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BASEL III AND THE REGULATION OF MARKET-BASED FINANCE: THE TENTATIVE REFORM

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Since the mid-2010s, with memories of the global financial crisis of 2008 ("GFC") progressively fading, there has been increasing recognition of the potential contributions of market-based finance. This refers to credit intermediation conducted by non-bank entities, effectively what in 2007 was termed "shadow banking." A number of policymakers in the post-crisis years have praised the opportunity to reconcile shadow banking with resilient market-based channels of intermediation. In 2016, the G30 stressed the potential that lies in securitization and other forms of market-based finance. In the process, though, market-based finance is also proposing the re-emergence of a business model that in the pre-crisis years was known as securitized banking.

The post-crisis narrative suggests that the regulatory corrections established since 2008 should contribute to transforming shadow banking into resilient market-based finance. The Basel III framework sits at the heart of the post-crisis regulatory architecture, and its design aims to protect large financial institutions from the risks flowing from market-based channels of intermediation. This general optimism, though, clashed with the economic slowdown caused by the COVID–19 pandemic in the spring of 2020, particularly insofar as it exposed some deep-seated fragilities in the financial system.

Therefore, this Article engages with a critical appraisal of that regulatory edifice, analyzing in particular its capacity to respond to risks associated with pre-2008 securitized banking, as well as the challenges emerging from the more recent morphing of market-based channels of intermediation. The new Basel framework appears to provide the necessary safeguards to guarantee the stable operations of restored capital markets. However, this Article observes that, despite providing much needed regulatory improvements from

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the pre-crisis regime, the current framework still falls short in protecting the financial system from inherent risks generated by the evolution of market-based finance.

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Introduction

This Article proposes a critical view of the resurrection of market-based channels of finance, which in the years before 2008 were characterized chiefly by securitization and the repurchase ("repo") market.[1] Halfway through the last decade, with memories of the 2008 debacle slowly fading in public perceptions, policymakers at the global level started to praise the potential economic benefits of market-based finance, and the opportunity to reconcile the shadow banking[2] system, with the idea of resilient market-based finance.[3] As an illustration of this policy trend, the U.K. Financial Conduct Authority ("FCA") stressed the importance of alleviating large banks of the burden traditionally borne as providers of finance as well as the need to lower systemic risk in the banking system by developing alternative market-based channels of intermediation.[4] In a similar vein, the EU Capital Markets Union was chiefly conceived as an opportunity to integrate European capital markets around, primarily, a revived securitization market.[5]

Two specific concerns prompted this Article, both of which materialized in the spring of 2020, when the pandemic-induced economic slowdown unveiled deep-seated fragilities in the financial system. The first one coincided with the downgrade of Collateralized Loan Obligations ("CLO")[6] tranches, caused by defaults in the underlying leveraged loans. Several commentators looked at the post-2008 development in the CLO market as the "ground zero for the next financial crisis."[7]

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1. The combination of securitization and repo is often referred to as securitized banking, especially in the context of pre-2008 practices.

2. The term was coined by economist Paul McCulley at a speech in 2007 by the Kansas City Federal Reserve Bank.

3. *See generally* Matteo Aquilina & Wladimir Kraus, *Market-Based Finance: Its Contributions and Emerging Issues*, Financial Conduct Authority, May 2016, at 1; *EU Commission Green Paper on Building a Capital Markets Union*, COM (2015) 63 final (Feb. 18, 2015); Grp. of Thirty, Shadow Banking and Capital Markets: Risks and Opportunities (2016).

4. Aquilina & Kraus, *supra* note 3.

5. *See EU Commission Green Paper on Building a Capital Markets Union*, *supra* note 3.

6. Collateralized Loan Obligations are a sub-species of pre-2008 securitized debt. For more on this, see discussion *infra* Section I.D.

7. Joe Rennison & Robert Smith, *CLOs: Ground Zero for the Next Stage of the Financial Crisis?*, Fin. Times (May 13, 2020), https://www.ft.com/con-

The second concern has roots in a broader regulatory problem related to increasing levels of private debt creation and leverage coupled with ensuing financial stability concerns.[8] This led to claims that the financial system showed serious fragilities in the spring of 2020 that demanded regulatory intervention.[9]

Notwithstanding the aforementioned concerns, proponents of market-based finance believe that new channels of financial intermediation, outside of the banking system, could represent more efficient avenues of credit transmission, thus achieving the goal of completing financial markets.[10] Moreover, central to this idea is the greater risk-sharing capacity that market-based financial systems have when compared to banking systems.[11] Claims that market-based finance can be reconciled with resilience and sustainability, however, are grounded in the existence of a new regulatory framework, whereby the excesses of securitized banking experienced in the decade pre-

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tent/f10eaaac-0f4e-46bc-8f78-0754028da46a. These alarms were mirrored by the ECB. *See Leveraged Lending: Banks Exposed to Risks amid COVID-19*, SUPERVISION NEWSL. (Eur. Cent. Bank, Frankfurt, Ger.), May 13, 2020, https://www.bankingsupervision.europa.eu/press/publications/newsletter/2020/html/ssm.nl200513.en.html; *see also* Frank Partnoy, *The Looming Bank Collapse*, ATLANTIC, July-Aug. 2020; Vincenzo Bavoso, *Hail the New Private Debt Machine: Private Equity, Leveraged Loans, and Collateralised Loan Obligations*, 14 LAW & FIN. MKTS. REV. 141 (2020).

8. *See* IMF, *Global Corporate Vulnerabilities: Riskier Business*, Global Financial Stability Report (Oct. 2019).

9. Paul Tucker, *Time to Look Again at the Financial System's Dangerous Faultlines*, FIN. TIMES (Jan. 20, 2021), https://www.ft.com/content/0d848d03-7d66-4a76-a4f2-8f09980747fa. The Systemic Risk Council followed up from the events from April 2020, and in October 2020 it issued a statement that looked, among other things, at ways to strengthen the financial system, with some emphasis on the containment of systemic risks from the shadow banking system. *See* Letter from The Systemic Risk Council to the Finance Ministers and Central Bank Governors of the G20, The Financial Stability Board, and the International Standard-Setters (Oct. 9, 2020), http://4atmuz3ab8k0glu2m35oem99-wpengine.netdna-ssl.com/wp-content/uploads/2020/10/SRC-Reigniting-the-Reform-Debate.pdf.

10. This stance is traditionally associated with the idea of financial deepening and market completion. *See* Peter L. Rousseau & Paul Wachtel, *What is Happening to the Impact of Financial Deepening on Economic Growth?*, 49 ECON. ENQUIRY 276 (2011).

11. Tobias Adrian & Bradley Jones, *Shadow Banking and Market-Based Finance* (Int'l Monetary Fund, Departmental Paper No. 18/14, 2018).

ceding the GFC should be reined in.[12] From a global perspective, Basel III represents the central piece of the post-2008 regulatory architecture, particularly with respect to the interplay between large banks and capital markets as well as the containment of systemic risks from the shadow banking system.[13]

Some of the Basel III provisions need to be understood in connection with the risks that they seek to mitigate. In particular, a revived securitized banking model re-proposes forms of maturity and liquidity transformation[14] conducted outside of the banking system, potentially creating long and opaque intermediation chains that, as it happened before 2008, magnify problems of complexity and leverage. Part I of this Article therefore provides an analytical understanding of the legal and regulatory problems that emerged in connection with non-bank (market-based) financial intermediation, bearing in mind that some of these problems are intrinsic to and inevitable features of the financial system.[15]

While it is now well known that the shadow banking system does not benefit from the same regulatory backstops that apply in the banking sector,[16] the intricate web of interconnectivities that link the two systems together represent the most

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12. GRP. OF THIRTY, *supra* note 3.

13. *See* Andrea Enria, Chair, Supervisory Bd. of the Eur. Cent. Bank, Keynote Speech at the European Commission's DG Financial Stability, Financial Services and Capital Markets Union Conference on the Implementation of Basel III (Nov. 12, 2019).

14. The former is represented by the use of short-term funds to invest in long-term assets, whereas liquidity transformation focuses on the use of liquid liabilities to buy illiquid assets. *See* Laura Kodres, *What is Shadow Banking?*, FIN. & DEV., June 2013, at 42.

15. Asymmetry of information and more general agency problems between sellers of financial products and buyers are inevitable. These agency problems can only be exacerbated by misaligned incentives (such as compensation structures), that in the pre-crisis decades progressively encouraged a culture of risk taking centered on the volume of sales, as opposed to one rooted in more prudential behavior on the part of bankers. Asymmetry of information was further fuelled by the increased complexity of financial products, which created information failures. One such case was that of collateralized debt obligations, which while creating greater appeal to investors, due to the tranched securities, were also concealing underlying loan-level data, leading thus to neglected risks. *See* Joshua Coval et al., *The Economics of Structured Finance*, J. ECON. PERSPS., Winter 2009, at 3; Adrian & Jones, *supra* note 11, at 6.

16. *See* Zoltan Pozsar et al., *Shadow Banking* (Fed. Rsrv. Bank N.Y., Staff Report No. 458, 2010).

problematic aspect of this story. Before 2008, a number of contractual features that connected banks' balance sheets to entities and products in the shadow banking system exemplified these ties. This interconnectedness is precisely the regulatory problem that became crystallized in the events of September 2008, when a run on the repo market quickly propagated through the global financial system. In a sense, regulators aimed post-2008 at insulating the banking system from risks arising in less regulated markets—in other words, at preventing another GFC from recurring. This Article focuses precisely on assessing the capacity of Basel III to achieving that, especially in light of the aforementioned events of March 2020.

As mentioned at the beginning of this Introduction, widespread risk aversion and the threat of new regulatory measures caused the drastic decline in market-based activities after 2008.[17] This trend changed in 2014 when policymakers began brainstorming the idea of a regulatory architecture that could ensure simplicity and transparency in market-based finance, and, thus, achieve some degree of resilience.[18] At the global level, the main tool was the creation of an infrastructure for the system-wide monitoring of systemic risk in the shadow banking system. This is centered on the work of the Financial Stability Board ("FSB") through its Global Shadow Banking Monitoring Report.[19] Two goals represent the Basel III frame-

17. This trend is best represented by the parallel decline in securitization and repo activities after September 2008, with the slow and consistent restart of these markets after 2010. *See* BONNIE G. BUCHANAN, SECURITIZATION AND THE GLOBAL ECONOMY 115 (2017) (chart on CDO issuance); Barry Ritholtz, *Will Twist Cause Problems for the Repo Market?*, BIG PICTURE (June 26, 2012), https://ritholtz.com/2012/06/will-twist-cause-problems-for-the-repo-market/ (chart on volume of repo transactions).

18. For probably the first concrete policy document in this sense, see Bank of Eng. & Eur. Cent. Bank, *The Case for a Better Functioning Securitisation Market in the European Union* (May 29, 2014); *see also* Tobias Adrian et al., *Liquidity, Leverage, and Regulation 10 Years After the Global Financial Crisis*, 10 ANN. REV. FIN. ECON. 16 (2018); GRP. OF THIRTY, *supra* note 3.

19. *See* FIN. STABILITY BD., GLOBAL MONITORING REPORT ON NON-BANK FINANCIAL INTERMEDIATION 2018 (2019). At the EU level, much progress has been made with the European Systemic Risk Board ("ESRB"), which is also important in the related risk assessment processes and in the implementation of relevant macroprudential policies. At the U.S. level, Title I of the Dodd–Frank Act established the Financial Stability Oversight Council, which represents a functional coordination of the U.S. regulators with respect to the regulation of large systemic financial institutions. *See* ADRIAN BLUNDELL-

work's role in this regulatory effort: a) to recognize the exposure of deposit-taking institutions to the shadow banking system through better capital and risk coverage rules, and b) to foster resilient market-based intermediation by bringing transparency into both the securitization and repo markets, and also by reducing the dependence of banks on wholesale funding channels.[20]

To develop and address the above questions, this Article is divided into six parts, including the present Introduction. Part I provides the background of this research by tracing the evolution of banks and capital markets through the lens of securitization and repos, the two main legs of the securitized banking model. It then draws a picture of the market-based development that occurred over the past decade. Part II engages with a critical analysis of the regulatory and legal origins of market-based developments. This analysis starts by situating the central role of market discipline in the regulation of capital markets, and how it informed more specific regulatory and legal developments in the areas of securitization and repo. The post-2008 evolutions in market-based finance are also explained through the lens of the market discipline orthodoxy. Part III moves the discussion on to the critical analysis of the relevant Basel III measures. It focuses on capital and risk coverage rules, the new securitization framework, the leverage ratio, and the liquidity rules. Outside of Basel III, this Article also discusses the rules on minimum haircuts in repos. The critical review of the new regulatory framework is the basis for an appraisal, conducted in Part IV, of whether and how the post-crisis regulatory framework is likely to respond to the challenges posed by revived market-based finance, and whether shadow banking can be brought within a resilient boundary. The Article then concludes.

WIGNALL ET AL., GLOBALISATION AND FINANCE AT THE CROSSROADS 218 (2018).

20. New rules on liquidity, in particular, and the greater focus on off-balance sheet exposures, generally, illustrate the willingness to strengthen banks' exposure to non-bank channels of intermediation. For a closer examination of this area of the Basel framework, see *infra* Part III.

I.
Framing the Problem: Market Developments and Changes in Banks and Capital Markets

The trajectory of financial development, globally, has been characterized since the 1980s by the expansion of market-based channels of intermediation and the attendant greater availability of market-based financial products.[21] Presently, this trend can be illustrated through a number of policy documents recently produced by the EU Commission in support of the initiative to implement a capital markets union ("CMU") in the EU.[22] Similarly, shifts from more traditional models of credit intermediation to market-based ones have been even more pronounced in other jurisdictions, primarily in the United States and to a degree in the United Kingdom, where regulatory changes between the 1980s and the early 2000s promoted the further development of capital markets.[23]

It is important to clarify that the above shift did not simply rebalance the old textbook distinction between bank finance and capital markets finance. As this Part will illustrate, the development of capital markets was instrumental to the emergence of large banking institutions (so called "dealer banks")[24] due to their increasing interaction with capital markets. The business model of dealer banks progressively relied less on the traditional deposit-based funding channels, and more on wholesale, market-based funding channels.[25] In essence, banks became an integral part of capital markets finance, and their

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21. *See* Niki Anderson et al., *A European Capital Markets Union: Implications for Growth and Stability*, Fin. Stability Paper (Bank of Eng., London, U.K.) Feb. 25, 2015.

22. *See EU Commission Green Paper on Building a Capital Markets Union*, *supra* note 3.

23. *See* Jeffrey N. Gordon and Kathryn Judge, *The Origins of a Capital Market Union in the United States* (Eur. Corp. Governance Inst. Working Paper, Paper No. 395, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3154676.

24. *See* Robert C. Hockett & Saule T. Omarova, *The Finance Franchise*, 102 Cornell L. Rev. 1143, 1165 (2017); *see also* Vincenzo Bavoso, *Market-Based Finance, Debt and Systemic Risk: A Critique of the EU Capital Markets Union*, Acct. Econ. & L., Oct. 2018, at 1.

25. *See* Hockett & Omarova, *supra* note 24; Aquilina & Kraus, *supra* note 3.

interplay with capital markets drastically changed the patterns of financial intermediation and credit transformation.[26]

In order to understand the relationship between this new model of financial intermediation and the events of 2007–2008, and beyond, it is necessary to examine the way in which large dealer banks operated within this model. From the early 2000s, large banking institutions had fully expanded their activities into different areas of business, which in previous decades had been kept separate by a number of regulatory constraints.[27] The shift in the banks' business models was dramatic. To appreciate the scale of changes, it is useful to look at the structure of their balance sheets, namely at the items included as assets and liabilities.[28] A simplified overview of a traditional commercial bank's balance sheet would show on the assets side: a) a mix of loans (from more secured mortgages, to other commercial and consumer loans, as well as interbank loans); b) securities, such as government bonds; and c) reserves and cash items. On the liabilities side, one would find: i) deposits of different sizes; ii) borrowings from other banks; and iii) bank capital.[29]

Conversely, dealer banks' balance sheets show their greater interplay with capital markets, and, more specifically, with market-based funding channels. On the assets side, long-term asset-backed securities ("ABS") started replacing the more conventional loan-type assets.[30] This shift necessitated a longer chain of relationships with a number of financial intermediaries, for the purpose of minimizing the risks associated with ABSs held by dealer banks.[31] It is important to em-

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26. *See* Hockett & Omarova, *supra* note 24; Aquilina & Kraus, *supra* note 3.

27. It is beyond the scope of this Article to map the regulatory changes that elicited the emergence of dealer banks. For an overview, see BLUNDELL-WIGNALL ET AL., *supra* note 19, at 1–39.

28. See Perry Mehrling, *Financialization and its Discontents*, 3 FIN. & SOC'Y 1 (2017), bearing in mind that assets refer to promises to pay made by others to the bank, whereas liabilities refer to promises to pay issued by the bank to other parties.

29. *See Assets and Liabilities of Commercial Banks in the United States—H.8*, FED. RSRV. BANK, https://www.federalreserve.gov/releases/h8/current/default.htm (last visited Sept. 22, 2021).

