, "Model for Effective Regulation" (May 2000) *Report of the SRO Consultative Committee* 1 at 3.

69 This is the industry association responsible for repurchase agreements and the publication of the Global Master Repurchase Agreement in the EU.

70 This is the industry association responsible for securities lending and the publication of the Global Master Securities Lending Agreement in the EU.

71 This is the industry association responsible for derivatives transactions and the publication of the International Swaps and Derivatives Association Master Agreement.

72 IOSCO (n 68) 1 at 4.

73 The master agreements will be briefly discussed below. See also, IOSCO (n 68) 1 at 4; H Nabilou and A Prum, "Shadow Banking in Europe: Idiosyncrasies and their Implications for Regulation" (2019) European Journal of Risk Regulation 781 at 785.

74 The threat of potential expulsion from an industry association for breach of its voluntary code is an effective enforcement technique despite being unenforceable in a court of law. On this, see J Benjamin and D Rouch, "The international financial markets as a source of global law: the privatisation of rule-making?" (2008) Law and Financial Markets Review 78 at 79. See also, IOSCO (n 68) 1 at 5.

tion… Hence, master agreements… are portrayed as exercising… valid claims to provide authoritative guidance".[75]

3.2.1 Master agreements

As discussed in Chapter 5, there is an extensive analysis of collateral transactions in practice and in particular, the role financial collateral and margin play within the relevant master agreements. For that reason, this section will not discuss the role of financial collateral or margin as it operates in the master agreements. The master agreements will therefore only be briefly discussed here.[76]

Master agreements[77] are standardised documents "fondly referred to by… insiders as a piece of private legislation".[78] These documents outline the respective contractual terms of a repo, securities lending and/or derivatives transaction between parties and are important legal tools providing adjudication, enforcement and defining rules by which market participants must adhere.[79] According to IOSCO, master agreements allow for a "flexible, effective and efficient means to provide the necessary protections in today's ever-changing global" and financial marketplace.[80] Their existence enables market participants to swiftly adapt to changing market conditions and business needs.[81] This is especially important given that advances in technology ensure financial markets remain increasingly global and trade is conducted without regard to national boundaries. Significantly, master agreements adapt to financial innovation in ways that national and regional regulation cannot, with transactions crossing national boundaries, often where regulatory powers cannot.[82] By their very nature, master agreements allow greater flexibility for market participants to tailor their agreement, such as the type and amount of financial collateral, the appropriate margin/haircut levels and events of default.[83]

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75 Schmitthoff (n 60) 3 at 33. See also, Eidenmuller (n 61) 407 at 408-409; B Muscat, Insolvency Close-out Netting: A Comparative Study of English, French and US Law in a Global Perspective (2020) 1 at 44.

76 For an in-depth discussion of the master agreements and related issues, such as property law, choice of law and conflict of laws, see generally Chapters 3 and 5.

77 Including the Global Master Repurchase Agreement ("GMRA") for repurchase agreements, the Global Master Securities Lending Agreement ("GMSLA") for securities lending transactions and the International Swaps and Derivative Association ("ISDA") Credit Support Annex under the ISDA Master Agreement for derivatives transactions.

78 K Pistor, The Code of Capital (2019) 146.

79 Benjamin and Rouch (n 74) 78 at 79.

80 IOSCO (n 68) 1 at 2. See also, Eidenmuller (n 61) 407 at 407.

81 Ibid.

82 IOSCO (n 68) 1 at 5 and 12.

83 Pistor (n 78) 145. In addition, Chapter 5 extensively discusses the relevant provisions under the master agreements and in particular the use of financial collateral, margin and choice of law clause.

A cause for concern, however, is the potential risks that could arise in respect of the substantial flexibility market participants have in tailoring agreements. Contractual clauses, which are drafted by market participants who have an intimate knowledge of the market, do so with a view to maximising benefits whilst minimising costs. The fact that self-interest is a central human paradigm, profit maximising market participants rarely take into account the broader economic and societal issues when entering into a transaction. One only has to look to the Global Financial Crisis, and in particular the systemic risk rising out of financial collateral, margin and leverage to fully grasp the broader systemic issues.[84]

3.3 Interplay Between the Private Sector and Public Law

As a result of the Global Financial Crisis, the interplay between the private sector, regulatory private law and public law indicates that there is now a growing synergy between these sources of law. There has indeed been a marked increase in industry engagement, seen in discussions surrounding global convergence, which has stimulated consideration of convergence in issues associated with collateral transactions, such as that related to mandatory margin requirements.[85] For example, as a result of the changing regulatory landscape, there is now considerable interplay between the ISDA Credit Support Annexes and the EMIR/RTS. Because many market participants in the EU now have to be regulatory compliant when collateralising a derivatives transaction, it is helpful that ISDA, in 2016, published new Credit Support Annexes designed to accommodate new regulatory requirements. Given that many current open transactions underpinned by the 1995 ISDA Credit Support Annex are not regulatory compliant, it was concluded that new Credit Support Annexes for initial and variation margin be prepared to provide market participants with a quick and efficient means of complying with new EMIR/RTS standards.[86] The 2016 Initial and Variation Margin Credit Support Annexes are, therefore, updated versions of the 1995 ISDA Credit Support Annex, which allows (new and existing) parties to establish the applicable financial collateral and margin requirements compatible with the EMIR/RTS.[87] Sadly, the same level of engagement has yet to be reached with regard to privately negotiated repo and securities lending transactions.

84 IOSCO (n 68) 1 at 4.
85 Benjamin and Rouch (n 74) 78 at 80.
86 Harding and Harding (n 17) 42 and 105.
87 See the ISDA website: https://www.isda.org/book/2016-credit-support-annex-for-variation-margin-english-pdf/. It should also be observed that initial margin is, at the time of writing (13 May 2020), still being phased in until 1 September 2022 – it is therefore possible that ISDA will issue further CSAs with regard to initial margin.

3.4 Financial Collateral Directive

The Financial Collateral Directive was discussed in detail in Chapter 3. Topics within the Financial Collateral Directive such as the types of financial collateral (cash, financial instruments and credit claims), the personal and material scope of the Financial Collateral Directive (including property law (title transfer and security interest) and possession and control) and conflict of laws, will not be discussed again in this section.[88]

Instead, this section will focus on the extent by which collateral transactions and margin benefits from special insolvency treatment, which is covered in Articles 7 and 8 of the Financial Collateral Directive.[89] In particular, Article 7 of the Financial Collateral Directive relates to the application of close-out netting despite insolvency and Article 8 of the Financial Collateral Directive relates to the application of margin despite insolvency. Before exploring this special insolvency treatment however, it may first be helpful to outline traditional insolvency proceedings, broadly speaking.[90] This will prove a useful benchmark when coming to discuss special insolvency proceedings.

3.4.1 Traditional insolvency law

Under traditional insolvency law principles, all open contracts entered into by the insolvent party and its counterparties are immediately 'stayed'. This means that the insolvent party and its counterparties are no longer able to perform their contractual obligations. The intention behind this principle is two-fold. Firstly, to avoid a run by creditors on the insolvent party's estate. Secondly, to keep the value inside the insolvent estate, and, in many jurisdictions, to even allow the insolvency administrator to increase the value of the insolvent estate by 'cherry picking' and executing favourable contracts.[91] The reasoning of the last element is in place to increase the amount available for sharing between the general creditors.[92] The primary objective in traditional insolvency proceedings is to maximise the value of assets of the failed firm in the interest of creditors.

88 For a discussion of these topics, refer to Chapter 3.

89 Paech (n 30) 1 at 7.

90 The term 'insolvency' relates to a financial state of being – one that is reached when it is no longer possible to pay off debts. The term 'insolvency' can be distinguished from the term 'default', which describes the situation where there has been a failure to meet an obligation.

91 F Garcimartin and M Isabel Saez, "Set-off, netting and close-out netting", in M Haentjens and B Wessels, Research Handbook on Crisis Management in the Banking Sector (2015) 331 at 337.

92 Paech (n 30) 1 at 36-38.

3.4.2 Special insolvency treatment

> *"Representatives of derivatives traders, the modern captains of finance, successfully lobbied the legislatures in more than fifty countries to amend their bankruptcy codes and create a "safe harbor" for derivatives and repos* [and securities lending], *thereby exempting these financial assets from rules that are binding for everyone else"*[93] [emphasis added].

There are a number of financial contracts, such as collateral transactions, which are generally understood to be of a special character, and as such, the 'automatic stay' of the traditional insolvency principles outlined above do not apply as they are believed to do more harm than good. This means that the normal risk adjustment process of posting sufficient financial collateral and margining techniques are no longer applicable once the 'stay' is engaged. The main reason for this special treatment (safe harbour) is because collateral transactions are prone to carry risk that may quickly become incalculable when the insolvency stay is engaged.[94] The concern is that because collateral transactions are generally of high value and because traditional insolvency proceedings often take many years to conclude, open transactions subject to an insolvency stay puts the solvent party at risk of becoming heavily under-secured.[95] It has been argued that the "prompt liquidation of an insolvent's position is generally desirable to minimize the potentially massive losses and chain reaction of insolvencies that could occur if the market were to move sharply in the wrong direction".[96] Unsurprisingly, this volatility may (and generally does) trigger systemic consequences, which is why parties to the collateral transaction are exempted from the traditional automatic insolvency stay that would often apply under general property and insolvency laws.[97]

Figure 14 below provides an illustration of the core aspects of the special insolvency treatment for collateral transactions found within Articles 7 (close-out netting) and 8 (margining) of the Financial Collateral Directive. Each will be discussed in turn.

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93 Pistor (n 78) 144-145.

94 *Ibid* at 148.

95 Paech (n 30) 1 at 36-38.

96 F R Edwards and E R Morrison, "Derivatives and the Bankruptcy Code: Why the Special Treatment?" (2005) *Working Paper Series No. 258 Columbia law School* 1 at 7.

97 ISDA, "Challenges with Expanding BRRD Moratoria Powers" (August, 2017). See also, European Parliament legislative resolution of 16 April on the proposal for a directive of the European Parliament and of the Council amending Directive 2014/59/EU (16 April, 2019); Paech (n 30) 1 at 36-39; European Commission, "Press Release: EU Banking Reform: Strong Banks to Support Growth and Restore Confidence" (23 November, 2016), available at: http://europa.ei/rapid/press-relaese_IP-16-3731_en.htm; M Haentjens, Y Diamant, J Siena, R Spence and A Zacaroli, *Financial Collateral: Law and Practice* (2020) 286.

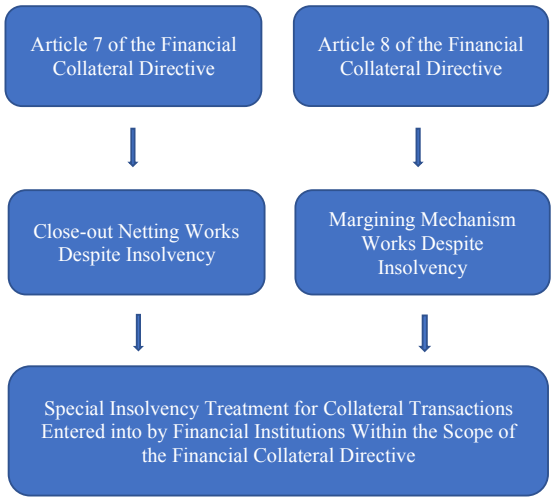

Figure 14: Article 7 and 8 of the Financial Collateral Directive

3.4.3 *Close-out netting*

The purpose of close-out netting is to reduce the exposures on open contracts should a party become insolvent during the lifecycle of the contract. Close-out netting thus operates by way of forming an agreement that typically allows the solvent party to terminate all contracts between parties, calculate the losses and gains on each contract, and then set them off so that a single balance is owing.[98] This is the 'net' amount.[99]

Collateral transactions are therefore usually dealt with *en-masse* from a capital requirement and risk management perspective. For instance, it is not uncommon for party A and party B to have many outstanding mutual obligations through various collateral transactions. It would arguably be cheaper and more efficient to assess the relevant risk, post adequate financial collateral/margin and calculate the necessary underlying capital if these transactions are dealt with on an aggregate basis.[100]

As noted above in section 3.4.2, collateral transactions covered by close-out netting are often protected by 'safe harbours', meaning that these transactions are shielded from traditional insolvency law rules that would otherwise be

98 Garcimartin and Isabel Saez (n 91) 331 at 331-333. See also the legal definition of close-out netting under Article 2 (1) (98) of Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms; Article 2 (1) (n) (i) of FCD.

99 Close-out netting can be distinguished from 'set-off'. 'Set-off' refers to a settlement of mutual debt between a creditor and a debtor through offsetting transaction claims. See also generally, Muscat (n 75); Haentjens *et al* (n 97) 316.

100 Paech (n 30) 1 at 36-39.

applicable. These safe harbours thus serve to protect the parties' enforcement of the contractual arrangements against insolvency law. Close-out netting is thereby said to have a practical effect comparable to a 'super priority' in that it is exempted to some extent from the equal treatment of creditors *(pari passu)* because of set-off, which results in full payment of claims.[101]

The natural playing field of close-out netting provisions are the industry standard master agreements, which contain clauses for contractual termination and liquidation of the specific transaction as one of their most important elements.[102] Bankruptcy is indeed a triggering event that allows the non-defaulting party to 'close-out' all outstanding claims.[103] The non-defaulting party does not have to wait, there is no concern for other creditors and no consideration is given to reorganising the defaulting debtor.[104] In addition, provided the parties are within scope,[105] the protection of close-out netting against the commencement of traditional insolvency proceedings is also enforced under Article 7 of the Financial Collateral Directive. The global importance of close-out netting cannot be overemphasised. Virtually all entities operating in the shadow banking sector cover virtually all collateral transactions with a close-out netting provision. Close-out netting is, therefore, a crucial form of protection.

Close-out netting is therefore viewed by market participants as an important risk mitigation tool that reduces the exposures to a counterparty and, as a consequence, counterparty risk. In particular, close-out netting has been argued to reduce systemic risk in the financial markets. The derivatives market, for instance, has expanded significantly over the past decades. Because derivative transactions are systemically risky, primarily due to the value of the derivative contract being derived from the underlying asset – which can cause the value of the derivative contract to substantially fluctuate – defaults in the derivatives markets are perceived to cause systemic damage to the financial markets. Close-out netting can therefore "reduce the gross exposures incurred

101 Garcimartin and Isabel Saez (n 91) 331 at 337. See also, Article 8 of FCD; G Yeowart, R Parsons, E Murray and H Patrick, *The Law of Financial Collateral* (2016) 436-438; UNIDROIT, *Principles on the Operation of Close-out Netting Provisions* (2013), Principle 7 on the Operation of Close-out Netting Provisions in Insolvency and Resolution; Haentjens *et al* (n 97) 286; R J Mokal, "Liquidity, Systemic Risk and the Bankruptcy Treatment of Financial Contracts" (2015) *Brooklyn Journal of Corporate, Financial and Commercial Law* 1 at 20.

102 Paragraph 10 of the GMRA 2011; Paragraph 11 GMSLA 2010; Paragraphs 4 (b) and 6, 1995 ISDA English Law CSA and Paragraphs 4 (b) and 6, 2016 English Law CSA for Variation Margin. See also, Garcimartin and Isabel Saez (n 91) 331 at 337. Also, please see preceding sections above for the respective close-out netting provisions and how they operate under the respective master agreement.

103 *Ibid.*

104 Pistor (n 78) 147 and 149.

105 This relates to both 'material' scope and 'personal' scope under the Financial Collateral Directive. See Chapter 3 for a more in-depth discussion.

in derivative transactions to net exposure and, consequently, the systemic risk in the derivatives market is reduced".[106]

According to Haentjens and others, *Figure 15* below illustrates that the notional amount of outstanding OTC derivative contracts by end December 2018 was USD 544 trillion, the gross credit exposure was USD 2.3 trillion and the gross market value (the cost of replacing the derivative contract at market value) was USD 9.7 trillion.[107] by deducting the gross credit exposure from the gross market value reflects valid and enforceable close-out netting arrangements and importantly, these calculations show that close-out netting can significantly reduce counterparty exposure, by approximately 75%, which consequently has a positive effect on financial stability.[108]

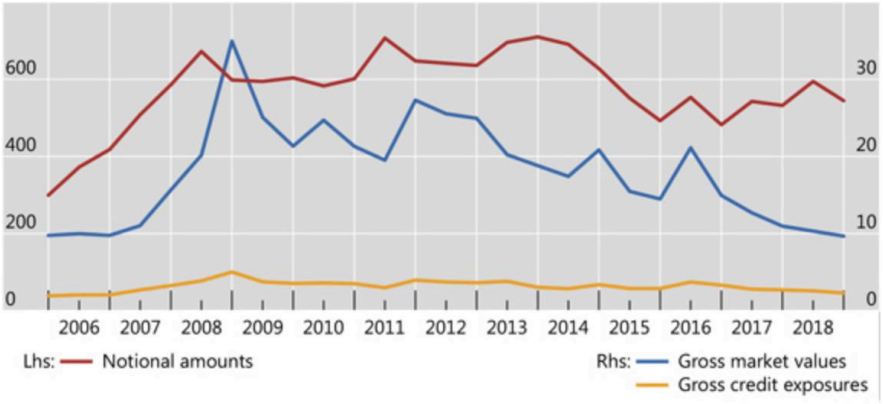

Figure 15: Outstanding OTC Derivatives Amounts
Source: Bank for International Settlements[109]

3.4.3.1 Close-out netting: some observations

However, despite close-out netting being a crucial form of protection, it does raise concerns. In particular, close-out netting has been argued to give rise to a moral hazard problem. Moral hazard occurs when an entity has incentive to increase its risk exposure knowing it will not bear the full costs of that risk. The risk in this instance relates to over-lending and excessive leverage due

106 Haentjens *et al* (n 97) 317. See also, Pistor (n 78) 149; D L Mengle, "Close-Out Netting and Risk Management in Over-the-Counter Derivatives" (2010) *ISDA and Fordham University* 1 at 10; Mokal (n 101) 1 at 25.

107 Haentjens *et al* (n 97) 287. See also generally, Bank for International Settlements, "Statistical release: OTC derivatives statistics at end December 2018" (2 May, 2019), available at: https://www.bis.org/publ/otc_hy1905.pdf.

108 Haentjens *et al* (n 97) 316-317.

109 See generally, Bank for International Settlements (n 107). See also initial inspiration, Haentjens *et al* (n 97) 286-287.

to low *ex-ante* margin requirements.[110] Intuitively, close-out netting gives a 'super-priority' to certain market participants at the expense of the "priority rights of creditors and subordinated trade creditors, as well as claims of employees and other ordinary creditors.[111] Why, then, would parties in the EU shadow banking sector not want to maximise their benefits (through lending and leverage) and enter into a transaction, ensuring 'super-priority' status, "if all it takes is tweaking a contract?"[112] Significantly, an enforceable close-out netting provision insulates and allows non-defaulting parties to exit the transaction quicker than everyone else.[113] The priority given to these market participants creates a moral hazard problem because it "reduces the incentives… to monitor risk taking".[114] This is particularly true given the expense to other creditors of the insolvent estate – whose available assets would be significantly reduced and the value of the estate somewhat eroded.[115] Consequently, Katarina Pistor has argued that while there are obvious benefits of close-out netting, it equally "helped deepen the crisis".[116]

In response to the potential adverse effects posed by close-out netting since the Global Financial Crisis, the European legislature has been slowly introducing measures to limit the use of close-out netting.[117] For example, the Bank Recovery and Resolution Directive[118] has introduced moratorium powers, which gives power to resolution authorities to suspend payment or delivery obligations, pursuant to any contract to which an institution in resolution is party, for a fixed period of two business days (in practice, this is generally over the weekend – from Friday to Monday).[119] In addition, on 23 November 2016, the European Commission published proposed amendments

110 Pistor (n 78) 149 and 207.
111 *Ibid* 149.
112 *Ibid.*
113 Bank for International Settlements, "Report on OTC Derivatives: Settlement procedures and counterparty risk management" (1998) *CPSS Publications* 1 at 2.
114 Mengle (n 106) 1 at 11.
115 Edwards and Morrison (n 96) 1 at 17. See also, Mokal (n 101) 1 at 29.
116 Pistor (n 78) 149.
117 European Commission, Proposal for a Directive of the European Parliament and of the Council amending Directive 2014/59/EU on loss-absorbing and recapitalisation capacity of credit institutions and investment firms and amending Directive 98/26/EC, Directive 2002/47/EC, Directive 2012/30/EU, Directive 2011/35/EU, Directive 2005/56/EC, Directive 2004/25/EC and Directive 2007/36/EC (23 November 2016).
118 Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council ("BRRD").
119 Recital 27 of Directive (EU) 2019/879 of the European Parliament and of the Council of 20 May 2019 amending Directive 2014/59/EU as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms and Directive 98/26/EC ("BRRD 2"). See also, Article 69 of BRRD.

to these moratorium powers by increasing the moratorium period from two working days to five working days.[120] These moratorium powers do undermine and challenge the effectiveness of financial netting and collateral arrangements, by removing the protection of close-out netting provided by the Financial Collateral Directive (and potentially the master agreements – provided parties are within the scope of the Financial Collateral Directive and the Bank Recovery and Resolution Directive).[121]

Importantly, ISDA have noted that the moratorium powers are said to "pose significant challenges to financial stability, and introduce new levels of uncertainty" into the marketplace, leaving counterparties significantly underexposed for a prolonged period of time.[122] Yet on the other hand, not every collateral transaction raises systemic concerns. It is therefore a somewhat biased view that every transaction which carries an enforceable close-out netting provision gives priority to one party over another. This is especially true given that not every transaction is systemically risky and, therefore, actually warrants priority. It is therefore the author's view that a more balanced approach to close-out netting should also be considered; one that balances the interests of the party under resolution against the systemic interests of the counterparties who rely on close-out netting to mitigate their risk exposure.[123] Such an approach would ensure that parties to the transaction would measure risk accordingly, namely mitigating over lending and excessive leverage by posting appropriately higher margin levels at the point of trade.

3.4.4 Margining

The second aspect of the special insolvency treatment relates to Article 8 of the Financial Collateral Directive and in particular the issue of margin. Under traditional insolvency principles, the insolvency court has the power to prevent collateral/margin transfers that occurred shortly prior to insolvency. According to Phillip Paech, this is generally within three months of insolvency, but the precise time horizon does depend on applicable national bankruptcy laws.[124] The reason is that such transfers are regarded as giving preferential treatment

120 European Commission, Proposal for a Directive of the European Parliament and of the Council amending Directive 2014/59/EU on loss-absorbing and recapitalisation capacity of credit institutions and investment firms and amending Directive 98/26/EC, Directive 2002/47/EC, Directive 2012/30/EU, Directive 2011/35/EU, Directive 2005/56/EC, Directive 2004/25/EC and Directive 2007/36/EC (23 November 2016) 1 at 4.

121 Moratorium powers only apply to parties within the scope of the BRRD, it does not apply to every collateral transaction as certain parties are not within the scope of the BRRD.

122 ISDA (n 97). See also, Paech (n 30) 1 at 36-39; European Commission (n 97); Pistor (n 78) 149.

123 Edwards and Morrison (n 96) 1 at 8. See also, European Banking Federation, "Solvent Wind-down of Derivatives and Trading Portfolios" (26 July, 2019) 1 at 4, available at: https://www.fsb.org/wp-content/uploads/EBF-2.pdf.

124 Paech (n 30) 1 at 9.

to the relevant collateral taker *vis-à-vis* the other creditors of the insolvent estate. However, for the reasons discussed above, under section 3.4.2 '*Special insolvency treatment*', "certain insolvency provisions are disapplied".[125] Specifically, the special insolvency treatment extends to collateral/margin being provided shortly before insolvency as enforced in Article 8 of the Financial Collateral Directive. According to the wording of the Financial Collateral Directive under Article 8 (3) (a) and (b), where there is:

> *"(a) an obligation to provide financial collateral or additional financial collateral in order to take account of changes in the value of the financial collateral or in the amount of the relevant financial obligations, or*
>
> *(b) a right to withdraw financial collateral on providing, by way of substitution or exchange, financial collateral of substantially the same value,*
>
> *Member States shall ensure that the provision of financial collateral, additional financial collateral or substitute or replacement financial collateral… shall not be treated as invalid or reversed or declared void".*[126]

Similar to preceding section 3.4.3 on *'Close-out netting'*, in order for parties to benefit from Article 8 and the insolvency protection afforded under the Financial Collateral Directive, they have to be within the scope of the directive.[127]

4 PUBLIC LAW

The Global Financial Crisis has triggered a seismic shift in the way the shadow banking sector is to be regulated. While it is laudable that the public sector is attempting to transform "shadow banking into a resilient market-based financial system" via the introduction of various directives and regulations,[128] it is equally true that the public sector has much work to do.[129] The term 'public sector' in this context relates to public law (administrative law) and the implementation of government-enforced legislation, such as European

125 Article 8 FCD.
126 Article 8 (3) (a) and (b) FCD.
127 For an in-depth discussion in relation to material' scope and 'personal' scope under the Financial Collateral Directive, see Chapter 3.
128 Although as noted previously, directives and regulations can also be rooted in private law.
129 Financial Stability Board, "Transforming Shadow Banking into Resilient Market-based Finance: Re-hypothecation and collateral re-use: Potential financial stability issues, market evolution and regulatory approaches" (25 January, 2017). See also, A Moreira and A Savov, "Shadow banking and the economy" (2014) *CEPR Policy Portal*, available at: https://voxeu.org/article/shadow-banking-and-economy.

directives (which are transposed into national law) and regulations (which have direct effect and are directly applicable in all EU Member States).[130]

As previously noted, the purpose of financial regulation is to preserve financial stability, mitigate systemic risk and prevent market failures.[131] Because a failure of financial regulation is often cited as one of the main causes of the crisis, and considering the procyclical effects of margin were a source of systemic risk during the crisis, it is unfortunate that this is an issue yet to be substantially tackled. It has been over a decade since the Global Financial Crisis and while some regulatory progress has been made, there is still, however, "no unified regulatory framework in the EU level that governs the settings of margins and haircuts for all non-centrally… cleared transactions, derivatives and SFTs" in the shadow banking sector.[132]

However, despite there being no overarching EU regulatory framework in relation to margin within the shadow banking sector, margin is still addressed, directly and indirectly, in several parts of the EU regulatory framework. A key example of margin being addressed *directly* is EMIR and the accompanying RTS, which have arguably made significant progress in relation to mandatory margin requirements and has therefore been described as a "milestone" for making the derivatives markets in the EU safer.[133] Other forms of *indirect* public law intervention, such as the Securities Financing Transactions Regulation ("SFTR")[134] and provisions in the Alternative Investment Fund Managers Directive ("AIFMD")[135] and the Undertakings for Collective Investments in Transferable Securities ("UCITS") Directive[136] concerning leverage levels, which can have the same effect as implementing mandatory margin requirements, have sadly been less convincing.[137] This section will therefore proceed by mapping the current state of the EU regulatory framework and

130 Article 288 of the Treaty on the Functioning of the European Union 2012/C 326/01 OJ. C 326.

131 J Armour, D Awrey, P Davies, L Enriques, J N Gordon, C Mayer and J Payne, *Principles of Financial Regulation* (2016) 51.

132 European Systemic Risk Board (n 26) 1 at 42.

133 European Systemic Risk Board, "Revision of the European Market Infrastructure Regulation" (2017) 1 at 2 and 5, available at: https://www.esrb.europa.eu/pub/pdf/other/20170421_esrb_emir.en.pdf.

134 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 ("SFTR").

135 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) ("AIFMD").

136 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").

137 As to how leverage can have the same effect as implementing mandatory margin requirements will be discussed below. See also, European Systemic Risk Board (n 26) 1 at 55.

exploring the aforementioned directives and regulations in relation to margin within the shadow banking sector.