30. Pozsar et al., *supra* note 16, at 10–11.

31. Specifically, risks associated with ABSs were sold off to other capital markets intermediaries. This would occur through different derivative con-

phasize that in the pre-crisis years it was widely believed that these ABSs were virtually risk free (and also more liquid than conventional loan assets) due to the process whereby their risk was being passed to asset managers and other derivatives dealers, who were, in turn, selling these risks (or rather financial products whose value was based on these risks) to capital markets investors. These assets, perceived to be risk free, were eventually used by dealer banks as collateral in a number of other transactions detailed below.[32]

On the liabilities side, dealer banks' balance sheets became even more interconnected with wholesale, market-based funding channels. Instead of traditional deposits, they increasingly funded their operations through repo contracts with money market funds.[33] Perry Mehrling aptly defined this form of financial intermediation as "money market funding of capital market lending."[34] Effectively, dealer banks engaged with what has been referred to as the securitized banking system, whereby they repackaged loans and resold them as ABSs on their assets side, while, on their liabilities side, they mainly relied on repo transactions with money market funds.[35]

Why is this relevant at all? Because the transactions and products that characterize dealer banks' balance sheets, and their relationships with other financial intermediaries, resulted in high levels of interconnectedness with the shadow banking system.[36] In the pre-crisis years, the shadow banking system revolved chiefly around two main channels of credit intermediation: the securitization market and the repo market.[37] Therefore, it is necessary to briefly illustrate how these two seg-

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tracts such as interest rate swaps, foreign exchange swaps, or credit default swaps. *See* Aquilina & Kraus, *supra* note 3, at 13.

32. *Id.* at 14; Adrian & Jones, *supra* note 11, at 3–4.

33. *See* Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on the Repo*, 104 J. FIN. ECON. 425 (2012).

34. *See* Perry Mehrling et al., Bagehot Was a Shadow Banker: Shadow Banking, Central Banking and the Future of Global Finance (Nov. 6, 2013) (unpublished manuscript), http://papers.ssrn.com/abstract=2232016.

35. *See* Gorton & Metrick, *supra* note 33, at 428.

36. *See* Pozsar et al., *supra* note 16, at 4–7 (providing an understanding of shadow banking system as we know it today).

37. *Id.* at 10–11 (explaining the various steps and phases of the shadow system). *See also* Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, 2010 BROOKINGS PAPERS ON ECON. ACTIVITY 261, 269–70.

ments of capital markets functioned in the pre-crisis period, followed by how they have morphed after 2008.

A. *The Evolution of Securitization Before 2008*

From the early 2000s, the practice of securitizing receivables gathered increasing pace, due chiefly to transactional and technological innovation, but also as a consequence of the regulatory changes that caused the progressive liberalization of financial markets.[38] In the United States and the United Kingdom, this expansion was characterized by new transactional forms, such as collateralized debt obligations ("CDO" and later CDO squared and synthetic CDOs).[39] These facilitated the origination of many more assets, critically, low quality assets.

Typically, the originating bank (or sponsoring bank) transfers a pool of assets to a special purpose vehicle ("SPV"), which, in turn, issues debt securities secured over the asset pool to investors in the capital markets.[40] Traditionally, SPVs issued one type of security against the asset pool, with investors acquiring a pro rata interest in it.[41] With the advent of tranching, SPVs started slicing the security into a number of tranches, each bearing a different level of credit quality and subordination.[42] As each tranche carried a different level of risk and rate of return, this way of pooling assets attracted a wider variety of investors with a more diverse risk appetite.[43] Unlike more traditional securitization structures, tranching fa-

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38. *See* Vincenzo Bavoso, *Financial Innovation and Structured Finance: The Case of Securitisation*, 34 CO. LAW. 3 (2013).

39. A large amount of literature has been written on securitization and its more recent innovations. *See, e.g.*, Sarai Criado & Adrian van Rixtel, *Structured Finance and the Financial Turmoil of 2007–2008: An Introductory Overview* (Banco de España, Documento Ocasional No. 0808, 2008); Gerard Caprio, Jr. et al., *The 2007 Meltdown in Structured Securitization: Searching for Lessons, Not Scapegoats* (World Bank, Dev. Rsch. Grp., Fin. & Priv. Sector Team, Working Paper No. 4756, 2008); Douglas Lucas et al., *Collateralized Debt Obligations and Credit Risk Transfer*, Yale Int'l Ctr. for Fin., Working Paper No. 07-06, 2007).

40. Bavoso, *supra* note 38, at 4.

41. Lucas et al., *supra* note 39.

42. *Id.* (explaining that first losses on the underlying pool are borne by the bottom (equity) tranche of the bond, while the top senior tranches are the most secure, and therefore rated AAA).

43. Coval et al., *supra* note 15, at 5–6.

cilitated the origination of low quality assets.[44] These however, received high ratings from credit rating agencies ("CRA") because CDOs were structured in accordance with complex correlation formulas that underscored the bundling of the asset pool.[45] A variety of credit enhancement mechanisms also had the effect of minimizing the SPV's credit risk, thus facilitating the marketability of securitized bonds to investors.[46]

Innovations in tranching and the way in which assets were pooled together led to the more dramatic emergence of synthetic CDOs. These instruments involved the use of derivatives and, in particular, credit default swaps ("CDS") which helped create an exposure to the credit risk of the asset pool.[47] More specifically, synthetic CDOs did not feature a sale of assets to the SPV. Instead, the originator entered into a CDS with the SPV, whereby the SPV acted as swap counterparty and sold credit protection over the asset pool to the originator.[48] The SPV, in turn, issued credit-linked notes to investors, thus effectively passing the risk of the asset pool (that it did not own) onto investors.[49] This practice was associated with much higher levels of leverage creation[50] and with the increased opacity of the securitization market.[51]

The vast application of securitization allowed banks to remove the loan inventory from the asset side of their balance sheet, leading to what has been referred to as an "originate-to-

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44. In CDO structures, it became common practice to securitize already existing debt securities, such as other "unsold" securitization tranches, giving way to what has been termed securitization squared.

45. Felix Salmon, *A Formula for Disaster*, WIRED, Mar. 2009 (explaining how the Gaussian Copula formula allowed the creation of triple-A securities where none of the underlying assets were worth triple-A).

46. *See* Viral Acharya et al., *Securitization without Risk Transfer*, 107 J. FIN. ECON. 515, 531–32, (2013).

47. *See* Elizabeth Uwaifo, *Key Issues in Structuring a Synthetic Securitisation Transaction—A European Perspective*, 16 J. INT'L BANKING L. 98 (2001).

48. *Id.*

49. *See* Jan De Vries Robbé & Paul Ali, *Synthetic CDOs: The State of Play*, 21 J. INT'L BANKING L. & REGUL. 12, 12–13 (2006).

50. *See* Margaret Blair, *Financial Innovation, Leverage, Bubbles and the Distribution of Income*, 30 REV. BANKING & FIN. L. 225 (2010).

51. *See* Vincenzo Bavoso, *Filling the Accountability Gap in Structured Finance Transactions: The Case for a Broader Fiduciary Obligation*, 23 COLUM. J. EUR. L. 369 (2017).

distribute" model of credit intermediation.[52] Under this model, banks could profit from loan intermediation—not only for originating and holding them on their balance sheet, as was traditionally the case.[53] More importantly, moving assets off-balance sheets created regulatory capital, which was instrumental in facilitating the origination of more loans (especially mortgages), in fueling asset expansion not complemented by increases in capital, and, therefore, in huge increases in leverage.[54]

In the context of the securitized banking system, it is also important to remember that the vast amount of securitized bonds, originated and traded by dealer banks, were pledged as collateral for securing financing in repo transactions.[55]

B. *The Interplay with Repurchase Agreements*

As discussed, the practice of tranching facilitated the production of assets that were perceived as super-safe, namely the top tranches of securitized bonds that were receiving triple-A ratings.[56] By virtue of their safety, these senior tranches became very valuable collateral in the pre-crisis years, especially in the context of repurchase transactions.[57] Typically, in repo transactions, a dealer bank (borrower) borrows short-term funds from a money market mutual fund (lender) by transferring the legal ownership of the collateral to the lender. The money market mutual fund engages in a reverse repo as the

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52. Instead of the traditional originate-to-hold, whereby banks would hold the assets they originated on their books until maturity. *See* Vitaly M. Bord & João A.C. Santos, *The Rise of the Originate-to-Distribute Model and the Role of Banks in Financial Intermediation*, FED. RSRV. BANK N.Y. ECON. POL'Y REV., July 2012, at 21–34.

53. Gorton & Metrick, *supra* note 33, at 434.

54. *See* Jay Cullen, *Securitisation, Ring-Fencing and Housing Bubbles: Financial Stability Implications of UK and EU Bank Reforms*, 4 J. FIN. REGUL. 73 (2018); Emilios Avgouleas, *Bank Leverage Ratios and Financial Stability: A Micro- and Macroprudential Perspective* (Levy Econ. Inst., Working Paper No. 849, 2015).

55. Nicola Cetorelli, *Hybrid Intermediaries* 4–5 (Fed. Rsrv. Bank N.Y., Staff Report No. 705, 2014) (arguing that this model led to the growing centrality of dealer banks and the market for securities lending and repo agreements).

56. This took place at a time when demand for safe and liquid assets was increasing, while low-risk government bonds were becoming scarce. *See* Daniela Gabor & Cornel Ban, *Banking on Bonds: The New Links Between States and Markets*, 54 J. COMMON MKT. STUD. 617 (2016).

57. Gorton & Metrick, *supra* note 33.

dealer bank promises to repurchase the collateral at a later date.[58] Critically, if the dealer bank becomes insolvent and cannot honor its promise, the lender can sell the collateral.[59] Lenders are further protected by haircuts. These refer to the market value of the collateral, which is higher than the value of the loan (also referred to as the margin, which is calculated on the value of the collateral).[60] Similarly, if the collateral falls in value, margin calls are used to ensure that the repo is fully collateralized.[61]

In the context of the securitized banking system, repo agreements became significantly convenient due to two main legal features characterizing pre-crisis practices. First, the collateral was transferred to the lender, enabling the lender to immediately access and sell the assets in the event of the borrower's default.[62] Second, as the assets were transferred to the lender, lenders were free to reuse the same collateral in other similar transactions, a process that has been referred to as rehypothecation, and that gave rise to virtually endless chains of rehypothecations.[63] In this respect, it must be acknowledged that many of the problems associated with rehypothecation (which will be discussed in more detail in Part II) were prerogative of bilateral repos, where collateral and cash were exchanged simultaneously on a delivery-versus-payment basis.[64] Conversely, in tri-party repos, the employment of an

58. *See* Jay Cullen, *The Repo Market, Collateral and Systemic Risk: In Search of Regulatory Coherence, in* RESEARCH HANDBOOK ON SHADOW BANKING 85 (Iris H.-Y. Chiu & Iain G. MacNeil eds., Edward Elgar 2018).

59. *Id.*

60. *See* Gorton & Metrick, *supra* note 37, at 264. Specifically, the haircut represents the difference between the amount of money deposited by the lender and the value of the collateral pledged by the borrower (the latter being higher); whereas the repo rate is the difference between the amount of money deposited by the lender and the amount that the lender receives back with the second leg of the repurchase agreement.

61. In this context a margin call is typically issued by the lender when the value of the collateral falls below the level that is necessary to support the loan. *See* Carolyn Sissoko, The Collateral Supply Effect on Central Bank Policy 19 (Aug. 21, 2020) (unpublished manuscript), https://ssrn.com/abstract=3545546.

62. Cullen, *supra* note 58, at 8.

63. *Id.* at 13.

64. *Id.* at 9.

agent to manage the transaction added much in terms of transparency and stability.[65]

Like securitization, the repo market grew exponentially in the post-liberalization years,[66] and it became the centerpiece of the market-based financial system, where large financial institutions could increasingly tap wholesale funding channels (through repos), instead of deposits, to fund their operations.[67] The centrality of the repo market in the market-based financial system is also represented by the heavy exposure that dealer banks had to it, as opposed to the exposure of traditional commercial banks.[68]

C. *The Rise and Fall of Securitized Banking*

The interplay of securitization and the repo market coincided with what came to be defined as the shadow banking system,[69] which is now more commonly referred to as market-based finance. The main problem attributed to these channels of financial intermediation was the replication of bank-like functions, resulting in maturity transformation and liquidity creation.[70] While maturity transformation is typical of banks as they hold long-term assets (such as mortgages) and issue short-term liabilities (such as deposits),[71] it presents more risky contours in the shadow banking system. This is particularly evi-

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65. *Id.* at 6. However, it must be explained that in some ways the mechanics of tri-party repo added some complexity to the structure of the market. For instance, during the GFC of 2008, repo lenders had to be concerned about other repo lenders exiting the market (and, therefore, leaving them with the burden of holding a larger share of the market together), but above all they were wary of agent banks not being able or willing to complete daily clearing operations, leaving lenders hugely exposed. *See* John Mullin, *The Repo Market is Changing (and What is a Repo, Anyway?)*, ECON FOCUS, First Quarter 2020, at 16.

66. This was particularly the case once the market started accepting as collateral privately issued ABSs as well as securities issued by shadow banking entities. This shift was caused by the scarcity of government bonds which are traditionally the quintessentially safe assets. Daniela Gabor, *The (Impossible) Repo Trinity: The Political Economy of Repo Markets*, 23 REV. INT'L POL. ECON. 967, 982 (2016).

67. *Id.* at 981–84.

68. *See* Gorton & Metrick, *supra* note 33, at 438.

69. Pozsar et al., *supra* note 16, at 1.

70. *Id.* at 1–2.

71. Morgan Ricks, *Regulating Money Creation after the Crisis*, 1 HARV. BUS. L. REV. 75, 98 (2011).

dent in the repo market, where dealer banks were exposed to significant short-term liabilities, often having to roll-over contracts on a daily basis, thus magnifying the maturity transformation.[72] Moreover, liabilities issued in the repo market resulted in money claims due to their liquidity.[73] However, unlike typical money claims (deposits), they were not regulated and, in particular, they were not covered by deposit insurance protection.[74] On this point, it is important to remember that these activities within the shadow banking system fell outside the perimeter of traditional banking regulation.[75]

In particular, two relevant areas of regulation did not apply in the shadow banking system: capital requirements and deposit insurance protection. Traditionally, capital requirements are designed to constrain the level of risk-taking in banks.[76] This is done by imposing a cushion to absorb losses from money claims.[77] The cushion is typically represented by the percentage of equity that banks have to hold against certain assets, which varies according to the riskiness of the assets.[78] Constraining the level of banks' risk-taking in this way should also result in limiting their level of leverage.[79]

There is an important caveat here, because the impact of capital regulation had been severely affected by financial innovation. The way in which the shadow banking system developed meant that banks were allowed to originate assets far beyond the limits of capital requirements, therefore stultifying the function of the cushion mentioned earlier. Most of the shadow banking intermediation was taking place outside the umbrella of regulatory oversight.[80] Specifically, loans or mortgages originated by dealer banks were transferred off-balance sheets and to SPVs, thus freeing up dealer banks' regulatory

72. *Id.* at 86.

73. *Id.* at 97.

74. *Id.* at 120. This was the main cause of the run on the repo market, as documented by Gorton & Metrick, *supra* note 33, at 447–48.

75. Pozsar et al., *supra* note 16, at 7 (highlighting the difference between credit intermediation activities that are respectively receiving direct public enhancement, indirect public enhancement, or are unenhanced).

76. Avgouleas, *supra* note 54, at 2.

77. *Id.*

78. *Id.*

79. *Id.* at 9–10.

80. Pozsar et al., *supra* note 16, at 7 (showing that credit intermediation related to securitized banking activities was unenhanced).

capital to originate more assets.[81] Of course, SPVs were not covered by capital regulation. On the contrary, the capital requirements devised under Basel I and II created an incentive for dealer banks to pursue asset growth strategies by simply moving assets off their balance sheets, with the assurance that the securities issued by the SPV would receive attractive ratings due to the credit enhancement mechanisms in place, and the use of credit derivatives to ensure the creditworthiness of securitized bonds.[82] This widespread practice contributed to the failure to control the amount of credit created by banks (or in other words, the ratio between bank capital and debt), and in turn, the uncontrolled increase in leverage, both firm-wise and system-wise.[83]

To further appreciate the riskiness of credit intermediation conducted in the shadow banking system, it is useful to highlight the different regulatory protection in relation to money claims. As already mentioned, deposit insurance protection regulation represented a non-discretionary support of money claims.[84] Deposit insurance protection was complemented by the discretionary, lender of last resort protection provided by central banks, which was similarly conceived to prevent banks' defaults on money claims.[85] The main difference with protecting deposits was that it constituted an *ex ante* guarantee that depositors' money would be protected (up to a certain amount). The prevention of defaults on money claims was essentially aimed at minimizing the occurrence of bank runs.[86] As was explained earlier in this Article, deposits are not the only money claims, and it has been observed that in the United States, for instance, money claims outside the deposit insurance protection exceed those that fall within the protection.[87] Again, this dynamic is due to money claims being is-

81. Cullen, *supra* note 54, at 81.

82. *See* Perry Mehrling, *Credit Default Swaps: The Key to Financial Reform*, *in* TIME FOR A VISIBLE HAND 185, 195 (Stephany Griffith–Jones, José Antonio Ocampo & Joseph Stiglitz eds., 2010).

83. Margaret M. Blair, *Making Money: Leverage and Private Sector Money Creation*, 36 SEATTLE U. L. REV 417, 434 (2013).

84. Ricks, *supra* note 71, at 83.

85. *Id.* at 117.

86. *Id.* at 119.

87. *Id.* at 121.

sued in the shadow banking system, largely in repo contracts, and therefore outside the system of banking regulation.

Most notably, a run on the repo market aggravated the collapse of Lehman Brothers in 2008.[88] When the value of the securitized bonds that Lehman was pledging as collateral in repo contracts fell, lenders in the repo market either demanded a higher haircut, or simply refused to roll-over those contracts with Lehman.[89] Unlike depositors, money market mutual funds in the repo market had no guarantee of getting their money back, which partly explains the events of September 2008.[90] Moreover, the fact that the repo market remained effectively unregulated until 2015 further increased its vulnerability, due to a fundamental lack of transparency and the ensuing unmonitored level of leverage.

Finally, it is worth reiterating that the intermediation chains developed in the securitized banking system created huge levels of interconnectedness between regulated financial institutions and intermediaries in the shadow banking system.[91] One clear drawback of this interconnectedness was the ensuing fragility of the financial system as a whole, due to its vulnerability to shocks that could be transmitted through the system, causing the sort of domino effect that was eventually experienced with the collapse of Lehman Brothers in 2008.[92] Critically, the homogeneity of dealer banks' balance sheets aggravated this problem of "contagion."[93] The combined application of tranching and CDS created layers of counterparty credit risk, effectively leading to dealer banks holding portfolios of assets (securitized bonds and CDO tranches) that were

88. *See id.* at 126, 126–27 n.116.

89. *See* Gorton & Metrick, *supra* note 33, at 447–48.

90. *See id.*

91. It must be remembered that entities investing in securitized bonds were often other financial institutions, or funds that had borrowed money from financial institutions. Moreover, mechanisms such as credit enhancements and credit default swaps contributed to an overall asset homogenization among financial institutions. *See* Vincenzo Bavoso, *High Quality Securitisation and EU Capital Markets Union—Is it Possible?*, ACCT. ECON. & L., Dec. 2017, at 1.

92. *See* Andrew Haldane & Robert May, *Systemic Risk in Banking Ecosystems*, 469 NATURE 351, 355 (2011).

93. *See* Bavoso, *supra* note 91, at 19.

similar to one another.[94] Homogeneity of portfolio composition and the correlation of the assets therein (and particularly their sensitivity to market movements) were ultimately the factors that heightened problems of systemic risk that emerged in connection with the Lehman downfall.[95]

D. *The Post-Crisis Morphing of Market-Based Finance*

After 2008, the securitization market remained moribund. For example, the U.S. market was chiefly supported by government-backed issues, with private sector securitizations remaining only a small fraction of the market.[96] The post-2008 U.S. market also showed that more problematic segments of structured finance, such as CDOs, were all but defunct between 2008 and 2014.[97] A similar trend can be observed in the repo market,[98] which was affected by the scarcity of collateral that was normally posted in repo contracts. Still, it is well documented that market-based channels of finance slowly restarted in the post-2008 years, and with them the interconnectedness between banks and non-bank entities.[99]

As structured credit markets slowly thawed after 2014, they did so under the new regulatory framework of Basel III (partly implemented, partly to be implemented). While the structure and impact of Basel III is analyzed later in this Article, it can be anticipated that its main focus is on the large financial institutions that emerged as the main culprits after

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94. *See* Frédéric Hache, *A Missed Opportunity to Revive "Boring" Finance?*, FIN. WATCH, Dec. 2014, at 1, 35–36.

95. *Id.*

96. Alper Kara & Solomon Y. Deku, *Securitisation—The Complex Financial Product that Fuelled the Financial Crisis is Making a Comeback*, THE CONVERSATION (Sept. 14, 2018, 8:18 AM), https://theconversation.com/securitisation-the-complex-financial-product-that-fuelled-the-financial-crisis-is-making-a-comeback-93807.

97. *See* Grahame Johnson & Eric Santor, *Central Bank Liquidity Provision and Core Funding Markets*, RSRV. BANK AUSTL., 2013, at 111; BONNIE G. BUCHANAN, SECURITIZATION AND THE GLOBAL ECONOMY 115 (2017).

98. Ritholtz, *supra* note 17.

99. For instance, between the first quarter of 2015 and the first quarter of 2020, banks' cross-border claims on, and liabilities to non-bank entities grew from $4.6 trillion to $7.5 trillion (claims), and from $3.7 trillion to $5.6 trillion (liabilities). Inaki Aldasoro et al., *Cross-Border Links between Banks and Non-Bank Financial Institutions*, BANK FOR INT'L SETTLEMENTS Q. REV., Sept. 2020, at 61, 62–63.

2008.[100] The goal, as stated elsewhere, was to insulate large systemic institutions from risks flowing from the shadow banking system.[101] In light of this regulatory strategy, the more recent developments in the CLO[102] market should come as no surprise.[103] As of 2019, the level of CLO issuance neared $120 billion in the United States. In the EU, it was close to $30 billion.[104] The renaissance of CLOs coincided with the growth of leveraged loans, originated both in the United States and in the United Kingdom, whereby CLOs became the transactional structure that allowed these high risks to be transferred onto capital markets investors.[105]

While this dynamic will sound redolent of pre-2008 themes, it is currently being shaped by new transactional patterns. This is why, notwithstanding warning signs raised by the IMF about the increasing levels of leverage and the ensuing rise of systemic risks,[106] industry experts have been reiterating that the structure of CLOs can "ride out cycles" and keep risks away from systemic institutions.[107]

Compared to more traditional forms of securitization, CLOs are characterized by the central role of private equity firms (instead of dealer banks), acting as both sponsors and managers of the transaction.[108] More specifically, the transaction flow here does not start with the origination and pooling of receivables by a bank. Instead, the transaction hinges on the

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100. Enria, *supra* note 13.

101. *Id.*

102. CLOs were initially conceived as an innovation of plain vanilla asset securitization, and in fact as a subset of the more popular CDOs. *See* Andreas Jobst, *Collateralised Loan Obligations (CLOs)—A Primer* 11 (Ctr. for Fin. Stud., Working Paper No. 2002/13, 2002).

103. In 2013 CLO issues reached a value of $55.41 billion against $88.94 billion in 2007. Tracy Alloway & Nicole Bullock, *CLO Issuance Hits Highest Level Since Before Financial Crisis*, FIN. TIMES, (Sept. 29, 2013), https://www.ft.com/content/a9008c0c-26c1-11e3-9dc0-00144feab7de.

104. *Leveraged Loan Primer*, S&P GLOB., https://www.spglobal.com/marketintelligence/en/pages/toc-primer/lcd-primer#sec8ci (last visited Oct. 20, 2021).

105. FIN. STABILITY BD., VULNERABILITIES ASSOCIATED WITH LEVERAGED LOANS AND COLLATERALISED LOAN OBLIGATIONS 7 (2019).

106. IMF, *Lower for Longer*, Global Financial Stability Report, at 25 (2019).

107. *See* Stephen Foley & Henny Sender, *Private Equity Firms Fuel Demand for CLOs*, FIN. TIMES (Dec. 20, 2012), https://www.ft.com/content/bd0081a8-4ab7-11e2-9650-00144feab49a.

108. Bavoso, *supra* note 7, at 143.

management role of private equity firms. They: a) set up and manage the SPV; b) accomplish functions that are typical of asset managers in ensuring the quality of the asset pool;[109] c) facilitate the issuance of the leveraged loans (either by owning the firms that access the loans, or by engineering the LBOs that stand behind the leveraged loans) that are pooled in the CLO; and d) orchestrate the process of syndication through which leveraged loans are issued by pools of lenders.[110]

From the outset, one key feature of these transactions is the syndication of the origination process which involves a number of lenders, fractionally exposed to the leveraged loans, assigning their portion of receivables to the SPV—a process coordinated by the private equity firm.[111] This also means that individual banks are not directly exposed to the CLO market.[112] However, as will be discussed in the next section, the new shape of CLOs presents a number of legal and regulatory challenges to the application of post-2008 regulation.

The 2008 collapse of securitization, and particularly CDOs, deprived repo agreements of what had become their main source of collateral. Moreover, the new Basel III framework created regulatory costs on dealer banks that drastically reduced their exposure to the repo market.[113] Contextually, repo lenders started to engage with central banks. In the United States, for instance, the Federal Reserve created the Overnight Reverse Repurchase Agreement Facility in 2014, designed to borrow from a number of firms, including mutual

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109. In terms of selection and management of the asset pool. *See* Douglas Long, *Converging Developments in ABCP Conduits and SIV Markets*, *in* ASSET SECURITISATION AND SYNTHETIC STRUCTURES 115, 120 (Rick Watson & Jeremy Carter eds., 2006).

110. *See* Foley & Sender, *supra* note 107 (describing how the private equity industry is fueling demand for leveraged loans, which in turn require CLOs).

111. *See* Bavoso, *supra* note 7, at 143.

112. *Id.* at 144.

113. *See* Sriya Anbil & Zeynep Senyuz, *The Regulatory and Monetary Policy Nexus in the Repo Market,* 30 (Bd. Governors Fed. Rsrv. Sys., Working Paper No. 2018-027, 2018), https://doi.org/10.17016/FEDS.2018.027 (explaining in particular that European dealer banks reduced their exposure to repo borrowing at quarter end (due to quarterly reporting obligations) by around 30%).

funds.[114] In essence, the Fed used its powers in the repo market both as a monetary policy tool (something that is beyond the scope of this Article) and also to promote market liquidity through its credit facility programs.[115]

New regulatory constraints also affected the EU repo market which, after 2008, has been characterized by an increase in centrally cleared transactions.[116] Here, too, monetary policies affected the dynamics of the repo market: Central banks purchasing assets (thus draining the market of necessary collateral) on the one hand, and, on the other hand, making assets available through their securities lending facilities aimed at increasing liquidity in the repo market.[117]

II.
The Regulatory and Legal Origins of Securitized Banking

The developments in market-based finance mapped out in the previous Part point to several legal and regulatory questions. While some were not recognized before the GFC of 2008 and were, thus, at the heart of the Basel III reform process, other regulatory problems emerged in the context of the panic in March 2020.

The fact that much of the securitized banking intermediation was conducted in the shadow banking system, and that the shadow banking system proved to be highly interconnected with dealer banks, was the first concern that clearly emerged after 2008. As explained by much of the post-crisis literature, the collapse in the value of assets that were pledged as collateral in the repo market caused the inability of these

114. With this, the Fed sought to establish a system of interest rate targeting, which had been partly affected by quantitative easing. *See* Mullin, *supra* note 65.

115. *See id.* at 14 (noting in particular that since the outbreak of the COVID–19 pandemic, the Fed has been active through its Primary Dealer Credit Facility).

116. *See* Michael Grill et al., *Recent Developments in Euro Area Repo Markets, Regulatory Reforms and Their Impact on Repo Market Functioning*, *in* Fin. Stability Rev. 158, 160 (Nov. 2017), https://www.ecb.europa.eu/pub/pdf/fsr/art/ecb.fsrart201711_03.en.pdf?cdc0ecfde7587803e21ae82506a69565 (noting that centrally cleared transactions increased from around 30% in 2019, to more than 60% in 2017).

117. *Id.*

same banks to extend new lines of credit or renew existing ones.[118] This resulted in the well-known credit crunch dynamics that have afflicted the real economy since 2007.[119] Basel III dealt with these problems (as will be explained in Part III) through a new liquidity framework designed to capture banks' exposures to non-bank entities, as well as through new capital requirements and a leverage ratio, both incorporating off-balance sheet exposures.

An attendant issue is that shadow banking in the pre-crisis years consisted chiefly of securitization and repo, and much of the post-crisis regulatory effort has been directed at mitigating risks flowing from those segments of capital markets.[120] However, as was detailed at the end of Part I, the structure of market-based finance has morphed after the GFC, and it is therefore crucial to understand how these changes challenge the efficacy of the Basel III framework. While this question is ultimately addressed in Part III, with the discussion on Basel III, it is important to conceptually explore the legal and regulatory underpinnings of market-based finance and its developments. This analysis is central to the overarching inquiry conducted in this Article, because ultimately Basel III was designed to make market-based finance resilient. This Part is therefore specifically concerned with the reconceptualization of how law and regulation shaped the development of market-based finance, and how Basel III is interplaying with that regulatory trend.

A. *Market Discipline and the Rationale for (Not) Regulating Capital Markets*

Before moving on to the more specific analysis of the legal and regulatory origins of the securitization and repo markets, it is necessary to reconceptualize the foundation upon which market-based channels of finance developed. In particular, it is important to remember that the undisputed application of market discipline underscored capital markets develop-

118. Avgouleas, *supra* note 54, at 21.

119. *See id.* (explaining, among other things, how the macro-prudential perspective, developed after 2008, contributed to understanding the interactions between traditional banking channels and shadow banking intermediation).

120. *See generally* Gorton & Metrick, *supra* note 37.

ment in the last three decades.[121] This regulatory approach rested on the overarching belief that regulation could not improve overall economic welfare; the only exception to that would be the occurrence of a market failure, because the collapse of the market is considered, under this line of thinking, to be more costly than regulatory (government) intervention.[122] This meant that there was an overwhelming prioritization of efficiency goals in policy and regulatory discourses.[123]

In the absence of a strong regulatory oversight, market forces and market players were left free to engineer new structures and products, this being the essence of the process of financial innovation that characterized the period between the 1980s and the early 2000s.[124] As was briefly explained in the Introduction, this process was justified by the belief that a wider and more diversified range of financial products would lead to more efficient and complete markets that would, in turn, ensure a better allocation of resources and risk diversification.[125]

In the process, financial innovation became the engine that enabled financial institutions to engage with excessive levels of risk taking through undesirable increases of lever-

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121. *See* Vincenzo Bavoso, *Regulating Complex Financial Products Post-Crisis: Between the STS Regulation and ESMA Power Intervention Powers, in* REGULATION AND THE GLOBAL FINANCIAL CRISIS 101 (Daniel Cash & Robert Goddard eds., 2020); Emilios Avgouleas & Jay Cullen, *Market Discipline and EU Corporate Governance Reform in the Banking Sector: Merits, Fallacies, and Cognitive Boundaries*, 41 J.L. & SOC'Y 28, 28–50 (2014).

122. On the broader regulatory debate, see ANTHONY OGUS, REGULATION: LEGAL FORM AND ECONOMIC THEORY 4 (reprt. 2004).

123. Bavoso, *supra* note 121, at 108–09.

124. *Id.*

125. This ideology found a springboard in the neoliberal orthodoxy disseminated chiefly with the work of Milton Friedman, "Capitalism and Freedom," where the idea of the free market was championed, and particularly the role of the free market for regulatory purposes. *See* MILTON FRIEDMAN, CAPITALISM AND FREEDOM (Univ. of Chi. Press 1962). This proposition in turn advanced the concept of rational utility-maximizers who would lead to a state of competitive equilibrium (optimal allocation of resources, or Pareto efficiency) in the context of efficient markets. Attaining this idealized state of competitive equilibrium represented another justification for preferring policies that facilitated the interaction between rational utility-maximizers and the market, with limited regulatory interference in the process. On the idea of competitive equilibrium and Pareto optimality, see Kenneth Arrow & Gerard Debreu, *Existence of an Equilibrium for a Competitive Economy*, 22 ECONOMETRICA 265 (1954).

age.[126] This trend was also accepted in pre-crisis years, because mainstream academics and policymakers contended that high levels of leverage were a prerequisite for efficient financial markets. In particular, it was believed that leverage could have a positive impact on banks' allocative efficiency, due to the resulting lower cost of capital.[127] In turn, this would allow banks to extend more credit at cheaper rates, ensuring, according to this line of thinking, broader economic development.[128] Along these lines, it was also contended that regulating leverage would impede financial institutions (chiefly their capacity to extend cheap credit) and create competitive advantages for non-regulated entities in the non-bank sector.[129]

Much of the discourse above underscored the regulatory agenda in pre-crisis years, and still informs some of the critiques made against the new measures introduced under Basel III[130] (discussed in Part III of this Article). One of the problems with the pre-crisis regulatory approach was that market participants assumptively monitored leverage and other risky practices.[131] Under the third pillar of Basel II, in fact, the supervision of the Committee's standards was to be left to mar-

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126. *See* JAMES K. GALBRAITH, A SHORT HISTORY OF FINANCIAL EUPHORIA 19 (Penguin Books 1994) (explaining that "[t]he world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version. All financial innovation involves, in one form or another, the creation of debt secured in greater or lesser adequacy by real assets."). The same type of debt creation was involved within the subsequent innovation which was centered on the use of leverage and the collateralization of assets.

127. Indeed, banks in pre-crisis years did expand their balance sheets chiefly through debt rather than equity. *See* Harry DeAngelo & René Stulz, *Liquid-Claim Production, Risk Management and Bank Capital Structure: Why High Leverage is Optimal for Banks* (Fisher Coll. of Bus., Working Paper No. 2013-03-08, 2014), http://ssrn.com/abstract=2254998.

128. It was contended that a wider extension of credit would ensure that the best projects would be adequately financed, and this would of course contribute to economic growth. *Id.*

129. *See, e.g.*, *id.* at 5.

130. Briefly, it has been observed that the Leverage Ratio and the higher capital requirements under Basel III may limit the ability of banks to extend credit, and this could in turn have consequences in terms of GDP decline. *See* INST. INT'L FIN., THE CUMULATIVE IMPACT ON THE GLOBAL ECONOMY ON CHANGES IN THE FINANCIAL REGULATORY FRAMEWORK (Sept. 2011).