4.1 EMIR: Central Counterparty Clearing

Since the 2007/2008 Global Financial Crisis, and in accordance with the 2009 G20 Pittsburgh Summit,[138] an increasing number of jurisdictions, including the EU, require "all standardised OTC derivatives contracts to be cleared… [and settled] through a" central counterparty ("CCP").[139] Commentators often argue that because "derivatives contracts… are systemically risky and, indeed, were a cause of the financial crisis", mandatory CCP clearing is justified as a means to reduce systemic risk.[140] In particular, the existing CCP regulatory framework under EMIR consists of various measures explicitly designed to reduce systemic risk, namely "prudential requirements" including liquidity and capital requirements, initial and variation margins and mechanisms for loss sharing.[141] Significantly, as a way to reduce systemic risk, "mitigating procyclicality of margin requirements in derivatives transactions has been a major policy objective in regulating CCPs".[142] However, it should also be noted that mandatory CCP clearing is not a watertight solution. In fact, there is "clear consensus in the financial markets that CCPs do not eliminate risk, they just reallocate it and most likely centralize it" leading to CCPs themselves becoming the main hub for risk.[143]

4.1.1 Defining 'clearing', 'settlement' and a 'CCP'

A 'CCP' is typically a well-capitalised entity "that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer" – thus ensuring the

138 G20 Leaders' Statement (n 16).

139 The definition of a 'CCP', 'clearing' and 'settlement' will be analysed in greater detail below. See also, Recitals 5 and 98 of EMIR. In addition, the USA impose mandatory CCP clearing on certain transaction through Title VII of the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act.

140 S L Schwarcz, "Central Clearing of Financial Contracts: Theory and Regulatory Implications" (2019) *167 (6) University of Pennsylvania Law Review* 1327 at 1330-1333.

141 See generally, Articles 16 and 40-50 EMIR.

142 These risk mitigation methods will be discussed in greater detail below. See also, H Nabilou and I G Asimakopoulos, "In CCP we trust… or do we? Assessing the regulation of central clearing counterparties in Europe" (2020) 15 (1) *Capital Markets Law Journal* 70 at 71.

143 These risks will be discussed in greater detail below. See also, Nabilou and Asimakopoulos (n 142) 70 at 77.

performance of open contracts.[144] 'Clearing' refers to the activities and processes carried out between trade and settlement. It is a post-trade mechanism and involves "the process of transmitting, reconciling and, in some cases, confirming transactions prior to settlement, potentially including the netting of transactions and the establishment of final positions for settlement… This term also refers to the balancing of profits and losses and the daily calculation of collateral" and margin.[145] Settlement can be defined as "the discharge of an obligation in accordance with the terms of the underlying contract".[146] A contract is deemed to be cleared when the performance of the seller and the buyer is guaranteed and settled by the CCP.[147]

4.1.2 Modus operandi of central counterparty clearing

In its simplest form, a CCP interposes itself between the contracting parties to a collateral transaction.[148] This means that no direct contract exists between the original contracting parties (as in a bilateral transaction[149]) but rather, two separate contracts exist with the CCP and each counterparty (clearing member[150]). The CCP is therefore the primary counterparty on both sides of the contract – "the buyer to every seller and the seller to every buyer".[151] As a result, The CCP legally assumes all contractual rights, obligations and risks arising from the contract. The legal process whereby the CCP is positioned between the buyer and the seller is known as 'novation', which is the replace-

144 Article 2 (1) EMIR. See also, The Committee on Payment and Settlement Systems, "A Glossary of Terms Used in Payments and Settlement Systems" (2016) 1 at 3, available at: https://www.bis.org/dcms/glossary/glossary.pdf?scope=CPMI&base=term. CCPs include European Central Counterparty N.V., KDPW_CCP and Keler CCP to name but a few. For an exhaustive list, see ESMA, "List of Central Counterparties authorised to offer services and activities in the EU" (9 April, 2020), available at: https://www.esma.europa.eu/sites/default/files/library/ccps_authorised_under_emir.pdf.

145 The Committee on Payment and Settlement Systems (n 144) 1 at 4. See also, Article 2 (3) EMIR. In addition, clearing entities include Eurex Clearing, Nasdaq OMX Clearing AB and LME Clear Ltd to name but a few.

146 The Committee on Payment and Settlement Systems (n 144) 1 at 16.

147 For convenience, the phrase 'CCP clearing' will be used hereinafter to refer to contracts that are cleared and settled through a CCP. See also, Nabilou and Asimakopoulos (n 142) 70 at 71.

148 It should be noted that CCP clearing can apply to all collateral transactions, however, only standardised derivatives require mandatory central clearing. In addition, CCPs also perform various other functions, such as collateral management and margin – these will be discussed in greater detail below. See also, A G Balmer, *Regulating Financial Derivatives: Clearing and Central Counterparties* (2018) 45.

149 See Chapter 5 for an overview of a bilateral transaction.

150 The term 'clearing member' will be discussed below.

151 R R Bliss and R S Steigerwald, "Derivatives clearing and settlement: A comparison of central counterparties and alternative structures" (2006) *Economic Perspectives* 22 at 24. See also, The Committee on Payment and Settlement Systems (n 144) 1 at 3; Schwarcz (n 140) 1327 at 1329-1330; Article 2 (1) EMIR.

ment of one contract with one or more contracts.[152] As depicted in *Figure 16* below, the CCP replaces "the web of bilateral transactions with a hub-and-spoke structure that has the CCP at the centre".[153]

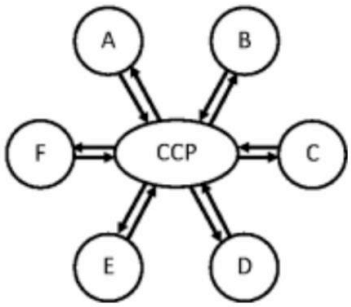

Figure 16: Hub-and-Spoke CCP Structure[154]

Since a CCP legally assumes all rights, obligations and risks arising from the contract, it must, for its own and other members' sake, carefully vet all counterparties. For this reason, CCPs only deal with creditworthy and well capitalised counterparties who have the capacity to undertake all operational aspects required (such as the posting of high-quality collateral,[155] initial and variation margin requirements[156] and default fund contributions[157]) – these entities are referred to as 'clearing members'. In order to conduct a cleared transaction, clearing members have 'clients', who will then conduct the trade on behalf of their client through the CCP. Building from *Figure 16* above, a visual example depicted in *Figure 17* below helps illustrate how the client, clearing member and CCP process operates in practice.

152 J Gregory, *Counterparty Credit Risk: The new challenge for global financial markets* (2010) 373. See also, Balmer (n 148) 39.
153 For an in-depth discussion about how bilateral collateral transactions operate, see Chapter 5. See also, European Systemic Risk Board (n 26) 1 at 23.
154 Gregory (n 152) Chapter 6 (generally).
155 Article 46 (1) EMIR.
156 Article 41 EMIR.
157 Article 45 (2) EMIR.

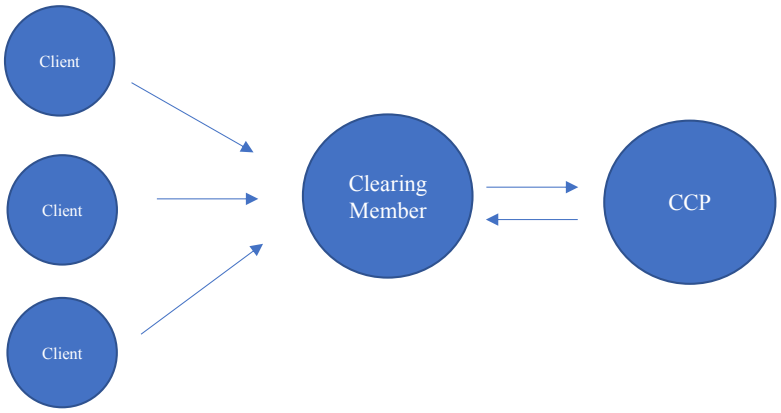

Figure 17: Correlation between CCP, Clearing Member and Client

Figure 18 below illustrates the way by which clearing members transact with a CCP. As a starting point, it is important to note that the CCP functions on the basis of a 'matched-book'. Namely, every position the CCP takes on the asset side of the balance sheet is off-set and matched by an opposite position on the liability side of the balance sheet.[158] For example, a transaction that is cleared through a CCP consists of two transactional legs. In the opening leg of the transaction, party A enters into a contract with the CCP by, for example, providing cash to the CCP; in return, the CCP provides financial collateral to party A. Simultaneously, Party B enters into a contract with the CCP by providing financial collateral to the CCP; in return, the CCP provides cash to party B.

Additionally, CCPs require the mutual posting (by party A and party B) of initial margin to account for the risk that each respective party brings to the CCP by having its trade cleared there.[159] As noted in previous chapters, initial margin is posted at the point of trade and is predetermined, fixed value cash or non-cash financial collateral with the objective of protecting the CCP from contractual non-performance. In practice, initial margin is in place to cover the loss that a CCP may sustain if it requires to wind down or liquidate a portfolio of a defaulting member. After doing due diligence, the onus is on the CCP to make an assessment on a case-by-case basis, of the potential future loss that it may sustain.[160] Issues such as counterparty risk, credit and market risk and potential procyclicality are all taken into consideration when determining initial margin levels.[161] For instance, the higher the initial margin

158 Nabilou and Asimakopoulos (n 142) 70 at 74.
159 D Domanski, L Gambacorta and C Picillo, "Central clearing: trends and current issues" (2015) *BIS Quarterly Review* 59 at 60-61.
160 Article 41 (2) EMIR.
161 R Heckinger, R T Cox and D Marshall, "Cleared margin setting at selected CCPs" (2016) *4 Economic Perspectives* 1 at 6.

the riskier the transaction and the lower the initial margin the less risk involved.

In the closing leg of the transaction, there is a commitment by party A, party B and the CCP to redeliver the respective contracted for assets. For example, party A will provide the CCP with financial collateral and in return, the CCP will provide party A with cash. Simultaneously, party B will provide the CCP with cash and in return, the CCP will redeliver financial collateral. Finally, the CCP will redeliver any initial or variation margin.[162] On top of this, the clearing members bear the costs of transacting through a CCP. This is generally charged per cleared transaction. Often, clearing members are also required to pay a one-off admission fee as well as an annual membership fee.[163]

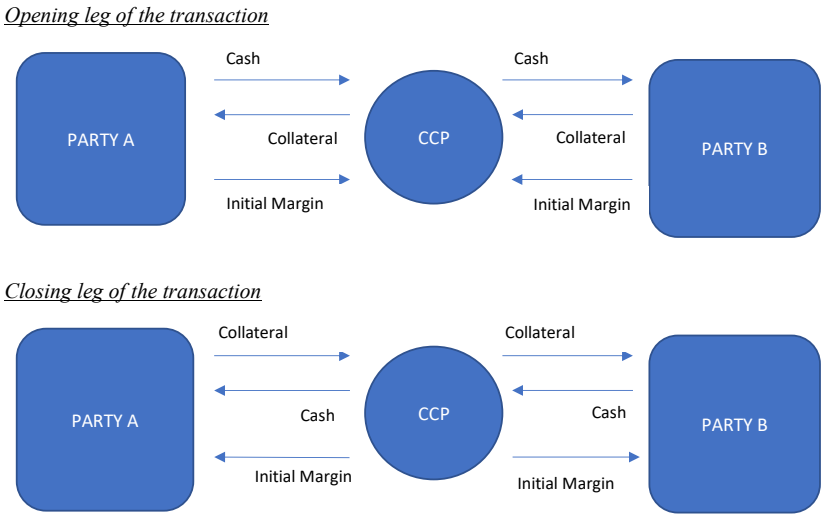

Figure 18[164]

4.1.3 *Variation margin*

In addition to posting initial margin, party A and party B may also be asked, often daily, to post variation margin following the mark-to-market valuation

162 Variation margin will be discussed below, see section 4.1.3 "*Variation margin*".

163 J Capel, M Hendrikx, A Hondius, A Kosse, T T Man and M Wennekes, "All the Ins & Outs of CCPs" (2013) *De Nederlandsche Bank* 1 at 16.

164 A Miglietta, C Picillo and M Pietrunti, "The impact of CCPs' margin policies on repo markets" (2015) 515 BIS Working Papers 1 at 7, available at: https://www.bis.org/publ/work515.pdf.

of individual positions *vis-à-vis* the CCP.[165] As noted in previous chapters, mark-to-market addresses daily shifts in valuation and are payments from the clearing member to the CCP (or vice versa) to manage and mitigate risk exposure. As noted by Eurex Clearing, variation margin is posted by either the CCP or the clearing member to ensure the "daily settlement of profits and losses".[166] *Figure 19* below provides a working example and illustrates that in practice, following a mark-to-market valuation, if a party is 'out of the money' then the counterparty must post variation margin to the affected party (see *Figure 19* below – party A to CCP). Conversely, if a party is 'in the money', then that party must return the appropriate amount, via variation margin, to the affected party (see *Figure 19* below – CCP to party B).[167]

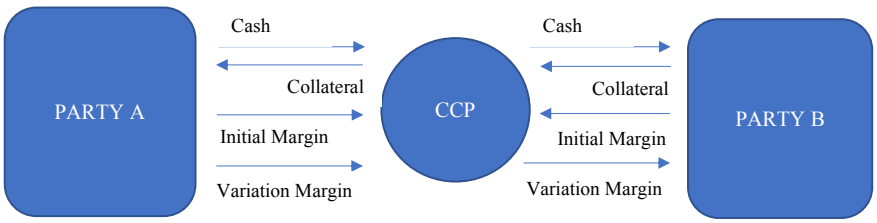

Figure 19

Figures 17, 18 and *19* above illustrate the basic operational steps that take place when parties have their trade cleared through a CCP. Given the importance of such transactions, and in order to gain a better understanding of why mandatory CCP clearing is being recommended as a way to mandatorily implement margin requirements in the EU shadow banking sector, a deeper analysis into CCPs' risk mitigation framework is necessary.

4.1.4 Risk mitigation

A crucial role of a CCP is to monitor and manage counterparty credit risk (the risk that a counterparty does not fully meet its financial obligations under the contract), liquidity risk (the risk that a counterparty has an insufficient amount of funds to meet its obligations under the contract) and market risk (the risk of financial loss as a result of valuation and price changes). CCPs manage these

165 Variation margin will be discussed in greater detail below. See also, Miglietta *et al* (n 164) 1 at 7.

166 Eurex Clearing, "Margining Process" (accessed 15 June, 2020), available at: https://www.eurexclearing.com/clearing-en/risk-management/margining-process.

167 Balmer (n 148) 49-50.

risks by holding pre-funded and segregated financial resources in the form of initial margin, variation margin and default fund contributions.[168]

However, if a party defaults, the CCP then becomes the counterparty to the defaulted position and as such, must continue to meet the various obligations to its surviving participants. The CCP can therefore face a potential loss from present and future changes in the value of the defaulting participant's portfolio until it is able to close-out or liquidate that participant's position(s). To contain a clearing member's default within the CCP and prevent contagion across the market, CCPs rely upon a so-called 'default waterfall' to cover any resulting losses.[169]

4.1.5 Default waterfall

In view of the pivotal role played by CCPs, a defaulting clearing member (and a CCP for that matter) can have substantial consequences for not only the financial markets, but also the economy as a whole. Risk is therefore an inherent characteristic of a CCP. To minimise such risk, CCPs have a 'rulebook' containing rules and standards to which they must comply.[170] As part of its rulebook, a CCP's risk and default management system generally consists of a model comprising several lines of defence.[171] If one line of defence fails to absorb the risk/default, the subsequent line of defence is activated. This consecutive sequence is referred to as the 'default waterfall' and is funded by initial margin, variation margin, default fund contributions and the CCP's own financial resources.[172] Depicted in *Figure 20* below is one of many examples illustrating a default waterfall.[173]

168 See generally, U Faruqui, W Huang and E Takats, "Clearing risks in OTC derivatives markets: the CCP-bank nexus" (2018) *BIS Quarterly Review* 73.

169 *Ibid* at 76.

170 For examples of 'rulebooks', see for example Clearnet SA or EuroCCP Clearing Rulebook, available at: https://euroccp.com/document/euroccp-clearing-rule-book/.

171 M Broos, J Capel, C Haseth, A Hondius, A Kosse and E de Vogel, "The CCP – a pivotal player in the financial system" (2018) *De Nederlandsche Bank* 1 at 16.

172 Balmer (n 148) 54.

173 This default waterfall is merely a description and one example of many. CCPs may vary with their respective default waterfall.

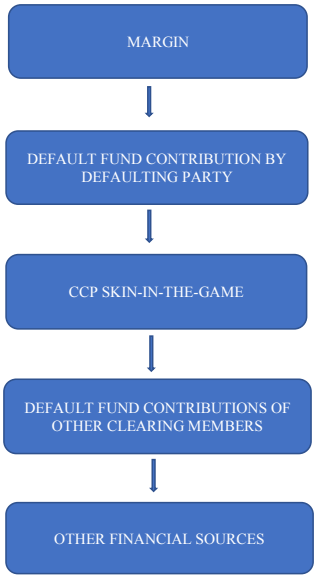

Figure 20: Default Waterfall

4.1.5.1 Margin

> *"It is therefore of concern that the… margin be set correctly in order to minimize the need to utilize the remaining layers of the waterfall".*[174]

The CCP's obligation to ensure contractual settlement despite potential default by its clearing members necessitates the CCP to command collateral. The capital primarily stems from its members and is referred to as margin, namely initial margin and variation margin.[175] Margin is therefore the first line of defence in the default waterfall, being absorbed by the CCP upon failure of the clearing member to fulfil their contractual obligations. Assets used for margin purposes must therefore be highly liquid and their price should be relatively consistent.[176] Often, cash or high-quality non-cash liquid securities, such as Aaa rated government bonds, are the most sought-after.[177] Importantly, margin is held in segregated accounts to prevent losses resulting from other defaults; CCPs are therefore prohibited from using margin posted by non-defaulting clearing members to cover losses arising from defaulting clearing members.[178]

174 Heckinger et al (n 161) 1 at 2.
175 Balmer (n 148) 48.
176 Capel *et al* (n 163) 1 at 26.
177 It should however be noted that while EMIR does set qualitative standards, it is ultimately up to the CCP to decide what to accept and what not to accept. On this see Article 46 EMIR.
178 Article 45 (4) EMIR.

As outlined by EMIR, margin requirements should be sufficient to cover possible losses originating from "at least 99% of the exposure movements over an appropriate time horizon".[179]

4.1.5.2 Defaulting party: default fund

Besides posting initial margin and variation margin, counterparties must also provide the CCP with capital for the CCP's default fund (also known as a 'guarantee fund'), which is the second line of defence in the default waterfall. A default fund is a pool of funds contributed to by clearing members to absorb the costs of default when margin contributions prove insufficient.[180] All participating clearing members contribute to this default fund and each CCP employs its own quantitative method to determine the contribution, the size of which differs per clearing member.[181] The greater the estimated risks attached to a clearing member, the higher the contribution to the default fund they have to make.[182] If a clearing member defaults and the margin contributions prove insufficient to cover the loss, the CCP will activate the defaulting party's contribution to the default fund to absorb the shortfall. According to EMIR, the total default fund must be large enough to absorb a bankruptcy of the largest two clearing members without any problems.[183] Yet a cause for concern is that while margins must be rigorously assessed (often several times a day), default fund contributions are assessed far less, leaving the default fund potentially under-capitalised.[184]

4.1.5.3 Skin-in-the game

If the margin and the defaulting party's contribution to the default fund are completely depleted, then the CCP must then break into its own capital resources – skin-in-the-game. The minimum level of the CCP's skin-in-the-game is set at 25% of its capital requirements[185] and EMIR requires a CCP to have an available and permanent initial capital of € 7.5 million.[186] The underlying idea behind skin-in-the-game being part of the default waterfall is to stimulate the CCP to prevent contagion. This requirement means the "CCP itself has a greater interest in preventing a clearing member from going bankrupt".[187]

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179 *Ibid.* See also, Nabilou and Asimakopoulos (n 142) 70 at 74.
180 Article 42 (1) EMIR.
181 *Ibid.*
182 Article 42 (2) EMIR. See also, Capel *et al* (n 163) 1 at 26-27.
183 Article 43 (2) EMIR.
184 D Elliot, "Central Counterparty Loss-allocation Rules" (2013) *20 Bank of England Financial Stability Paper* 1 at 10. See also, Balmer (n 148) 54.
185 Article 35 (2) of 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.
186 Article 16 EMIR.
187 Capel *et al* (n 163) 1 at 27.

4.1.5.4 Non-defaulting party: default fund

The fourth line of defence in the default waterfall, provided all preceding measures have been exhausted, is to rely on non-defaulting members' contributions to the default fund.[188] Such a measure – multilateral netting – "mutualizes the residual loss among surviving clearing members".[189] The objective is to decrease moral hazard, adverse selection and reduce asymmetric information problems by making participants contribute to the defaults of their fellow clearing members.[190]

4.1.5.5 Other financial resources

The final line of defence is relying on the CCP's remaining equity.[191] If losses are larger than this equity, then unfortunately the CCP will become insolvent.[192] Given that CCPs are "systemically important institutions", that are now deemed "too-big-too-fail" in some quarters, failure would undoubtedly trigger catastrophic consequences.[193] In the unlikely event that there is CCP default, CCPs that operate with a banking licence can make use of the Bank Recovery and Resolution Directive, but there is currently no equivalent resolution regime for non-bank CCPs.[194] However, the European Commission has issued the so-called European Proposal for the Recovery and Resolution of CCPs,[195] which is, at the time of writing, under discussion.[196] In addition, "Article 85 (1) (a) of EMIR opens up the possibility for CCPs to have access to central bank liquidity facilities by mandating the Commission to assess, in cooperation with the members of the European System of Central Banks, the need for any measure to facilitate CCPs' access to central bank liquidity facilities".[197]

188 Article 45 EMIR.
189 Nabilou and Asimakopoulos (n 142) 70 at 78.
190 Balmer (n 148) 55.
191 Article 43 (1) EMIR.
192 Elliot (n 184) 1 at 5.
193 A failed CCP would imply that all regulatory measures have failed and as such, is often said to be the result of a crisis. On this see, V Bignon and G Vuillemey, "The Failure of a Clearinghouse: Empirical Evidence" (2017) *638 Banque de France Working Paper*. See also, G Ferrara and X Li, "Central counterparty auction design" (August 2017) 669 *Bank of England Staff Working Paper* 1 at 5. See also, Schwarcz (n 140) 1327 at 1355.
194 I Ruffini, "Central Clearing: Risks and Customer Protections" (2015) 39 *Journal of Economic Perspectives* 90 at 97. See also, Recital 4 and Article 23 of RTS; Nabilou and Asimakopoulos (n 142) 70 at 72.
195 Proposal for a Regulation of the European Parliament and of the Council on a framework for the recovery and resolution of central counterparties and amending Regulations (EU) No 1095/2010, (EU) 2015/2365, COM/2016/0856 final – 2016/0365 (COD).
196 12 December, 2020. It is, however, outwith the scope of this thesis to discuss the consequences of CCP failure.
197 Nabilou and Asimakopoulos (n 142) 70 at 88. See also, Heckinger *et al* (n 161) 1 at 6-9.

4.1.6 *Mitigating procyclicality of margin*

Mitigating procyclicality of margin requirements has been a major policy objective in regulating CCPs. To avoid procyclicality, strict margin requirements are often argued as being necessary.[198] Measures, such as higher margin requirements consisting of high-quality liquid assets[199] with minimal credit and market risk that are segregated and insulated from losses stemming from the default of another counterparty.[200] Despite such measures there is no escaping the procyclicality of margin. Market changes that directly impact the value of securities results in increases in margin. This then leads to losses due to the need to access additional liquidity. This directly impacts margin practices, and the implementation of haircuts on margins in stressed market conditions can exacerbate the cycle causing deleveraging, which results in increased margin requirements thus fuelling the cycle, causing more losses and thus higher margins.[201] To counter this, it has been observed that CCPs should take the procyclical consequences of margin requirements into account when setting, enforcing and calibrating their margin policy.[202] In addition, there is considerable support by the European Central Bank to include intervention tools in EMIR by granting authorities the power of setting and calibrating time-varying margin floors and ceilings in order to limit leverage and procyclicality.[203]

4.2 EMIR: OTC Derivatives

4.2.1 *Introduction*

Minimising risk is a top priority of all financial institutions, and derivatives are often viewed as among the most volatile of financial instruments given their inherent exposure to intra-day price fluctuations. Over the past decade, financial institutions around the world have sought to mitigate this risk by collateralising their derivatives exposure by taking cash or cash equivalent securities as financial collateral (in the form of initial margin and/or variation margin) from their counterparties.[204] Post Global Financial Crisis reforms aimed at the EU shadow banking sector, such as EMIR and the accompanying

198 Balmer (n 148) 51-52.
199 It should however be noted that while EMIR does set qualitative standards, it is ultimately up to the CCP to decide what to accept and what not to accept. On this see Article 46 EMIR.
200 Articles 45 (4) and 47 (1) EMIR.
201 Balmer (n 148) 51-52.
202 Nabilou and Asimakopoulos (n 142) 70 at 79.
203 European Central Bank, "Financial Stability Review" (2016) 1 at 106.
204 See generally, Harding and Johnson (n 15).

RTS have contributed substantially to preserving financial stability.[205] In addition, ESMA is mandated to promote the smooth functioning of the financial markets and to safeguard financial stability by ensuring EU rules are uniformly applied across the EU.[206]

4.2.2 Post Global Financial Crisis reforms

EMIR was published in the *Official Journal of the European Union* on 27 July 2012 and entered into force on 16 August 2012. It has been described as the "centrepiece" of post Global Financial Crisis regulatory reform and is the translation into European law of the commitments made by the G20 at the 2009 Pittsburgh Summit concerning derivatives.[207] As previously discussed, one of the objectives of the 2009 Pittsburgh Summit is the reduction of systemic risk, by imposing stringent rules that requires eligible counterparties to post higher margin requirements for uncleared OTC derivatives transactions than previously existed.[208] In response to the above G20 Pittsburgh commitment, the Working Group on Margining Requirements was formed with the objective of reducing systemic risk by developing a consistent global standard for margin requirements for uncleared OTC derivative transactions.[209] This has resulted in the implementation of the EMIR and the RTS.[210]

4.2.3 Risk mitigation requirements for uncleared OTC derivatives

As a result of the aforementioned recommendations posed by the Working Group on Margining Requirements, the EMIR[211] and the accompanying RTS impose risk mitigation requirements on parties to uncleared OTC derivative transactions.[212] Article 11 (1) of the EMIR requires parties to an uncleared derivatives transaction to ensure "that appropriate procedures and arrangements are in place to measure, monitor and mitigate risk", in particular, risk-

205 Also included but not discussed in this section are the suite of collateral documentation published by the ISDA, predominantly in the form of the Credit Support Annexes. See also, M Hsiao, "Regulating OTC derivatives: the CCP's role and the EMIR", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 205 at 205-206.

206 Recital 10 EMIR. See also, Balmer (n 148) 90-93.

207 However, according to Alexandra Balmer, the EU has still yet to enact legislation complying with many of the G20 commitments. On this see, Balmer (n 148) 4. See also, European Commission, "Questions and Answers on the proposal to amend the European Market Infrastructure Regulation" (4 May, 2017), available at: https://ec.europa.eu/commission/presscorner/detail/en/MEMO_17_1145. See also, Recital 4 EMIR; Hsiao (n 205) 205 at 210-211.

208 Harding and Harding (n 17) 11 and 23-24. See also, Recital 4 EMIR.

209 See generally, BCBS and IOSCO (n 21).

210 For a more in-depth discussion on this, please refer to section 2.1 above.

211 Article 11 EMIR.

212 As required by Article 11 (15) (a) EMIR.

management procedures that require "the timely, accurate and appropriately segregated exchange of collateral".[213] As previously mentioned, when financial collateral is posted in a derivatives transaction, it is referred to as 'margin', which can, in turn, be sub-divided into two categories, namely initial margin, which is applied at the point of trade and variation margin, which is applied during the lifecycle of the transaction.[214] Both initial margin and variation margin are necessary techniques to properly manage the risks to which parties to an uncleared OTC derivative transaction are exposed.[215]

4.2.3.1 Scope of the risk mitigation requirements

The scope of the risk mitigation requirements in relation to the exchange of collateral affects many EU financial[216] and non-financial counterparties[217] with uncleared OTC derivative portfolios above the EMIR/RTS thresholds ("in-scope entities").[218] In-scope entities now have to comply with 'phased-in' mandatory margin requirements, and are therefore required to exchange initial margin and variation margin when called upon to do so.[219] Depicted in *Table 5* below are the most recent BCBS/IOSCO timelines and thresholds demonstrating when an in-scope entity is required to post initial margin and/or variation margin.