131. *See* Emilios Avgouleas, *The Global Financial Crisis and the Disclosure Paradigm in European Financial Regulation: The Case for Reform*, 6 Eur. Co. & Fin. L. Rev. 440, 458–62 (2009).

ket discipline.[132] For the purpose of the Basel framework, market discipline entailed the development of a set of disclosure recommendations, which were assumed to allow market participants to access and process sufficient information.[133] Information, in turn, was supposed to enable risk assessment procedures and the general risk management related to the capital adequacy of each financial institution.[134]

Furthermore, the Basel framework laid particular emphasis on the importance of banks' internal risk methodologies, which essentially empowered large financial institutions to develop a high degree of discretion in assessing (which will be discussed later in this Part, as "gaming") and applying capital requirements.[135] Again, this system of regulation and supervision was largely justified on the grounds of its cost effectiveness, and on the belief that market participants would be able to police themselves.[136] The hypothesis was grounded on the assumption that depositors and other bank creditors could play a part in monitoring risk taking.[137] Market discipline would then materialize through: a) investors reacting to excessive levels of risk taking (by, for instance, withdrawing funds or demanding higher returns); and b) market reactions that would signal excessive risk taking (such as changes in the value of banks' liabilities).[138]

Beyond the Basel framework, the reliance on market discipline was amplified in the years before 2008 by a fundamental trust in all those supervisory processes that stemmed from market mechanisms and external (non-state) governance ar-

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132. *See infra* Section IV.B, which analyzes market discipline in the context of the Basel framework.

133. For a critique of the disclosure paradigm as a regulatory mechanism, see Avgouleas, *supra* note 131, at 440–75; Martin Hellwig, *Market Discipline, Information Processing, and Corporate Governance* (Max Planck Inst. for Rsch. on Collective Goods, Preprint No. 2005/19, 2005).

134. Basel Comm. on Banking Supervision, Pillar 3—Market Discipline (Sept. 2001) (unpublished manuscript), https://www.bis.org/publ/bcbs_wp7.pdf.

135. *Id.* at 1. See *infra* Part III for more on this point.

136. *See* Avgouleas, *supra* note 131, at 447–48.

137. *See id.* at 448.

138. *See* David Min, *Understanding the Failures of Market Discipline*, 92 WASH. U. L. REV. 1421 (2015).

rangements.[139] It was widely believed that market forces were better at allocating resources through an assessment of the relevant risks and returns, and at exercising discipline across financial institutions.[140]

In a 2001 speech at the Bank for International Settlements, Andrew Crockett (then Head of the Financial Stability Board) noted that notwithstanding the above orthodoxy, there were shortcomings related to market discipline, particularly with respect to its suitability to deal with the evolution of systemic risk.[141] He further pointed out that the presumed effectiveness of market discipline can be hindered by a number of shortcomings that are typically associated with market forces.[142] Primarily, they are related to the difficulty to disclose full information under market mechanisms and the attendant problematic assessment of asset values and risks.[143] Of course, these flaws were worsened by a problematic incentive structure that was already evident at that time and became fully apparent during the following crisis years.[144]

Similarly, market discipline also manifested with an increasing bias towards debt finance, largely because, following the Savings and Loans crisis of the mid-1980s, the perception was that the system of regulation and supervision of banks was not sufficient to curb and monitor banks' risk taking. Instead, it was believed that market discipline should complement the regulation of banks' risk exposure, specifically through the

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139. *See* Andrew Crockett, Gen. Manager, Bank for Int'l Settlements, Speech at the Banks and Systemic Risk Conference: Market Discipline and Financial Stability (May 23, 2001).

140. *See id.* (warning that for it to be effective, market discipline rests upon a number of conditions, namely that market participants have sufficient information to reach informed judgements, that they have the ability to process information, that they have the right set of incentives, and that they have the mechanisms to exercise discipline).

141. *Id.*

142. *Id.*

143. *Id.* Crockett further notes that as opposed to market mechanisms, supervisory authorities can be better placed in a number of situations, given that they have preferential access to information, face a different incentive structure, and may also be better at dealing with risks that affect the system as a whole). *Id.*

144. *See generally* Emilios Avgouleas & Jay Cullen, *Excessive Leverage and Bankers' Pay: Governance and Financial Stability Costs of a Symbiotic Relationship*, 21 COLUM. J. EUR. L. 1 (2015).

role of bondholders, who were thought to be best placed to exert discipline.[145]

Finally, it is useful to note that the development of securitization and repo was also the result of an efficiency rationale upheld within the relevant legislative processes and at common law level. Admittedly, before 2008, the regulation of these two segments of capital markets was at best indirect.[146] At the same time, relevant contractual developments went unfettered and were actually facilitated by a liberal legal and regulatory approach.[147]

The efficiency that securitization provided to originators' balance sheets was facilitated by two commercial law features, namely the transfer of assets from originator to SPV, which was characterized as a true sale,[148] and the bankruptcy remoteness of the SPV from the originator, which prevented the substantive consolidation of the SPV's assets with the originator's estate in the event of its insolvency.[149]

The repo market, too, prospered in the years before 2008, chiefly due to the flexibility that is afforded to lenders and the money-like claims they hold.[150] In a repo transaction, title to the collateral passes to the lender (as if it were effectively a

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145. *See* Robert B. Avery et al., *Market Discipline in Regulating Bank Risk: New Evidence from the Capital Markets*, 20 J. MONEY CREDIT & BANKING 597, (1988).

146. *See* Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 235, 277–78 (2012).

147. *Id.*

148. There is a long-standing academic debate as to whether the transfer of receivables to the SPV should instead be configured as a secured financing, where the assets are pledged as security. This characterization of the transaction would of course be detrimental to the goal of securitization, which is to move assets off the originator's balance sheet. *See* STEVEN SCHWARCZ ET AL., SECURITISATION, STRUCTURED FINANCE AND CAPITAL MARKETS 37–43, 69–70 (2004); *see also* PHILIP WOOD, PROJECT FINANCE, SECURITISATIONS, AND SUBORDINATED DEBT 112 (2d ed. 2007).

149. Again, allowing the creditors of the originator to lodge claims on the assets held by the SPV upon insolvency would defy the purpose of securitization because it would drastically compromise the interests of SPV investors. Moreover, the likelihood of substantive consolidation would highly affect the rating of securitized bonds, thereby hindering investor appetite. *See* SCHWARCZ ET AL., *supra* note 148, at 69–70; *see also* WOOD, *supra* note 148, at 125.

150. *See* Gorton & Metrick, *supra* note 37, at 265–66; *see also* Ricks, *supra* note 71, at 89 (contending that money market instruments possess basic properties of money).

true sale rather than a secured financing), providing greater security to lenders in cases of borrowers' default and also giving them freedom to reuse the same collateral in other transactions.[151] More significantly, in the United States, where title to the collateral does not pass from borrower to lender, transactional efficiency was still preserved due to the "automatic stay" exception under U.S. bankruptcy law.[152] The next two subsections further explore the efficiency rationale that underscored developments in securitization and repo.

B. *Regulatory and Transactional Preconditions of Pre-2008 Securitization*

The abuse of securitization and its uncontrolled development into complex products was widely recognized as one of the main causes of the GFC after 2008.[153] For instance, *The Turner Review* of 2009 mapped the causes of the financial meltdown. Much of its first chapter, titled "What Went Wrong," focused on the role of securitization and financial innovation in advancing problems of leverage and maturity transformation in the shadow banking system.[154] In the United States, *The Financial Crisis Inquiry Report*, finalized in 2011, dedicated its Part II, called "Setting the Stage," to questions related to securitized banking and its genesis.[155] For the purpose of the analysis conducted in this Article, it is useful to

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151. At the EU level this was regulated through Directive 2002/47 of the European Parliament and European Council. *See* Council Directive 2002/47, 2002 O.J. (L 168) 43 (EC).

152. In the United States, an "automatic stay" is imposed during bankruptcy proceedings on the assets of the defaulted party. This means that secured creditors must wait for commencement of the bankruptcy proceedings before being able to seize the relevant assets pledged as security. The "automatic stay," however, does not apply in the context of repo transactions and derivatives, therefore allowing creditors to immediately use the collateral upon debtor's default. *See* Cullen, *supra* note 58, at 95–96 (explaining that reforms in bankruptcy law led to an almost total exception related to all types of repo collateral in 2005).

153. *See* FIN. SERVS. AUTH., THE TURNER REVIEW: A REGULATORY RESPONSE TO THE GLOBAL BANKING CRISIS 28 (2009).

154. *See id.* at 11–49.

155. *See* FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT 27–80 (2011) (discussing shadow banking, securitization and derivatives, deregulation redux, and subprime lending).

reconceptualize the pre-crisis development of securitization under two headings: regulatory and transactional.

The regulatory fault lines that spurred the perverse employment of securitization can be primarily reconciled with some unintended consequences of the Basel I and II frameworks. It is rightly contended that Basel represented a regulatory incentive for banks to resort to off-balance sheet finance.[156] In the 1990s, large dealer-banks had started expanding their business to capital markets, completing a functional integration between banking and capital markets activities.[157] The main focus of capital rules was on banks' balance sheets,[158] whereas banks' exposures relating to securitization and other off-balance sheet activities remained outside the scope of Basel capital regulation.

As a consequence, securitization was widely employed for regulatory arbitrage purposes, because it had the effect of creating regulatory capital for banks; banks could increase their asset base (by originating more mortgages, for instance), without having to post capital against those assets at the same time, because the originated mortgages would be moved off-balance sheet and outside the umbrella of capital regulation.[159] This model of financial intermediation proved to be highly profitable for banks. In essence, banks were engaging in asset substitution on the assets side of their balance sheet, moving risks off-balance sheet, while simultaneously originating or investing in high-risk assets.[160] While this increase in risk taking was highly lucrative for bank shareholders and executives—as it was maximizing returns on equity ("RoE")—the resulting increase in leverage was not accompanied by banks setting aside commensurate amount of capital to account for the risk.[161]

The accuracy of its risk weighting process was a connected regulatory problem with the Basel framework, which, in princi-

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156. Douglas W. Arner, *The Global Credit Crisis of 2008: Causes and Consequences* 14 (Asian Inst. Int'l Fin. L., Working Paper No. 3, 2009).

157. *See* Hockett & Omarova, *supra* note 24, at 1173.

158. Essentially, the focus of the Basel framework remained fixed on banking activities. *See* discussion *infra* Part III.

159. It will be remembered that the transfer of assets is between the originating bank and the SPV; SPVs were of course not subject to any capital regulation. *See* Arner, *supra* note 156, at 16.

160. *See* Avgouleas, *supra* note 54, at 9.

161. *See* Avgouleas & Cullen, *supra* note 144, at 10.

ple, should have mitigated the issue explained in the previous paragraph. Two specific regulatory gaps affected this process in the pre-crisis years. The first one was represented by the subjective inputs provided by the larger and more sophisticated dealer banks that could resort to the internal ratings-based approach to assess the riskiness of their securitization exposures.[162] This entailed that securitization was employed to circumvent (or rather, to "game") capital requirements and achieve risk-weighted optimization.[163] The deficient measurement of leverage in pre-crisis years represents the second gap. Traditionally, leverage ratios did not incorporate any distinction between different types of assets, and more importantly, did not encompass off-balance sheet exposures.[164] Given the role of securitization (and more generally, of financial innovation as a whole) in shifting leverage across the shadow banking system and outside the perimeter of financial regulation, this resulted in banks increasing the riskiness of their balance sheet, due to both investments in riskier projects and assets and the buildup of leverage system-wide.[165]

The second problem with securitization during the pre-crisis years was related to its transactional development. As analyzed in Section I.A, a number of features of pre-crisis securitization practice can be singled out and will be treated here under three headings: tranching, credit enhancements, and synthetic exposures. The practice of tranching[166] allowed dealer banks to originate assets of poorer quality (higher risk),

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162. BANK FOR INT'L SETTLEMENTS, BASEL III DOCUMENT: REVISIONS TO THE SECURITISATION FRAMEWORK 2 (2016 ed. rev. 2014) ("The IRB approach is aimed at more sophisticated banks and allows for a more granular assessment of the relevant risks associated with the securitisation exposures concerned.").

163. *See* Avgouleas, *supra* note 54, at 14.

164. *See* discussion *infra* Section III.C ("LR's risk insensitivity means that assets with the same nominal value, but different risk levels, are treated equally. . . ."). Basel III introduced the off-balance treatment of the leverage ratio. *See id.*

165. *See* Avgouleas, *supra* note 54, at 12–13 (discussing the argument that leverage ratios may encourage banks to increase the riskiness of their asset portfolios and build up riskier balance sheets). Financial innovation in particular, as will be explained in the next paragraph, allowed the shifting of regulatory promises towards areas of the financial system where they were treated differently, or were not recognized at all.

166. With tranching, instead of issuing one type of security against the asset pool, the SPV issues several types of securities (tranches) of different

which would still receive a high credit rating due to the complex correlation formulas that determined the way in which assets with different risk profiles were bundled in each tranche. In other words, tranching reflected the belief in risk diversification, which was thought to occur thanks to a new transactional design.[167]

The most senior tranches received triple-A ratings from the CRAs due to another contractual device embedded into the securitization chain. It was common practice in pre-crisis years for originators or sponsors to extend a liquidity protection to the SPV, through credit enhancement mechanisms.[168] These mechanisms took the shape of guarantees that were triggered in the event of the SPV's insufficient cash flow from the asset pool.[169] As a result, in spite of the true sale and bankruptcy remoteness, the originator ensured payments to investors by retaining the SPV's credit and liquidity risks.[170] This practice, which was defined as "securitization without risk transfer," had the effect of aggregating risks (instead of efficiently dispersing them as was predicated by the theory) within large dealer banks that were not holding sufficient capital against these risks.[171]

The interconnectedness caused by tranching and credit enhancement mechanisms was further aggravated by the use of CDSs in the most sophisticated synthetic securitization structures. Beyond their use in the context of securitization, CDSs became very common in the early 2000s and were more generally employed in capital markets either to hedge certain exposures or to speculate on certain assets.[172] While CDSs

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credit quality and subordination, whereby each tranche carries a different risk and rate of return. *See* Coval et al., *supra* note 15, at 5–6.

167. The concepts of diversification and financial deepening were consistent with the belief that new products would be conducive to a state of competitive equilibrium. *See* Pozsar et al., *supra* note 16, at 17.

168. *See* Acharya et al., *supra* note 46, at 519–20, 519 n.6 (describing the practice of sponsors providing guarantees to SPVs, resulting in qualification for high credit ratings).

169. *See id.*

170. *Id.* at 516, 519.

171. *Id.* at 521.

172. *See generally* Adrian Blundell-Wignall & Paul Atkinson, *Thinking Beyond Basel III: Necessary Solutions for Capital and Liquidity*, 2010 ORG. FOR ECON. COOP. & DEV. J.: FIN. MKT. TRENDS 9, 13 (describing the evolution of CDS and the way in which it allowed banks to transform buckets of risk with deriv-

were welcomed as instruments that had the potential to complete and diversify financial markets,[173] dealer banks started employing them to transform their assets' risk profile, thus undermining the function of capital regulation.[174] Before the wave of post-2008 regulation, these derivatives were traded over-the-counter, and there was little or no transparency about counterparty credit risk.[175]

The massive growth in synthetic securitizations in the mid-2000s caused sharp increases in the level of dealer banks' leverage, which was not shifted off-balance sheet.[176] Overall, the combined use of tranching, credit enhancements, and CDSs, created homogeneity among dealer banks' balance sheets, going squarely against what was predicted by proponents of financial deepening—namely that the justification for more financial products and for expanding capital markets was always the opportunity to create more avenues for private risk diversi-

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atives without having to trade as much on the underlying securities on primary markets).

173. *See id.* Associating complex derivatives with concepts such as market completion and financial risk diversification was consistent in the pre-crisis years with the prevailing market discipline orthodoxy, explored in the previous Part. As an illustration of this ideology, Alan Greenspan, former head of the United States Federal Reserve, kept dismissing the threats posed by derivatives including in 2004, when he reiterated their capacity to diversify risks in the financial system, and as ideal risk-management tools. *See* Peter S. Goodman, *Taking Hard New Look at a Greenspan Legacy*, N.Y. TIMES, (Oct. 8, 2008), https://www.nytimes.com/2008/10/09/business/economy/09greenspan.html?smid=url-share.

174. As will be observed in the next Part, this resulted in a case of shifting promises in the financial system. *See* Blundell-Wignall & Atkinson, *supra* note 172.

175. Both Dodd–Frank in the United States, and EMIR in the EU (Regulation EU No. 648/2012) established a clearing obligation for derivative contracts, with the aim to enhance transparency and mitigate the problem of counterparty credit risk, by interposing central clearing counterparties and trade repositories between the two derivative counterparties. Before then, it is safe to infer over-the-counter derivatives were not regulated. *See generally* Dodd–Frank Wall Street Reform and Consumer Protection Act, 15 U.S.C. § 8302, (2010) (imposing rulemaking requirements regarding clearing and trade repository reporting); *see also* Commission Regulation 648/2012 of July 4, 2012, OTC Derivatives, Central Counterparties and Trade Repositories, 2012 O.J. (L 201) 2.

176. *See* FRANK FABOZZI ET AL., INTRODUCTION TO STRUCTURED FINANCE 135–38 (2006).

fication.[177] Homogeneity of balance sheets meant that the assets held by dealer banks were highly correlated (and contagious), thus, increasing the interconnectedness of the financial system, and, critically, the interconnectedness between regulated banks and the shadow banking system. As became evident in September 2008, these dynamics exacerbated problems of systemic risk.[178]

Problems of excessive leverage were also linked to the lack of liquidity that flowed from the use of securitization. This again countered the assumptions of market discipline, which justified leverage as a form of liquidity creation in the financial system.[179] While dealer banks were able to maximize the use of their capital base by securitizing assets, this trend also led to a decrease in liquidity in these banks' balance sheets.[180]

Finally, the transactional innovation of securitization created a level of opacity in capital markets that made it nearly impossible for investors to conduct due diligence on the asset pool. In particular, assessing the riskiness of the underlying portfolio became too costly for investors[181] who increasingly relied on CRAs and the presumption of safety attached to senior tranches.

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177. *See* Hache, *supra* note 94, at 35 (stating securitization and the use of CDS leads to banks having similar global asset portfolios).

178. *See generally id.*, at 35–36 (noting that the resulting increased correlation between balance sheets shifts risk in the tail, creating a challenge from a systemic risk perspective).

179. *See* Ricks, *supra* note 71, at 91 (countering the idea that transaction reserves must be held in a medium of exchange, stating that highly liquid assets can be used to meet transactional needs).

180. It must be noted that liquidity refers mainly to two different aspects, namely funding liquidity and asset liquidity. Funding liquidity is the maturity transformation function that is typical of banks, whereas asset liquidity reflects the types of assets that banks invest in and their ability to convert those assets into cash. It has been observed that the ability of dealer banks to securitize their loan portfolio coincided with a decrease of liquid assets on their balance sheet. In other words, the ability to increase the liquidity of the loan portfolio coincided with a massive decrease of on-balance sheet liquidity. *See* Elena Loutskina, *The Role of Securitization in Bank Liquidity and Funding Management*, 100 J. FIN. ECON. 663, 664 (2011).

181. This was also due to the increased heterogeneity of asset classes in the CDOs. *See* Hache, *supra* note 94, at 39.

C. *The Regulatory Approach to Repo Haircuts and Rehypothecation*

The mechanics of the repo system magnified the creation of leverage in the financial system, particularly in its shadow banking segments. The expansion of the repo market made the new dealer bank business model—which was over-reliant on wholesale channels of funding instead of traditional deposits—possible.[182] Its development remained unfettered in the 1990s because it was believed that an active repo market could ensure liquidity in the financial system (particularly in the market for government bonds).[183] Moreover, dealer banks' reliance on market discipline mechanisms and a risk management framework based on haircuts and collateral was believed to ensure a liquid and well-functioning market.[184]

Wholesale funding channels allowed banks to grow their balance sheet on the assets side beyond their core liabilities and were the main driver of instability. Through the repo market, dealer banks could access large sources of funding where the only limitation was the quantity and quality of collateral that they could post.[185] As explained earlier, collateral in these transactions was represented by senior tranches of securitized bonds, which were either manufactured by the same bank, or purchased from other banks.[186] Effectively, dealer banks were able to expand their asset base, without simultaneously increasing their regulatory capital or reducing existing risks. Unsurprisingly, this model of funding proved to be incredibly profitable. The only constraint on the assets pledged as collateral was represented by the haircut—the risk attributed to those assets.[187]

To understand the dynamics of haircuts and how they can be conducive to financial instability, it is useful to briefly explain how haircuts and initial margins interplay in the repo market. Haircuts represent the difference expressed as a percentage between the value of the collateral pledged by the dealer bank, and the value of the loan extended by the repo

182. *See* Aquilina & Kraus, *supra* note 3, at 11–17.
183. *See* Gabor, *supra* note 66, at 980–81.
184. *Id.* at 981.
185. *See* Hache, *supra* note 94, at 38.
186. *Id.* at 30–32.
187. *Id.* at 38.

lender (also called the purchase price of the repo).[188] The initial margin is the premium that is added to the market value of the security pledged as collateral.[189] The essence of these contractual arrangements is that haircuts provide a form of over-collateralization whereby the lender is hedged against the risks of that collateral.[190] In turn, the collateral is a tool to protect the lender against the borrower's risk of default.[191]

The problems associated with the repo market, and experienced before the GFC, are centered around the pro-cyclicality of haircut spirals. Before 2007, triple-A CDO tranches were considered safe collateral and dealer banks could borrow 90% on the value of these assets.[192] With changes in market conditions, which include dynamics such as leverage cycles, fluctuations in asset prices can be exacerbated by the use of short-term funding channels such as repos.[193] After 2007, with the tightening of credit conditions and the waning optimism surrounding the value of securitized bonds, it became very difficult for dealer banks to rely on these assets as collateral in the repo market. This type of trend tends to quickly become a self-fulfilling prophesy, where bad news concerning the value of certain assets leads market participants to liquidate those assets, causing a further decrease in their value. When a substantial number of lenders experience losses linked to the value of collateral in the repo market, they will either refuse to lend

188. *See* RICHARD COMOTTO, HAIRCUTS AND INITIAL MARGINS IN THE REPO MARKET 4 (2012). A haircut is also referred to as a margin percentage.

189. *Id.* Initial margins are also expressed in percentage points, and can also be called margin ratios (in the GMRA) or independent amounts (in the ISDA Master Agreement). Thus, having a 100% initial margin equates to a 0% haircut (because there will be no difference between the market value of the collateral and the purchase price of the repo).

190. *Id.* at 4–5.

191. *Id.* at 5. It is noted here that in principle the haircut should be a function of market liquidity risk, operational risk, legal risk, and default risk. *Id.* at 5–6.

192. John Geanakoplos, *Solving the Present Crisis and Managing the Leverage Cycle*, 16 FED. RSRV. BANK N.Y. ECON. POL'Y REV., August 2010, at 101, 112 (noting that in fact banks could borrow as much as 98.4 cents on the dollar on AAA assets, which, according to credit rating agencies' valuations, were only supposed to have a risk of default over a ten-year period of 1 in 100).

193. *See, e.g.*, Ana Fostel & John Geanakoplos, *Reviewing the Leverage Cycle* (Cowles Found. for Rsch. in Econ., Discussion Paper No. 1918, 2013) (reviewing the leverage cycle, specifically the feedback properties of leverage, volatility, and asset prices).

against those assets, or demand higher haircuts that dealer banks would not be able to afford.[194] The result of this process is a systemic shock due to the fundamental breakdown of liquidity mechanisms.[195]

The problem with this pro-cyclical trend is that the rapid and sharp swings in the level of haircuts come at the worst time and tend to affect a wider spectrum of market participants, not simply those with over-leveraged positions.[196] In other words, higher haircuts will lead to fire sales, and then to prices further dropping.[197] As prices plummet, and the value of assets become insufficient to collateralize transactions, margin calls issued by repo lenders further reinforce a dynamic that eventually leads to a crisis.[198]

The rehypothecation of collateral is the second problem associated with the repo market. In essence, this is the right that lenders have to reuse the collateral posted by the borrowers under the contract.[199] The problem arises when the process is repeated several times, which is normally the case in most repo agreements.[200] Unless otherwise stated, there is a tacit consent to this practice.[201] The exception to that is represented by tri-party repos (more common in the United States than in Europe),[202] where the collateral cannot be reused, and also by centrally cleared repos, where the collateral is managed by a central clearing counterparty ("CCP").[203] While some limits to rehypothecation did exist in the United States,[204] in Europe and, particularly in the United Kingdom, there were vir-

194. *Cf.* Cullen, *supra* note 58, at 15. It is reminded here that between 2007 and 2009 the haircut on ABSs increased by more than 50%.

195. This is well documented in the work of Gorton and Metrick, who emphasize how a run on the repo market was the ultimate cause of the Lehman Brother's collapse. *See* Gorton & Metrick, *supra* note 33, at 447.

196. *See* Geanakoplos, *supra* note 192, at 104.

197. *See id.*

198. *See* Sissoko, *supra* note 61, at 19.

199. *See* Cullen, *supra* note 58, at 13.

200. *See generally* Manmohan Singh & James Aitken, *Deleveraging After Lehman—Evidence from Reduced Rehypothecation* 3 (Int'l. Monetary Fund, Working Paper 09/42, 2009) (describing the common practice of including blanket consents to rehypothecation).

201. *Id.*

202. *See* Cullen, *supra* note 58, at 9–11.

203. *See id.* at 11.

204. *See* 17 C.F.R. §§ 240.15c2–1, 15c3–3 (2021) (creating rules for hypothecation and customer protection with regard to customers' securities).

tually no regulatory constraints to the unlimited reuse of collateral before the financial crisis.[205]

The belief in market discipline, and the ensuing overarching prioritization of market efficiency[206] ahead of financial stability, led to identifying the reuse of collateral in repo markets as a source of funding liquidity in financial markets.[207] By allowing the same asset to fund a number of other transactions, repo contracts were effectively performing a money multiplier function.[208]

Before 2008, these long chains of rehypothecations led to increased levels of leverage in the financial system. As assets pledged as collateral were being reused, there was an infinite collateral creation fueling the expansion of dealer banks' off-balance sheet positions.[209] As was illustrated in the previous Part with respect to securitization, the repo market became a nexus of interconnectedness between banks and non-bank entities, and a source of systemic fragility given the unmonitored creation of leverage in the shadow banking system.[210] Moreover, the mechanics of collateral reuse further exacerbated the "illusion of liquidity" in the financial system as well as the over-reliance of market participants on liabilities that, despite being money-like, were not receiving any public backstop.[211]

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205. *See generally* Cullen, *supra* note 58, at 14 n.56 ("In European repo markets . . . the lender may use the property in any way it likes, including using it as collateral . . . .").

206. *See* Zoltan Pozsar & Manmohan Singh, *The Nonbank-Bank Nexus and the Shadow Banking System* 7–11 (Int'l Monetary Fund, Working Paper No. 11/289, 2011).

207. *See* Hyejin Park & Charles M. Kahn, *Collateral, Rehypothecation, and Efficiency*, 39 J. FIN. INTERMEDIATION 34 (2019) (observing that rehypothecation increases capital efficiency, because due to the reused collateral, less regulatory capital is needed).

208. *See* Gorton & Metrick, *supra* note 33, at 428.

209. *See generally* Peter Breuer, *Measuring Off-Balance-Sheet Leverage* (Int'l Monetary Fund, Working Paper 00/202, 2000) (describing the ability of highly leveraged institutions to accumulate leverage off the balance sheet).

210. *See* Paolo Saguato, *The Liquidity Dilemma and the Repo Market: A Two-Step Policy Option to Address the Regulatory Void* 36 (London Sch. Econ., Working Paper No. 21/2015, 2015).

211. *See, e.g.*, Ricks *supra* note 71, at 103–04; *see also* Cullen, *supra* note 58, at 14.

D. *The "Efficiency" of Market-Based Finance and the Panic of 2020*

The evolution of capital markets, outlined in Section I.D, is at the heart of some of the problems that arose in the COVID–19-induced economic shutdown in the spring of 2020. This Section builds on that analysis by exploring the legal and regulatory questions that emerged in March 2020, and which will link to the later analysis of Basel III.

The growth of the leveraged loan market is one key factor that contributed to the drastic increase in risk taking in the post-2008 years.[212] The erosion of underwriting standards, caused by changes in loan documentation, explains the market's intrinsic fragility.[213] In particular, covenant-lite loans (referred to as "cov-lite") became, both in the United States and in the United Kingdom, the predominant contractual practice employed to realize loan syndication.[214] These loans are negotiated with a financial incurrence covenant typically associated with bonds, and that requires the issuer to still be in compliance with the underlying covenant in the event they take an action (for instance issuing debt or paying dividends).[215] Because taking on more debt would only be in compliance within that incurrence limit, this type of clause can limit the issuer's debt to, for example, five times its cash flow.[216]

Maintenance covenants instead, where an issuer is required to meet certain financial tests periodically (e.g., on a quarterly basis) regardless of whether the issuer has taken any action, would be more typical, and perhaps appropriate, in the context of loan agreements. In this case, an issuer taking on more debt would have to pass a maintenance test every quarter.[217]

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212. *See* Bavoso, *supra* note 121, at 7.

213. Fin. Stability Bd., Vulnerabilities Associated With Leveraged Loans and Collateralised Loan Obligations 1 (2019).

214. *See generally* S&P Glob., Syndicated Loans: The Market and the Mechanics 15–16 (2017) (defining covenant-lite loans and noting their proliferation since 2013).

215. *Id.*

216. *See id.* Bearing in mind that the incurrence test does not affect past actions, so if for instance an issuer found itself above the incurrence threshold because of deteriorated earnings, this would not trigger a breach of the covenant.

217. *Id.* at 16.

Of course, investors' demand for high yields in the post-2008 years motivated this practice in the past, which in turn led to a growth in the market for leveraged loans.[218] The problem is that during unforeseen swings in the economic cycle, such as the one experienced in mid-2020, the level of defaults can rise beyond expectations.[219] This dynamic shows that questions of financial stability were downplayed during the euphoric times (mid-2010s), when new transactional forms were shaped in the name of efficiency, in order to boost leveraged loans issuance, and the repackaging of these assets into CLOs.[220] While proponents of this transactional structure reiterated their confidence in the stability of these products,[221] the level of leverage they create and the low credit quality of the underlying assets[222] indicate that this may be a turning point in the leverage cycle.[223]

Another regulatory change that impacted the post-2008 regulatory infrastructure is the recent booming of the CLO market. One regulatory reaction to the GFC was the introduction of a formal "skin in the game" provision aimed at aligning the interest of securitizers and investors, limiting the riskiness of the assets repackaged in securitization-type transactions. The provisions' effect was to impose a retention of the economic risk for all the originated assets, equal to at least 5%.[224] This provision was problematic in the context of CLOs, due to the peculiar structure of these transactions, with private equity firms and a syndicated origination process at their heart.[225]

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218. *See* Bavoso, *supra* note 121, at 2.

219. *See* FIN. STABILITY BD., *supra* note 213, at 1.

220. *See generally id.* at 1 (stating that the syndicated loan market has become dominant due to the efficiency of syndicated loans compared to traditional bilateral credit lines).

221. *See* Rennison & Smith, *supra* note 7.

222. This concern was specifically highlighted by the FSB. FIN. STABILITY BD., *supra* note 213, at 16.

223. For a critical perspective on how the combination of relaxed underwriting standards and innovations in structured finance can interplay with a leverage cycle, see Bavoso, *supra* note 7.

224. This was enshrined in the Dodd–Frank Wall Street Reform and Consumer Protection Act, 15 U.S.C. § 78o–11 (2012), and at the EU level in 2013 O.J. (L 176) 1 and the accompanying Council Directive 2013/36, 2013 O.J. (L 176) 338 (EU).

225. The transaction structure of CLO was closely detailed in Section I.D. *See* discussion *supra* Section I.D.

Moreover, the application of this provision seemed to hinder the economic viability of the leveraged loan market, which was perceived in the post-2008 years to be channeling useful sources of finance to the economy.[226] These sentiments led U.S. industry regulators in 2013 to propose a different approach to the risk retention requirement, revolving around a different configuration of risk retention for "open market CLOs." This framing implied a distinction from "balance sheet CLOs"—while the former acquire their assets by trading in the open market, the latter are created by the originator of the underlying assets (thus resembling traditional securitization transactions).[227] In light of this distinction, the loan syndicators and the lead arranger fulfill the risk retention obligation in open market CLOs, rather than the CLO manager.[228]

In 2018, this industry approach was endorsed by the United States Court of Appeals in *Loan Syndications & Trading Ass'n v. SEC.*[229] The court emphasized that Dodd–Frank did not purport to bind open market CLO managers with risk retention requirements, because managers are not securitizers within the meaning of the Act.[230] Specifically, they were not transferors of the assets in the securitization structure.[231] This problematic application of risk retentions flows from the *sui generis* transactional structure of CLOs as well as from the undisputable fact that CLO managers do not own or control assets that are transferred to the SPV.

The EU applied the Capital Requirement Regulation[232] and encountered a similar dilemma, because collateral manag-

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226. *See* Partnoy, *supra* note 7.

227. This distinction was clarified by the United States Court of Appeals in Loan Syndications & Trading Ass'n v. SEC, 882 F.3d 220, 221 (D.C. Cir. 2018).

228. Rob McDonough, *Collateralised Loan Obligations*, GLOBAL FIN. MKTS. INST. (Apr. 9, 2016), https://www.gfmi.com/articles/collateralized-loan-obligations/.

229. *Loan Syndication & Trading Ass'n*, 882 F.3d at 229.

230. *Id.* at 222.

231. *Id.* at 225. The Court reiterated that a party must be a transferor, relinquishing ownership or control of assets to an issuer of securities, in order for that party to be a securitizer within the meaning of § 941 of Dodd–Frank.