The amount of initial margin varies on a case-by-case basis but ultimately reflects the size of the potential future exposure. A number of factors are taken into consideration, namely the volatility of the financial collateral, contract duration, how often the contract is revalued including the exchange of variation

213 Recital 1 RTS.

214 European Systemic Risk Board (n 26) 1 at 4. See also, Harding and Harding (n 17) Authors' Foreword xi.

215 See Chapter 4 for a more in-depth discussion on these "necessary techniques". See also, Recital 1 RTS.

216 Article 2 (8) EMIR defines 'financial counterparty' as: "an investment firm authorised in accordance with Directive 2004/39/EC, a credit institution authorised in accordance with Directive 2006/48/EC, an insurance undertaking authorised in accordance with Directive 73/239/EEC, an assurance undertaking authorised in accordance with Directive 2002/83/EC, a reinsurance undertaking authorised in accordance with Directive 2005/68/EC, a UCITS and, where relevant, its management company, authorised in accordance with Directive 2009/65/EC, an institution for occupational retirement provision within the meaning of Article 6(a) of Directive 2003/41/EC and an alternative investment fund managed by AIFMs authorised or registered in accordance with Directive 2011/61/EU".

217 Article 2 (9) EMIR defines 'non-financial counterparty' as: "an undertaking established in the Union other than the entities referred to in" Article 2 (1) and (8) EMIR.

218 Excluded entities include members of the European System of Central Banks, public sector entities owned or guaranteed by government and certain multilateral development banks. See also Article 10 EMIR.

219 See generally, European Securities and Markets Authority, "Questions and Answers: Implementation of the Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories (EMIR)" (4 February, 2019). See also, Harding and Harding (n 17) 24.

margin. The crux is that, the riskier the transaction the higher the initial margin and the less risky the transaction, the lower the initial margin.

Table 5: Compliance Deadlines – Margin Requirements for EU Counterparties

Amount of Uncleared OTC Derivatives Exposure	*Initial Margin*	*Variation Margin*[220]
> €3 trillion	4 February 2017[221]	4 February 2017
> €2.25 trillion	1 September 2017[222]	1 March 2017
> €1.5 trillion	1 September 2018[223]	1 March 2017
> €0.75 trillion	1 September 2019[224]	1 March 2017
> €50 billion	1 September 2021[225]	1 March 2017
> €8 billion	1 September 2022[226]	1 March 2017

Source: BCBS/IOSCO[227] and RTS[228]

In order to facilitate market participants with the necessary information on whether they are subject to comply with the margin requirements as outlined in *Table 5* above, ISDA have helpfully published a 'Regulatory Margin Self-Disclosure Letter', which is intended to assist parties with regulatory margin compliance. The ISDA Regulatory Self-Disclosure Letter, published in June 2016, is essentially a standard form that allows parties to exchange the necessary information to determine if, and when, the rules under a particular margin regime will apply to the respective trading relationship.[229] This could result in one (or more) of the following scenarios:[230]

1. The party must post or collect initial margin; or,
2. The party must post or collect variation margin; or,

220 Article 37 (1) (a) and (b) RTS.
221 Article 36 (1) (a) RTS.
222 Article 36 (1) (b) RTS.
223 Article 36 (1) (c) RTS.
224 Article 36 (1) (d) RTS.
225 As a result of the Covid-19 outbreak, this phase has recently been amended by BCBS and IOSCO. On this see the BCBS and IOSCO, "Margin requirements for non-centrally cleared derivatives" (April, 2020), available at: https://www.bis.org/bcbs/publ/d499.pdf. For a comparison with the old provision, see Article 36 (1) (e) RTS.
226 Ibid.
227 See generally, BCBS and IOSCO (n 225).
228 Articles 36 and 37 RTS.
229 See the ISDA website: https://www.isda.org/2016/10/26/isda-regulatory-margin-self-disclosure-letter-2/.
230 Harding and Harding (n 17) 34.

3. The party must post or collect both initial margin and variation margin; or,
4. The party does not need to post or collect initial margin and/or variation margin.

4.2.4 Collateral eligibility

Since the Global Financial Crisis, the quality of assets posted as financial collateral for initial and variation margin purposes have substantially increased and in practice, liquidity and the promise of cash immediacy are paramount when determining what is deemed acceptable. The BCBS/IOSCO and the RTS have helpfully provided EU market participants with an informative list, which outlines the most liquid and safest forms of financial collateral assets used for margin purposes in a derivatives transaction:[231]

- Cash;
- High-quality[232] government and central bank securities;
- High-quality corporate bonds;
- High quality-covered bonds;
- Equities included in major indices; and,
- Gold.

This would imply that assets used for financial collateral purposes that fall outwith the aforementioned asset classes would be "legally ineligible".[233] Where one party attempts to use assets that do not conform to the EMIR/RTS requirements and the "Credit Support Eligibility Conditions" documented in the 2016 Variation Margin Credit Support Annex,[234] the assets would be deemed 'ineligible' and the Transferee is therefore required to notify the Transferor by delivering a "Legal Ineligibility Notice" outlining, amongst other things, the reasons why the assets do not fulfil the eligibility requirements.[235] In such a situation, the 'legally ineligible' financial collateral would have to be replaced by 'legally eligible' collateral.

231 BCBS and IOSCO (n 225) 1 at 17-18. See also Article 4 RTS, which provides a comprehensive list of eligible collateral types.

232 The term 'high-quality', refers to collateral that can be considered highly liquid. Liquidity is defined in Chapter 6 as an asset that can be sold quickly and efficiently. See also, Recital 92 EMIR.

233 Paragraphs 9 (e) and 11 (c) (iii), 2016 English Law CSA for Variation Margin.

234 Paragraph 11 (c) (iv), 2016 English Law CSA for Variation Margin.

235 Paragraphs 9 (e)-(h) and 11 (c) (iii), 2016 English Law CSA for Variation Margin.

4.2.5 Initial margin

Under Article 1 (1) of the RTS, initial margin is defined as:

> *"The collateral collected by a counterparty to cover its current and potential future exposure in the interval between the last collection of margin and the liquidation of positions or hedging of market risk following a default of the other counterparty".*[236]

Initial margin is a predetermined, fixed value cash or non-cash financial collateral with the objective of protecting the contracting parties from non-performance. It is posted at the point of trade and can either be a unilateral arrangement or a bilateral arrangement. A unilateral arrangement is common with supranational institutions entering into a transaction with a smaller institution, such as a corporate/hedge fund (i.e. financial collateral flowing one-way to the supranational institution). However, since the Global Financial Crisis and the default of Lehman Brothers in 2008, there is a greater trend to focus on bilateral arrangements, which is driven by industry bodies and regulators alike. A bilateral arrangement involves the mutual posting of financial collateral by both parties to the transaction and is required to be placed in segregated accounts.[237] According to ISDA, the rationale behind initial margin in the derivatives market is to provide an additional financial buffer that insulates the surviving party against further losses following a default.[238]

In practice, initial margin is commonly applied to CCP transactions but is currently not commonly applied to uncleared OTC derivative transactions.[239] The distinction between initial margin in CCP and uncleared OTC transactions is due to CCPs requiring the mutual posting of initial margin at the point of trade to account for the risk that each respective party brings to the CCP by having its trade cleared there.[240] Yet from an uncleared OTC perspective, the requirement for eligible counterparties to exchange initial margin has a staggered phase-in period as outlined in *Table 5* above. Counterparties that are eligible to exchange initial margin depends upon whether the size of the counterparties' portfolio of uncleared OTC derivatives transactions measured

236 Article 1 (1) RTS.

237 The segregation of initial margin will be discussed in greater detail below. See also, Harding and Johnson (n 15) 79.

238 See the ISDA website: https://www.isda.org/tag/initial-margin/.

239 As previously mentioned, initial margin is still being phased in and will play a much more prominent role in the future. See the ISDA, "Initial Margin for Non-centrally Cleared Derivatives: Issues for 2019 and 2020" (July, 2018), available at: https://www.isda.org/a/D6fEE/ISDA-SIFMA-Initial-Margin-Phase-in-White-Paper-July-2018.pdf; Financial Conduct Authority, "Margin requirements for uncleared derivatives" (2017), available at: https://www.fca.org.uk/markets/emir/margin-requirements-uncleared-derivatives.

240 Domanski *et al* (n 159) 59 at 60-61.

as the 'aggregate monthly average notional amount' *exceeds*, at the time of writing, € 0.75 trillion.[241]

Crucially, in a derivatives transaction initial margin is not just calculated on a one-off basis like it is in a repo and securities lending transaction.[242] Counterparties are required to recalculate initial margin upon certain specified events happening including the execution of a new in-scope transaction, payments under a transaction or termination of a transaction with a minimum initial margin recalculation period of ten days.[243] In addition, regulation now requires initial margin to be re-calibrated on an annual basis.[244]

4.2.5.1 Initial margin segregation[245]

Uncleared OTC derivatives contracts that are not considered suitable for CCPs entail operational and counterparty credit risks. To manage these risks, "financial counterparties shall have risk-management procedures that require the timely, accurate and appropriately segregated exchange of collateral with respect to OTC derivative contracts".[246] One such 'risk management procedure' is the segregation of initial margin. As such, the mutual posting of collateral required to meet initial margin requirements for uncleared OTC derivatives transactions must be segregated in an "insolvency-remote custody account".[247] This is also the case for CCPs, who hold pre-funded and segregated financial resources in the form of initial margin to mitigate risk.[248]

The reason for legally segregating initial margin is to protect counterparties to the derivatives transaction from loss in the event of a default. Legal segregation refers to the segregation of client assets from counterparty assets. This can be distinguished from operational segregation, which concerns segregating clients' assets 'on the books'.[249] The concern is that if initial margin is not held in such a way to ensure it is immediately available upon counterparty default, and if counterparties to the transaction were able to obtain legal title in the posted assets and thus reuse those assets in another transaction, parties would experience significant loss should some form of default occur.[250] As

241 4 December, 2020. See also, BCBS and IOSCO, "Summary of changes to the implementation of margin requirements for non-centrally cleared derivatives" (accessed 27 March, 2019), available at: https://www.bis.org/bcbs/publ/d317_summarytable.pdf. See also generally, BCBS and IOSCO (n 225).

242 Unless re-pricing, adjustment or substitution takes place.

243 Article 18 RTS. See also, Harding and Harding (n 17) 27.

244 Articles 16 (1) and 18 (1) (b) RTS. See also, Harding and Harding (n 17) 27.

245 This section contains and builds upon Chapter 9 of Haentjens et al (n 97).

246 Article 11 (3) EMIR.

247 Article 19 (1) (c) RTS.

248 See generally, Faruqui *et al* (n 168). See also, Article 45 (4) EMIR.

249 D Verheij, J Tegelaar and N Campuzano, "Asset segregation: its many faces and challenges faced" (2019) *Leiden Law Blog*, available at: https://leidenlawblog.nl/articles/asset-segregation-its-many-faces-and-challenges-faced.

250 BCBS and IOSCO (n 225) 1 at 19-21. See also, Recital 35 RTS; Balmer (n 148) 84.

such, "for effective protection of… assets in case of insolvency, legal segregation is key".[251]

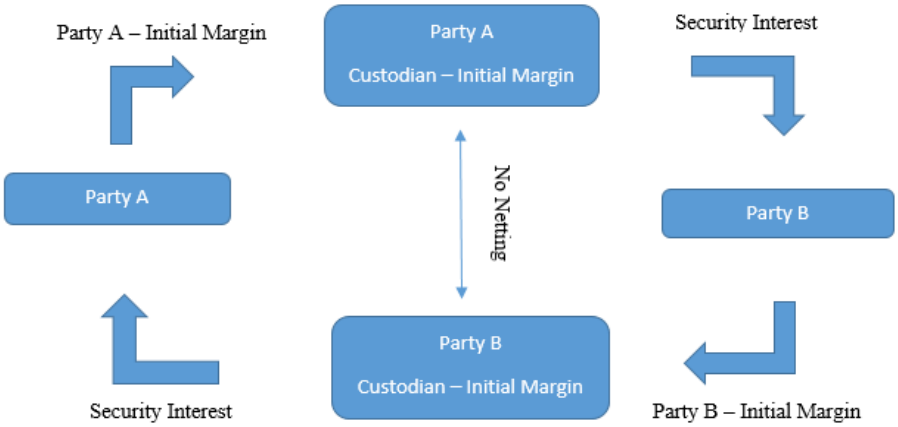

Figure 21: Initial Margin Segregation

Figure 21 above provides an illustration of how initial margin is 'legally' segregated and demonstrates that, as a starting point, initial margin is 'two-way' – meaning that both parties must, simultaneously, post and receive collateral. In terms of party A, it posts its initial margin amount to a segregated account with its custodian. A security interest or pledge (as opposed to title transfer) over the initial margin and account with the custodian is granted to party B. In terms of party B, it also has to post initial margin to its custodian, which is then placed in a segregated account. A security interest or pledge over the initial margin and account of the custodian is then granted to party A. The two sets of posted initial margin cannot be used for netting purposes, but must be segregated. While the segregation of initial margin has obvious financial stability benefits, it should also be observed that the expected outcome of the segregation of initial margin may "noticeably decrease available liquidity in the market".[252]

The contractual framework is based on counterparties entering into an ISDA master agreement, with a Credit Support Annex and a dedicated ISDA Account Control Agreement, which is signed between counterparties and the custodian. The ISDA Account Control Agreement facilitates the negotiation process of contractual arrangements that provide for the segregation of Independent

251 Verheij *et al* (n 249).
252 Balmer (n 148) 84.

Amounts (initial margin) with a third-party custodian. The ISDA Account Control Agreement is a three-way contract between the custodian and the two OTC derivatives counterparties and provides that the custodian will hold and release Independent Amounts to the counterparties based on pre-defined conditions.[253] Following a termination event, or an event of default by one of the parties to the transaction for example, the custodian may only release the initial margin as provided and permitted under the Account Control Agreement.

The fact that the posted initial margin is underpinned by ISDA documentation, such as the Account Control Agreement and others, is segregated in a custodian account with an attached security interest and further, "the collecting counterparty shall not rehypothecate, repledge nor otherwise reuse the collateral collected as initial margin",[254] raises the question whether the segregation of initial margin which prevents the financial collateral being in the possession, or under the control of the collateral taker, is necessary? Under the initial margin rules in the EU, the custom has been to use the language followed in the EU Financial Collateral Directive, under which 'provision' of collateral is equivalent to collateral "being delivered, transferred, held, registered or otherwise designated so as to be in the possession or under the control of the collateral taker or of a person acting on the collateral taker's behalf".[255] It is possible "that an irrevocable instruction by the posting party to a third-party custodian could be sufficient to meet this test, but this will depend on how the collateral is held and the account structured".[256]

4.2.6 Variation margin

Under Article 1 (2) of the RTS, variation margin is defined as:

> *"The collateral collected by a counterparty to reflect the results of the daily marking-to-market or marking-to-model of outstanding contracts".*[257]

In practice, variation margin is the most commonly used method to collateralise a derivatives transaction. Variation margin operates in a similar way to margin transfers found under the GMRA and the margining techniques found under

253 See the ISDA website: www.isda.org.

254 Article 20 (1) RTS.

255 Article 2 (2) FCD. See also, L Gullifer, "What Should We Do about Financial Collateral?" (2012) *65 (1) Current Legal Problems* 377-410.

256 The issue of 'possession or control' was discussed in greater detail in Chapter 3. See also, J Haines, A Levitt, A Tanney and J Knight, "Margin for OTC Derivatives – Impact for Insurers, Reinsurers and Asset Managers" (2016) *Ashurst*, available at: https://www.ashurst.com/en/news-and-insights/legal-updates/margin-for-otc-derivatives-october-2016/;see also, Haentjens *et al* (n 97) 331-333.

257 Article 1 (2) RTS.

the GMSLA. In a derivatives transaction, the fact that the value of the underlying asset can fluctuate in value, regular mark-to-market valuations are performed on the underlying asset to mitigate the exposure that one party will always be 'in the money' and the other party will always be 'out of the money'.[258] Variation margin is precisely in place to mitigate this risk and is a payment obligation from one party to the other party. The value of the underlying asset is thus regularly valued (in practice this is done daily) at market price and set against the previous valuation to determine the true value of the underlying asset.[259] Such a valuation determines which party has a "Credit Support Obligation", if any, to either post financial collateral ("Delivery Amount") or to return surplus financial collateral ("Return Amount") on a specific "Valuation Date" – taking into account the *de minimis* "Minimum Transfer Amount" not exceeding € 500,000, which attempts to avoid costly and unnecessary transfers.[260] Unlike initial margin, "variation margin may be re-hypothecated, repledged or re-used".[261]

4.2.7 Haircut

Within a derivatives transaction, a haircut is used slightly differently to that found in repo and securities lending transactions. A haircut is a percentage discount applied to the market value of the financial collateral to cover the worst expected price movements over the mark-to-market frequency period and a holding period if the financial collateral needs to be liquidated following a default. While initial margin tries to deal with the volatility of risk exposure, 'haircuts' deal with the volatility of price movements between the time the financial collateral is called and its receipt.

> *"[In a derivatives transaction,] haircuts provide an extra cushion to protect the collateral value between Valuation Dates or during a liquidation period. They are highly correlated to the tenor and price volatility of the… collateral".*[262]

In practice, the ISDA Credit Support Annexes use the term "Valuation Percentage" when referring to the reciprocal term – the 'haircut'.[263] For instance, if the real value of the financial collateral asset is € 100 and the agreed Valu-

258 Balmer (n 148) 17. See also, R A Jarrow, *Financial Derivatives Pricing* (2008) 358.
259 Paragraph 3 (b), 2016 English Law CSA for Variation Margin.
260 The Minimum Transfer Amount was discussed in Chapter 5. See also, Paragraphs 2 (a), (b), 10 and 11 (b) (i) (A), (B), 1995 ISDA English Law CSA and Paragraphs 2 (a), (b) 10 and 11 (c) (i) (A), (B), 2016 English Law CSA for Variation Margin.
261 Article 20 (1) RTS. See also, BCBS and IOSCO (n 225) 1 at 20.
262 Harding and Johnson (n 15) 80.
263 Paragraphs 10 and 11 (b) (ii), 1995 ISDA English Law CSA and Paragraphs 10 and 11 (c) (v), 2016 English Law CSA for Variation Margin.

ation Percentage is 97%, then the haircut is 3%.[264] Helpfully, the BCBS/IOSCO have published a haircut schedule, which provides market participants with an important benchmark when determining applicable haircut percentages.[265]

Table 6: BCBS/IOSCO/RTS Haircut Schedule

Asset Class	*Residual Maturity*	*Haircut % of Market Value*
Cash in same currency	N/A	0%
Member States' government/central bank securities	< 1 year	0.5%
High quality corporate/covered bonds	< 1 year	1%
Member States' government/central bank securities	> 1 and < 5 years	2%
Member States' government/central bank securities	> 5 years	4%
High quality corporate/covered bonds	> 1 and < 5 years	4%
High quality corporate/covered bonds	> 5 years	8%
Equities included in major stock indices	N/A	15%
Gold	N/A	15%

Source: BCBS/IOSCO and the RTS[266]

The haircut schedule is depicted in *Table 6* below and is now implemented in the RTS.[267]

It should be noted however, that adherence to this schedule is not a mandatory requirement, but nonetheless provides market participants with an important reference point. Instead of using the schedule as outlined above in *Table 6*, counterparties in uncleared derivatives transactions can also calibrate haircuts based on their own internal models. If the internal approach is used, the RTS set out a number of minimum conditions to be met, such as frequency with which haircuts must be updated (this is usually once every three months or sooner if there is material volatility), the appropriate internal review process to be followed and finally, the minimum variables to be applied when calibrating the models (99% confidence level and 10 day liquidation period).[268]

264 Harding and Harding (n 17) 13.
265 BCBS and IOSCO (n 21) 1 at 27.
266 BCBS and IOSCO (n 21) 1 at 27. See also, Annex II RTS.
267 Annex II RTS.
268 Annex III 1 (a), (b) and (c) RTS. See also, European Systemic Risk Board (n 26) 1 at 28.

4.3 SFTR: Repurchase Agreements and Securities Lending

The SFTR was published in the *Official Journal of the European Union* on 23 December 2015 and came into force on 12 January 2016. It is part of a globally coordinated effort by the Financial Stability Board and the European Systemic Risk Board to improve oversight and reduce financial stability risks arising from shadow banking transactions.[269]

Under the SFTR, the types of transactions covered are termed 'securities financing transactions' and include, *inter alia*[270], repurchase agreements[271] and securities lending transactions.[272] As noted in previous chapters, transactions of this nature are often titled 'secured' in the sense that the seller/borrower ("collateral giver") of cash or securities provides financial collateral to the buyer/lender ("collateral taker")[273] so that should the collateral giver default, the collateral taker can liquidate the financial collateral to recoup the principal.[274] In addition, the transaction is almost always 'overcollateralised' via the margin/haircut, which ensures that the value of the financial collateral is worth more than the value of the contracted for cash/securities. Overcollateralistion provides a further layer of security, giving the collateral taker a time horizon financial buffer should the collateral giver default.[275]

In order to "curb shadow banking" by preventing the rapid "build-up of leverage, procyclicality and interconnectedness in the financial markets",[276] the Financial Stability Board proposed that a "regulatory framework for haircuts on non-centrally cleared securities financing transactions" be adopted into the SFTR.[277] It was argued that by introducing "qualitative standards for methodologies used by market participants to calculate haircuts" as well as "numerical haircut floors" for non-centrally cleared securities financing transactions, that the risks associated with leverage and procyclicality would be diminished.[278] By introducing higher haircuts/initial margin requirements at the point of trade would limit the amount of debt (leverage) a financial

269 Recitals 1-5 of SFTR. See also, J Mazzacurati, "Haircuts in EU securities financing markets" (2017) *ESMA Report on Trends, Risks and Vulnerabilities* 52 at 53.

270 It should also be noted that the SFTR, as part of its definition of 'securities financing transaction' includes a buy-sell back or a sell buy-back and a margin lending transaction. However, these two transactions will not be discussed.

271 Article 3 (9) SFTR.

272 Article 3 (7) and (11) (a) and (b) SFTR.

273 Reference to borrower/seller and lender/buyer relates to parties entering into a securities lending transaction or repurchase agreement. Chapter 4 provides details of this.

274 Grillet-Aubert *et al* (n 36) 1 at 27-28.

275 For a more in-depth discussion of 'overcollateralisation', please see Chapters 3 and 4.

276 Recital 2 SFTR.

277 See generally, Financial Stability Board 2015 (n 27). See also, Recital 3 SFTR.

278 Financial Stability Board 2015 (n 27) 1 at 4-7. See also, European Securities and Markets Authority, "Report on securities financing transactions and leverage in the EU" (2016) *ESMA/2016/1415* 1 at 9, available at: https://www.esma.europa.eu/sites/default/files/library/2016-1415_-_report_on_sfts_procyclicality_and_leverage.pdf.

institution can obtain. The haircut schedule proposed by the Financial Stability Board is depicted in *Table 7* below:

Table 7: Financial Stability Board Haircut Schedule

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%	

Source: Financial Stability Board[279]

However, such a framework has yet to be adopted into law and as a result, mandatory margin requirements in relation to non-centrally cleared securities financing transactions currently "do not exist in the EU".[280] Given that available data on margins and "haircuts is sparse, and little is known of current market practice"[281] in this area, it seems fruitless to "regulate something you cannot measure".[282] It therefore seems apt that the SFTR's primary aim is "to foster transparency of SFTs by increasing the reporting requirements".[283] This will arguably allow regulators to first obtain important granular data before introducing substantive reforms.

279 Financial Stability Board 2015 (n 27) 1 at 8, Updated on 19 July, 2019; 25 November 2019; and, 7 September 2020, available at: https://www.fsb.org/wp-content/uploads/P070920-1.pdf. See also, European Securities and Markets Authority (n 277) 1 at 9.

280 European Securities and Markets Authority (n 277) 1 at 8-10. See also, European Systemic Risk Board (n 26) 1 at 49.

281 Mazzacurati (n 269) 52 at 52.

282 H Nabilou and A M Pacces, "The Law and Economics of Shadow Banking", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 7 at 17.

283 European Systemic Risk Board (n 26) 1 at 51. See also, Recital 7 SFTR.

4.3.1 Scope of the SFTR

The SFTR aims to create a safer and more transparent financial system by placing additional requirements on market participants entering into securities financing transactions. The approach taken by the SFTR requires securities financing transactions to adhere to:

- The reporting requirement: securities financing transactions must be reported to trade repositories;[284]
- The disclosure requirement: transparency and disclosure obligations by UCITS management companies, UCITS investment companies and Alternative Investment Fund Managers requiring periodic reports informing investors of securities financing transactions and total return swaps;[285] and,
- The collateral reuse requirement: prior risk disclosure and written consent before counterparties are permitted to reuse or rehypothecate assets.[286]

Each of these requirements have important implications in relation to margin and as such, will be discussed in turn.

4.3.2 Reporting requirement

> *"Important blind spots in our view of the financial system remain, in part owing to data gaps. When it comes to financial stability, what you do not know really can hurt you – and there remains a good bit we do not know".*[287]

The SFTR creates a framework under which counterparties of a securities financing transaction have to report details of the specific transaction to trade repositories.[288] A trade repository is defined under the SFTR as a registered "legal person that centrally collects and maintains the records of" securities financing transactions.[289] The information obtained by the trade repository is then centrally stored and is directly accessible by relevant authorities (such as the European System of Central Banks, the European Securities and Markets Authority, the European Central Bank and the European Systemic Risk Board and others) "for the purpose of identification and monitoring of financial stability risks entailed by shadow banking activities".[290]

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284 Article 4 SFTR.
285 Articles 13 and 14 SFTR.
286 Article 15 SFTR.
287 S Fischer, "Financial Stability and Shadow Banks: What We Don't Know Could Hurt Us" (3 December, 2015) Financial Stability Conference – Washington DC 1 at 4, available at: https://www.bis.org/review/r151207b.pdf.
288 Article 4 (1) SFTR.
289 Articles 3 (1) and 5 SFTR.
290 Recital 13 SFTR.

Article 4 of the SFTR requires counterparties to a securities financing transaction to report the details of a transaction to a registered or recognised trade repository "no later than the working day following the conclusion, modification or termination of a transaction".[291] If a trade repository is unavailable to record the specific details, counterparties can report details to the European Securities and Markets Authority as an alternative.[292] Counterparties are required to keep a record of any securities financing transaction "that they have concluded, modified or terminated for at least five years following the termination/maturity of the transaction".[293]

4.3.2.1 What has to be reported?

Under the SFTR, both parties to a securities financing transaction are required to report specific details of a transaction to a trade repository. The specific details included under the reporting obligation include, *inter alia:*[294]

- The assets used as financial collateral and their type, quality and value;
- The method used to provide financial collateral;
- Whether the financial collateral is available for reuse purposes (or has been reused);
- Any collateral substitution; and,
- Any margin/haircut.

Based on the reported information by counterparties, Article 12 of the SFTR highlights that "trade repositories shall regularly, and in an easily accessible way, publish aggregate positions" to ensure that data is readily available to the relevant EU authorities.[295] While it remains to be seen the extent of Article 12, the reporting requirement is arguably a step in the right direction. Granular data is essential for introducing substantive reforms and ultimately, to make financial markets safer.

4.3.3 Disclosure requirement

Supplementing the existing reporting requirements are provisions on investor transparency when entering into a securities financing transaction and total return swap.[296] These provisions are closely linked to the AIFMD and the UCITS Directive and requires fund managers to provide pre-contractual and periodical information to investors in relation to the risks associated with the use of

291 Article 4 (1) SFTR.
292 Article 4 (5) SFTR.
293 Article 4 (4) SFTR.
294 This is not an exhaustive list as it would be trite to list all the requirements parties must adhere to. This list is used in relation to the purpose of this study. For a fuller overview of the list of the minimum reporting obligations, see Article 4 (9) (b) SFTR.
295 Article 12 (1) and (2) SFTR.
296 Article 13 (1) SFTR.

securities financing transactions and total return swaps.[297] It is worth noting at this juncture that the investor transparency provisions capture both securities financing transactions and total return swaps.

4.3.3.1 Pre-contractual information

Either the UCITS prospectus and/or the pre-contractual disclosure by Alternative Investment Managers to investors, must specify the securities financing transactions and total return swaps that the respective funds are authorised to use and include a clear statement that those transactions and instruments are used. This is to "ensure that investors understand and appreciate the inherent risks before they decide to invest in a particular UCITS or" Alternative Investment Fund.[298] The following information must be included in either a UCITS prospectus and/or the pre-contractual disclosure to investors for Alternative Investment Funds:[299]

- Acceptable collateral: description of acceptable collateral with regard to asset types, issuer, maturity, liquidity as well as the collateral diversification and correlation policies.
- Collateral valuation: description of the collateral valuation methodology used and its rationale, and whether daily mark-to-market and daily variation margins are used.
- Risk management: description of the risks linked to securities financing transactions and total return swaps as well as risks linked to collateral management, such as operational, liquidity, counterparty, custody and legal risks and, where applicable, risks arising from collateral reuse.
- Specification of any restrictions (regulatory or self-imposed) on reuse of collateral.

Recital 15 of the SFTR highlights that the use of securities financing transactions and total return swaps can increase the risk profile of the respective fund. Therefore, it is crucial to ensure that investors in funds are able to make informed choices and are able to assess the overall risk and reward profile of a fund. This is further emphasised in Recital 20 of the SFTR where such information is necessary to ensure that investors understand and appreciate the inherent risks before deciding to invest in a particular fund.

297 Recitals 19 and 20 and Articles 13 and 14 SFTR.

298 Recital 20 SFTR.

299 This list is not exhaustive, but only outlines the most relevant sections for the purpose of this thesis. For an exhaustive list, see Section B of the Annex SFTR.

4.3.4 Collateral reuse requirement

> *"In a sea of complex trades, Article 15* [SFTR] *is no lifeguard – it is just another signpost stating that there may be some danger, somewhere, at some time. Not where; not when; and provides no help in identifying or mitigating that risk"*[300].

Collateral reuse is accounted for in Article 15 of the SFTR. As noted in Chapter 3, collateral reuse refers to transactions whereby market participants pledge, sell, or more generally transfer an asset they have received from one market participant and transfer it to another market participant.[301] In a typical credit intermediation chain, financial collateral can be reused several times over. The re-churning of the same asset leads to long chains of intermediation, which harbours both benefits and risk and along the intermediation chain, a single financial institution can be involved in multiple transactions.[302]

4.3.4.1 Benefits of collateral reuse

From an economic perspective, the reuse of financial collateral is the functional equivalent to the creation of money that takes place in the traditional banking sector through the process of deposit taking and loan making.[303] In a repo transaction, for example, market participants raise cash "to buy securities, which in turn, are repoed out to raise more cash to buy more securities and so on" .[304] The chain of intermediation is a "money multiplier" and in theory, the financial collateral underpinning the transaction may be constantly re-used; mathematically, the cumulative intermediation chain "can be infinite".[305] This means that 'collateral reuse' can mechanically increase the supply of available securities back into the marketplace, which can then be used for clearing, settlement and financing purposes (rather than sitting idle on an

300 T Dilks and A Datoo, "Danger Signs" (2016) Lexology.

301 Chapter 3, section 5 extensively discusses the issues surrounding collateral reuse and its velocity. It would be trite to cover the same ground twice. For a more in-depth analysis of collateral reuse, please refer to Chapter 2. In addition, Article 3 (12) SFTR defines collateral reuse as: "the use by a receiving counterparty, in its own name and on its own account of another counterparty, including any natural person, of financial instruments received under a collateral arrangement, such use comprising transfer of title or exercise of a right of use in accordance with Article 5 of Directive 2002/47/EC but not including the liquidation of a financial instrument in the event of default of the providing counterparty".

302 Chapter 3, section 5 "The Velocity of Financial Collateral" provides a visual depiction of the reuse of financial collateral.

303 This was discussed in Chapter 6.

304 Bank for International Settlements, "Repo Market Functioning" (2017) 59 CGFS Papers 1 at 6, available at: https://www.bis.org/publ/cgfs59.htm.

305 Cullen (n 27) 85 at 94-95.

investor's balance sheet, thus optimising a portfolio's yield).[306] The reuse of financial collateral has indeed become an essential component of modern finance – it not only facilitates leverage; it also facilitates liquid and efficient markets.[307]

4.3.4.2 Risks of collateral reuse

However, the reuse of financial collateral also poses significant risk and often comes under the regulatory spotlight from a financial stability perspective.[308] There is concern that reusing financial collateral creates complex intermediation chains within the financial sector, which subsequently gives rise to systemic risk. In particular, the long chains of intermediation often lack transparency and, therefore, heightened risk, particularly in relation to the amplification of contagion. The reuse of the same financial collateral security increases the interconnectedness among market participants, thereby contributing to the formation of contagion and potential spillover effects. Since the Global Financial Crisis, market participants are now forced to use financial collateral to secure transactions in order to obtain funding in the markets. This financial collateral can then be reused to secure or guarantee new credit transactions, which generates dynamic collateral chains whereby the same security is used multiple times over. This leads to an increase in leverage and strengthens the procyclical nature of the financial system making it more vulnerable to runs and sudden deleveraging.

Another key concern is market risk, which directly translates into the price volatility of the financial collateral. The reuse of the same financial collateral security can, therefore, create systemic contagion, particularly if the market becomes stressed and an entity within the chain experiences financial distress. Given that it is often unclear as to the cumulative build-up of exposures along the intermediation chain, default would automatically activate a number of "competing claims to the same asset", which would potentially leave parties within the intermediation chain from being able to reclaim any losses leading to subsequent additional fails.[309] In addition, the market risk arising from

306 The Global Financial Markets Association and International Capital Markets Association, "The GFMA and ICMA Repo Market Study: Post-Crisis Reforms and the Evolution of the Repo and Broader SFT Markets" (December 2018) 1 at 33-34.

307 See generally, P Mehrling, Z Pozsar, J Sweeney and D H Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance" (2013).

308 See generally, Financial Stability Board (n 126); See also, Financial Stability Board, "Transforming Shadow banking into Resilient Market-based Finance – Non-Cash Collateral Re-Use: Measures and Metrics" (25 January, 2017); Article 15 SFTR.

309 Pistor (n 78) 15. See also, The International Swaps and Derivatives Association, the Association for Financial Markets in Europe, the Futures Industry Association, the International Capital Markets Association and the International Securities Lending Association, "Information Statement in accordance with Article 15 of the Securities Financing Transactions Regulation" (2020) 1 at 3, available at: https://www.sifma.org/resources/general/sifma-amg-information-statement-in-accordance-with-article-15-of-the-securities-financing-trans-

the price volatility of the financial collateral exacerbates movements in margin. If the value of the financial collateral falls then margins/haircuts rise. Therefore, the money multiplier as described above works in reverse and causes a deleveraging effect – the cumulative margins/haircuts on reused financial collateral essentially become more sizeable. In periods of market stress, there will be simultaneous demands for the return of securities and the reuse of financial collateral will undermine these demands on a timely basis, incentivising parties to run.[310] Such a situation can potentially start a domino chain of events leading to fire sales and, consequently, further crises.[311]

4.3.4.3 The Article 15 information statement

In an attempt to mitigate the risks associated with collateral reuse, Article 15 of the SFTR requires the collateral taker to duly inform the collateral giver of the risks and consequences that may be involved in permitting the reuse of the posted financial collateral.[312] Market participants must adhere "to at least both the following conditions":[313]

1. Risks and consequences have been communicated in writing;[314] and,
2. Prior express consent of the providing counterparty has been granted.[315]

To assist relevant counterparties in their compliance, the so-called "Article 15 SFTR Information Statement" has been introduced and published by five key industry associations.[316] The Article 15 SFTR Information Statement "is a template for use by market participants to inform their counterparties of the general risks and consequences that may be involved in consenting to a right of use of collateral provided under a security collateral arrangement or of concluding a title transfer collateral arrangement".[317]

In essence, the goal of the Article 15 SFTR Information Statement is to inform everyone in the intermediation chain, in standard wording, of the risks and

action-regulation/; Financial Stability Board (n 308) 1 at 7.

310 Cullen (n 27) 85 at 86.

311 Autorité des Marches Financiers, "The Reuse of Assets: Regulatory and Economic Issues" (9 November, 2016) 1 at 2. See also, M Singh, "Velocity of Pledged Collateral: Analysis and Implications" (2011) IMF Working Paper 1 at 22.

312 Article 15 (a) and (b) SFTR.

313 Article 15 (1) SFTR.

314 Article 15 (1) (a) SFTR.

315 Article 15 (1) (b) SFTR.

316 See generally, the International Swaps and Derivatives Association, the Association for Financial Markets in Europe, the Futures Industry Association, the International Capital Markets Association and the International Securities Lending Association (n 309).

317 International Swaps and Derivatives Association, "SFTR Information Statement" (2016), available at: https://www.isda.org/book/sftr-information-statement/. See also, Article 2 (1) (b) and (c) FCD. A deeper explanation as regards the specific property law rights in described in Chapter 3.

consequences involved with the reuse of financial collateral. In theory, such a requirement seems prudent. However, the reality is less compelling. It is indeed debatable whether the Information Statement serves any significant benefit in mitigating the broader systemic concerns associated with the reuse of financial collateral beyond meeting the Article 15 SFTR requirements.[318] The reasons are arguably twofold. Firstly, the wording in the Article 15 SFTR Information Statement is standardised and it is not necessary to tailor the Information Statement to the particular transaction – although it is possible to tailor the document should the parties wish.[319] This means that important risks, often of a systemic nature, such as margin, haircuts, leverage and pro-cyclicality, may be missing.[320]

Secondly, it is often argued that Article 15 of the SFTR is a provision that could restrain excessive leverage and procyclicality *de facto* implementing mandatory margin requirements.[321] For instance, the SFTR obliges counterparties to securities financing transactions to provide their consent to the reuse of the financial collateral they post. Refusal to give such consent, has the potential to limit, albeit to a certain extent, the build-up of excessive leverage. However, this provision may essentially be undermined when it becomes evident that, pursuant to the SFTR, separate consent is not required if the financial collateral is provided by way of a title transfer.[322] It is indeed noteworthy that market practice in the EU illustrates that all repo transactions and the majority of securities lending transactions are concluded by way of title transfer.[323] As such, ownership rights pass in the financial collateral when it is transferred from one party to another party. This means that the right to reuse the financial collateral is not a discretionary right but an automatic right, arising from ownership.[324]

4.4 The AIFMD

The AIFMD puts in place a comprehensive framework for the regulation of Alternative Investment Fund Managers in the EU.[325] It was adopted by the

318 Dilks and Datoo (n 300).
319 International Swaps and Derivatives Association (n 317).
320 The International Swaps and Derivatives Association, the Association for Financial Markets in Europe, the Futures Industry Association, the International Capital Markets Association and the International Securities Lending Association (n 309).
321 European Systemic Risk Board (n 26) 1 at 51.
322 Article 15 (1) (a) (ii) SFTR.
323 European Systemic Risk Board (n 26) 1 at 51 (footnote 40).
324 The Global Financial Markets Association and International Capital Markets Association, "The GFMA and ICMA Repo Market Study: Post-Crisis Reforms and the Evolution of the Repo and Broader SFT Markets" (December, 2018) 1 at 33-34.
325 The AIFMD framework is made up of the following EU legislation: Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment

European Parliament on 11 November 2010, and published in both the *Official Journal of the European Union* on 1 July 2011 and in the *Official Bulletin* on 21 July 2011.[326]

The AIFMD includes private equity funds, hedge funds, real estate funds and infrastructure funds as Alternative Investment Funds that do not fall within the scope of 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 the UCITS Directive.[327] In this context, an Alternative Investment Fund 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.[328] In addition, the AIFMD provides that any authorised Alternative Investment Fund Manager may market shares of an EU Alternative Investment Fund to professional investors in any Member State using a 'passport' mechanism.[329]

The AIFMD prescribes specific rules relating to Alternative Investment Fund Managers who "are responsible for the management of a significant amount of invested assets…, account for significant amounts of trading in markets for financial instruments, and can exercise an important influence on markets and companies in which they invest".[330] It is important to distinguish at this juncture, between an Alternative Investment Fund (which represents the entity

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Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU No 1095/2010) ("AIFMD"); 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, depositories, leverage, transparency and supervision; Commission Implementing Regulation (EU) No 447/2013 of 15 May 2013 establishing the procedure for AIFMs which choose to opt-in under Directive 2011/61/EU of the European Parliament and Council; Commission Implementing Regulation (EU) No 448/2013 of 15 May 2013 establishing a procedure for determining the Member State of reference of a non-EU AIFM pursuant to Directive 2011/61/EU of the European Parliament and of the Council; and, Commission Delegated Regulation (EU) No 694/2014 of 17 December 2013 supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to regulatory technical standards determining types of alternative investment fund managers. See also, European Securities and Markets Authority, "Questions and Answers: Application of the AIFMD" (16 December, 2016), available at: https://www.esma.europa.eu/sites/default/files/library/2016-1669_qa_on_aifmd.pdf.

326 Article 70 of AIFMD. In addition, Legislatures of the respective Member State must have transposed the AIFMD into their national law by 22 July 2013 – see Article 66 (1) AIFMD. See also, D A Zetzsche, "Introduction: Overview, Regulatory History and Technique, Transition", in D A Zetzsche (ed), The Alternative Investment Fund Managers Directive: European Regulation of Alternative Investment Funds (2012) 1 at 6.

327 UCITS will be discussed in greater detail below. See also, Recital 3 AIFMD. See also, OJ l 302, 17.11.2209, page 32.

328 European Securities and Markets Authority (n 277) 1 at 40.

329 Articles 32 (1) and 39 (1) and (2) AIFMD.

330 Recital 1 AIFMD.

by which the assets are held) and an Alternative Investment Fund Manager (that manages the fund's assets and dictates the investment strategy). This distinction is important because the Alternative Investment Fund is generally based *'offshore'* in a tax efficient jurisdiction and therefore beyond the reach of the national regulator, whereas Alternative Investment Fund Managers are typically based *'onshore'* and are increasingly subject to regulatory oversight. For this reason, the AIFMD "does not regulate" Alternative Investment Funds.[331]

4.4.1 Rationale of the AIFMD

This AIFMD was prompted as part of a wider effort "to regulate the so-called shadow banking system" undertaken by the G20 nations following the Global Financial Crisis.[332] The adoption of the AIFMD "means that hedge funds and private equity funds will no longer operate in the regulatory void outside the scope of regulators… The new regime adds to the overall stability of our financial system".[333] The promotion of financial stability and the mitigation of systemic risk are therefore key concerns and the AIFMD is said to facilitate this by establishing a "stringent regulatory… framework… governing the authorisation and supervision of AIFMs [Alternative Investment Fund Managers] in order to provide a coherent approach to the related risks and their impact on investors and markets" in the EU.[334]

Alternative Investment Fund Managers have become "very significant actors in the European financial system" and the strategies employed by Alternative Investment Fund Managers are vulnerable to systemic risk, such as the risk posed by the rapid build-up of leverage.[335] As such, it was deemed "necessary to establish a framework capable of addressing those risks taking into account the diverse range of investment strategies and techniques employed by" them:[336]

> *"[H]edge funds have contributed to asset price inflation and the rapid growth of structured credit markets. The abrupt unwinding of large, leveraged positions in response to tightening credit conditions has had a procyclical impact on declining markets and may have impaired market liquidity. Funds of hedge funds have faced serious liquidity problems: they could*

331 Recital 10 AIFMD. See also, H McVea, "Targeting hedge funds and 'repo runs'", in I H Y Chiu and I G MacNeil, Research Handbook on Shadow Banking Legal and Regulatory Aspects (2018) 177 at 184.

332 R Wilhelmi and M Bassler, "AIFMD, Systemic Risk and the Financial Crisis", in D A Zetzsche (ed), The Alternative Investment Fund Managers Directive: European Regulation of Alternative Investment Funds (2015) 21 at 35. See also, Recital 89 AIFMD.

333 J M Barroso, "European Commission statement at the occasion of the European Parliament vote on the directive on hedge funds and private equity" (11 November, 2010).

334 Recitals 1, 2, 4 and 49 AIFMD.

335 Recital 49 AIFMD.

336 Recital 3 and 49 AIFMD.

not liquidate assets quickly enough to meet investor demands to withdraw cash, leading to some funds of hedge funds having to suspend or otherwise limit redemptions".[337]

The European Commission has therefore deemed the introduction of the AIFMD "necessary to ensure that leverage is used responsibly and that the associated risks are understood and managed" effectively.[338]

4.4.2 Leverage

Under the AIFMD, Alternative Investment Fund Managers rely on collateral transactions to obtain leverage and conduct their financial activities.[339] As discussed in Chapter 4, the reciprocal of leverage is margin. Therefore, margin limits the amount of leverage a financial institution can obtain – the lower the margin the higher the leverage and the higher the margin the lower the leverage. Therefore, restricting leverage is "functionally equivalent to implementing mandatory margin requirements".[340]

Leverage is defined in the AIFMD as "any method by which an AIFM [Alternative Investment Fund Manager] increases the exposure of an AIF [Alternative Investment Fund] it manages whether through borrowing cash or securities, or leverage embedded in derivative positions or by any other means".[341] The AIFMD provides for a lighter regime for Alternative Investment Fund Managers when the cumulative Alternative Investment Fund under management falls below the threshold of:

1. € 100 million – if the AIF uses leverage;[342] or,
2. € 500 million, if the AIF does not use leverage and does not grant investors redemption rights for a period of five years.[343]

The use of leverage is to be disclosed to investors as well as to supervisory authorities.[344] The purpose of disclosure to supervisory authorities consists of identifying and mitigating systemic risk. Under the AIFMD, Alternative

337 European Commission, "Proposal for a Directive of the European Parliament and of the Council on Alternative Investment Fund Managers and Amending Directives 2004/39/EC and 2009" (2009), available at: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52009PC0207.

338 European Commission, "Directive on Alternative Investment Fund Managers ('AIFMD'): Frequently Asked Questions" (11 November, 2010).

339 Recitals 3, 34, 43 and 89 AIFMD. See also, Nabilou and Pacces (n 282) 7 at 32; McVea (n 331) 177 at 182.

340 European Systemic Risk Board (n 26) 1 at 55.

341 Article 4 (1) (v) AIFMD. See also, European Securities and Markets Authority (n 277) 1 at 40.

342 Recital 17 and Article 3 (2) (a) AIFMD.

343 Recital 17 and Article 3 (2) (b) AIFMD.

344 Recital 49 AIFMD.

Investment Fund Managers set a maximum level of leverage which they may employ on behalf of every Alternative Investment Fund they manage, as well as the extent of the collateral reuse right that could be granted under the leveraging arrangement.[345] Upon setting the maximum leverage level, the Alternative Investment Fund Manager should, *inter alia*, take the following into account:[346]

i The extent to which the leverage is collateralised;
ii The type of AIF;
iii The sources of leverage of the AIF;
iv The investment strategy of the AIF;
v The asset/liability ratio;
vi The scale, nature and extent of the activity of the AIFM on the markets concerned; and,
vii Any other interlinkage.

The AIFMD does not set any hard limits on the use of leverage but it does require the asset manager to implement "reasonable" leverage limits to the funds it manages.[347] This means that appropriate leverage levels are set by the Alternative Investment Fund Manager on a transaction-by-transaction basis.[348] This implies that while leverage has to be disclosed, levels of leverage can theoretically be unlimited.[349] Much criticism was voiced during the legislative process with regard to addressing Articles 25 (3) and (4) of the AIFMD of the European Commission's proposal, which contained entitlement of the European Commission and the Competent Authorities to adopt implementing measures imposing general harmonised limits to the level of employed leverage.[350] This approach was not followed as it was argued that stricter reporting requirements should apply to Alternative Investment Funds that are "substantially leveraged".[351] Under Article 25 (3) and (4) of the AIFMD, competent authorities may impose leverage restrictions in exceptional circumstances "in order to ensure the stability and integrity of the financial system".

345 Article 15 (4) AIFMD.
346 Article 15 (4) AIFMD.
347 Article 25 (3) AIFMD. See also, A M Agresti and R Brence, "Statistical work on shadow banking: development of new datasets and indicators for shadow banking" (2017) *Bank for International Settlements* 1 at 11.
348 Articles 25 (3) and (4) AIFMD.
349 Recital 49 AIFMD. See also, H Nabilou, *The Law and Economics of Hedge Fund Regulation* (2014) 29.
350 N Maloney, *EU Securities and Financial Markets Regulation* (2014) 302.
351 Article 24 AIFMD.

This means that the National Competent Authorities of the Member State may impose additional limits on the level of leverage that Alternative Investment Fund Managers employ.[352]

4.4.3 AIFMD: some observations

Whilst part of the broader concept to regulate leverage and the associated systemic risks, the AIFMD has divided the academic community into three broad camps. Firstly, the AIFMD has been argued to being both "ill-conceived and badly drafted".[353] Of particular concern is Alternative Investment Fund involvement in collateral transactions and the use of leverage, which can contribute to the transmission of systemic risk.[354] Secondly, the AIFMD has been labelled a "success" and therefore an important "step in the right direction" bringing about important changes to leverage and transparency requirements.[355] Thirdly, commentators argue that Alternative Investment Funds "pose no systemic threat" to the wider financial system and as a result, the very introduction of the AIFMD has been heavily criticised:[356]

> *"Arguments in favour of increased hedge fund regulation in order to lower systemic risk are flat wrong. Such arguments fail to consider that hedge funds pose no systemic threat because of the incredible diversity in their investment strategies, an assertion bolstered by evidence from decades of experience with hedge funds".*[357]

This view is corroborated by the Managed Funds Association, which represents the alternative investment industry, arguing that Alternative Investment Funds are not "a cause of systemic risk" and while "often thought of as highly leveraged… are, in fact, less leveraged than many other financial institu-

352 Article 25 (3) AIFMD.

353 George Parker, Financial Times Political Editor, interviewed George Osborne, then Shadow Chancellor, on 17 July, 2009, available at: https://www.ft.com/content/f199e7c8-7447-11de-8ad5-00144feabdc0.

354 McVea (n 331) 177 at 180.

355 J Buckley and D Howarth "Internal Market: Regulation the So-Called 'Vultures of Capitalism'" (2011) *49 Journal of Common Market Studies 123 at 139.*

356 J R Macey, *Corporate Governance: Promises Kept, Promises Broken* (2008) 268-269. See also, McVea (n 331) 177 at 178. See also, D Walters, "Hedge Funds and Private Equity" (2008) *Financial Services Authority* where it is argued that AIFs "do not pose a systemic risk to financial stability"; N Terzi, "Are Hedge Funds a Potential Threat to Financial Stability" (2010) *2 Scientific Papers of the University of Pardubice* 328 at 329.

357 Macey (n 356) 268-269. See also, McVea (n 331) 177 at 178. This view was alluded to by both De Larosiere Report and the Turner Review. On this see, J de Larosiere, "The High-Level Group of Financial Supervision in the EU" (25 February, 2009) European Commission 1 at 23 (paragraph 86); Turner (n 7) 1 at 72-73.

tions".[358] Yet one only has to recall the failure of highly leveraged hedge fund Long-Term Capital Management in 1998 and the 2007 collapse of two Bear Stearns Hedge Funds – argued to being "the early harbinger of the financial crisis" – to appreciate that in both events, the aggressive use of leverage precipitated failure.[359] One therefore has to wonder why commentators claim that Alternative Investment Funds pose no systemic threat to financial stability.

4.5 UCITS

Since the Global Financial Crisis, international work in relation to shadow banking, coordinated by the Financial Stability Board, identified certain areas of investment funds that required closer scrutiny.[360] In particular, "the money-market fund reform… has drawn the UCITS sector into the shadow banking reform agenda".[361] UCITS and their use of collateral transactions was flagged as potentially problematic due to raised concerns in relation to hidden leverage, runs and therefore systemic risk.[362]

UCITS is a European harmonised regulated fund product that can be sold on a cross-border basis within the European Economic Area based on its authorisation in one EU Member State.[363] This means that funds authorised in one EU Member State can be marketed in another EU Member State via a passport mechanism.[364] Underpinning UCITS is a comprehensive legal framework for the regulation of harmonised investment funds within the EU. Originally introduced in 1985, the UCITS rules have been revised several times, most

358 Managed Funds Association, "MFA Comments on Second FSB/IOSCO Consultation Document – Methodologies for Identifying Non-Bank Non-Insurer Globally Systemically Important Financial Institutions" (29 May, 2015) 1 at 7, available at: https://www.iosco.org/library/pubdocs/479/pdf/Managed%20Funds%20Association%20(MFA).pdf.

359 President's Working Group, *Hedge Funds, leverage and Lessons of Long-Term Capital Management* (1999), available at: https://www.treasury.gov/press-center/press-releases/Pages/report3097.aspx. See also, G K Zestos, *The Global Financial Crisis: From US subprime mortgages to European sovereign debt* (2016) 210; M Odekon, *Booms and Busts: An Encyclopedia of Economic History from the First Shock* (2015) 72 – 74.

360 European Commission, "Consultation Document: Undertaking for Collective Investment in Transferable Securities" (26 July 2012) 1 at 2, available at: https://ec.europa.eu/finance/consultations/2012/ucits/docs/ucits_consultation_en.pdf. See also, Finance Watch, "Answer to the public consultation from the European Commission on UCITS" (18 October 2012), available at: https://www.finance-watch.org/wp-content/uploads/2018/08/121018_Answer_to_EC_Consult_UCITS.pdf.

361 Maloney (n 350) 260.

362 European Commission, "Green Paper on Shadow Banking" (2012) *COM/2012/0102final* at paragraphs 4, 6.3 and 7.2, available at: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A52012DC0102. See also, European Commission (n 360) 1 at 2-3.

363 UCITS also enjoy a high level of recognition in many non-European Economic Area countries, such as South Africa, Asia and South America.

364 Recital 5 UCITS as regards the clarification of certain definitions.

recently through the UCITS V Directive, which came into force on 18 March 2016.[365]

With the enactment of the AIFMD, investment funds in Europe are classified into two broad categories, namely UCITS and Alternative Investment Funds. In general, investment funds are investment products created for the sole purpose of gathering investors' capital and investing that capital collectively through a portfolio of financial instruments such as bonds, equities and other securities.[366] The UCITS category includes mutual funds and pension funds – these funds are available to retail investors and one of the distinguishing features of UCITS from Alternative Investment Funds is that UCITS raise funds from the public, while Alternative Investment Funds raise capital privately.[367]

365 The UCITS framework is made up of the following EU legislation: 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; 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 - This is a 'framework' Level 1 Directive, which has been supplemented by technical implementing measures (as follows); 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; Commission Directive 2010/43/EU of 1 July 2010 implementing Directive 2009/65/EC of the European Parliament and of the Council as regards organisational requirements, conflicts of interest, conduct of business, risk management and content of the agreement between a depositary and a management company; Commission Regulation (EU) No 583/2010 of 1 July 2010 implementing Directive 2009/65/EC of the European Parliament and of the Council as regards key investor information and conditions to be met when providing key investor information or the prospectus in a durable medium other than paper or by means of a website; Commission Directive 2010/42/EU of 1 July 2010 implementing Directive 2009/65/EC of the European Parliament and of the Council as regards certain provisions concerning fund mergers, master-feeder structures and notification procedure; Commission Regulation (EU) No 584/2010 of 1 July 2010 implementing Directive 2009/65/EC of the European Parliament and of the Council as regards the form and content of the standard notification letter and UCITS attestation, the use of electronic communication between competent authorities for the purpose of notification, and procedures for on-the-spot verifications and investigations and the exchange of information between competent authorities; and, Commission Implementing Regulation (EU) 2016/1212 of 25 July 2016 laying down implementing technical standards with regard to standard procedures and forms for submitting information in accordance with Directive 2009/65/EC of the European Parliament and of the Council. See also, European Securities and Markets Authority, "Fund Management" (2020) available at: https://www.esma.europa.eu/regulation/fund-management.

366 European Commission, "Investment funds: EU laws and initiatives relating to collective investment funds" (accessed 27 April, 2020) available at: https://ec.europa.eu/info/business-economy-euro/growth-and-investment/investment-funds_en.