232. Commission Regulation 575/2013 of June 26, 2013, Prudential Requirements for Credit Institutions and Investment Firms and Amending Regulation 648/2012, 2013 O.J. (L 176) 1.

ers held the retained interest, even where they were not originators or sponsors in the transaction.[233] They then corrected the approach in 2014, and enacted a new rule that collateral managers would only be under a risk retention obligation if they qualified as originators or sponsors.[234]

Critical evolutions in market-based finance also occurred in the repo market. The correlation between an overall reduced turnover in the repo market and the introduction of the leverage ratio, which imposed higher costs on market participants, demonstrates the major effects Basel III had on dealer banks' balance sheets in the period between 2010 and 2015.[235] Dealer banks adjusted to the new regulatory requirements in different ways, depending on how the ratio was implemented across jurisdictions, and how it had to be reported.[236] For instance, the requirement under the leverage ratio[237] was implemented differently for U.S. and European banks.[238] For the latter, the leverage ratio was calculated, and reported, on a quarterly basis; whereas in the United States the equivalent measure (called the Supplementary Leverage Ratio) was calculated on a daily basis.[239]

This difference created incentives for European banks to engage in so called "window-dressing," which entails con-

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233. Latham & Watkins, *EU Risk Retention Rules and CLOs—the Journey's End?*, CLIENT ALERT NO. 1704, 2 (June 26, 2014), https://www.lw.com/thoughtLeadership/LW-EU-CLO-regulatory-technical-standards.

234. See the original broader risk-retention requirement in Council Directive 575/2013, art. 122A, 2013 O.J. (L 176) (EU), which was later narrowed with the *EBA Final Draft Regulatory Technical Standards*, art. 4, 5, 8, EBA/RTS/2013/12 (Dec. 17, 2013). See also Latham & Watkins, *supra* note 233, at 3, for a discussion on how the application of risk retention rules was designed with securitization-type transactions in mind, and how it would remain problematic in the context of CLOs.

235. Andreea Bicu et al., *The Leverage Ratio and Liquidity in the Gilt and Repo Markets* 24 (Bank of Eng., Working Paper No. 690, 2017). While this piece by the Bank of England focused primarily on the leverage ratio, other measures introduced under Basel III (such as the liquidity coverage ratio and the net stable funding ratio) also contributed to increasing costs on dealer banks.

236. Anbil & Senyuz, *supra* note 113, at 9.

237. Namely, a requirement to hold 3% Tier-1 capital of an exposure measure that includes both on- and off-balance sheet assets, thus including repo transactions. *Id.* at 2.

238. Anbil & Senyuz, *supra* note 113, at 9.

239. *Id.* The authors note that U.K. dealer banks moved in 2016 to a reporting based on daily averages. *Id.* at 9 n.4.

tracting their balance sheet in connection with reporting dates, only to expand it again afterwards.[240] As a consequence of this trend, European banks have reduced 30% of their borrowing from the repo market around the end of each quarter, with adjustments mainly taking place in overnight activities.[241] It is also worth noting that, in the context of these adjustments, window-dressing increased by 80%.[242]

The U.S. policy implemented by the Federal Reserve, namely the reverse repo facility ("RRP"), kept repo lenders (chiefly money market mutual funds) lending to the Fed.[243] Effectively, this policy facilitated the implementation of Basel III insofar as it provided money markets with an alternative to the repo borrowers that were withdrawing from the market.[244]

While the combination of the Basel III provisions was envisaged as a way to constrain liquidity spirals in the repo market, particularly by limiting dealer banks' exposure to liquidity risks,[245] the events of March 2020 proved that instability may well be an intrinsic feature in the repo market.[246] Alternatively, one could argue that post-2008 reforms may not have tackled the sources of that instability. However, notwithstanding central banks' efforts to maintain stability by engaging in heavy market-making (that is, huge purchase programs of both government and private label bonds), the fragility of the

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240. *Id.* at 9–10. The authors explain that the measures under the Basel III liquidity framework are subject to daily reporting, therefore there are no implications here for quarter end repo activities nor for window-dressing.

241. *Id.* at 19–20. The authors emphasize here that in the United States there has been no window-dressing pattern, and that the net effect of the implementation of Basel III is near zero. *Id.* at 20.

242. *Id.* at 30.

243. This applied to eligible money market mutual funds, whereas non-eligible ones were still relying on the private market.

244. *See* Benjamin Braun & Daniela Gabor, *Central Banking, Shadow Banking, and Infrastructural Power*, *in* INT'L HANDBOOK OF FINANCIALIZATION (Philip Mader et al. eds., 2020).

245. As will be explained in Part III, Basel III discourages the use of private sector collateral (such as securitized bonds) in the repo market, while favoring more liquid government bonds. *See* discussion *infra* Section III.D.

246. *See* Andrew Bailey, Governor, Bank of Eng., Speech at the ISDA 35th Annual General Meeting: Taking Our Second Chance to Make MMFs More Resilient (May 12, 2021). Bailey stressed that despite some regulatory adjustments post-2008, there remains structural vulnerabilities associated with money market mutual funds, particularly because of the growth of non-bank finance after 2014.

repo market was once again exposed in March 2020. In particular, the economic uncertainty brought by the pandemic again highlighted the mechanics of haircut, margin spirals, and the ensuing liquidity problems.[247] In other words, the same dynamics that had characterized the beginning of the 2008 GFC were being reproposed, suggesting that some fundamental weaknesses in wholesale markets have not been fixed.[248]

Notably, an important mechanism to manage risk exposures, namely total return swaps ("TRS"), facilitated post-2008 market-based finance.[249] TRSs have essentially permitted institutional investors (such as hedge finds) to leverage their balance sheet by gaining exposure to the return of financial assets (such as bonds, loans, equity interests), without owning the underlying assets.[250] Essentially, this has become a way to facilitate risk taking for institutional investors, particularly in the context of risky assets, such as CLOs. Moreover, the problem with TRSs is that as investors are exposed to the assets' credit risk, there is a problematic layer of counterparty risk that these transactions elicit.[251] That risk materializes when investors enter into a number of TRSs on similar (correlated) underlying assets: the decline in the value of such assets would cause a reduced return for investors, who would continue to make payments for those assets under the TRS. Should investors not be adequately capitalized, their risk of default would represent

247. *See generally* Jeanna Smialek, *The Financial Crisis the World Forgot*, N.Y. TIMES (Mar. 16, 2021), https://www.nytimes.com/2021/03/16/business/economy/fed-2020-financial-crisis-covid.html (detailing the economic crisis resulting from the pandemic).

248. For a good account of the events of March 2020, see Smialek, *supra* note 247. The author highlights here how the massive rescue package passed by Congress in the United States managed to save the market.

249. Under a TRS two parties exchange the returns from a financial asset. The contractual structure of this derivative is similar to other swaps (such as credit default swaps), and it sees one party (the investor) making payments based on a set rate, while the other party (say a bank holding the financial asset) makes payments based on the return of the underlying assets. For an illustration, see *What is a Total Return Swap (TRS)?*, CORP. FIN. INST. (last visited Sept. 25, 2021), https://corporatefinanceinstitute.com/resources/knowledge/finance/total-return-swap-trs/.

250. *Id.*

251. *Id.*

a substantial risk on their counterparties too (such as banks).[252]

One of this scheme's critical efficiencies is the opportunity that investors have to maximize their investment capital, because there is no transfer of assets and no substantial use of capital. Furthermore, while derivatives were at the heart of post-2008 regulation, some reforms have not been fully implemented—this is crucially the case for measures aimed at mitigating counterparty credit risk through margin requirements and clearing obligations through central counterparties. This raised criticism, particularly in the United States where Dodd–Frank provided for a number of rules to be finalized in relation to swaps.[253] The SEC, however, was very slow to implement relevant rules on transparency (due only in November 2021).[254] Meanwhile, due to the pandemic, most regulators also pushed back the implementation of margin requirements for non-cleared swaps (to September 2022).[255]

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By analyzing the post-2008 evolution of market-based finance, this Part highlighted the fundamental fault lines in capital markets that emerged again in March 2020. Because the efficiency rationale has informed the way in which capital markets morphed and adapted in response to post-2008 regulation, these can primarily be ascribed to the structure of these markets. We will now turn to the relevant provisions of the Basel III framework that were engineered to make market-based finance resilient.

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252. *Id.*

253. *See* Dodd–Frank Wall Street Reform and Consumer Protection Act, 12 U.S.C. § 5301 (2010). Under EU law, TRSs are covered under the Securities Financing Transactions Regulation. Commission Regulation 2015/2365 of 25 Nov. 2015, Transparency of Securities Financing Transactions and of Reuse and Amending Regulation 648/2012, 2001 O.J. (L 337).

254. Joe Rennison et al., *US Put Off Derivatives Rules for a Decade Before Archegos Blew Up,* FIN. TIMES (Apr. 12, 2021), https://www.ft.com/content/7819e714-bf9d-4f83-a6e4-497df534f77c.

255. *Id.*

III.
SETTING THE TEST: BASEL III AND THE REGULATION OF MARKET-BASED FINANCE

For the purpose of this analysis, the reform package engineered by the Basel Committee after the GFC (Basel III)[256] represents a central piece of the post-crisis regulatory framework and is at the heart of the assessment conducted in this Article. Importantly, despite the visible tightening of the earlier framework and the addition of a number of provisions aimed at strengthening the new one, Basel III represents a development, rather than a restructuring, of the same architecture that was employed under Basel II. It is correct in this sense to say that at the heart of the Bank for International Settlements ("BIS") policymaking remains a belief that the regulatory architecture based on risk models is still valid. This argument is based on a subtle distinction, however, because the method employed for the risk analysis is still considered correct, whereas its application, the underlying statistical risk modeling and the data therein, was deemed incorrect—and this caused the risk regulation's failure before the crisis.[257]

Therefore, that the conceptual foundation of Basel III replicates that of its predecessor is unsurprising. Basel III comprises three pillars for the regulation of capital: Pillar 1 is centered on different capital ratios (including countercyclical buffers and capital conservation buffers), on risk coverage (which embeds counterparty credit risk) and on leverage; Pillar 2 deals with risk management and supervision; Pillar 3 with market discipline.[258] Higher levels of loss absorbency capacity for systemically important financial institutions supplement these three pillars. Moreover, the Basel III framework provides

256. The process of reform can be said to have started in 2010 with BANK FOR INT'L. SETTLEMENTS, BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS (2010) [hereinafter BIS 2010]; this process culminated in 2017 with BANK FOR INT'L SETTLEMENTS, BASEL III: FINALISING POST-CRISIS REFORMS (2017) [hereinafter BIS 2017].

257. For a discussion, see SIMON GLEESON, GLEESON ON THE INTERNATIONAL REGULATION OF BANKING 27–33 (3d ed. 2018). The author here provides an interesting insight explaining how the main flaw of risk modeling regulation was related to the use of statistical data and the weakness of historical information related to markets and prices.

258. BANK FOR INT'L SETTLEMENTS, BASEL III: HIGH-LEVEL SUMMARY OF BASEL III REFORMS (2017).

a new set of liquidity standards that this Part will closely analyze.[259] The rest of this Part discusses the provisions of the new Basel framework that are relevant to the problems highlighted in the previous Part of this Article. The analysis will also extend to the new securitization framework and the regulation of repo haircuts.

A. *Capital Rules, Risk Coverage and the Use of Internal Models*

A number of capital regulation changes have been implemented to reflect a better and more robust quality of capital under Basel III. First, there is a greater focus on common equity as tier-1 capital, which must be 4.5% of risk-weighted assets ("RWA"), phased in at 6% in 2019.[260] Common equity as tier-1 capital enhances the capacity of banks to run on a going concern basis, while tier-2 capital includes instruments issued by consolidated subsidiaries, other instruments issued by banks and not included in tier-1, and loan-loss provisions.[261] The total of tier-1 and tier-2 RWA capital must be no less than 8%.[262]

A new capital conservation buffer of 2.5% of tier-1 RWA, which is designed to be built up in good times, and run down during bad times, complements the capital rules.[263] This buffer involves constraints on the discretion of banks to distribute dividends and/or bonuses when the buffer range is triggered.[264] This requirement tackles problems of pro-cyclicality which are traditionally associated with capital regulation and should contribute to enhancing the capacity of banks to be resilient in times of stress.[265]

The counter-cyclical buffer is more squarely designed to mitigate problems of pro-cyclicality. This buffer focuses on the cyclical development of the whole financial system, thereby in-

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259. An essential map of the new Basel framework is provided in *Basel Committee on Banking Supervision Reforms—Basel III*, BANK FOR INT'L SETTLEMENTS, https://www.bis.org/bcbs/basel3/b3_bank_sup_reforms.pdf (last visited Sept. 25, 2020).

260. BANK FOR INT'L. SETTLEMENTS, BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS 12, 69 (2010).

261. *Id.* ¶ 57.

262. *Id.* ¶ 50.

263. *Id.* ¶¶ 129, 133.

264. *Id.* ¶¶ 124, 129–132.

265. *See id.* ¶ 128.

corporating a macroprudential, systemic perspective.[266] This extra buffer, of up to 2.5% tier-1 RWA, aims to mitigate the cyclical effects of excessive credit growth.[267] It reflects the problems commonly associated with the leverage cycle and the instability that ensues.[268] Importantly, this buffer is triggered at the discretion of the national supervisor based on their observation of growth in the credit market.[269]

Loss absorbency requirements also strengthen capital ratios under Basel III. These aim to allow capital instruments to be written off or converted into equity in the event of the bank becoming nonviable.[270] These requirements are particularly relevant in connection with global systemically important banks ("G-SIB"), which are identified by national supervisors in accordance with five broad criteria, namely: a) size; b) interconnectedness; c) lack of readily available substitutes or financial institution infrastructures; d) global activity; and e) complexity.[271] Together with the aforementioned buffers, loss absorbency requirements should reduce the probability of G-SIBs' failures and their impact. They involve additional capital ranging between 1% and 2.5% tier-1 RWA (depending on how the bank is positioned within the five criteria).[272]

While the overview of these revamped capital ratios shows a more robust framework and a clear focus on higher levels of better capital, they need to be evaluated in close connection with the way in which capital is calculated. Generally speaking, under Basel, the capital ratio is calculated by dividing tier-1 and tier-2 capital of the bank by its risk-based assets.[273] In other words, determining the risk weight of a bank's assets is instrumental in calculating how much capital the bank has to

266. *Id.* ¶¶ 137, 139
267. *Id.* ¶ 139.
268. *Id.* ¶¶ 29–30.
269. *See id.* ¶¶ 139–42, 150.
270. *See* BANK FOR INT'L SETTLEMENTS, GLOBAL SYSTEMICALLY IMPORTANT BANKS: UPDATED ASSESSMENT METHODOLOGY AND THE HIGHER LOSS ABSORBENCY REQUIREMENT (2013).
271. *See id.* ¶¶ 15, 16.
272. *See id.* ¶ 46.
273. *See* Adrian Blundell-Wignall et al., *Assessing the Finalised Basel III Banking Regulation Regime*, *in* GLOBALISATION AND FINANCE AT THE CROSSROADS 201, 212 (2018); *Definition of Capital*, BANK FOR INT'L SETTLEMENTS, https://www.bis.org/basel_framework/chapter/CAP/10.htm?inforce=20191215 (last updated June 5, 2020).

post. Risk-weighting has traditionally been problematic under this regulatory model, not only because of the overarching question concerning the weakness of the dataset used, but also, more controversially, because of the freedom that banks have enjoyed in determining risk weights. More specifically, large and more sophisticated financial institutions were traditionally allowed to resort to an internal ratings-based ("IRB") approach[274] which essentially elicited the in-house development and use of internal models for regulatory capital charges.[275] In the aftermath of the GFC, it became apparent that reported risk-weighted capital ratios had become unreliable due to the excessive variability in the RWA calculations conducted by banks.[276]

One key Basel III development is related to the use of bank models. While it appears that post-crisis the Committee accepted that the use of internal models caused uneven capital weights between similar banks and overall problems of regulatory arbitrage, it is altogether clear that internal models are not prohibited under Basel III.[277] Instead, the Committee has chosen to restrict the use of models. More specifically, the advanced IRB approach won't be available for banks' exposure to other banks and financial institutions under Basel III, because exposure to these entities are too difficult for banks to model.[278] Banks will instead be allowed to employ a foundation IRB approach, under which they can still estimate the probability of default, while other risk-weights will be calculated according to parameters determined by the Committee.[279] Banks will still be able to employ the advanced IRB approach in cases where robust estimates are considered more likely. But even in such cases, more conservative outputs will

274. The alternative of the IRB being the standardized approach ("SA"). Under the SA, banks employ a prescribed risk weight for the calculation of the RWA. *See Overview of the Revised Credit Risk Framework—Executive Summary*, BANK FOR INT'L SETTLEMENTS (Feb. 28, 2018), https://www.bis.org/fsi/fsisummaries/rcrf.htm.

275. *See* Blundell-Wignall et al., *supra* note 273, at 48, 208.

276. *See* BIS 2017, *supra* note 256, at 1.

277. *See* Blundell-Wignall et al., *supra* note 273, at 208.

278. *Id.* at 208.

279. Typically, models are used to calculate a wide array of exposure-related risks that flow into the formulas for capital rules, such as the probability of default, the loss given default, the exposure at default, and the effective maturity of exposures. See *id.* for an explanation.

be ensured by applying input floors to parameters for the calculation of probability default, loss given default, and exposure at default.[280]

In other words, banks using internal models for the calculation of capital will be subject to an alternative minimum capital requirement.[281] This represents a limit on the opportunities for regulatory arbitrage that such banks can exploit by using internal models instead of the standardized approach. This approach should lead to a more level playing field between different types of financial institutions.[282]

Notwithstanding these developments, sophisticated banks will still be able to benefit from the use of internal models, given that the probability of default remains a key variable, even in the foundation IRB approach.[283] The overarching problems that emerged in the pre-crisis years with the use of internal models are likely to remain; in fact, the safety and resilience of banks may largely depend on the effectiveness of the leverage ratio, discussed later in this Part.[284]

Beyond the revised approaches for calculating RWA,[285] Basel III tackles some of the regulatory problems that had emerged in the pre-crisis years. Part II of this Article explained how Basel II did not incorporate off-balance sheet exposures into the risk assessment of banks, creating problems of regulatory arbitrage and incentives to expand shadow banking chan-

280. *Id.* at 209.