367 Nabilou (n 349) 296-297.

A defining feature of the UCITS framework is characterised by the offer to investors of on-demand liquidity. In particular, a "UCITS shall repurchase or redeem its units at the request of any unit-holder".[368] To guarantee the liquidity of the UCITS product are the specific portfolio diversification requirements as outlined under Article 52, which is reinforced by the list of eligible and non-eligible assets as specified under Article 50.[369] For instance, Article 52 (1) and (2) state that a UCITS shall invest no more than 5% of its assets in transferable securities or money market instruments issued by the same body and, the risk exposure to a counterparty of the UCITS in an OTC derivative transaction shall not exceed 10%.[370]

However, no financial institution is immune to risk. In fact, it has been noted that possible regulatory shortcomings in the UCITS sector need to be addressed.[371] Mark Carney has warned of the potential fragilities in the sector and stated that UCITS are a potential source of systemic risk.[372] Because the UCITS framework offers 'on-demand liquidity' to investors – what happens if leveraged UCITS funds have assets that "fundamentally aren't liquid or might become illiquid in a downturn"?[373] Such a situation arose in June 2019 where the UCITS sector had "some $30 trillion tied up in difficult-to-trade investments".[374] This caused Mark Carney to state that UCITS "funds are built on a lie, which is you can have daily liquidity… The damage of that 'lie' for financial stability is that it leads to the expectation for individuals that it's not that different from having money in a bank".[375] Such a situation is very similar to a classic bank run where funds can be withdrawn – *en-masse* – and financial institutions are therefore forced to deleverage thereby exacerbating systemic risk. An infinitely preferable approach would arguably be regulation that better aligns the redemption terms with the actual liquidity of the underlying investment.

368 Article 84 (1) UCITS.

369 Articles 50 and 52 UCITS.

370 Article 52 (1) and (2) UCITS.

371 European Central Bank, "Green Paper on the enhancement of the EU framework for investment funds" (2005). See also, L M Vivar, M Wedow and C Wiestroffer, "Is leverage driving procyclical investor flows? Assessing investor behaviour in UCITS bond funds" (2019) *European Central Bank.*

372 A Massa and C Torres, "Liquidity and a "Lie": Funds Confront $30 Trillion Wall of Worry" (27 June, 2019) *Bloomberg* (quoting Mark Carney). See also generally, Vivar *et al* (n 371).

373 C Giles and O Walker, "BOE governor Mark Carney calls for change to investment regulation" (26 June, 2019) *Financial Times* (quoting Mark Carney), available at: https://www.ft.com/content/e6d5bf04-980b-11e9-8cfb-30c211dcd229.

374 Massa and Torres (n 372) (quoting Mark Carney). See also generally, Vivar *et al* (n 371).

375 C Giles and O Walker, "BOE governor Mark Carney calls for change to investment regulation" (26 June, 2019) *Financial Times* (quoting Mark Carney), available at: https://www.ft.com/content/e6d5bf04-980b-11e9-8cfb-30c211dcd229.

4.5.1 Leverage

UCITS funds tend to generally employ traditional investment strategies with low levels of leverage. They often "invest in marketable securities and have to comply with leverage restrictions under the UCITS Directive.[376] Financial "leverage, meaning leverage (debt) obtained through outright borrowings, is limited to 10% of net asset value and can only be carried out on a temporary basis.[377] Furthermore, 'global exposures' gained through the use of derivatives are restricted to 100% of net asset value, *de facto* limiting synthetic leverage in UCITS".[378] As noted by the European Systemic Risk Board:

> *"The UCITS Directive includes specific limits on leverage. UCITS may borrow up to a limit of 10% of their net assets, and only on a temporary basis, for example for liquidity management purposes. Also, exposures related to derivatives and SFTs cannot exceed the total net value of the portfolio. This means that leverage from borrowing, derivatives and SFTs cannot exceed 2.1 times the UCITs Net Asset Value. Finally, ESMA guidelines on… UCITS prescribes that collateral collected in the course of OTC derivative and SFT transactions must be of high quality, liquid and that assets that exhibit high price volatility should not be accepted as collateral unless suitably conservative haircuts are in place".*[379]

Similar to Alternative Investment Funds, provisions in the UCITS Directive concerning leverage levels can have the same effect as implementing mandatory margin requirements.[380] The UCITS framework is indeed far more restrictive and robust in relation to leverage than the AIFMD – it is however unfortunate that mandatory margin requirements are not directly addressed.

4.5.2 Enforcement

Under the UCITS, there is a division of responsibility between home and host regulators as to enforcement and supervision against a UCITS. As a general rule, authorities of the "home Member State shall have the power to take action against the UCITS if it infringes any law, regulation or administrative provision".[381] The home Member State is responsible for ensuring that the UCITS "comply with the rules… [*inter alia*] including the calculation of total exposure and leverage".[382]

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376 Article 19 (3) (f) UCITS.
377 Articles 2 (1) (p) (i) (ii), 48 (1) and (2) (b) and 83 (2) (a) UCITS.
378 European Central Bank, "Is Leverage Driving Procyclical Investor Flows? Assessing Investor Behaviour in UCITS Bonds Funds" (2019), available at: https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu201910_4~a9c04beceb.en.html#toc2. See also generally, Vivar *et al* (n 371).
379 European Systemic Risk Board (n 26) 1 at 55.
380 *Ibid.*
381 Article 108 (1) UCITS.
382 Article 19 (3) (c) UCITS.

Yet the host Member State also has a role to play in supervision and enforcement of UCITS. If the infringement falls within the scope of Articles 92 and 94 of UCITS, then it would be a host Member State issue.[383] It is indeed necessary for host Member States to be responsible for certain forms of supervision and enforcement given that the conduct of the regulated entity will likely affect the nationals of the host Member State. For example, host Member States may be able to supervise and enforce against a hosted UCITS in respect of issues dealing with dissemination of information such as the key investor information document, prospectuses and payments to unit holders upon redemption.[384]

An important aspect of the prospectus is to "inform investors of the collateral policy of the UCITS. This should include permitted types of collateral, level of collateral required and haircut policy".[385] As noted by ESMA, "any collateral received other than cash should be highly liquid and traded on a regulated market or multilateral trading facility with transparent pricing in order that it can be sold quickly".[386] Article 46 of the ESMA guidelines requires UCITS to have a clear haircut policy. The parameters that influence the haircut policy are decided per transaction and include factors such as counterparty risk, maturity of the security, its liquidity and potential volatility.[387]

5 CONCLUSION

To conclude, within the EU shadow banking sector, the need for a more robust margin framework could not be more profound. Margin was identified as a source of systemic risk long before the 2007/2008 Global Financial Crisis. Since the crisis, and the decade that has followed, little has been achieved to mitigate the procyclical effects that margin poses within the EU shadow banking sector. The fact that margin not only contributes to financial stability by absorbing losses and helping to manage financial risk, it does not exclude it nor excuse it from equally being a source of systemic risk. As such, finding the optimal balance of preserving financial stability, mitigating systemic risk and preventing market failures is, indeed, a gargantuan task.

However, despite little being done to mitigate the procyclical and systemic effects of margin, legal and regulatory mechanisms do exist. For example, privately negotiated contracts by way of the master agreements largely oversee collateral transactions within the EU shadow banking sector. Master agreements

383 Article 108 (1) UCITS.
384 Recital 63 and Articles 92 and 94 UCITS.
385 European Securities Markets Authority, "Guidelines for competent authorities and UCITS management companies" (2014) 1 at 11.
386 Article 43-a of the ESMA Guidelines for competent authorities and UCITS management companies (2012).
387 *Ibid* at Article 46.

allow market participants greater flexibility to tailor their agreement, such as the setting of margin and the type and amount of financial collateral. It is often noted that market participants favour legal certainty and because collateral transactions are almost always of a cross-border nature, master agreements have the ability to transcend national boundaries, often where public law cannot. Yet master agreements do not come without complications. Market participants with an intimate knowledge of the market, tailor agreements with a view to maximising profits for themselves whilst minimising benefits elsewhere. Arguably, they do not take into account the wider systemic implications of their actions on the broader economy.

With regard to public law, it is submitted that more needs to be achieved in this area – particularly with regard to repos and securities lending transactions. While derivatives have arguably made substantial progress with regard to implementing mandatory margin requirements (provided parties are within the scope of the EMIR and the RTS), reforms in relation to repos and securities lending are far from convincing. For instance, the SFTR, while potentially a valuable data source, does very little in relation to the regulation of margin. The AIFMD, does impose a 'light touch' leverage regime on Alternative Investment Fund Managers. However, it is up to the manager of the fund to set the leverage level they believe to be appropriate. The UCITS Directive does go further than the AIFMD by restricting the amount of leverage a UCITS can obtain. It is however unfortunate, that margin is not tackled head on. The Financial Collateral Directive, which was discussed in Chapter 3, has implications for margin in an insolvency setting, in particular close-out netting and margining. These mechanisms allow market participants within the scope of the Financial Collateral Directive a special insolvency treatment by avoiding the traditional insolvency stays.

8 How should margin operate in the EU shadow banking sector?

1 INTRODUCTION

The good times of low margins and high leverage will, inevitably, turn bad. Financial collateral valuations will therefore drop, resulting in *ex-post* controls that force market participants to call for additional margin and subsequently either decide not to 'roll-over' the contract or enter into a new contract and raise margin levels in response. As a consequence, as margin calls generally result in a need for market participants to deleverage, there is a high risk of leveraged market participants losing net wealth. In sum, changing margins can have a procyclical impact with the potential to substantially exacerbate financial volatility.[1] Consequently, market participants could find themselves scrambling for liquidity precisely at a time when market volatility is high and such liquidity is hard to come by. Ultimately, the situation of low margins and high leverage would result in rapid deleveraging which would trigger procyclical price corrections and systemic liquidity and leverage spirals, generating contagion and reinforcing stress in the financial system. The aforementioned market volatility and the subsequent downward spirals would be more pronounced in a highly leveraged environment compared with a financial system with less leverage.[2]

Significantly, the reoccurring theme of highly leveraged financial institutions being forced to deleverage has been "at the heart of recurrent episodes of financial instability since the late 19th century".[3] Importantly, events of the 21st century illustrate that the same problem keeps reappearing. It has indeed been observed during the 2007/2008 Global Financial Crisis that:

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1 J Brumm, M Grill, F Kubler and K Schmedders, "Margin Regulation and Volatility" (2015) *75 Journal of Monetary Economics* 54 at 55.

2 D K Tarullo, "Shadow Banking and Systemic Risk Regulation" (22 November, 2013) *Speech at the Americans for Financial Reform and Economic Policy Institute Conference, Washington D.C.*, available at: https://www.federalreserve.gov/newsevents/speech/tarullo20131122a.htm.

3 V Constancio, "Margins and haircuts as a macroprudential tool" (6 June, 2016) speech at the ESRB international conference on the macroprudential use of margins and haircuts, Frankfurt am Main. See also, M Schularick and A M Taylor, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises 1870-2008" (2012) *102 (2) American Economic Review* 1029-1061.

> *"The build-up of excessive leverage and subsequent deleveraging in the banking sector and within financial markets more generally, is widely viewed as one of the main causes of the global financial crisis. Notably… leverage and liquidity were closely interlinked and reinforced stress in the financial system".*[4]

A not dissimilar reoccurring problem of leveraged market participants being forced to deleverage as a result of margin calls has also been observed in relation to the 2020 Covid-19 pandemic, where it has been stated that:

> *"The Covid-19 pandemic has caused some of the largest – and fastest – market dislocations in modern history. Contemporaneous with the significant fall in market values is the evaporation of market liquidity… The withdrawal of global liquidity suppliers is correlated with the increase of over 400% in margin requirements, driving a procyclical downwards liquidity and leverage spiral".*[5]

Financial instability, such as the episodes outlined above, can have major economic and societal implications. The negative externalities can be, and often are, catastrophic. It is therefore not entirely evident why regulators are not learning lessons from the past. The same recurring problems continue to reappear at different moments in time and it is truly unfortunate that EU regulators are not tackling this problem head on.

In light of these observations, it is natural to explore a regulatory setting aimed at taming financial uncertainty, mitigating excessive leverage and dampening procyclicality. A regulatory framework of mandatory margin requirements is one such setting. Because there is no comprehensive EU wide regulatory framework for the application of margin in the shadow banking sector, potential tools subjecting all collateral transactions to a regulatory framework of mandatory margin requirements should be considered paramount.[6]

A potential future macroprudential regulatory margin toolkit would be beneficial and could conceptually take several forms and consist of a range of different elements. While the general mechanisms by which excessive leverage and procyclicality in collateral transactions can induce systemic risk

4 Constancio (n 3).

5 S Foley, A Kwan, R Phillip and B A Odegaard, "Contagious Margin Calls: How Covid-19 threatened global market stock liquidity" (August, 2020) UiS Working Papers in Economics and Finance. See also, European Systemic Risk Board, "Liquidity risks arising from margin calls" (June, 2020) 1 at 2-4, available at: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report200608_on_Liquidity_risks_arising_from_margin_calls_3~08542993cf.en.pdf; Bank for International Settlements, "Containment Measures: Policy Interventions" (June, 2020) *Annual Economic Report* 1 at 44, available at: https://www.bis.org/publ/arpdf/ar2020e.pdf.

6 European Systemic Risk Board, "The macroprudential use of margins and haircuts" (2017) 1 at 67-68, available at: https://www.esrb.europa.eu/pub/pdf/reports/170216_macroprudential_use_of_margins_and_haircuts.en.pdf.

are well understood, several options are available to address risk.[7] For example, some macroprudential tools seem to be better suited to containing the build-up of leverage during the upswing phase of the financial cycle, whereas other tools would be more focused on dampening the excess deleveraging in the downswing phase of the financial cycle.[8] This chapter will therefore analyse each proposed tool and will proceed as follows.

Section 2 recommends the introduction of mandatory CCP clearing for all collateral transactions. Despite the transfer and centralisation of risk being key concerns, the benefit of introducing the CCP infrastructure to the EU shadow banking sector is the *de facto* implementation of mandatory margin requirements, as well as the default waterfall structure and multilateral netting. Such mechanisms arguably contribute to financial stability. However, it should be noted that while the *de facto* implementation of mandatory margin requirements is a key feature of the CCP infrastructure, the setting of margin levels is currently discretionary. Section 3 will recommend the introduction of minimum margin floors. Because leverage has been at the heart of many past financial crises, minimum margin floors can prevent leverage building-up. The idea is that the higher the margin level imposed *ex-ante,* the lower amount of leverage a financial institution can obtain. A minimum margin floor framework would therefore introduce an *ex-ante* cap on the minimum acceptable margin level. Section 4 recommends the introduction of a countercyclical margin add-on. Because procyclicality is a driver of financial instability, taming uncertainty is key. The countercyclical margin add-on is primarily designed to build-up margin in the upswing, when financial collateral prices increase. The idea is that the additional margin that has been built-up in the upswing can relieve financial pressure in the downswing when margin calls materialise. Section 5 recommends the introduction of a discretionary margin ceiling. Margin calls in the downswing exacerbate procyclicality. A discretionary margin ceiling aims to provide an *ex-ante* cap by limiting the amount of margin that can be called. These recommendations could either be standalone measures or complementary. A complementary approach would ensure that recommendations 2, 3 and 4 be transposed into the CCP framework requiring market participants to operate within clear and definitive margin boundaries in the hope of taming financial uncertainty. However, these measures do not come without risk. Section 6 concludes.

2 RECOMMENDATION 1: MANDATORY CENTRAL COUNTERPARTY CLEARING

> *"Unlike… the shadow banking system, CCPs played a key role in the global financial crisis (GFC) in containing the propagation of risks and contagion of financial shocks, which*

7 *Ibid* at 59.
8 *Ibid*.

otherwise could have led to a far deeper disruption during the crisis. This made CCPs the unlikely heroes of the GFC".[9]

As noted in Chapter 7, mandatory CCP clearing in the EU only applies to certain standardised derivatives transactions. Yet because the procyclical effects of margin are a common trait in all collateral transactions, one has to wonder why mandatory CCP clearing does not apply to all collateral transactions?[10] While it is true that not all derivatives are collateralised, and not all collateral transactions are standardised, unsurprisingly, there have been numerous calls for uncleared collateral transactions to be mandatorily cleared and settled through a CCP.[11] According to Alexandra Balmer, the "CCP structure… was put to the test during the 2008 financial crisis when Lehman Brothers collapsed – and it succeeded perfectly".[12] This view was echoed by the Bank for International Settlements, stating that "the CCP-cleared euro repo market proved remarkably resilient during the financial crisis, and that, when backed by high-quality collateral, it also acted as a shock absorber" in times of stress.[13] The Financial Stability Board therefore recommended that:

"Authorities should evaluate, with a view to mitigating systemic risks, the costs and benefits of proposals to introduce [mandatory] CCPs in their… [collateral transaction] markets".[14]

9 H Nabilou and I G Asimakopoulos, "In CCP we trust… or do we? Assessing the regulation of central clearing counterparties in Europe" (2020) 15 (1) Capital Markets Law Journal 70 at 79.

10 According to the International Capital Markets Association, about 70% of the EU repo market consists of centrally cleared transactions. This does not mean that parties to a repo or securities lending transaction have to use CCPs, even though parties often do, there is no explicit mandate requiring parties to do so. On this see, the International Capital Markets Association, "frequently Asked Questions on Repo" (2015) 1 at 25. See also, P Norman, *The Risk Controllers: Central Counterparty in Globalised Financial Markets* (2011) 12.

11 P Saguato, "The Liquidity Dilemma and the Repo Market: A Two-Step Policy Option to Address the Regulatory Void" (2017) 22 *Stanford Journal of Law, Business & Finance* 126 at 130-138. See also, S L Schwarcz, "Central Clearing of Financial Contracts: Theory and Regulatory Implications" (2019) *167 (6) University of Pennsylvania Law Review* 1327 at 1341; A Miglietta, C Picillo and M Pietrunti, "The impact of CCPs' margin policies on repo markets" (2015) 515 *BIS Working Papers* 1 at 6-8, available at: https://www.bis.org/publ/work515.pdf; J Gregory, *Counterparty Credit Risk: The new challenge for global financial markets* (2010) 369.

12 A G Balmer, *Regulating Financial Derivative: Clearing and Central Counterparties* (2018) 53-54.

13 Miglietta *et al* (n 11) 1 at 5.

14 Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos" (29 August, 2013) 1 at 18, available at: https://www.fsb.org/wp-content/uploads/r_130829b.pdf?page_moved=1.

2.1 Regulatory Shortcomings

The CCP infrastructure, while subject to 'prudential requirements' and various risk mitigation mechanisms, still has several regulatory shortcomings that are directly correlated to margin. For example, under EMIR margin requirements are mandatory for centrally cleared derivatives transactions.[15] However, similar to uncleared bilateral transactions,[16] EMIR does not require setting margins at any specific level, leaving it to the discretion of the CCP.[17] Given the CCP is subject to prudential requirements, EMIR expects that the CCP will set the margins at an optimal level. Yet what exactly does 'optimal' mean? While the advantages of mandating robust margin requirements are clear, there are equally consequences associated with an excessively high margin framework. CCPs indeed have a strong incentive to set margin at a level that avoids a possible reduction in market and funding liquidity that could occur should margin levels be excessive. A potential solution could be to implement a margin framework consisting of a minimum margin floor, countercyclical margin add-ons and a margin ceiling as illustrated in recommendations 2, 3 and 4 below into the CCP structure. Alternatively, another approach may be to set margin levels above what is needed to cover any perceived risk as measured by the CCP. The optimal margin level could therefore be defined as a balance between too much and too little margin.[18]

Another potential shortcoming worth noting is that some CCPs are private "for-profit" financial institutions; their primary objective being profit maximisation.[19] This would imply that these CCPs may adopt a lax approach to collateral and margin requirements,[20] potentially leaving them heavily undercapitalised. Therefore, the CCP may not internalise the systemic risks of its operation, arguably leaving it to third parties to deal with the problem if (and when) the problem occurs.[21] This would undoubtedly lead to unwanted negative externalities. A related problem is the fact that CCPs are now considered "too-big-to-fail" financial institutions, which leads to a moral hazard problem. Moral hazard occurs when an entity has an incentive to increase its risk exposure knowing it will not bear the full cost of the risk should something go wrong. To mitigate the moral hazard problem, robust and harmonised

15 Article 41 of Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July on OTC derivatives, central counterparties and trade repositories ("EMIR").
16 See previous Chapter 7, section 4.1.
17 Article 41 EMIR.
18 R Heckinger, R T Cox and D Marshall, "Cleared margin setting at selected CCPs" (2016) *4 Economic Perspectives* 1 at 2.
19 Nabilou and Asimakopoulos (n 9) 70 at 88.
20 As noted above, this is because it is up to the CCP to decide what to accept and what not to accept as collateral and margin.
21 Nabilou and Asimakopoulos (n 9) 70 at 88.

mandatory margin levels have been proposed.[22] Yet it should be noted that while imposing more stringent margin requirements is laudable, there is an implied opinion that should a CCP run into difficulty, the central bank will access its liquidity facility and essentially bail-out the CCP thus leading back to the initial moral hazard problem.[23] However, because most risk is centralised in the CCP, leading to CCPs themselves becoming the main hub for risk, should failure occur, the consequences could be unthinkable.[24]

2.2 The Way Forward

Despite these shortcomings, the CCP infrastructure is in place precisely to promote financial stability and mitigate systemic risk.[25] Various risk mitigation mechanisms, including mandatory margin requirements, the so-called 'default waterfall', as well as CCPs' ability to mutualise risk (through multilateral netting) among all counterparties, would contribute substantially to making the EU shadow banking sector a safer place.[26] Crucially, an important consequence of imposing mandatory CCP clearing to all collateral transactions is the *de facto* implementation of mandatory margin requirements. CCPs indeed require all counterparties to post initial margin at the point of trade, as well as cover any margin calls via variation margin throughout the lifecycle of the transaction. One may therefore conclude that, recommending the implementation of mandatory CCP clearing to all collateral transactions in the EU shadow banking sector, *de facto* implementing mandatory margin requirements, is necessary in the quest to reduce systemic risk.

22 D Duffie, "Replumbing our Financial System: Uneven Progress" (2013) *9 International Journal of Central Banking* 251 at 267-269. See also, Nabilou and Asimakopoulos (n 9) 70 at 88.

23 Article 85 (1) (a) EMIR. See also, Nabilou and Asimakopoulos (n 9) 70 at 88; R Foroohar, "How the virus became a credit run" (16 March, 2020) *Financial Times* 1 at 17.

24 These risks will be discussed in greater detail below. See also, Nabilou and Asimakopoulos (n 9) 70 at 77.

25 Recital 19 EMIR.

26 The 'default waterfall' and the CCPs ability to mutualise risk among counterparties was discussed in greater detail in Chapter 7, section 4.1.

3 RECOMMENDATION 2: MINIMUM MARGIN FLOORS

3.1 Introduction

> *"From a macroprudential perspective, there may be a need for measures that prevent initial margins from falling to excessively low levels".*[27]

Initial margin and haircut levels are *ex-ante* decided at the point of trade, are at the discretion of the contracting parties and in practice, are often "set to the lowest possible level".[28] The problem with allowing contracting parties to determine the appropriate level of margin is that their singular objective of profit maximisation, which often results in minimum margin and maximum leverage, is systemically risky.[29] While leverage is a multiplier of gains, it is also a multiplier of losses and significantly, profit maximising parties rarely take into account the effects of the expansionary and contractionary impact of the financial cycle on the broader economy when setting margin levels.[30]

In good times, *ex-ante* margin requirements tend to fall to extremely low levels because market participants perceive there to be little risk. However, as noted in Chapter 6, good times are coupled with instability and the difficulty lies in identifying for how long such a period should be allowed to continue or whether the speculative bubble of instability should be reined in.[31] There is indeed considerable risk that margin requirements might become too low, resulting in overly leveraged market participants coming under pressure from *ex-post* margin controls during stressed market conditions.[32] To mitigate these risks, a system of minimum margin floors is one potential way to ensure financial stability and will be discussed as follows.

3.2 Rationale for Minimum Margin Floors

The rationale behind proposing minimum margin floors is "to limit the build-up of leverage in a benign market environment and reduce the size of any [potential] 'shock effect'… [due to] a sudden increase in margins and haircuts" as the cycle turns.[33] Minimum margin floors would introduce a loss absorption mechanism by implementing an *ex-ante* cap on the maximum accept-

27 European Systemic Risk Board (n 5) 1 at 53-54.
28 Brumm *et al* (n 1) 54 at 55.
29 A Damodaran, *Applied Corporate Finance* (2015) 1-3.
30 See Chapter 6 generally for an explanation of the expansionary and contractionary impact of the financial cycle on the broader economy.
31 P Mehrling, *The New Lombard Street: How the Fed Became the Dealer of Last Resort* (2011) 12-13 and 15.
32 European Systemic Risk Board (n 5) 1 at 54.
33 Constancio (n 3).

able leverage level.[34] To the extent that minimum margin floors introduce a higher financial buffer at the point of trade, thus limiting the build-up of leverage in good times, significantly, with less liquidity pressure on market participants, the need to de-leverage may be less pronounced when good times turn bad and volatility increases.

In certain situations, and to avoid administrative costs and burdens, the fluctuation in the value of the financial collateral may result in only minor price changes. In such a case, the pre-set and conservative "Minimum Transfer Amount" (as discussed in previous Chapter 5, section 5.3.2.5) would absorb these price changes.[35] In a situation where the value of the financial collateral exceeds the pre-set Minimum Transfer Amount and to avoid exacerbating procyclical margin calls, the affected counterparty could be entitled to apply one of two options to the transaction.

1. Should the value of the financial collateral exceed the Minimum Transfer Amount, this option would entitle the affected counterparty to recalibrate the transaction via repricing or adjustment to reflect actual developments in market volatility – namely, introducing a higher margin requirement to account for that market risk.
2. Provided the value of the financial collateral exceeds the Minimum Transfer Amount, another option would entitle overly cautious market participants, who foresee future market risk, to accelerate the transaction and either roll-over the contract with new and updated terms or bring the transaction to a close. The idea behind options one and two is to ensure that the collateral taker is never undercollateralised.

A key externality that market participants often fail to internalise is that if leverage were *ex-ante* curtailed, losses would be much less when the cycle turns because the economy would be less indebted.[36] This view is corroborated by John Geanakoplos, who argues that "the best way to stop a crash is to act long before it occurs, by restricting leverage in ebullient times".[37] Importantly, introducing minimum margin floors with a conservative pre-set Minimum Transfer Amount can not only limit leverage but also limit the need for market

34 Financial Stability Board, "Transforming Shadow Banking into Resilient Market-based Finance: Regulatory framework for haircuts on non-centrally cleared securities financing transactions" (12 November, 2015) 1 at 7, available at: https://www.fsb.org/wp-content/uploads/P190719-1.pdf.

35 The Mimimum Transfer Amount was discussed in greater detail in Chapter 5, section 5.3.2.5. See also, Paragraphs 2 (a), (b), 10 and 11 (b) (i) (A), (B), 1995 ISDA English Law CSA and Paragraphs 2 (a), (b) 10 and 11 (c) (i) (A), (B), 2016 English Law CSA for Variation Margin.

36 This will be explained in greater detail below. See also, J Geanakoplos, "Leverage, Default, and Forgiveness: Lessons from the American and European Crises" (2014) *39 Journal of Macroeconomics* 313 at 320.

37 J Geanakoplos, "The Leverage Cycle" (2009) *1715R Cowles Discussion Paper* 1 at 4.

participants to abruptly raise initial margins/haircuts in a downturn, since the margin level would already be higher as the cycle turns.[38] Consequently, there would initially be more overcollateralisation than the market would demand resulting in the financial system being arguably more resilient to future stress during bad times.

Certainly, such an adjustment would require a higher level of margin initially but being primarily targeted to reduce the build-up of leverage in the upswing, minimum margin floors may also indirectly dampen the procyclical effects of margin calls in the downswing. Because minimum margin floors result in higher haircuts/initial margins in good times, liquidity and deleveraging pressure may be less severe compared to a situation in which haircuts and initial margins increase from excessively low levels. For instance, the flipside of higher margins is that spikes in financial collateral price volatility and risk aversion may lead to less pronounced procyclical increases in margin throughout the lifecycle of the transaction. Hence, A system of minimum margin floors would arguably contribute to financial stability, which in turn would reduce the overall procyclicality of the financial system thereby minimising parties' incentive to 'run'.[39]

3.3 Experience from the USA: Regulation T

In the USA, 'Regulation T' is a tangible illustration of legislation implementing a minimum margin floor. However, at the outset it is important to note that Regulation T is limited in scope and only applies to certain securities dealers and brokers dealing in certain 'margin' accounts. While this thesis argues that the macroprudential regulatory toolkit should be extended to include a system of minimum margin floors, Regulation T does not does not provide an overarching margin framework for collateral transactions in the (USA) financial sector, although it is often argued it should.[40]

Regulation T was motivated by the 'boom' period of the Stock Market Bubble of 1927-1929 and the subsequent 'bust' period of the Great Depression of 1929. These events led US Congress to pass the 1934 Securities Exchange Act, which granted the Federal Reserve Board the power, under Regulation T, to set initial margin requirements for partially loan-financed stocks on national

38 Constancio (n 3).

39 Federal Reserve's Second Monetary Policy Report for 2014, Hearing before the Committee on Banking, Housing, and Urban Affairs, United States Senate (15 July, 2014) 1 at 39-40. See also, European Systemic Risk Board (n 6) 1 at 61.

40 See generally, W G West, "Recent Ruling: Securities Regulation – Margin Requirments – Installment Purchase of Tax-Sheletered Programs" (1973) *24 Case Western Reserve University Law Review* 391. See also generally, B Berman, L S Harmetz, C M Horn and A T Pinedo, "Extended Settlements and Regulation T" (2013) *Lexology.*

exchanges.[41] The current wording of Regulation T sets an initial margin floor at 50%, which means that an investor who wishes to purchase USD $1000 worth of equity, can borrow no more than USD $500 to do so.[42]

The rationale for the introduction of Regulation T is ultimately to mitigate systemic risk by preventing the build-up of excessive leverage. By setting the initial margin floor at 50%, Regulation T effectively limits the amount of leverage an investor can obtain. The Federal Reserve has therefore attempted to tame uncertainty by minimising the amount of trouble investors can get into if there is a margin call. Gikas Hardouvelis has commented that the "Fed typically attributes its decision to increase margin requirements to a rapid increase in stock prices… and to a rapid expansion in stock market volatility. Sometimes high trading volumes, inflationary pressure, and an expanding economy were also given as reasons" to set initial margin floors at 50%.[43] However, evidence on the success of Regulation T is, at best, 'mixed'.[44] For example, whilst some empirical analyses support the view that higher margin levels at the point of trade significantly lowers volatility in a downturn because leverage is limited,[45] other analyses support the view that Regulation T impedes liquid and efficient markets because it ultimately restricts the amount of liquidity circulating the financial system.[46]

3.4 Some Concerns

While higher margins may tame uncertainty by limiting leverage, an initial margin floor of 50% does, in the author's view, seem excessively high. Rather than maximising benefit while minimising risk, the 50% initial margin floor outlined in Regulation T appears to minimise benefit whilst minimising risk. Such a provision undoubtedly impairs market and funding liquidity and significantly, due to the extra associated cost borne by market participants, may facilitate regulatory arbitrage, triggering market participants to seek to find an alternative and more profitable solution outwith the regulatory perimeter.

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41 Brumm *et al* (n 1) 54 at 56-57.

42 12 C.F.R. § 220.12 (a).

43 G Hardouvelis, "Margin requirements, volatility, and the transitory component of stock prices" (1990) *80 (4) American Economic Review* 736 at 740-741.

44 Constancio (n 3).

45 O Rytchkov, "Asset pricing with dynamic margin constraints" (2014) *69 The Journal of Finance* 405. See also, G Hardouvelis and P Theodossiou, "The asymmetric relation between initial margin requirements and stock market volatility across bull and bear markets" (2002) *15 (5) Market Review of Financial Studies* 1525; Brumm *et al* (n 1) 54 at 54; Hardouvelis (n 43) 736 at 740-741.

46 P Fortune, "Margin Lending and Stock Market Volatility" (2001) *4 New England Economic Review* 3-26. See also, T Moore, "Stock Market Margin Requirements" (1966) *74 Journal of Political Economy* 158-167.

A number of policy proposals have already been developed recommending the setting, calibration and implementation of a minimum margin framework in the EU shadow banking sector.[47] However, it is unfortunate that these proposals continue to remain 'non-binding' – the market preferring to leave it to the contracting parties to decide.[48] Empirical evidence suggests that key reasons as to why these margin proposals remain 'non-binding' is due to a "lack of knowledge on the side of the regulators [who feel]… uneasy about imposing measures based on their limited knowledge [due to the difficulty in assessing]… what the side effects are because of the bad data".[49] Significantly, "regulators doubt whether they could identify the right haircuts better than market agents" could.[50] While the lack of conviction on the side of the regulator is worrying, allowing market participants to set the appropriate margin level is equally worrisome, and often a source of systemic risk. Market participants do indeed fail to take into account the negative externalities that arise from setting the margin level too low. As a result, when good times turn bad, there can be a sharp contraction in the supply of secured financing when assessments about the quality of the pledged financial collateral change abruptly. Such a miscalculation increases the probability of a cumulative downward systemic spiral and reinforces stress in the financial system.

3.5 The Way Forward

A better approach may be to implement a framework for minimum margin floors that is far more comprehensive than that proposed by the Financial Stability Board in *Table 7* above.[51] One solution may be to adopt the haircut schedule proposed by the BCBS depicted in *Table 4* above.[52] However, one must remain wary about adopting any new schedule given that issues in relation to imposing and calibrating meaningful margin levels due to poor

47 See for example above *Table 6* published by the BCBS and IOSCO in Chapter 7, section 4.2.7 and/or *Table 7* published by the FSB in Chapter 7, section 4.3.

48 These proposals include: Financial Stability Board, "Regulatory Framework for haircuts on non-centrally cleared securities financing transactions" (2015), available at: https://www.fsb.org/wp-content/uploads/P190719-1.pdf. See also, Basel Committee on Banking Supervision and the International Organization for Securities Commissions, "Margin requirements for non-centrally cleared derivatives" (2015 – revised in April, 2020), available at: https://www.bis.org/bcbs/publ/d499.pdf; European Systemic Risk Board, "ESRB opinion to ESMA on securities financing transactions and leverage under Article 29 of the SFTR" (2016), available at: https://www.esrb.europa.eu/pub/pdf/other/20161004_esrbopinion.en.pdf.

49 M Thiemann, M Birk and J Friedrich, "Much Ado About Nothing? Macro-Prudential Ideas and the Post-Crisis Regulation of Shadow Banking" (2018) *Kolner Zeitschrift fur Sozialpsychologie* 259 at 270.

50 *Ibid.*

51 See Chapter 7, section 4.3 "SFTR: Repurchase Agreements and Securities Lending".

52 See Chapter 4, section 3.3 "Determining Margin at the Point of Trade".

data remain. It is clear that bad data does impede any margin reform especially in light of the fact that numerical haircuts (such as those imposed by the Financial Stability Board) are often "much below average haircuts and… thus not constraining for market actors… for fear of unintentionally causing market disruptions".[53]

How then to move forward? On a more positive note, given the introduction of the SFTR,[54] important data is already starting to be collected as of 2018. While the exact outcome of this data analysis is yet to be discerned, it is hoped that the aggregation of data will provide meaningful results, particularly in relation to mandatory minimum margin requirements. Once this data is available, this thesis argues that the framework proposed by either the Financial Stability Board or the BCBS should be recalibrated, thus providing appropriate margin levels encompassing all types of asset class as well as covering all collateral transactions, whether cleared on uncleared in the EU shadow banking sector.

In addition, minimum margin floors that are set through the cycle should be conservative enough so that the margin level acts as a disincentive to secured lending at low margins in good times. Once the appropriate data is collected, the stable component of mandatory minimum margin floors could in turn be based and calibrated on a market volatility element. This element would introduce a margin level that would vary depending on the quality of the financial collateral in question. In other words, there is not a 'one size fits all' solution. For example, minimum margin floors applied to collateral transactions would require a market participant that wants to borrow any security to post a minimum amount of excess margin dependent upon the quality of the financial collateral used to secure the transaction.[55] This would be reflected in the appropriate minimum margin floor schedule, which in turn would reflect market conditions. The idea is that the higher the quality of the financial collateral, namely government debt, the lower the margin and the lower the quality of the financial collateral, namely equities, the higher the margin. Additionally, in a situation where the market does become stressed, and the pre-set Minimum Transfer Amount is breached, it is possible for the affected counterparty to recalibrate the transaction via repricing, adjustment or acceleration. By creating a binding and harmonised EU-wide supra-national regulatory tool for mandatory margin requirements, it is hoped that financial uncertainty will be tamed, leverage limited and procyclicality reduced.[56]

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53 Thiemann *et al* (n 49) 259 at 271-272.

54 And also, the reporting obligation under Article 9 EMIR.

55 Tarullo (n 2).

56 Other similar examples of a minimum margin floor framework include that developed by the Basel Committee on Banking Supervision and the International Organization for Securities Commissions, "Margin requirements for non-centrally cleared derivatives" (2015 – revised in April, 2020) 1 at 26-27, available at: https://www.bis.org/bcbs/publ/d499.pdf.

4 RECOMMENDATION 3: COUNTERCYCLICAL MARGIN ADD-ONS

4.1 Introduction

While minimum margin floors prevent the build-up of leverage and may help dampen procyclicality, other complementary margin options are available to mitigate systemic risk in the EU shadow banking sector.[57] Countercyclical margin add-ons are one such option and while Basel III already imposes a similar countercyclical capital buffer on prudentially regulated banks, there remains no equivalent provision for the EU shadow banking sector. Countercyclical margin add-ons could therefore be viewed as a novel introduction. However, before discussing the potential *modus operandi* of countercyclical margin add-ons in the EU shadow banking sector, it is first important to provide a brief overview of countercyclical capital buffers as prescribed under Basel III.[58]

4.2 Basel III: Countercyclical Capital Buffer

> *"Countercyclical regulation that imposes sufficiently large macroprudential add-ons… can lead to significant reductions in… volatility".*[59]

As noted in Chapter 2, credit institutions operating in the EU are required to maintain a set minimum capital level of 8%.[60] Complementary to the 8% capital requirement, the countercyclical capital buffer as regulated under the Capital Requirements Directive,[61] is a macroprudential supervisory tool designed to help counter procyclicality in the traditional banking sector. It is intended to increase the resilience of prudentially regulated banks by building up a capital buffer (between 0% – 2.5% of risk weighted assets) in the upswing so that when losses materialise during periods of stress, market

57 A further option will be outlined in Recommendation 4 below, which will argue for a margin ceiling to be introduced to the margin framework.

58 Basel Committee on Banking Supervision, "Basel III: A global regulatory framework for more resilient banks and banking systems" (December, 2010) *Bank for International Settlements* 1 at 5-7, available at: https://www.bis.org/publ/bcbs189_dec2010.pdf.

59 Brumm et al (n 1) 54 at 67.

60 For a more detailed explanation, see Chapter 2, section 3.2.1.1. See also, Article 92 (1) (c) of Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending regulation (EU) No 648/2012 (OJ L 176) ("CRR").

61 Articles 130 and 135-140 of Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC.

participants can rely on the buffer as a financial backstop during a downswing.[62] By forcing credit institutions to hold more capital when their assets grow (i.e. when they make many loans), regulators can ensure that a larger buffer protects bank solvency should the value of those assets decrease. The countercyclical capital buffer is principally in place to increase the loss-absorbing capacity of banks, although it would also help dampen the downswing of the financial cycle by maintaining a supply of credit to the economy should the buffer need to be released.[63] Significantly, an empirical study by Miguel Faria e Castro demonstrates that an additional financial backstop in the form of a countercyclical capital buffer during the Global Financial Crisis could have helped prevent the crisis by creating a "soft landing" for affected economies in financial distress.[64]

4.3 Shadow Banking: *Modus Operandi* of Countercyclical Margin Add-Ons

The EU shadow banking sector is not subject to prudential regulation. However, minimum margin in the shadow banking sector does act as the functional equivalent to capital adequacy rules found under Basel III in the prudentially regulated banking sector. Both margin and capital require the respective (shadow banking and traditional banking) institutions to hold a specific level of capital against assets. By requiring market participants to hold a higher level of capital (either margin in the shadow banking sector or capital in the traditional banking sector), it is thought that financial institutions may be "less susceptible to runs and, thus, to the need for engaging in fire sales that can depress capital levels" further.[65] Yet given the tendency of financial market participants to collectively under price risk in good times, stable and through the cycle minimum margin floors may not fully internalise the systemic costs associated with a downturn. To mitigate this risk, a countercyclical margin add-on could be used in the EU shadow banking sector as a macroprudential tool to increase capital levels when "authorities (such as the ECB and/or ESRB) judge that markets are under-pricing collateral risks" and/or in periods of

62 Articles 130, 136 (4) and 135-140 of Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC.

63 Basel Committee on Banking Supervision, "Frequently Asked Questions on the Basel III Countercyclical Capital Buffer" (2015) *Bank of International Settlements* 1 at 1, available at: https://www.bis.org/bcbs/publ/d339.pdf.

64 M Faria e Castro, "Can Countercyclical Capital Buffers Help Prevent a Financial Crisis" (2019) *15 Economic Synopses Federal Reserve Bank of St Louis*, available at: https://research.stlouisfed.org/publications/economic-synopses/2019/06/21/can-countercyclical-capital-buffers-help-prevent-a-financial-crisis.

65 Tarullo (n 2) also, E Perotti, "The roots of shadow banking" (2013) *69 Policy Insight - Centre for Economic Policy Research* 1 at 5.

"excess aggregate credit growth" that can ultimately be drawn upon during periods of financial uncertainty.[66]

Similar to the countercyclical capital buffer under Basel III described above, countercyclical margin add-ons could be a complementary mechanism to minimum margin floors requiring institutions operating in the EU shadow banking sector to set aside a higher portion of their capital during good times when credit is expanding and leverage is high. The idea is that while the minimum margin floor is stable, countercyclical margin add-ons are dynamic and respond to economic conditions, so that when the value of assets used for financial collateral purposes increase (as opposed to decrease), margin will be called. Adrian and Shin argue that when the price of assets used for financial collateral purposes increase, the balance sheet of entities operating in the shadow banking sector generally becomes more sizeable, and as a result, their leverage level lowers.[67] Because leverage becomes lower as asset prices increase, the immediate result is that these entities hold 'surplus capital'. Surplus capital equates to a larger balance sheet given that market participants understandably find ways in which to employ this capital to reach optimal yield. The consequence is that leverage levels are high during booms and low during busts.[68] In this sense, "leverage is procyclical… as a consequence of the active management of balance sheets by financial intermediaries who respond to changes" in asset prices.[69] The flipside is that, and as noted above, there are aggregate consequences (such as negative externalities) of such behaviour for the economy as whole that are (more often than not) not taken into consideration when market participants put their 'surplus capital' to 'presumably' better use.

However, a countercyclical margin add-on is a mechanism that can put such surplus capital to better use, mitigate the procyclicality of leverage and *de facto* tame financial uncertainty caused by an increasing balance sheet. For example, by forcing institutions operating in the EU shadow banking sector to hold and segregate proportionally more capital when asset values grow, regulators can ensure that a larger financial buffer can cover expected losses and protect the financial system from insolvency should the value of those assets drop and margin is called.[70]

The intention of imposing countercyclical margin add-ons is to mitigate against any potential downturn. When good times turn bad, the additional margin that has been built-up as a financial backstop can be released back

66 Basel Committee on Banking Supervision (n 60) 1 at 1. See also, Committee on the Global Financial System, "The role of margin requirements and haircuts in procyclicality" (2010) *36 CGFS Papers* 1 at 16-17, available at: https://www.bis.org/publ/cgfs36.pdf.

67 See generally, T Adrian and H Song Shin, "Liquidity and Leverage" (2010) *328 Federal Reserve Bank of New York*.

68 *Ibid* 1 at 9 - 12.

69 *Ibid* 1 at 1.

70 Faria e Castro (n 64).

into the financial system to relieve distress in the economy when margin is called in a downturn. By applying countercyclical margin add-ons during the upswing of the financial cycle, market participants would be *de facto* prohibited from excessively building-up leverage and as a consequence, procyclicality would be reduced. Countercyclical margin add-ons would therefore be withdrawn in the downswing, the trigger point being falling asset prices, which in turn would decrease the deleveraging pressure because a substantial financial buffer would already have been built-up. Countercyclical margin add-ons could therefore enhance the resilience of the EU shadow banking sector and arguably prevent future financial crises.[71]

4.4 Some Concerns

While higher margin contributes to financial stability by limiting leverage, it should also be noted that higher margin may also increase risk. The cost associated with holding a higher level of margin is an example. Higher levels of margin can significantly raise the cost of funding putting additional pressure on the collateral giver as margin is financed by their own equity. The net worth of the collateral giver would therefore be severely eroded should they continually have to hold more capital in an upswing. Of course, the segregated capital in the form of margin that has been built-up in the upswing, may (or may not) be relied upon. In the event the built-up capital is utilised in a downswing, then financial stability is preserved. Yet built-up capital that is not utilised because no downswing has occurred, may prove too onerous for profit maximising market participants. Because profitability is a key concern for market participants, measures that are too costly and onerous may in fact facilitate regulatory arbitrage thereby encouraging market participants to find a cheaper alternative by, for example, restructuring financial transactions.

Another concomitant risk relates to market liquidity and funding liquidity. It has already been noted that one reason why regulators are uneasy about imposing stricter margin requirements is due to the impact these potential new measures will have on market and funding liquidity.[72] Higher levels of margin would equate to less credit in the economy and as noted in Chapter 6, credit is required for investment, which in turn facilitates liquid and efficient markets.[73] If credit is tied-up because of higher margins, then it follows that funding and market liquidity may become impaired because market participants would find it particularly difficult to raise funds given the potentially

71 J Brumm, K Kubler, M Grill and K Schmedders, "Margin Regulation and Volatility" (July, 2014) *1698 European Central Bank Working Paper Series* 1 at 3, available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1698.pdf.

72 Thiemann *et al* (n 49) 259 at 270-275.

73 See Chapter 6, section 5.1 "The Two Faces of a Debt Contract".

limited marketplace activity. Any reform would therefore have to be weighed and calibrated against the potential risks.

Another concern is how to calibrate countercyclical margin add-ons. This is of course a very difficult task. Yet as argued above, countercyclical margin add-ons should be adjusted and calibrated according to the business/credit cycle. For example, when asset prices increase, margin is called and segregated so that should a downswing occur, the built-up financial buffer will be released. However, the practical challenges to achieve this level of calibration are difficult given that no indicators and triggers correlated to the business/credit cycle have been developed for the EU shadow banking sector as yet. It therefore goes without saying that indicators, triggers and precise calibration methods need to be substantially developed. The ECB and ESRB have been the most vocal of EU institutions in the area of countercyclical reform, recommending a broad and all-encompassing approach in relation to macroprudential margin and haircut setting practices for all collateral transactions.[74] Yet the sticking point remains: no countercyclical margin/haircut models or indicators have been developed in the EU shadow banking sector for the purpose of regulatory action.[75] While it goes beyond the scope of this thesis to provide precise calibration methods, currently, it has been observed that a key concern is that regulators "may encounter objective implementation difficulties due to a wide spectrum of financial instruments" that are utilised in collateral transactions.[76]

It is not just triggers, indicators and calibration that are key concerns, however. There appears to be considerable division in opinions among international standard setters, EU legislative bodies and institutions, and in some cases, specific departments within an institution. Empirical evidence suggests that the ECB and ESRB are the main proponents of regulatory margin reform and as such, this thesis argues that these bodies should be primarily responsible for oversight and governance.[77] However, national central banks, ESMA as well as the market operations department of the ECB "represents strong veto players… against the implementation of countercyclical [margin] instruments", fearing that market fragmentation will be a key concern in the EU thereby undermining liquid and efficient markets.[78] Svein Andresen, previous Secretary General of the Financial Stability Board has noted that the lack of inter-

74 European Systemic Risk Board (n 6) 1 at 61. See also generally ECB, "Financial Stability Review" (2016).

75 The closest the ECB has come to providing indicators and models for precise margin calibration is in relation to a theoretical leverage model. On this see generally ECB, "Financial Stability Review" (2016).

76 European Systemic Risk Board, "Report on the efficiency of margining requirements to limit pro-cyclicality and the need to define additional intervention capacity in this area" (2015) 1 at 23.

77 Thiemann *et al* (n 49) 259 at 275-276.

78 Thiemann *et al* (n 49) 259 at 276.

national convergence, multiple risk factors such as regulatory arbitrage and lack of data granularity are key impediments in moving forward.[79]

Important legal and practical challenges do therefore remain. However, this thesis argues that the governance structure should be spearheaded by the ECB and/or ESRB and any new proposal should be based on the already operational countercyclical capital buffer found in the prudentially regulated banking sector.[80] It remains a puzzle why it is not possible for any new countercyclical margin add-on proposal to be based on, and functionally equivalent to, the already operational countercyclical capital buffer found in the prudentially regulated banking sector. This is especially so given that, and as noted above, minimum margin requirements are functionally equivalent to capital adequacy requirements found in the prudentially regulated banking sector.

5 Recommendation 4: margin ceilings

5.1 Introduction

The upswing and downswing phases of the financial cycle are interconnected and hence considerably influence each other. If *ex-ante* initial margins/haircuts are set too low in good times and are followed by abrupt *ex-post* increases in margin in times of stress, this could trigger further price corrections and systemic liquidity and leverage spirals, generating contagion and reinforcing stress in the financial system. The aforementioned price corrections will be more pronounced in a highly leveraged environment compared to a financial system with less leverage. Margin calls can therefore substantially exacerbate procyclicality – the more margin calls there are, the more volatile the financial system becomes. For financial stability purposes, it may therefore be worthwhile to explore the need to limit the amount of margin that can be called. One potential way to do this is to implement a margin ceiling.

5.2 What is a Margin Ceiling?

A margin ceiling is a macroprudential tool designed to primarily target the downswing of the financial cycle. Such a ceiling would take the form of an *ex-ante* cap on the maximum acceptable level of margin that can be called,

79 Author's written notes from ESRB conference on the macroprudential use of margins and haircuts (6/6/2016).

80 For an overview of the currently operational countercyclical capital buffer - see above, section 4.2 "Basel III: Countercyclical Capital Buffer".

inclusive of any countercyclical margin add-ons.[81] The aim would be to manage the procyclical effects in the downswing of the financial cycle by limiting the *ex-post* ability of counterparties to make large or indeed infinite margin adjustments in periods of market stress. Assuming that market participants have not anticipated any upcoming financial market stress, and in the absence of any macroprudential regulation, one could envisage a situation in which margin is rapidly called. Because margin calls exacerbate procyclicality, a margin ceiling may therefore contribute to financial stability by restricting the upper level of margin by placing a ceiling on the amount of margin that can be called. Consequently, margin ceilings could be an important recommendation with a view to placing a limit on the rise in margins for macroprudential considerations when the cycle turns. Introducing a margin ceiling mirroring the minimum margin floor may have strong positive effects on taming uncertainty through the reduction of procyclicality. As the minimum margin floor is set higher and the margin ceiling set lower, procyclicality and leverage can arguably be substantially reduced.[82]

5.3 Some Concerns

From a theoretical perspective, margin ceilings could promote financial stability by restricting procyclicality. However, from a practical perspective, there are some concerns worth noting. Firstly, margin ceilings would be very difficult to implement. It has already been argued in sections 2 and 3 of this Chapter that there is still a severe lack of granular data in the EU shadow banking sector. As such, it would be very difficult to set, calibrate and regulate something that is not fully understood. Therefore, one major problem with implementing a margin ceiling is to try and calibrate the correct level and ensure that the regulator adheres to it in a crisis. Of course, because no one crisis is ever the same, the correct margin ceiling level would understandably be a guessing game. One solution could be that when the ceiling is reached, the National Central Bank of the applicable Member State must act as lender of last resort.[83] However, this could lead to a moral hazard problem where market participants will knowingly take on risk considering it will not bear the full cost of that risk should something go wrong.

Secondly, implementing a margin ceiling could facilitate runs. Imagine a situation where two parties have entered into a repo transaction and before maturity of that transaction, the market becomes stressed leading to numerous

81 As noted in previous section 4 "Recommendation 3: Countercyclical Margin Add-ons", the countercyclical margin add-on would be lifted in a downturn, which would result in less margin-calls.

82 As to how the margin ceiling would operate, see below section 5.4 "The Way Forward".

83 On this see below, section 5.4 "The Way Forward".

margin calls. Given the amount of margin calls, a transaction with a margin ceiling would result in that margin ceiling being dangerously close to becoming breached – the more margin calls there, the closer the ceiling is to being breached. In such a situation, market participants could either continue with the transaction hoping that the market will improve or they could run. Because market participants are profit maximisers, the most probable outcome will be for market participants to run in the hope that they avoid making loss. Nobody wants a run because it generates market panic, fire-sales and is a systemic event that is generally a precursor to crises. Based on the aforementioned events of 2019 and 2020,[84] it is likely that the National Central Bank of the respective Member State will act as lender of last resort, which could potentially lead us back to the moral hazard problem discussed above.[85]

Thirdly, as noted in Chapter 2 one reason why the EU shadow banking sector has risen to prominence is due to the tightening of prudential regulation. One therefore has to be cautious about imposing too onerous (and untested) regulatory rules on market participants. Regulatory arbitrage is indeed a key concern and regulation for the sake of regulation is impractical. The last thing anyone wants is a mass exodus of the market only to find an alternative unregulated market has been developed somewhere in the near future. Without the appropriate calibration, implementing rules in relation to a margin ceiling may in fact facilitate this exodus. Therefore, rather than stifling activity, a better approach would be an understanding of how best to manage it.[86]

5.4 The Way Forward

How then to move forward? Margin ceilings could have destabilising effects upon the behaviour of market participants if these untested ceilings are applied as 'hard' macroprudential tools. A 'hard' macroprudential tool is binding and its application is prescribed by law. As such, a hard macroprudential tool intervenes directly upon the business activities of market participants. One way to counter this is to implement margin ceilings as a 'soft' macroprudential tool. Soft tools could take the form of discretionary powers, persuasive guidance and/or recommendations governed by an industry body such as ECB and/

84 *The Economist*, "Repo-market ructions were a reminder of the financial crisis" (26 September, 2019); see also, G Tett, "The repo markets mystery reminds us that we are flying blind" (19 September, 2019) *Financial Times*, available at: https://www.ft.com/content/35d66294-dadc-11e9-8f9b-77216ebe1f17; Foroohar (n 23) 1 at 17.

85 However, as noted below in section 5.4 "The Way Forward", the National Central Bank would only intervene to tame uncertainty once market participants have internalised as much of the cost as possible.

86 As to how best this situation should be managed will be discussed in the subsequent section 5.4 "The Way Forward".

or ESRB.[87] This thesis argues that by allowing the respective regulator a discretionary power to implement an *ex-ante* margin ceiling, only activated in times of stress, could be a step in the right direction. This means that in good times, there are no 'hard' restrictive rules. However, as the cycle turns and regulators believe that a margin ceiling is warranted, namely due to issues in relation to quality of financial collateral, market risk, liquidity risk and counterparty credit risk, then a ceiling can be applied to a transaction to tame financial uncertainty. Additionally, when the margin ceiling is reached and the transaction thereby becomes 'too risky or systemic to manage', then the National Central Bank of the respective Member State can step in an act as lender of last resort to prevent a potential ensuing run. Without such intervention from the National Central Bank, asset prices would plummet and market participants would close positions, resulting in a credit freeze and subsequent crisis. A crucial step is central bank intervention to buy distressed asset prices with a relatively low haircut to tame any uncertainty and ultimately to avoid crises.

6 PIECING THE RECOMMENDATIONS TOGETHER

It has already been noted that CCP clearing is a tried and tested method to tame financial uncertainty, notwithstanding the regulatory shortcomings. The various CCP risk mitigation mechanisms, namely, mandatory margin requirements, the 'default waterfall', as well as CCPs' ability to mutualise risk (through multilateral netting) among all counterparties arguably contributes to a safer and sounder financial sector. Yet mandatory CCP clearing only applies to certain standardised derivatives transactions and, further, the precise margin levels are left to the discretion of the contracting parties. The viewpoint of this thesis is therefore twofold. Firstly, to extend the existing CCP clearing framework to cover all collateral transactions. Secondly, to transpose recommendations 2, 3 and 4, which creates a system of mandatory margin requirements, into the CCP framework.

Recommendations 2, 3 and 4 are proposed as complementary measures. *Figure 22* below provides a stylised example and brings together these three recommendations. The hypothetical example outlined below depicts a situation where an operational minimum margin parameter is set *ex-ante.* The minimum margin floor is set at 10% and the countercyclical margin add-ons provide *ex-post* controls to collateral price volatility.[88] The margin floor comes with a safety net in the form of the Minimum Transfer Amount, above which the affected counterparty would be entitled to recalibrate the transaction via repricing, adjustment or acceleration.

87 This list could also include BIS, BCBS, IOSCO and EBA.

88 The 10% minimum margin floor is an example – depending on various factors, such as collateral quality, market risk, credit risk etc. The margin floor may be higher or lower.