281. Essentially where banks use internal models, they are subject to an alternative minimum capital requirement—so called Basel III output floor. This is calculated using the SA, in a way that minimizes the regulatory benefits that banks using internal models would gain, compared to those using the SA. *See* Bozena Gulija, *Basel III Finalisation: Completing the Jigsaw*, INT'L FIN. L. REV. (Aug. 8, 2019).

282. *See* GLEESON, *supra* note 257, at 49. It is noted here that banks using internal models will be subject to minimum capital requirements equal to 72.5% of the requirement that would be applied if they were using the SA. This safeguard was introduced in order to balance risk sensitivity and limit arbitrage opportunities. In this sense it can be said that output floors represent a form of backstop. *See* Enria, *supra* note 13.

283. Blundell-Wignall et al., *supra* note 273, at 209.

284. *See id.*

285. Aside from what was explained in the previous paragraph, the new risk coverage framework introduces a revised output floor, which is designed to limit the regulatory capital benefits that can be obtained by banks using internal models instead of the SA. *See Basel Committee on Banking Supervision Reforms—Basel III*, *supra* note 259.

nels of intermediation. Under the new framework, a number of requirements should contribute to reducing those problems. First, banks need to determine their capital requirements for counterparty credit risk using stressed inputs.[286] These must include capital charges associated with the deterioration of counterparties' creditworthiness.[287] Second, capital charges have to incorporate so called wrong-way risks, namely transactions with counterparties whose probability of default is correlated with the amount of exposure.[288] Third, an asset value correlation ("AVC") is applied for exposures to regulated financial institutions that have assets of at least $25 billion, raising risk weights for this type of exposure.[289] Fourth, with respect to large and illiquid derivative exposure to counterparties, banks are required to apply longer margining periods as a basis for determining regulatory capital.[290] Finally, there are incentives to use centralized exchanges ("CCPs") instead of OTC derivatives, because a zero risk-weight is applied for counterparty risk exposures when the bank deals with a centralized exchange.[291]

B. *The New Securitization Framework and the STC Label*

As part of the risk coverage, Basel III introduced a new securitization framework that seeks to strengthen the capital standards for securitization exposures, particularly in light of the shortcomings associated with the previous framework.[292] This analysis is central to the appraisal of the overall ability of Basel III to mitigate risks arising from a revived securitized banking system.

Generally speaking, securitization exposures need to be risk-weighted under a specific regime that is different from the

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286. *See* Blundell-Wignall & Atkinson, *supra* note 172, at 1, 8.
287. *Id.*
288. *Id.*
289. *Id.* at 9.
290. *Id.*
291. *Id.*
292. In particular, the Committee found that major shortcomings were represented by: 1) mechanistic reliance on external ratings; 2) excessively low risk weights for highly-rated securitization exposures; 3) excessively high risk weights for low rated securitization exposures; 4) cliff effects; 5) insufficient risk sensitivity of the framework. *See* BANK FOR INT'L SETTLEMENTS, *supra* note 162, at 1–2.

ordinary one and also includes exposures from interest rates, currency derivatives, and/or credit protection to a securitization SPV.[293] Essentially, when a securitization exposure arises through an off-balance sheet SPV, that exposure has to be converted into an on-balance sheet SPV.[294] The overall risk-weighting of securitization exposures depends on the type of underlying exposures; in turn, this process follows a hierarchy of approaches, which is detailed in the next paragraph.

This revised hierarchy looks to reduce reliance on external ratings and limit the number of approaches in order to simplify the process.[295] At the top of the hierarchy is the internal ratings-based approach (SEC-IRBA), which employs a capital charge input for the underlying exposures, using either the advanced or the foundation approaches.[296] For the SEC-IRBA to be used, banks must have: a) an IRB model approved by the supervisor for the type of underlying exposures in the asset pool; and b) sufficient information to estimate the capital charge.[297]

Where banks cannot calculate the capital charge for the underlying exposures using the IRB framework, they would have to use the external ratings-based approach (SEC-ERBA), the condition here being that this method is implemented by the competent national regulator.[298] When neither of the above approaches is possible, banks use the standardized approach (SEC-SA), meaning the capital charge input for the underlying exposures is based on the standardized approach for credit risk.[299] This approach, in a more conservative form, is also employed for the risk-weighting of re-securitization exposures.[300]

Overall, the revised hierarchy has the merit of simplifying the approaches and reducing the reliance on external credit ratings, since other risk drivers have been incorporated into

293. *See* GLEESON, *supra* note 257, at 350.
294. This is done through a credit conversion factor of 100%. *Id.*
295. BANK FOR INT'L SETTLEMENTS, *supra* note 162, at 2.
296. *Id.* at 3.
297. *Id.*
298. *Id.*
299. *Id.*
300. *Id.*

the SEC-ERBA.[301] The prudential treatment of securitization has also been improved relative to the previous framework, with an increase in capital requirements. For instance, capital requirements of senior securitization exposures backed by quality pools are subject to risk weights of 15%.[302] The assessment of the new prudential treatment is made against the new STC (Simple, Transparent, and Comparable) criteria for the capital treatment of securitization exposures.

STC partly reflects the definition adopted under the EU STS Regulation.[303] The criteria within this label seek to promote a more sustainable use of securitization, where the parties in the transaction are able to evaluate risks and returns and compare products and asset classes.[304] As is the case with the EU equivalent, the STC aims to foster a more robust securitization market, devoid of the risks that had become prevalent before 2008.[305] Under the Basel III framework, "[s]implicity refers to the homogeneity of the underlying assets, . . . and a transaction structure that is not overly complex."[306] "Transparency" involves providing investors with sufficient information in relation to the underlying assets, the transaction structure, and the parties involved.[307] This criterion is aimed at empowering investors to exercise due diligence and make their assessment. "Comparability" aids investors in understanding differences among comparable securitization products and across jurisdictions.[308] Compliance with the STC criteria attracts a better capital treatment compared to non-STC exposures. For example, STC capital requirements of senior tranches are subject to a 10% risk weight as opposed to 15% for non-STC; capital charges vary similarly across different levels of seniority between STC and non-STC securitizations, with the latter attracting higher charges.[309]

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301. Such as maturity and tranche thickness for non-senior exposures. *Id.* at 5.

302. *Id.*; *see also* GLEESON, *supra* note 257, at 381 tbl.18.7.

303. Commission Regulation 2017/2402, 2017 J.O. (L 347) 36.

304. *See* Bavoso, *supra* note 91, at 7–8.

305. *See id.* at 3.

306. BANK FOR INT'L SETTLEMENTS, *supra* note 162, at 6.

307. *Id.*

308. *Id.*

309. *See* GLEESON, *supra* note 257, at 381, 384 (reproducing tables with securitization risk weights respectively for non-STC and STC securitization exposures).

Regulatory questions about the application of the STC label will arise due to the way the compliance process is designed. Undoubtedly, large financial institutions will seek to optimize their regulatory capital by using the STC risk weights; it is also foreseeable that they would adopt an internal ratings-based approach.[310] Despite STC compliance being attested against specific criteria, it is up to originators to make this claim of compliance, which has to be verified by investors.[311] More specifically, originating banks have to disclose all necessary information to the transaction parties, who would then be able to determine whether the exposure is compliant.[312]

The role of supervisors in this process is ostensibly marginal. Simply, it relates to reviewing the preferential capital treatment self-attributed by the banks that they supervise and taking remedial actions should they not be satisfied with compliance.[313]

The peripheral role of competent national supervisors, not to mention the absence of a transnational regulator in charge of monitoring a market that is inherently cross-border, is a criticism that has also been voiced concerning the similar

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310. The revised framework has clarified in this sense that the IRB top-down approach can be used. *See* BANK FOR INT'L SETTLEMENTS, *supra* note 162, at 3 n.8. A top-down approach entails that correlation effects are taken into account for the valuation, so the risk of default on a portfolio valued in this way will be less than the sum of the risks of default of individual assets in the portfolio; a bottom-up approach, instead, is the sum of the risks of default of all individual components in the portfolio. Therefore, for any portfolio, the top-down risks will be less than the bottom-up risks. The problem with the top-down valuation in the context of securitization is that a bank could well take assets that should be evaluated using the bottom-up approach, it could then securitize those assets, buy back the securitized notes, and thus gain a reduction in capital requirements. *See* GLEESON, *supra* note 257, at 342.

311. While originators assess regulatory compliance with the STC criteria in order to determine the capital treatment of their holding, originators have a duty to disclose sufficient information to allow investors to perform that assessment. *See* BANK FOR INT'L SETTLEMENTS, *supra* note 162, at 7.

312. The determination of compliance follows slightly different processes for short-term securitizations, where the assessment is performed by investors only; whereas for other securitization exposures the assessment is made by the sponsor, or by a third-party support provider. *See* BANK FOR INT'L SETTLEMENTS, CAPITAL TREATMENT FOR SHORT-TERM "SIMPLE, TRANSPARENT AND COMPARABLE" SECURITISATIONS 3 (2018).

313. *See* BANK FOR INT'L SETTLEMENTS, *supra* note 162, at 7.

STS initiative at the EU level.[314] It is important to remember that the role of originators and investors here reflects the unchanged orthodoxy of market discipline in the overall Basel III framework (Pillar 3, in fact).[315] The discussion conducted in Part II of this Article, on the rationale for incorporating market discipline as a regulatory technique, must be remembered here to inform the assessment as to whether the availability of internal models, combined with a strong determination power retained by large banks, will still create opportunities for regulatory arbitrage in the STC context.

C. *The Leverage Ratio*

The introduction of a leverage ratio ("LR") complemented the first pillar of Basel III. This was conceived as a limit to the total amount of leverage banks can achieve.[316] In line with other capital measures, it is designed to avoid the build up of leverage during boom years, and the ensuing deleveraging that becomes inevitable as a consequence.[317] LR requires banks with a large share of high-risk weighted assets to have additional loss-absorbing capacity, capturing both on- and off-balance sheet exposures (through a 100% credit conversion factor).[318] Non-G-SIBs have to operate under a permitted ratio of 3%,[319] whereas for G-SIBs a buffer at 50% of their risk-weighted higher loss absorbing requirement ("HLAR") is in place.[320]

The LR is a non-risk-based capital measure, conceived by the Committee as a backstop to the risk-based capital requirements. It is defined as tier-1 capital over a bank's total exposures.[321] The LR is expected to increase the resilience of large

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314. *See* Bavoso, *supra* note 91, at 14–15, 23–24; *see also* Bavoso, *supra* note 24, at 35–36.

315. *See Pillar 3 Framework—Executive Summary*, BANK FOR INT'L SETTLEMENTS (June 27, 2019), https://www.bis.org/fsi/fsisummaries/pillar3_framework.htm.

316. *See* BANK FOR INT'L SETTLEMENTS, BASEL III LEVERAGE RATIO FRAMEWORK AND DISCLOSURE REQUIREMENTS 1 (2014).

317. *See id.*

318. *See id.* at 1, 19.

319. BLUNDELL-WIGNALL ET AL., *supra* note 19, at 212.

320. *Id.*

321. BIS 2010, *supra* note 256, at 61 (referring to the ratio between a bank's non-risk weighted assets and its tier-1 capital). The ratio between a bank's non-risk weighted assets and its tier-1 capital is essentially designed to

banks as it will provide a measure to contain aggregate risks, and a protection against losses in the financial system.[322] Moreover, it is also conceived as a regulatory tool to limit opportunities for regulatory arbitrage, limiting the capacity of banks to leverage their capital base.[323] In essence the LR plays a central role in containing the system-wide build up of leverage.

Notwithstanding the above, LR's risk insensitivity means that assets with the same nominal value, but different risk levels, are treated equally and face the same capital charge.[324] In other words, moving away from a risk-based approach here may lead to unintended consequences where banks with low risk-weighted assets increase their risk taking beyond a desirable level, offsetting the benefit of holding extra capital under the LR.[325]

A more substantial critique of the LR has been its role as a backstop of capital. Given the ineffectiveness to date of the capital weighing approach, and the opportunities for regulatory arbitrage within it, the LR could have been the main regulatory measure to mitigate risk-taking in the banking system.[326] As a last critique, the leverage ratio is measured in different ways across jurisdictions.[327] This leads to fragmented implementation and supervision as well as potential problems of regulatory arbitrage. Ultimately, the LR operates in a broader context of prudential measures and will have to be evaluated as part of that larger regulatory puzzle.

D. *Liquidity Regulation*

The regulatory fault lines that emerged in connection with the securitized banking system pointed to weaknesses in large financial institutions' liquidity. The GFC of 2008 mani-

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supplement the risk weighted capital ratio. As a result, any bank with an unweighted leverage ratio of less than 3% would be considered undercapitalized.

322. *See* ROSS CRANSTON ET AL., PRINCIPLES OF BANKING LAW 53 (3d ed. 2018).

323. *Id.*

324. Smith et al., *The Leverage Ratio, Risk Taking and Bank Stability* 5 (Eur. Cent. Bank, Working Paper No. 2079, 2017).

325. *Id.*

326. *See* Blundell-Wignall & Atkinson, *supra* note 172, at 14–15.

327. Anbil & Senyuz, *supra* note 113, at 9.

fested itself as a rapid dry up of liquidity, where banks' assets became illiquid at any price.[328] Moreover, it is well documented that the liquidity crisis was heavily dependent on banks' over-reliance on wholesale funding channels.[329] This led the Committee to introduce, outside of the three traditional pillars, two liquidity measures under Basel III that are designed to aid supervisors.[330]

The liquidity coverage ratio ("LCR") and the net stable funding ratio ("NSFR") are conceived to improve the ability of banks to absorb shocks arising from financial stress, and—by extension—to reduce the possibility of shocks spilling over from the financial system to the real economy.[331] Traditionally, banks have been free to model liquidity without regulatory intervention, but this led to two main problems: a) subjective models used to calculate liquidity; and b) the uneven playing field created by these subjective calculations.[332]

The LCR requires that banks maintain a minimum amount of unencumbered[333] high-quality liquid assets ("HQLA") that would allow them to meet their liquidity needs during a 30-day stress scenario, surviving a stress scenario for that period.[334] During this timeframe, the stock of HQLA should remain at least 100% of the bank's total net cash outflows.[335] In essence, this is a way to regulate short-term liquidity management. Although the Committee's design of the LCR was based on existing market practices, the adopted definition

328. *See* GLEESON, *supra* note 257, at 427.

329. *See* Gorton & Metrick, *supra* note 33, at 433.

330. *See* GLEESON, *supra* note 257, at 420 (explaining that the new liquidity ratios represent a move away from modeling, towards a less flexible and less risk-based regulatory architecture).

331. *See* BIS 2010, *supra* note 256, at 8–9.

332. *See* GLEESON, *supra* note 257, at 428 (noting that even before the crisis Bear Stearns maintained a pool of short-term liquid assets to ensure its liquidity—comparable to the new LCR—while Lehman Brothers maintained a portfolio of long-term real estate loans on a funding base—comparable to the NSFR).

333. The term "unencumbered" as used here is intended to mean as not pledged to secure, collateralize, or provide credit enhancement to a transaction. *See* BANK FOR INT'L SETTLEMENTS, BASEL III: THE LIQUIDITY COVERAGE RATIO AND LIQUIDITY RISK MONITORING TOOLS ¶ 31 (2013).

334. *See id.* ¶ 17.

335. *See id.*

is grounded in two key mechanisms: 1) the definition of liquid assets, and 2) the calculation of expected outflows.

The definition of HQLAs favors government bonds, while it disfavors market-based products such as ABSs.[336] Beyond outlining characteristics that HQLAs should have (e.g., low credit risk, low market risk, certainty of valuation, and low correlation with risky assets),[337] Basel III divides liquid assets into two levels. Level 2 can comprise no more than 40% of the stock of HQLAs.[338] This assumes that cash inflows during the 30-day stress period never exceed 75% of the expected outflows.[339] The outflow is calculated by applying a presumed outflow percentage to the specific type of exposure, also known as run-off rates.[340]

The NSFR is conceived to supplement the LCR as a protection against extended liquidity shortages. It requires banks to maintain a percentage of available stable funding ("ASF") to match the amount of required stable funding ("RSF").[341] In other words, the purpose of this ratio is to limit the way in which banks can finance long-term assets with short-term liabilities—which is exactly one of the phenomena that emerged within the securitized banking model. In particular, the NSFR was designed to limit the exposure that dealer banks had in pre-crisis years to short-term funding on their liabilities side.

The NSFR is grounded in a definition of long-term assets, which, for the purpose of this ratio, are assets with a maturity of more than one year.[342] Long-term sources should fund these long-term assets on the liabilities side of a bank's balance sheet. The requirement forces a bank to hold an available

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336. *See id.* ¶ 24.

337. *See id.*

338. The classification includes level 2B assets, which may be permitted by supervisors, and should not amount to more than 15% of the total pool. *See id.* ¶ 46.