As an additional feature, and in the event that stress in the financial system materialises, the regulator can, for example, impose a discretionary margin ceiling in order to tame financial uncertainty. To fix ideas, this could be 80%.[89] The idea is that in periods of stress and in a situation where market participants are no longer confident to lend on distressed collateral, then the National Central Bank can intervene by committing to lending against distressed collateral at given margins. All market participants will automatically adapt to these margins having no reason to exceed them. Because it is intended the recommended margin ceiling be a discretionary feature, competent authorities may impose a ceiling only in exceptional circumstances "in order to ensure the stability and integrity of the financial system".[90] This means that in times of stress, the competent authority, namely ECB and/or ESRB, can step in and offer additional transactional support.

Piecing together all four recommendations, it is the view of this thesis to propose that the macroprudential regulatory toolkit be extended to include all these recommendations into the EU shadow banking sector. In order to comply with this, the respective master agreements (and the Credit Support Annex) would be altered to become regulatory compliant thereby creating a transparent and harmonised supra-national EU legal and regulatory framework for all collateral transactions in the shadow banking sector.[91] The compelling argument for harmonisation lies in the fact that collateral transactions have international scope and operate on a cross-border basis. It is therefore important that the EU legal and regulatory framework accounts for this cross-border nature to include transparency and harmonisation to avoid yet more piecemeal reforms.

89 This is merely an example; the margin ceiling can fluctuate depending on the risk involved and the asset class in question. It is not always set to 80%, but tailored to the specific transaction.

90 This is the wording of Article 25 (3) and (4) of 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) ("AIFMD").

91 Chapter 7, section 3.3 "Interplay Between the Private Sector and Public Law" highlights that the Credit Support Annex under the ISDA master agreement is now EMIR/RTS compliant and while this is only specific to derivatives transactions, there is no reason why it cannot apply to all collateral transactions.

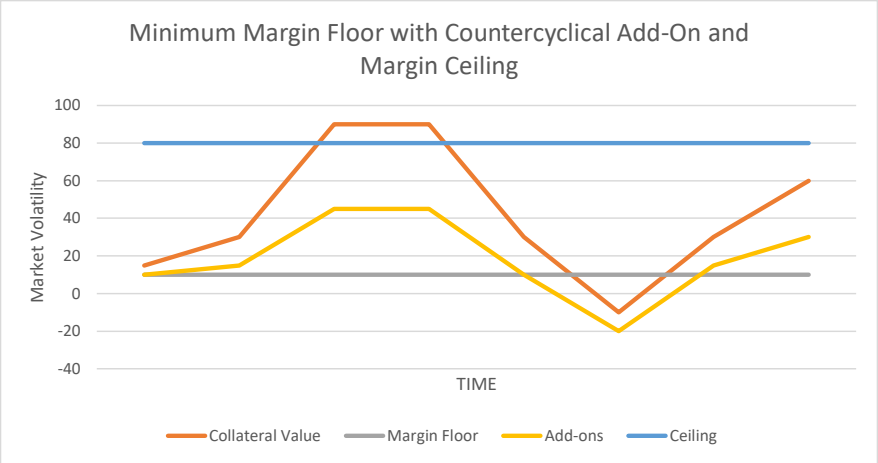

Figure 22

7 CONCLUSION

To conclude, taming financial uncertainty in collateral transactions should be a key concern for the EU shadow banking sector. Yet the problem of highly leveraged financial institutions being forced to deleverage as a result of margin calls is an ongoing recurring theme. It is clear that lessons are therefore not being learnt. In light of this and moving forward, this thesis has made several complementary recommendations in relation to imposing mandatory margin requirements in the EU shadow banking sector.

Recommendation 1 argues for the mandatory introduction of CCPs into the EU shadow banking sector for all collateral transactions. The CCP infrastructure is 'tried and tested' and has proved remarkably resilient in times of crises. It imposes the *de facto* implementation of mandatory margin requirements as well as a robust default waterfall mechanism and multilateral netting structure. However, a cause for concern is that margin requirements continue to be set at the discretion of the contracting parties. It is therefore the view of this thesis that recommendations 2, 3 and 4 could be implanted into the CCP infrastructure to tame the negative consequences of margin being set too low. One *caveat*, by introducing the CCP framework to the EU shadow banking sector, is systemically risky. All risk would be housed with the CCP and should the CCP itself fail – the consequences would be unthinkable.

Recommendation 2 imposes an *ex-ante* minimum margin floor. The rationale is to prevent margin levels being set too low and allowing market participants from obtaining too much leverage. A minimum margin floor is designed to introduce a higher level of margin at the point of trade and consequently dampening the build-up of leverage. Yet it should be noted that minimum

margin floors alone may not be enough to fully internalise the systemic cost of a downturn, which is why market participants have the ability to recalibrate the transaction via repricing, adjustment or acceleration.

Additionally, a countercyclical margin add-on, which is recommendation 3, could be an important complementary addition to minimum margin floors. A countercyclical margin add-on primarily targets the upswing of the financial cycle by tracking the value of the financial collateral. If the value of the financial collateral increases, margin will be called. The idea is to build-up a sufficiently robust level of margin in the upswing, which will be released in the event of a downswing to relieve deleveraging pressure in response to margin calls. Recommendation 4 introduces a discretionary margin ceiling, which could also be an important complementary addition. More margin calls in the downswing equates to higher levels of procyclicality. A margin ceiling would place an upper limit on the amount of margin that can be called thereby limiting systemic implications of procyclicality. It is proposed that margin ceilings be a discretionary measure only to be relied upon in times of stress. It is also proposed that these recommendations be regulated and supervised on the EU level by an EU institution, namely the ECB and/or ESRB, who will have the authority to oversee the transactions and, where necessary, impose margin ceilings.

It has been argued that introducing stringent margin measures may tame financial uncertainty by limiting leverage and dampening procyclicality. However, it should also be observed that imposing stringent margin measures does not come without risk. For example, there is considerable cost associated with imposing higher margins. Because margin is funded by the market participant's own equity, any increase in margin is likely to affect that market participant's profitability and therefore net worth. Concomitantly, market liquidity and funding liquidity would be impaired given that less funding and assets are circulating the financial system as a result in increasing margins levels. Lastly, regulatory arbitrage could also be a cause for concern. If a market participant's activity becomes unprofitable as a result of increased margin rules, then by default, the shadow banking sector will likely circumvent those rules and find alternative sources of funding outside the regulatory perimeter. Margin calibration for this proposed new regulation (and compliant master agreements) is therefore key, providing a situation where risks are minimised and benefits maximised. Failure to do so would, it is submitted, lead the financial system back down the familiar dark path of 2007/2008.

9 Conclusion

To conclude, this thesis has been discussing the role margin plays in the EU shadow banking sector from both a legal and economic perspective. It first explores margin from a positive perspective, in the sense of how margin *does* operate in the EU shadow banking sector. The discussion then proceeds by exploring margin from a normative angle, which is the focus of the central research question, namely: *how should mandatory margin requirements operate, from a legal and economic perspective, in the EU shadow banking sector?*

In order to provide an answer to the central research question and understand the pivotal role margin plays in the EU shadow banking sector, it is first important to understand that financial collateral is applied to a transaction to hedge default risk. Provided the financial collateral is liquid and thus 'safe', it can be used as 'cash equivalent' to financially underpin the transaction. Margin is then *ex-ante* applied to overcollateralise the transaction by adding a further layer of safety. In this sense, margin plays an important risk mitigation function and is principally in place to hedge the risk on the price volatility of the financial collateral.

However, margin is also procyclical and is paradoxically a source of systemic risk. Within a collateral transaction, margin is maintained through *ex-post* mark-to-market controls for the lifecycle of the transaction. Because financial collateral consists of marketable securities, its price can be subject to volatile price swings. Should the value of the financial collateral plummet in value, margin will be called to rebalance the transaction. The more margin calls there are, the more volatile and procyclical the financial sector becomes, ultimately causing leveraged market participants to deleverage precisely at a time when asset prices are low and volatility is high. Margin calls have therefore been noted as a systemic indicator and a precursor to financial crises. It is often thought that the more leveraged a financial sector is, the riskier it becomes given that leverage is a multiplier of gains as well as a multiplier of losses.

The level of margin applied by private markets to any given collateral transaction is generally "set to the lowest possible level".[1] There are two reasons for this. Firstly, to maximise profits – as this is the primary objective

1 J Brumm, M Grill, F Kubler and K Schmedders, "Margin Regulation and Volatility" (2015) *75 Journal of Monetary Economics* 54 at 55.

of market participants operating in the EU shadow banking sector. As already noted, leverage is a multiplier of gains (as well as losses), therefore, an *ex-ante* lower level of margin equates to a higher level of leverage and thus higher gains. This is beneficial for market participants because it facilitates their ability to reach optimal yield. Greater leverage for the economy as a whole allows greater investment – at the price of greater fragility.[2] Secondly, and more importantly, the level of margin in any given transaction is largely left to the discretion of the contracting parties. Margin is therefore a mechanism that has minimal regulatory oversight. This is problematic given that profit maximising and leveraged market participants fail to internalise the systemic costs associated with a downturn.[3]

The reciprocal of margin is leverage. Because leverage has been at the heart of many past financial crises and margin is a mechanism that can tame financial uncertainty, regulating margin would, this thesis argues, seem like a step in the right direction. Margin is therefore a mechanism that has the ability to limit the amount of leverage a market participant can obtain. Any new reform/regulation would likely result in a higher level of margin resulting in lower levels of leverage compared with the current situation of lower margins and therefore higher leverage. Significantly, there is currently no comprehensive EU wide legislative mechanism for regulating margin in the shadow banking sector. While margin is addressed, both directly and indirectly in several parts of the EU regulatory framework, the fact remains that the response to date has been piecemeal at best. In light of this, this thesis has endeavoured to provide a constructive and meaningful response to how margin *should* operate in the EU shadow banking sector. The main conclusions answering the central research question can be summarised as follows.

Chapter 2 explores shadow banking in terms of what it is, how it functions and its relevance to the economy. The term 'shadow banking' was first coined in 2007 by American economist Paul McCulley to describe a sector that is subject to minimal regulatory oversight precisely because it operates on a subterranean level. However, it was not until the Global Financial Crisis that the shadow banking sector started to gain prominence given its contribution to financial instability. It is argued that there are several lines of reasoning as to why the shadow banking sector has risen in prominence to now account for a significant part of the financial system. Changes in prudential regulation, namely the introduction and amendments to the Basel Accords, which has resulted in a drop in profitability for the traditional banking sector leading to a mass exodus to the less regulated and more profitable shadow banking sector where an equivalent, cheaper and less burdensome service is offered. As a result, and with the progress of financial innovation, there is now a

2 G B Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* (2012) 179.

3 H McVea, "Targeting hedge funds and 'repo runs'", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 177 at 181.

genuine and economic demand for services conducted in the shadow banking sector.

Lumped into the 'shadow banking' bucket are a number of divergent entities, activities and transactions. Such diversity has arguably become a key obstacle to providing a clear and commonly agreed shadow banking definition. There have indeed been various definitional responses encompassing both 'broad' and 'narrow' views. A broad view does very little in providing a workable definition however. This approach is more suited for monitoring and surveillance purposes. A narrow approach to defining shadow banking is better and can be adapted based on the purpose for which shadow banking is used. For the purpose of this study, shadow banking can be defined as: "*leveraging on collateral to support liquidity promises*"[4]. This definition is beneficial because it is able to unpack the economic purposes of the transactions used within the shadow banking sector. Such an approach is beneficial because it is able to capture the complex practices through which money is created in the modern financial system – where debt relationships are organised via tradeable securities.

Shadow banking is therefore a sector that intermediates credit by performing "bank-like functions" by transforming long-term securities such as government bonds, which are used as financial collateral to secure short-term funding.[5] It is indeed the presence of financial collateral that gives the shadow banking sector its distinctive character. Financial collateral comes in the form of marketable securities and depending upon the liquidity of the financial collateral, implies the promise of a credible financial underpinning. Specifically, should default occur, then the financial collateral can be liquidated to make good on the initial promise. Financial collateral is therefore widely regarded as having 'money-like' equivalence.[6] However, the implied liquidity of financial collateral, and the fact it is often considered to be as safe as money, makes the contracts backed by the financial collateral, such as repos, securities lending and derivatives transactions, subject to run[7] – which was a fundamental issue during the Global Financial Crisis and continues to be an issue during the current Covid-19 pandemic.[8]

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4 A M Pacces and H Nabilou, "The Law and Economics of Shadow Banking" (2017) *ECGI Working Paper Series in Law* 1 at 11.

5 Gorton (n 2) 43.

6 M Singh, *Collateral and financial Plumbing* (2016) 35.

7 Pacces and Nabilou (n 4) 1 at 5.

8 At the time of writing 16 January, 2021. See also generally, A Schrimpf, H S Shin and V Sushko, "Leverage and margin spirals in fixed income markets during the covid-19 crisis" (2 April, 2020) *2 BIS Bulletin*. See also, OECD, "The impact of the coronavirus (COVID-19) crisis on development finance" (24 June, 2020), available at: https://read.oecd-ilibrary.org/view/?ref=134_134569-xn1go1i113&title=The-impact-of-the-coronavirus-(COVID-19)-crisis-on-development-finance.

Chapter 3 focuses on the growing importance of financial collateral. In particular, the future of modern finance has become a "collateral-based banking system" where the plumbing of the financial system is lubricated with 'liquid' and 'safe' financial collateral in lieu of cash to settle credit obligations.[9] Widely regarded as the main currency used within the EU shadow banking sector, financial collateral is now described as the "lifeblood of the modern economy".[10]

Importantly, there is a distinction to be made with 'ordinary' collateral and 'financial' collateral. Ordinary collateral can consist of tangibles, such as real estate, plant and machinery, motor vehicles etc. It can also consist of intangibles such as intellectual property or financial instruments. Financial collateral, on the other hand, consists of marketable securities that can be traded at high frequency with orders being executed in seconds. This type of collateral is beneficial for liquid and efficient markets because the more liquid the asset, the safer it is due to the promise of cash immediacy. Financial collateral is therefore highly sought-after as compared with other types of collateral.

Under the Financial Collateral Directive, financial collateral consists of cash, financial instruments and credit claims. However, the Financial Collateral Directive is limited in both material scope and personal scope and as such, not every collateral transaction will be afforded the protection offered by the Financial Collateral Directive, such as that related to property law, insolvency law and conflict of laws. 'Privately' negotiated transactions, such as those conducted in the EU shadow banking sector for example, often fall outwith the scope of the Financial Collateral Directive. The general idea regarding transactions conducted within the EU shadow banking sector is that, as long as the financial collateral is mark-to-market, underpinned by the respective master agreement and the parties are in agreement about what constitutes acceptable financial collateral, the financial collateral can generally be used as cash equivalent to secure the transaction.[11]

The sort of collateral transactions used in the shadow banking sector consists of repos, securities lending and derivatives transactions. It is these

9 Bank of England, "Centre for Central Banking Studies" (2018) 1 at 14, available at: https://www.bankofengland.co.uk/-/media/boe/files/ccbs/ccbs-prospectus-2018.pdf?la=en&hash=CC52F29880CDDAE54988A3F24065123B0EB633F5. See also, P Mehrling, Z Pozsar, J Sweeney and D Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central banking, and the Future of Global Finance" (2012) *Institute for New Economic Thinking* 1 at 4 where the authors state that modern finance or the shadow banking system can also be termed the "collateral-based credit system"; see generally, J Benjamin, G Morton and M Raffan, "The future of securities financing" (2013) 7 (1) *Law and Financial Markets Review.*

10 J Wilmot, J Sweeney, M Klein, A Plant, J Schwartz, Z Shi and W Zhao, "When collateral is king" (15 March, 2012) *Market Focus: Global Strategy Research* 1 at 1-3. See also, M Singh, "Collateral flows and balance sheet(s) space" (2016) *5 (1) Journal of Financial Market Infrastructures* 65 at 66.

11 M Singh, "Collateral Reuse and Balance Sheet Space" (2017) *IMF Working Paper* 1 at 5.

sorts of transactions which give impetus to the growing importance of financial collateral. Although financial collateral is used to secure the transaction and hedge default risk and margin is then applied to the transaction to hedge the risk on the price volatility of the financial collateral, financial collateral is equally finite. There is therefore considerable concern that financial collateral is now 'scarce'. To alleviate the scarcity problem, financial collateral is given 'velocity' in the sense that it can be re-used multiple times. Velocity occurs because more often than not, there is generally a title transfer right in the financial collateral. This means that ownership rights pass as the financial collateral is used to secure the transaction. Financial collateral is therefore often viewed not as a mechanism to hedge risk, but as a tradeable and profitable instrument. However, velocity does not come without problems given that the long chains of intermediation often lack transparency and therefore heightened risk, particularly in relation to systemic contagion should one party default.

Chapter 4 analyses margin. The chapter proceeds by discussing what margin is and its economic rationale. Complementary to financial collateral is margin, which is a risk mitigation mechanism designed to hedge the risk on the unintended price fluctuations of the financial collateral. Within a collateral transaction, margin has two touchpoints. First, margin is *ex-ante* applied to the transaction to cover future potential losses. At the point of trade, market participants have an option on whether to apply margin either by way of a 'haircut' or by way of 'initial margin'. Both perform the same function by overcollateralising the transaction – the only difference being the arithmetic used in the calculation process. The level of margin is largely at the discretion of the contracting parties, but as a general rule, the appropriate level of margin will, *inter alia*, be dependent upon the quality of the financial collateral. Once the appropriate margin level is set, this level is 'maintained' for the lifecycle of the transaction through *ex-post* controls. The way it works is as follows: the financial collateral is regularly valued mark-to-market to take account of gains or losses on an open position. *Ex-post* margin controls ensure the overcollateralisation level is maintained and if need be, managed and adjusted to mitigate net exposures.

Margin can be adjusted via one of two routes. Firstly, should the value of the financial collateral suffer a significant change, the respective master agreement accounts for this possibility by way of repricing or adjustment. The idea is that the original transaction is maintained, but the margin is recalibrated to account for new market values/risk. Secondly, because margin calls understandably make lenders nervous, it is often the case that upon maturity of the contract, market participants will either bring the transaction to an end, or

alternatively roll-over the contract with renewed terms, such as increased margin requirements to account for market risk.[12]

Part of the inherent risk mitigation attribute that margin encompasses is its ability to limit the amount of leverage (or debt) a financial institution can obtain. The fact that margin represents the share of a security that cannot be funded in the market by requiring the collateral giver to draw upon their own equity at the point of trade, means that margin requirements applied to a collateral transaction determines the maximum amount a party can borrow when using a given security as financial collateral.[13] For instance, the lower the margin requirement, the more that can be borrowed and the higher the margin requirement, the less that can be borrowed. Margin is, therefore, a risk mitigation tool capable of controlling the build-up of excessive leverage.[14] However, margin is a mechanism that not only mitigates risk and limits leverage but it is paradoxically a mechanism that can amplify systemic risk. The procyclical effects of margin can, in good times allow for the build-up of leverage through low margin requirements. However, in bad times when asset prices fall and margin levels rise, highly leveraged financial institutions are forced to de-leverage, generating a cumulative downward leverage and liquidity spiral, which exacerbates systemic risk. Because the problems associated with leverage are a recurring phenomenon, which has been at the heart of past financial crises, it is unfortunate that regulators have yet to tackle this problem head-on.[15]

Chapter 5 discusses the market practice of collateral transactions in the EU shadow banking sector from the perspective of the relevant master agreement, focusing particularly on financial collateral and margin. Repos, securities lending and derivatives transactions are legally underpinned by the GMRA, The GMSLA and the Credit Support Annex under the ISDA master agreement respectively. Master agreements (or the Credit Support Annex in the case of a derivatives transaction) are the predominant choice for market participants operating in the EU shadow banking sector to legally underpin the collateral transaction. The benefit of using these standardised documents allows for efficiency and convenience. Importantly, key clauses within these documents

12 As to how margin can be repriced, adjusted and/or rolled-over, see Chapter 4, section 4.1.2 and Chapter 5, section 3.3.4.2.

13 M K Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007 - 2008" (2009) 23 (1) *Journal of Economic Perspectives* 77 at 91. See also, J Walmsley, *Macmillan Dictionary of International Finance* (1985) 136; European Systemic Risk Board, "The macroprudential use of margins and haircuts" (2017) 1 at 25.

14 V Constancio, "Margins and haircuts as a macroprudential tool" (6 June, 2016) Vice-President of the ECB, at the *ESRB international conference of the macroprudential use of margins and haircuts*, available at: https://www.esrb.europa.eu/news/speeches/date/2016/html/sp160606.en.html.

15 K Knot, "Rethinking Financial Stability; Evaluating regulatory prime concerns a decade on from the financial crisis" (3 December, 2018) *DeNederlandscheBank* 1 at 8-9.

accounts for specific risk mitigation mechanisms, namely financial collateral and margin.

Chapter 6 considers the role debt plays in the EU shadow banking sector. The origins of debt lie in the traditional banking sector by way of demand deposits. However, demand has now grown and the shadow banking sector has managed to successfully replicate the unique ability of the traditional sector to credibly promise liquidity on demand. It achieves this through its use of collateral transactions where long-term assets are used to obtain short-term funding. Generally, the tenor of the collateral transaction is short-term, albeit routinely rolled-over providing market participants with confidence in immediacy. Margin is applied to the transaction to tame uncertainty.

In order for there to be confidence in immediacy, shadow banking sector produced debt must be 'safe' meaning that the securities used as financial collateral must be insensitive to information. Government bonds are essentially a 'safe' asset given their credible underpinning. Shares, however, are sensitive to information and are subject to frequent and unpredictable intra-day price fluctuations. The sensitivities of a debt therefore play an important role in determining safety.

Synonymous with the sensitivities of debt is liquidity. The more liquid the asset, the safer it is given the promise of cash immediacy. Liquidity implies that assets can be bought and sold without loss. As a result, funding liquidity and market liquidity work at an optimal level. The more intermediation there is, the more credit there is to the economy. However, the flipside is that more credit equates to higher levels of leverage but with greater fragility.

Chapter 7 maps the regulatory framework in relation to margin within the EU shadow banking sector. The post crisis policy responses have largely been the catalyst for future development in this area. Although there is still no overarching margin framework in the EU shadow banking sector, margin is still addressed, directly and indirectly, in several parts of the EU legislature. From a private law perspective, self-regulation in the form of the *lex mercatoria* via the master agreements (and Credit Support Annex) is a crucial driving force in the EU shadow banking sector.[16] Because the global marketplace crosses national boundaries, often where regulation cannot, the industry associations "have been relatively successful in achieving certain degrees of standardisation in the design, governance, and regulation" of shadow banking transactions by way of the master agreements.[17] Another strand of private law relates to the Financial Collateral Directive, which has implications for margin in an insolvency setting. In particular close-out netting and margining. These mechanisms allow market participants within the scope of the Financial

16 IOSCO, "Model for Effective Regulation" (May 2000) *Report of the SRO Consultative Committee* 1 at 4.

17 *Ibid*. See also, H Nabilou and A Prum, "Shadow Banking in Europe: Idiosyncrasies and their Implications for Regulation" (2019) *European Journal of Risk Regulation* 781 at 785.

Collateral Directive special insolvency treatment by avoiding the traditional insolvency stays.

With regard to public law, it is submitted that more needs to be achieved in this area – particularly with regard to repos and securities lending transactions. While derivatives have arguably made substantial progress with regard to implementing mandatory margin requirements (provided parties are within the scope of the EMIR and the RTS), reforms in relation to repos and securities lending are far from convincing. For instance, the SFTR, while potentially a valuable data source, does very little in relation to the regulation of margin. The AIFMD, does impose a 'light touch' leverage regime on Alternative Investment Fund Managers. However, it is up to the manager of the fund to set the leverage level they believe to be appropriate. The UCITS Directive does go further than the AIFMD by restricting the amount of leverage a UCITS can obtain. It is however unfortunate, that margin is not tackled head on.

Chapter 8 directly answers the central research question by providing an answer to how margin should operate in the EU shadow banking sector. Based on the discussion of the last seven chapters, it is submitted that margin needs to be regulated, coupled with regulatory compliant master agreements. Leverage has been at the heart of numerous financial crises, and margin has the ability to limit leverage. The author therefore proposes four complementary measures that would ultimately result in a harmonised legal and regulatory supra-national margin framework in the EU shadow banking sector. Recommendation 1 argues for mandatory CCP clearing for all collateral transactions. The benefit of CCP clearing is that the infrastructure is already tried and tested; it *de facto* implements mandatory margin requirements, as well as providing a default structure and the ability to mutualise losses through multilateral netting. However, within the CCP structure, margin is still left to the discretion of the contracting parties.

Recommendations 2, 3 and 4 should therefore be implanted into the CCP structure to tame the negative consequences of margin levels being set too low. Recommendation 2 imposes an *ex-ante* minimum margin floor. A minimum margin floor is primarily designed to limit leverage by implementing a higher level of margin at the point of trade. Yet a minimum margin floor alone may not fully internalise the costs associated with a shock. In such a situation, and in order to avoid the negative effects of procyclical margin requirements, market participants should have the ability to recalibrate the transaction via repricing, adjustment or acceleration.

Additionally, recommendation 3 proposes a countercyclical margin add-on to tackle the upswing of the financial cycle and to monitor tracking the value of the financial collateral. If the value of the financial collateral increases, then the idea is to call for margin in order to build-up a sufficient financial buffer in expectation of a potential downturn. Recommendation 4 imposes a margin ceiling, which would ultimately place an upper limit on the amount of margin that can be called. This recommendation should be considered as a discretion-

ary measure only, to be applied in exceptional circumstances to maintain financial stability, with the possibility of a central bank backstop to ultimately prevent runs. Finally, this thesis argues that the implementation and oversight of these recommendations would be governed by the ECB and/or ESRB.

It has been argued that introducing stringent margin measures may tame financial uncertainty by limiting leverage and dampening procyclicality. However, it should also be observed that imposing stringent margin measures does not come without risk. For example, there is considerable cost associated with imposing higher margins. Because margin is funded by the market participant's own equity, any increase in margin is likely to affect market liquidity and funding liquidity, which would ultimately be impaired given that less funding and assets are circulating the financial system. Additionally, regulatory arbitrage could also be a cause for concern. If a market participant's activity becomes unprofitable as a result of increased margin rules, then by default, the shadow banking sector will likely circumvent those rules and find alternative sources of funding outside the regulatory perimeter. Margin calibration is therefore key, providing a situation where risks are minimised and benefits maximised. Failure to do so would, it is submitted, lead the financial system back into the shadows.

Samenvatting (Dutch summary)

ONDERPANDTRANSACTIES EN SCHADUWBANKIEREN

In de jaren voorafgaand aan de wereldwijde financiële crisis van 2007/2008 ontstonden structurele kwetsbaarheden in het mondiale financiële systeem. Complexe financiële producten met lange ketens tussenpersonen en slecht op elkaar afgestemde belangen leidden in het hele systeem tot een opeenstapeling van slecht begrepen en beheerste risico's. Hierdoor hadden veel instellingen niet goed zicht op hun eigen risicoblootstellingen en schoten regelgevende instanties en toezichthouders tekort in de beheersing van het financiële systeem en het adequaat toezicht houden op financiële instellingen.[1] Als gevolg daarvan namen de complexiteit en ondoorzichtigheid toe en werd het financiële systeem risicovoller.[2]

De wereldwijde financiële crisis heeft hierdoor een sterke invloed gehad op het mondiale financiële systeem. Significante kwetsbaarheden kwamen aan het licht en risico's en structurele vatbaarheden hadden zich opgestapeld. Maar in het bijzonder markeerde de crisis het toegenomen belang van de zogeheten 'schaduwbanksector' (in het Engels: *shadow banking sector*). Met de term 'schaduwbankieren' en 'schaduwbanksector' wordt over het algemeen de sector bedoeld die financiering verstrekt als alternatief voor de traditionele bankensector, zonder daarbij gebonden te zijn aan prudentiële regelgeving. Vele empirische studies tonen aan dat sinds vóór de wereldwijde financiële crisis de omvang van de schaduwbanksector van de Europese Unie ("EU") snel is toegenomen en nu de primaire financieringsbron is voor marktdeelnemers in de EU.[3]

Deze groei bevestigt het belang van de schaduwbanksector en de daarmee gepaard gaande voordelen voor de economie als geheel. Een van die voordelen is een verminderde afhankelijkheid van de traditionele bankensector voor

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1 P Krugman, *The Return of Depression Economics and the Crisis of 2008* (2009) 162-163. Zie ook, D Domanski, "Achieving the G20 goal of resilient market-based finance" (2018) *22 Banque de France Financial Stability Review* 155 at 156.

2 Zie verder, Domanski (n 1) at 155-165.

3 Zie verder, European Systemic Risk Board, "EU Non-bank Financial Intermediation Risk Monitor" (2019), te raadplegen via: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report190717_NBFImonitor2019~ba7c155135.en.pdf.

kredietverlening. Om de economie een alternatieve vorm van financiering te bieden, vervult de schaduwbanksector 'bankachtige functies' door risicovolle langetermijnactiva (zoals obligaties) om te zetten in veilige kortetermijnactiva (zoals cash). Dit is positief voor de economie omdat de schaduwbanksector zo niet alleen zorgt voor financiële diversificatie, maar ook voor liquide en efficiënte markten, die cruciaal zijn voor een effectieve economie. Zodoende biedt de schaduwbanksector diensten aan die functioneel gelijkwaardig zijn aan die van de traditionele bankensector, maar zonder gebonden te zijn aan kostbare en belastende prudentiële regelgeving.[4]

De schaduwbanksector brengt echter niet alleen maar voordelen mee; de sector kan ook een systeemrisico vormen voor de financiële stabiliteit.[5] Tijdens de wereldwijde financiële crisis werden we eraan herinnerd op welke wijze de traditionele bankensector directe toegang heeft tot formele krediet- en liquiditeitsvoorzieningen ('backstops'). Dit lag echter anders voor de schaduwbanksector, die niet is gebonden aan prudentiële regelgeving en derhalve geen directe toegang heeft tot deze typen backstop. Als gevolg is liquiditeitssteun niet gegarandeerd en kan financiering snel wegvallen.[6]

Relevant voor dit onderzoek is het gebruik door de schaduwbanksector van *collateral transactions* (onderpandtransacties), te weten *repurchase agreements* ("repo's"), *securities lending agreements* en derivatentransacties, en de rol die financiële zekerheden en margin daarin spelen. De schaduwbanksector maakt gebruik van *collateral transactions* voor kredietintermediatie in het financiële systeem en voor het opbouwen van hefboomwerking (in het Engels: *leverage*) door onder meer looptijdtransformatie - waarbij langlopende effecten, zoals staatsobligaties, worden omgezet en worden gebruikt als onderpand voor kortetermijnleningen[7]. Deze looptijdtransformatiefunctie leidt tot een kwetsbaarheid van de schaduwbanksector, doordat een *leveraged* marktdeelnemer die gebruikmaakt van looptijdtransformatie per definitie niet kan voldoen aan een plotseling verzoek om volledige terugstorting.

Zoals de naam al aangeeft, worden *collateral transactions* gedekt door financiële zekerheden ter afdekking van het kredietrisico. Financiële zekerheden functioneren als vangnet doordat ingeval van niet-nakoming door de wederpartij het onderpand kan worden geliquideerd ter voldoening van de oorspronke-

4 E Perotti, "The roots of shadow banking" (2013) *69 CEPR Policy Insight* 1 at 2.

5 M Hodula, "Off the Radar: Exploring the Rise of Shadow Banking in the EU" (2018) *16 Working Paper Series Czech National Bank* 1 at 3.

6 R Foroohar, "How the virus became a credit run" (16 maart 2020) *Financial Times* 1 at 17; *The Economist*, "Repo-market ructions were a reminder of the financial crisis" (26 september 2019); G Tett, "The repo markets mystery reminds us that we are flying blind" (19 september 2019) *Financial Times,* te raadplegen via: https://www.ft.com/content/35d66294-dadc-11e9-8f9b-77216ebe1f17.

7 G B Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* (2012) 43.

lijke betalingsverplichting.[8] Om het risico te verkleinen dat het onderpand tot onder het nominale bedrag van de transactie daalt, is het gebruikelijk de transactie te 'overcollateraliseren', zodat 'boventallig' onderpand, zogeheten margin, de nettoblootstellingen van de ene partij aan de andere partij dekt.[9] Zoals echter is geïllustreerd met de wereldwijde financiële crisis en de meer recente effecten van de coronapandemie op de financiële markten, geldt dat wanneer de prijzen van de financiële activa dalen, de marginlevels worden verhoogd en financiële ondernemingen met een hoge *leverage* die positie moeten verkleinen en marktdeelnemers uiteindelijk? gaan 'rennen' om anderen voor te zijn.[10] Op die manier kan een vicieuze cirkel ontstaan waarin kredietverstrekkers de marginlevels verhogen en meer financiële zekerheden eisen, gedwongen *deleveraging* plaatsvindt en meer assets worden verkocht tegen *fire sale* prijzen waardoor de prijzen verder zakken, wat uiteindelijk leidt tot een neerwaartse *leverage*- en liquiditeitsspiraal.[11] Dit is wat de hoogleraren Gary Gorton en Andrew Metrick tijdens de wereldwijde financiële crisis 'the run-on repo' noemden.[12] De oorzaak van deze instabiliteit is een terugkerend fenomeen waarbij sprake is van de opbouw van *leverage* die de economie kwetsbaar maakt voor financiële crises.[13]

Crises hebben vaak een hoge prijs voor de maatschappij. De belangrijkste doelstelling moet dan ook zijn het toezicht en de regulering van de schaduwbanksector te versterken om de sector meer solide te maken.[14] In een poging de regelgeving aan te pakken en de schaduwbanksector om te vormen tot een 'resilient market-based financial system', zijn talrijke publicaties, beleidsvoorstellen en EU-wetgevingsinstrumenten gepubliceerd.[15] Hoewel het algemeen

8 A M Pacces and H Nabilou, "The Law and Economics of Shadow Banking" (2017) *ECGI Working Paper Series in Law* 1 at 11-12.

9 European Systemic Risk Board, "ESRB opinion to ESMA on securities financing transactions and leverage under Article 29 of the SFTR" (oktober 2016) 1 at 4. Zie ook, paragrafen 2 (aa) en (bb) GMRA 2011.

10 H McVea, "Targeting hedge funds and 'repo runs'", in I H Y Chiu and I G MacNeil, *Research Handbook on Shadow Banking Legal and Regulatory Aspects* (2018) 177 at 195. Zie ook, Foroohar (n 6) 1 at 17.

11 V Constancio, "Margins and haircuts as a macroprudential tool" (6 juni 2016) Vice-President van de ECB op de *ESRB international conference of the macroprudential use of margins and haircuts*, te raadplegen via: https://www.esrb.europa.eu/news/speeches/date/2016/html/sp160606.en.html.

12 G B Gorton and A Metrick, "Securitized Banking and the Run-on Repo" (2009) *15223 NBER Working Paper Series.*

13 M K Brunnermeier and Y Sannikov, "The I Theory of Money" (2016) *Princeton University* 1 at 44.

14 Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos" (29 augustus 2013).

15 Zie verder, Financial Stability Board, "Transforming Shadow Banking into Resilient Market-based Finance: Regulatory framework for haircuts on non-centrally cleared securities financing transactions" (12 november 2015 (geüpdatet 19 juli 2019 en 25 november 2019)).

bekend is dat het reguleren van de EU-schaduwbanksector een omvangrijke taak is, zou men verwachten dat reeds een overtuigend resultaat was bereikt op dit gebied, mede gezien de inspanningen in de afgelopen decennia van de EU-autoriteiten.[16] Helaas is de realiteit minder succesvol en kan het reguleringskader op dit moment hoogstens *piecemeal* worden genoemd.[17]

Bovengenoemde risico's en kwetsbaarheden die samenhangen met de schaduwbanksector zijn inderdaad reden tot zorg. De negatieve gevolgen die de schaduwbanksector tijdens de wereldwijde financiële crisis had voor de maatschappij waren catastrofaal. Vanwege de potentiële ondermijning van de financiële stabiliteit en de bijdrage aan het systeemrisico, doordat de sector (mogelijk) niet is onderworpen aan adequaat toezicht en regulering, bestaat de zorg dat, mocht er opnieuw een crisis uitbreken, de kosten voor de economie en met name de negatieve externaliteiten opnieuw zullen leiden tot hogere kosten voor de samenleving.[18] Deze situatie wordt nog meer precair, niet verwonderlijk dat de volgende crisis op handen is, wanneer we de volgende twee (meer) recente gebeurtenissen in ogenschouw nemen. Ten eerste had de repomarkt op 15 september 2019 te maken met een ernstige *ruction* waarbij *leveraged* marktdeelnemers gedwongen werden hun schulden af te bouwen vanwege een plotselinge vraag naar cash. Dit resulteerde begrijpelijkerwijs in een forse piek in de *repo rate*. De Amerikaanse Federal Reserve slaagde erin de onzekerheid te dempen door gedurende enkele dagen USD $ 75 miljard in de financiële markten te pompen.

Ten tweede en belangrijker nog, op het moment van schrijven[19] ondervinden de financiële markten opnieuw aanzienlijke gevolgen van de coronapandemie.[20] Hoewel de omvang van de economische impact van de pandemie nog moet worden onderzocht, heeft het European Systemic Risk Board opgemerkt dat de "coronacrisis… is causing a sharp drop in asset prices and increased volatility, resulting among others in significant margin calls across centrally cleared and non-centrally cleared markets… Going forward, these could have major implications for the liquidity management and funding needs of counterparties and possibly even their solvency in a scenario where liquidity stress leads to systemic fire-sales"[21]. Het is opmerkelijk dat in beide hierboven geschetste gebeurtenissen *leveraged* financiële ondernemingen gedwongen worden

16 Financial Stability Board (n 15).
17 *Ibid*.
18 M A van Dijk, "The Social Costs of Financial Crises" (2013) *Erasmus University Rotterdam* 1 at 16.
19 15 januari 2021.
20 Zie verder OECD, "The impact of the coronavirus (COVID-19) crisis on development finance" (24 juni 2020), te raadplegen via: https://read.oecd-ilibrary.org/view/?ref=134_134569-xn1go1i113&title=The-impact-of-the-coronavirus-(COVID-19)-crisis-on-development-finance.
21 European Systemic Risk Board (n 9) 1 at 2-4.

hun schulden af te bouwen om liquiditeit te verkrijgen, net zoals zich voordeed in 2007/2008.[22]

Deze gebeurtenissen bevestigen de zorgen over de financiële stabiliteit in de schaduwbanksector van de EU waarvoor een adequate aanpak vooralsnog ontbreekt. Gesteld wordt wel dat stijgende marginlevels een systemische indicator vormen en dat zij vaak een aanjager vormen voor toekomstige volatiliteit.[23] Daarnaast worden *margin calls* in verband gebracht met perioden van financiële onrust, waardoor aanzienlijke verlagingen van *leverage* noodzakelijk zijn, wat uiteindelijk leidt tot *runs*.[24]

Vanwege het onvermogen van marktdeelnemers die actief zijn in de EU-schaduwbanksector de kosten te internaliseren die gepaard gaan met een negatieve impact zoals hierboven beschreven, beweren commentatoren dat "a *prima facie* justification for regulatory intervention… in order to prevent more widespread" marktfalen bestaat.[25] Voor de traditionele bankensector omvat die regulering een depositogarantiestelsel, *lender of last resort* en een raamwerk van constant ontwikkelende prudentiële regelgeving. Omvangrijke regelgeving vergelijkbaar met die in de traditionele bankensector moet echter nog zijn weg vinden naar de schaduwbanksector. De echte uitdaging voor de schaduwbanksector is dan ook, net als in het verleden voor de traditionele bankensector, het voorkomen van *runs* en tegelijkertijd voorzien in efficiënte kredietverlening.[26] De vraag rijst derhalve: hoe moeten regelgevende instanties en financiële toezichthouders de financiële onzekerheid dempen en systeemrisico's binnen de EU-schaduwbanksector aanpakken?[27] Er is wel gesteld dat *leverage* de kern was van veel financiële crises in het verleden.[28] Dit proefschrift zal dan ook beargumenteren dat het beperken van *leverage* essentieel is. Margin is een mechanisme dat een directe beperking vormt van de hoeveelheid *leverage* die financiële instellingen kunnen verkrijgen en aldus David Longworth:

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22 Foroohar (n 6) 1 at 17.

23 M K Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007-2008" (2009), *23 (1) Journal of Economic perspectives* 77 at 94.

24 T Adrian and H S Shin, "The Shadow Banking System: Implications for Financial Regulation" (juli 2009) *382 Federal Reserve Bank of New York* 1 at 9.

25 McVea (n 10) 177 at 182.

26 J Benjamin, G Morton and M Raffan, "The future of securities financing" (2013) *7 Law and Financial Markets Review* 4 at 4.

27 European Systemic Risk Board (n 9) 1 at 2-4. Zie verder ook, European Systemic Risk Board, "The macroprudential use of margins and haircuts" (2017); S L Schwarcz, "Regulating Shadow Banking" (2012) *31 Review of Banking & Financial Law* 619; J Armour, D Awrey, P Davies, L Enriques, J N Gordon, C Mayer and J Payne, *Principles of Financial Regulation* (2016) 3; A G Balmer, *Regulating Financial Derivatives: Clearing and Central Counterparties* (2018) 5.

28 V Constancio (n 11). Zie ook, M Schularick and A M Taylor, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises 1870-2008" (2012) 102 (2) *American Economic Review* 1029-1061.

"New regulations for margin requirements and haircuts are needed to dampen financial booms and busts"[29].

Niettemin moet worden opgemerkt dat het reguleren van margin geen oplossing zonder risico is. De mate van succes van regelgeving zal afhangen van de impact ervan op de negatieve externe effecten die de schaduwbanksector genereert, met name op de mate waarin regelgeving schaduwbanken dwingt tot het internaliseren van deze externe effecten en tegen welke kosten.[30] Nieuwe aanbevelingen moeten derhalve worden gewogen en geijkt zodat het voordeel maximaal is en het risico minimaal. Al te restrictieve maatregelen zouden ongetwijfeld een belemmering vormen voor liquide en efficiënte markten en reguleringsarbitrage door marketdeelnemers faciliteren.

Op basis van de bovengenoemde problemen en de potentiële bijdrage van margin bij het ondermijnen van de financiële stabiliteit, is de centrale vraag van dit proefschrift:

Hoe zouden verplichte margin-vereisten moeten werken, vanuit juridisch en economisch perspectief, in de EU-schaduwbanksector?

Om de centrale onderzoeksvraag te kunnen beantwoorden is goed inzicht vereist in hoe margin op dit moment *werkt* en hoe margin *zou moeten werken*. De centrale onderzoeksvraag wordt dan ook uitgewerkt in vier deelvragen:

1. *Wat zijn schaduwbankieren, financiële zekerheden en margin en hoe verhouden zij zich tot elkaar?*
2. *Waarom bestaan margin-vereisten en welk doel dienen ze?*
3. *Wat is het huidige juridische en regulatoire kader in de EU voor verplichte margin-vereisten?*
4. *Hoe* zouden *margin-vereisten in de EU* moeten *werken?*

Deelvraag een stelt de vraag: "Wat zijn schaduwbankieren, financiële zekerheden en margin en hoe verhouden zij zich tot elkaar?". Om inzicht te krijgen in de rol die margin speelt in de EU-schaduwbanksector in zijn algemeenheid, is het van meet af aan cruciaal inzicht te hebben in de belangrijkste componenten, namelijk schaduwbankieren, financiële zekerheden en margin.

Subvraag twee zal de economische grondgedachte voor margin-vereisten onderzoeken en ziet op de vraag "Waarom bestaan margin-vereisten en welk doel dienen ze?". In een *collateral transaction* is margin een belangrijk instrument voor risicobeperking dat marktdeelnemers door de transactie te overcollateraliseren een essentieel vangnet biedt ter afdekking van het risico op het

29 D Longworth, "Warding Off Financial Market Failure: How to Avoid Squeezed Margins and Bad Haircuts" (2010) 135 C.D. Howe Institute Backgrounder 1 at 1.

30 Brunnermeier (n 23) 91 at 92.

financiële onderpand. Er moet echter ook worden opgemerkt dat hoewel margin voornamelijk wordt gebruikt om risico's te beperken, het paradoxaal genoeg een procyclisch mechanisme is dat zelf een bron van systeemrisico's is.

Subvraag drie zal "het huidige juridische en regulatoire kader in de EU voor verplichte margin-vereisten" onderzoeken en kritisch analyseren. Het juridische kader wordt voornamelijk gevormd door de door de industrie ontwikkelde gestandaardiseerde raamovereenkomsten (in het Engels: *master agreements*), zoals de Global Master Repurchase Agreement ("GMRA") voor repo's, de Global Master Securities Lending Agreement ("GMSLA") voor *securities lending agreements* en de Credit Support Annex onder de International Swaps and Derivatives Association ("ISDA") *master agreement*.

Wat betreft de regulatoire aspecten: *collateral transactions* in de EU-schaduwbanksector raken aan verscheidene regelgevingsinstrumenten. Waar nodig zal een kritische analyse plaatsvinden van verscheidene relevante Europese verordeningen en richtlijnen.

Subvraag vier omvat de normatieve vraag "hoe zouden margin-vereisten in de EU moeten werken?". Omdat *leverage* de kern was van veel financiële crises in het verleden, is het vinden van een oplossing om *leverage* te beperken essentieel. Margin heeft de mogelijkheid *leverage* te beperken, maar het is een mechanisme dat niet aan adequate regelgeving is onderworpen. In deze deelvraag worden daarom de verschillende opties met betrekking tot de optimale werking van margin in de EU-schaduwbanksector onderzocht vanuit zowel juridisch als economisch perspectief.

De structuur van dit proefschrift vormt een belangrijke routekaart en kan als volgt worden samengevat. Hoofdstuk 2 bespreekt schaduwbankieren. Sinds de wereldwijde financiële crisis is de schaduwbanksector in omvang toegenomen en vergelijkbaar met die van de traditionele bankensector, waardoor de sector nu een aanzienlijk deel vormt van het financiële systeem. De sector biedt een alternatieve financieringsbron, zonder daarbij gebonden te zijn aan prudentiële regelgeving. De schaduwbanksector opereert dus binnen de wet, maar buiten de reikwijdte van prudentiële regelgeving. Gezien de grote omvang van de schaduwbanksector en omdat deze verschillende typen entiteiten, activiteiten en transacties omvat, vindt momenteel een discussie plaats over de 'pejoratieve' aard van de schaduwbanksector. Die pejoratieve aard blijkt een aantoonbaar obstakel te zijn voor het formuleren van een duidelijke en algemeen geaccepteerde definitie.[31] Dit hoofdstuk zal daarom stilstaan bij wat schaduwbankieren is, hoe het moet worden gedefinieerd en welke rol schaduwbankieren heeft gespeeld in de wereldwijde financiële crisis. Daarnaast

31 J S Taub, "What We Don't Talk About When We Talk About Banking" in M H Wolfson and G A Epstein (eds), *The Handbook of the Political Economy of Financial Crises* (2013) 447 at 451.

zullen financiële zekerheden en margin worden besproken binnen het EU-raamwerk voor schaduwbankieren.

Hoofdstuk 3 analyseert het gebruik van financiële zekerheden en het groeiende belang ervan binnen de EU-schaduwbanksector. Financiële zekerheden worden vaak beschreven als gelijkwaardig aan geld vanwege het belang ervan bij het afdekken van het kredietrisico.[32] Hoogwaardige, liquide en veilige activa zijn daarom de belangrijkste valuta voor de EU-schaduwbanksector, die commentatoren nu vaak omschrijven als het "collateral-based banking system".[33] Het gebruik van financiële zekerheden is zo een veelgebruikt risicobeperkingsmechanisme geworden door verscheidene transacties van onderpand te voorzien, te weten repo's, *securities lending agreements* en derivatentransacties. De goede werking van deze transacties wordt inderdaad vergemakkelijkt door financiële zekerheden, die essentieel zijn voor het efficiënt functioneren van de economie. Daarnaast zijn er eigendomsrechtelijke aspecten die relevant zijn voor de bespreking van financiële zekerheden, bijvoorbeeld welke aanspraak een deelnemende partij heeft met betrekking tot de financiële zekerheden. Voorgaande is met name van belang voor de vraag of het onderpand zal worden gebruikt voor verhaal of om redenen van verhandelbaarheid, wat relevant is voor insolventie, *collateral velocity* en hergebruik/*rehypothecation* van het onderpand.

Hoofdstuk 4 bespreekt margin en de economische ratio ervan. Om de vraag 'wat is margin?' te beantwoorden, wordt als uitgangspunt genomen dat financiële zekerheden dienen als zekerheid en zijn bedoeld ter afdekking van het kredietrisico. Margin biedt aanvullende zekerheid door afdekking van het risico op het financiële onderpand. Margin is dan ook een belangrijk instrument ter overcollateralisatie van de transactie en fungeert als een financiële buffer tegen eventuele prijsschommelingen. Onderscheid kan worden gemaakt tussen *ex ante* en *ex post* verstrekte margin. *Ex-ante* margin-vereisten kunnen de vorm hebben van een *haircut* of *initial margin* - beide concepten leiden tot hetzelfde resultaat, het enige verschil is van rekenkundige aard. *Ex-post* margin-controles nemen de winsten of verliezen op een open positie in aanmerking door middel van het vaststellen van de actuele marktwaarde van het financiële onderpand (*marking to market*). De term *mark-to-market* houdt in dat het geplaatste financiële onderpand in een *collateral transaction* wordt gewaardeerd op basis van de actuele marktprijs en deze waarde vervolgens wordt vergeleken met de

32 M Singh, *Collateral and financial Plumbing* (2016) 35.

33 Bank of England, "Centre for Central Banking Studies" (2018) 1 at 14, te raadplegen via: https://www.bankofengland.co.uk/-/media/boe/files/ccbs/ccbs-prospectus-2018.pdf?la=en&hash=CC52F29880CDDAE54988A3F24065123B0EB633F5. Zie ook, P Mehrling, Z Pozsar, J Sweeney and D Neilson, "Bagehot was a Shadow Banker: Shadow Banking, Central banking, and the Future of Global Finance" (2012) *Institute for New Economic Thinking* 1 at 4 waar de auteurs stellen dat hedendaagse finance of het schaduwbanksysteem ook kan worden aangeduid als "collateral-based credit system"; Benjamin *et al* (n 26) 4 at 4-5.

oorspronkelijke/laatste waardering.[34] Hoewel margin in eerste instantie een risicobeperkingsmechanisme is, is margin ook een procyclisch mechanisme dat een risico kan vormen voor de financiële stabiliteit.

Hoofdstuk 5 zal de werking van *collateral transactions* binnen de EU-schaduwbanksector in de praktijk onderzoeken vanuit het perspectief van de relevante raamovereenkomsten, met bijzondere aandacht voor financieel onderpand en margin. Bij repo's wordt de GMRA geanalyseerd. Omdat repo's zijn getransformeerd van een backoffice-activiteit in de jaren '70 tot een centraal onderdeel van de hedendaagse finance, is het van belang de werking van dergelijke transacties te begrijpen, vooral met betrekking tot risicobeperkende maatregelen, namelijk de toepassing van margin. Ook *securities lending agreements* zullen worden onderzocht vanuit het perspectief van de GMSLA. Repo's en *securities lending agreements* vervullen functioneel een vergelijkbare rol en dat geldt ook voor de rol van margin daarin.

Daarnaast wordt het verschaffen van onderpand in een derivatentransactie besproken vanuit het perspectief van de Credit Support Annex onder de ISDA-raamovereenkomst. Hoewel de ISDA Credit Support Annex vanuit juridisch oogpunt cruciaal is, bestaat sinds de wereldwijde financiële crisis een belangrijke wisselwerking tussen de ISDA Credit Support Annex en EMIR en de bijbehorende RTS.

Hoofdstuk 6 gaat in op de rol van schuld in de EU-schaduwbanksector. Van oudsher kon alleen de traditionele bankensector 'veilige' schuld creëren in het financiële systeem door middel van onmiddellijk opvorderbare deposito's, maar met de vooruitgang in financiële innovatie is de vraag daarnaar toegenomen. De schaduwbanksector is erin geslaagd de functies van het bankwezen te repliceren door een vorm van opvorderbare schuld te creëren zonder onderworpen te zijn aan prudentiële regelgeving die wordt ondersteund door een directe aanspraak op liquiditeit.[35] Ondanks deze directe aanspraak op liquiditeit, is echter ook deze door de schaduwbanksector gecreëerde schuld *runnable*. Dergelijke schuld wordt *runnable* als bij marktdeelnemers twijfel ontstaat over de betrouwbaarheid van de desbetreffende vorm van financiële activa. Een *run* is een systemische gebeurtenis en wordt vaak gezien als voorbode van crises. Wanneer de activaprijzen dalen, nemen marginlevels toe, wat marktdeelnemers ertoe dwingt tot *deleveraging* precies op een moment dat activaprijzen laag zijn en de volatiliteit hoog. Op die manier kan door de schaduwbanksector gecreëerde schuld *runnable* en daarmee destabiliserend zijn.

Hoofdstuk 7 zal de verschillende regelgevingsmechanismen onderzoeken die ten grondslag liggen aan margin in de EU-schaduwbanksector. Hoewel margin voornamelijk wordt gebruikt om risico's af te dekken, is het paradoxaal genoeg een procyclisch mechanisme dat de financiële stabiliteit kan ondermij-

34 Balmer (n 27) 49-50.
35 Benjamin *et al* (n 26) 4 at 4.

nen en het systeemrisico kan vergroten. Belangrijk is dat margin een mechanisme is dat grotendeels ongereguleerd is en daardoor in belangrijke mate wordt vormgegeven door de contractspartijen. Ondanks dat er geen algemeen EU-breed regelgevend kader bestaat voor margin in de EU-schaduwbanksector, zijn bepaalde onderdelen van het juridische en regulatoire kader relevant voor margin, zowel direct en indirect. Dit hoofdstuk zal dan ook in kaart brengen wat het juridische en regulatoire kader is ten aanzien van margin zoals die op dit moment wordt toegepast in de EU-schaduwbanksector.

Hoofdstuk 8 zal normatief van aard zijn door vier aanvullende maatregelen voor te stellen voor hoe margin *zou moeten* werken in *collateral transactions* in de EU-schaduwbanksector. Ten eerste meent de auteur dat alle *collateral transactions* onderworpen zouden moeten zijn aan verplichte clearing via centrale tegenpartijen ("CTP's"). CTP-clearing biedt voordelen vanwege de solide infrastructuur die tijdens de wereldwijde financiële crisis op de proef werd gesteld en "succeeded perfectly".[36] De voordelen van CTP-clearing bestaan uit de *de facto* implementatie van verplichte margin-vereisten; de zogeheten *default-waterval* die ziet op het mitigeren van risico's via de verschillende vooraf gedefinieerde verdedigingslinies; en de multilaterale nettingstructuur, die, in tegenstelling tot *close-out netting*, overkreditering voorkomt doordat multilaterale netting verliezen tussen alle clearingleden onderling verdeelt. Het grote probleem dat nog moet worden aangepakt in het CTP-clearingkader is echter dat hoewel *de facto* sprake is van verplichte margin-vereisten, de precieze margin-niveaus nog steeds worden overgelaten aan het oordeel van de contractspartijen. Daarom pleit dit proefschrift voor het opleggen van een geharmoniseerd supranationaal margin-reguleringskader, bestaande uit minimum-margin, anticyclische margin add-ons en een discretionair margin-plafond, allemaal in te bouwen in het CTP-kader.

Hoofdstuk 9 bevat de conclusies.

36 Balmer (n 27) 53-54.

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Curriculum vitae

Ross Spence is a University of Edinburgh, School of Law, graduate; he holds an LLB (Hons) and an LLM (with distinction) in International Banking Law and Finance. During his studies, Ross received various academic awards, in particular, the prestigious Anderson Strathern Mooting Quaich and the Comparative Law Hart Publishing Prize. In 2017, Ross commenced his EURO-CEFG PhD fellowship at Leiden University under the supervision of Professor Matthias Haentjens and Professor Alessio Pacces. During his research, Ross held positions as both a Young Researcher and Research Associate at the European Banking Institute in Frankfurt and the Amsterdam Centre for Law and Economics respectively. Ross has numerous publications in the field of financial law. Prior to academia, Ross travelled the world as a professional chef where he visited various countries, non-exhaustively including Cambodia, Laos, Vietnam, New Zealand, USA and Canada. Ross now works in Amsterdam at the Dutch Authority for the Financial Markets as a Supervision Officer in the Trading Venues Team.

In the range of books published by the Meijers Research Institute and Graduate School of Leiden Law School, Leiden University, the following titles were published in 2020 and 2021

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