339. *See id.* ¶ 69.

340. Stable retail deposits require 5% in the liquidity pool; less stable deposits require 10%; unsecured wholesale funding through operational relationship require 25%; unsecured wholesale funding from non-financial corporates require 75%; unsecured wholesale funding from all other customers require 100%. *Id.*

341. *See* BANK FOR INT'L SETTLEMENTS, BASEL III: THE NET STABLE FUNDING RATIO ¶ 9 (2014).

342. *See id.*

amount of stable funding,[343] established based on its assets and activities over the one year period.[344]

Clearly, the new liquidity measures tackle some of the pre-crisis problems concerning excessive reliance on wholesale funding. The reduced volume of the repo market after 2008[345] is the reflection of a new regulatory architecture that makes it substantially more expensive for dealer banks to engage with short-term funding in the wholesale market.[346] It is altogether evident that the use of classifications under the two ratios, such as stable funding, still inevitably relies on inputs from large banks and on supervisors' ability to monitor the market. This could eventually create scope for arbitrage opportunities, because banks incurring higher costs due to liquidity regulation may seek to increase their risk-taking in other areas.[347]

Notwithstanding the validity of the new framework to regulate liquidity, the panic of 2020 once again revealed liquidity problems in the money market. The Basel III liquidity framework is directed at banks; yet many areas of financial intermediation have migrated towards non-bank entities, and so leverage creation and liquidity oversight remain problematic.[348] This critique is expanded on in Part IV.

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343. ASF is defined as a portion of equity and liability financing that is expected to be a reliable source of funding for a one-year period, under conditions of extended stress. *See id.* ¶ 26 (providing a table of the ASF categories, which correspond to a factor of stability from 0% to 100%—i.e., 100% assigned to tier-1 capital or deposits for instance; 0% assigned to liabilities without a stated maturity). It must be noted that ASF is also required to support potential liquidity calls from off-balance sheet commitments.

344. RSF reflects the liquidity of the assets on the bank's balance sheet, their level of encumbrance and also off-balance sheet exposures. The calculation for the RSF factor is similar to the calculation for the LCR, and it assigns a percentage that reflects the liquidity of the assets—i.e., 0% assigned to coins, banknotes or central bank reserves for instance; 100% assigned to assets that are encumbered for more than one year, or non-performing loans. *See id.* ¶ 44 (providing a table of the RSF factors for various asset categories).

345. *See* Ritholtz, *supra* note 17.

346. Dealer banks have "reduced their balance-sheet commitment to market-making," which some have argued may have detrimental effects on market liquidity. Adrian et al., *supra* note 18, at 9.

347. *See* Blundell-Wignall & Atkinson, *supra* note 172, at 20; GLEESON, *supra* note 257, at 420.

348. *See* Yalman Onaran, *Can We Survive the Next Financial Crisis?*, BLOOMBERG (Sept. 10, 2018), https://www.bloomberg.com/graphics/2018-lehman-anniversary/.

E. *Mitigating Risks from the Repo Market*

Before the collapse of wholesale funding channels in 2008, the regulation of repo markets was thought to be best left to market discipline mechanisms. The EU Securities Financing Transaction Regulation was adopted in 2015 to directly deal with repos.[349] This initiative was specifically aimed at increasing transparency in repo-type transactions and addressing problems of collateral reuse by requiring adequate disclosure among the transaction counterparties.[350] Effectively, the EU Regulation was anchored in a regulatory technique based on market discipline; it relied on market participants' enhanced access to information to limit collateral reuse, or at least mitigate its effects.

The FSB picked up the other pressing issue for repos: minimum haircuts.[351] The FSB framework revolves around two main provisions: a) qualitative factors are incorporated into new or existing methodologies used by repo counterparties to calculate haircuts; and b) the application of *de minimis* through-the-cycle haircut floors to non-centrally cleared repos, where financing against collateral, other than government securities, is provided to non-bank entities.[352]

The first leg of the FSB provision seeks to mitigate procyclical fluctuations of repo haircuts, the uncertainty of which had contributed to instability in the financial system following the credit crunch of 2007.[353] The second leg set limits on the amount that non-bank entities could borrow against different types of securities in bilateral repos. The aim was to limit the build up of leverage outside of the regulated banking system and, by extension, reduce the pro-cyclicality of leverage as a whole.[354] The application of a haircut floor according to the

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349. *See* Commission Regulation 2015/2365, *supra* note 253, at 1.

350. *See id.* art. 15(1).

351. *See* FIN. STABILITY BD., TRANSFORMING SHADOW BANKING INTO RESILIENT MARKET-BASED FINANCE 2 (2015). This was aimed at establishing a globally applicable regime for haircuts on non-cleared transactions, among which repos.

352. *See id.* at 9. These provisions are applied with some exceptions, namely, centrally-cleared SFTs to banks and broker–dealers, subject to adequate capital and liquidity regulation; and repos carried out by central banks.

353. *See id.*

354. *See id.* at 9–10.

market risk and historical performance of collateral pledged is another important element of the FSB's framework.[355]

As is the case with the relevant Basel provisions, the FSB framework relies on market participants to establish adequate internal processes and procedures. While reference is made to national supervisors for monitoring haircuts, and to a coordination role of Basel and IOSCO,[356] the strategy adopted to mitigate the problems associated with the repo market relies chiefly on market discipline mechanisms. In particular, the limits on rehypothecation in the context of the EU Regulation simply reflect increased disclosure requirements from market participants. Similarly, the FSB relies substantially on inputs from market participants for the purpose of limiting haircut fluctuations. A more detailed conceptual critique of this regulatory approach will be expanded on in the next Part of this Article.

IV.
How Resilient is the Financial System? A Critique of the Current Regulatory Framework

The new regulatory architecture of global finance has produced a number of positive results, even before its full implementation. One straightforward sign is the safety of large banks, which are better capitalized and less leveraged than they were before 2008.[357] Similarly, these banks' funding structures have shifted towards more long-term and stable funding, in line with the liquidity provisions examined earlier.[358] Moreover, banks' business models seem to have moved away from

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355. As an example, short-term corporate debt attracts a 0.5% haircut floor, index equity 6%, while securitized debt would attract a higher haircut. *See* Bank for Int'l Settlements, Haircut Floors for Non-Centrally Cleared Securities Financing Transactions 8 (2015).

356. *See* Fin. Stability Bd., *supra* note 351.

357. There have been clear increases in the level of capital among large banks, especially in the United States. The average capital of the top U.S. banks in 2007 was 2.5%, whereas by 2018 this figure had risen to 6.6%. *See* Onaran, *supra* note 348.

358. *See id.* In 2007 large dealer banks were over-reliant on short-term repos (44%), against 29% of deposits and 6% of equity; in 2018 deposits went up to 47%, equity to 10% while repo agreements went down to 24%. This aggregate data includes the liabilities of JP Morgan, Citigroup, Bank of America, Goldman Sachs, and Morgan Stanley. *Id.*

risky trading to more traditional banking functions.[359] While some of the large European banks may still be affected by non-performing loans ("NPL") on their books, they are also showing increasing levels of capitalization, in line with Basel III requirements and reductions in RWA.[360]

Because some segments of capital markets restarted after 2014[361] and some areas of shadow banking are growing in the process, it is imperative to examine the Basel framework's persistent weaknesses in reining in risks in financial markets. As previously examined, market-based finance is taking on a new shape. With a sharp collapse in the amount of outstanding CDOs since 2008, there has been a contextual increase in the amount of outstanding CLOs, which are essentially bonds backed by leveraged loans. This points to another post-2008 trend: the increasing move of risky leveraged loans away from banks, towards non-bank entities. While banks have become safer, risks have moved to other areas of capital markets and outside the traditional pre-2008 channels of securitization and repos.[362] However, they replicate very similar risks.[363] The turmoil in the spring of 2020 demonstrated the intrinsic fragilities in the mechanics of market-based finance that have endured after 2008.[364]

This Part critiques the Basel III framework from four interrelated perspectives, starting with a macro view of the framework and its place in global financial regulation. The next critique focuses on the Committee's reluctance to depart

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359. *See id.* This needs to be ascribed to both the new capital rules under Basel III and, in the United States, the Volcker Rule. Dodd–Frank Wall Street Reform and Consumer Protection Act, 12 U.S.C. § 1851 (2018).

360. *See* Maheen Khan, *Capital and RWAs of Top European Banks—2017 to 2018*, CLARUS FIN. TECH. (Sept. 10, 2018), https://www.clarusft.com/capital-and-rwas-of-top-european-banks-2017-to-2018/.

361. *See supra* notes 13, 14, 75 and accompanying text.

362. *See* Onaran, *supra* note 348.

363. For instance, against a sharp collapse in the amount of outstanding CDOs since 2008, there is a contextual increase in the amount of outstanding CLOs, which are essentially bonds backed by leveraged loans. This points to another post-crisis trend, which is the increasing move of risky leveraged loans away from banks, towards non-bank entities. So while banks have become safer, risks have moved to the shadow banking sector, even though outside the traditional channels of securitization and repos. *See id.*

364. *See* Tucker, *supra* note 9. Interestingly Tucker stressed that only massive central banks' intervention, in the shape of bond purchasing programs, could rescue financial markets from collapsing. *See id.*

from the orthodoxy of market discipline. Finally, the analysis questions whether the current framework offers market players opportunities for regulatory arbitrage before concluding with an assessment on the safety of the financial system.

A. *Zooming in and Zooming out*

The analysis conducted in Part III offers a rather optimistic view of how Basel III could rein in the excesses of securitized banking, putting market-based finance on a more sustainable footing. Post-crisis regulation seems to create the right incentives for dealer banks to make more efficient use of their capital and liquidity resources, due to the higher costs of providing market and funding liquidity.[365] More specifically, the combination of leverage and liquidity provisions under Basel III creates disincentives for dealer banks to participate in low margin activities while simultaneously incentivizing them to hold more liquid securities and reduce their reliance on short-term funding.[366]

The aggregate of individual provisions creates a regulatory environment where certain activities, such as pre-crisis securitized banking, have become costly for banks. For instance, output floors introduced under Basel III will likely mitigate the degree of RWA variability experienced in the pre-crisis years.[367]

Zooming out though may provide a bigger picture, and a more critical perspective of the impact of the new framework. The reader will recall from the earlier analysis that the new

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365. *See* Nina Boyarchenko & Or Shachar, *Liquidity Effects of Post-Crisis Regulatory Reform*, FED. RES. BANK N.Y.: LIBERTY ST. ECON. (Oct. 16, 2018), https://libertystreeteconomics.newyorkfed.org/2018/10/liquidity-effects-of-post-crisis-regulatory-reform/. It needs to be noted that asset or market liquidity refers to the ease with which an asset is traded, whereas funding liquidity is the ease with which funding can be obtained, see Markus K. Brunnermeier & Lasse Heje Pedersen, *Market Liquidity and Funding Liquidity* (Nat'l Bureau Econ. Rsch., Working Paper No. 12939, 2007).

366. *See* Boyarchenko & Shachar, *supra* note 365.

367. This comes with some caveat though, as it has been observed that banks with capital constraints will still have incentives to game their internal models. Variability is also more likely to persist in banks with a high share of opaque assets. *See* Edson Bastos e Santos et al., *Variability in Risk-Weighted Assets: What does the Market Think?* (Bank for Int'l Settlements, Working Paper No. 844, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3549535.

capital measures still rely on a number of assumptions and classifications. The new capital ratios still leave room for the use of internal models, despite some restrictions.[368] Similarly, the new securitization framework relies on the STC label, which is a form of self-certification by market participants. This may lead to market participants using the label as an arbitrage device.[369] Moreover, under the already mentioned liquidity measures, classifications such as stable funding will leave large banks vying to exploit arbitrage opportunities, given the costs imposed by the regulation and the possibility that banks have to increase risk-taking in other areas.

The crisis of 2020 highlighted Basel's emphasis on banks, and particularly on G-SIBs. This focus fails to capture risk taking in other areas of capital markets, such as private equity firms structuring CLOs. A critical question is the extent to which G-SIBs are sufficiently insulated from risks emanating from other areas of capital markets. It is undeniable that, in the spring of 2020, another global financial crisis was only averted due to massive government interventions (via central banks).[370]

Overall, zooming out presents a landscape where Basel III relies substantially on the fairness of market participants' inputs, and on the role of national supervisors.[371] This should come as no surprise, because the Committee believes in the validity of model-based regulation. Moreover, this regulatory design is still accompanied by the orthodoxy of market discipline. In other words, a macro perspective of Basel III offers a view of the framework that is strikingly similar to its discredited predecessor.

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368. Beyond the restrictions discussed in the previous Part, it is worth also looking at the guidelines by the ECB, see EUR. CENT. BANK, ECB GUIDE TO INTERNAL MODELS (2019).

369. Bearing in mind that infringements would result in penalties.

370. *See* Tucker, *supra* note 9.

371. As we know, there is no global supervisor in international finance, despite some efforts to coordinate supervisory strategies provided by BIS, FSB and IOSCO. It seems to be widely accepted though that Basel III is bound to be implemented in different ways, according to the different economic structure of each jurisdiction and its regulatory arrangements. *See* BLUNDELL-WIGNALL ET AL., *supra* note 19, at 217–18.

B. *The Problem with Market Discipline*

After 2008, former Chairman of the United States Federal Reserve, Alan Greenspan, one of the keenest proponents of market discipline in the pre-crisis heydays of market efficiency,[372] conceded that the intellectual edifice that permeated risk management in the pre-crisis decades was flawed.[373] Richard Posner reached a similar conclusion in his post-crisis book, firmly stating that the financial system had relied too heavily on market forces for the purpose of regulating and monitoring the industry.[374]

While some institutional responses to the GFC emphasized that the failures of market discipline were caused by structural barriers, such as misaligned incentives, moral hazard, or lack of transparency, they insisted the concept was worth preserving.[375] However, this viewpoint does not explain the failure of market discipline to signal excessive risk taking or investor and market reactions.[376] These were conceptual failures, and not merely failures related to the application of market discipline. While it is beyond the scope of this Article to dig into a wider conceptual critique of market efficiency and its tenets, it is difficult to advocate for the merits (or indeed the success) of market discipline.

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372. *See* Alan Greenspan, Chairman, Fed. Reserve. Bd., Remarks Before the American Bankers Association on the Evolution of Bank Supervision (Oct. 11, 1999) (transcript available at https://www.federalreserve.gov/boarddocs/speeches/1999/19991011.htm) ("Heavier supervision and regulation designed to reduce systemic risk would likely lead to the virtual abdication of risk evaluation by creditors of such entities . . . . The resultant reduction in market discipline would, in turn, increase the risks in the banking system, quite the opposite of what is intended.").

373. *See* Edmund L. Andrews, *Greenspan Concedes Errors on Regulation*, N.Y. TIMES (Oct. 23, 2008), http://www.nytimes.com/2008/10/24/business/economy/24panel.html.

374. *See* RICHARD A. POSNER, A FAILURE OF CAPITALISM: THE CRISIS OF '08 AND THE DESCENT INTO DEPRESSION (2011).

375. *See* INST. INT'L FIN., *supra* note 130; *see also* David Min, *Understanding the Failures of Market Discipline*, 92 WASH. U. L. REV. 1421, 1422 (2015).

376. *See* Min, *supra* note 375, at 1457. Min identifies four more specific failures of market discipline in the context of the GFC: a) liabilities of individual banks failed to timely identify risks; b) interbank borrowing rates failed to timely signal systemic risk; c) market pricing of ABSs failed to timely signal systemic risk; d) clear evidence of bank risks prior to July 2007. *See id.* at 1457–68.

Notwithstanding the limits associated with market discipline,[377] Basel III confirms a firm reliance on this regulatory strategy, with the strengthening of existing disclosure requirements. The effectiveness of disclosure as a regulatory technique is premised on a system of informational efficiency, where information can be timely transmitted to market participants who are able to process it and make rational decisions based on the information disclosed.

This construction is built on a rather feeble foundation. A number of studies have convincingly pointed to the failures of disclosure, especially in the pre-crisis years.[378] One key problem is the increased complexity of financial markets, and of banks' balance sheets. Due to information failures, this combination severely limits the scope of disclosure.[379] Complexity also explains a second problem: the cognitive biases of market participants. Rational decision making is at best an assumption, and investors, even when equipped with all necessary information, suffer a number of "errors of judgement."[380]

Errors of judgement affect not only investors, who under the conventional narrative are assumed to perform a number of monitoring mechanisms,[381] but also shareholders and boards. Shareholders have monitoring powers over the bank's activities and risk taking, while the board steers the bank's strategies. However, questions of complexity and cognitive bias have impacted on the capacity of both shareholders and directors to provide discipline and curb risk taking.[382] This trend has been reinforced by a system of corporate governance mechanisms, whereby market actors in the past have not had sufficient incentives to embark on costly monitoring func-

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377. *See* Simon Kwan, *Testing the Strong-Form of Market Discipline: The Effects of Public Market Signals on Bank Risk* (Fed. Rsrv. Bank of S.F., Working Paper No. 2004–19, 2004).

378. *See, e.g.*, Emilios Avgouleas, *The Global Financial Crisis, Behavioural Finance and Financial Regulation: In Search of a New Orthodoxy*, 9 J. CORP. L. STUD. 23, 44 (2009); Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 220–23 (2009).

379. *See* Schwarcz, *supra* note 378, at 236–39.

380. Errors of judgement are also called heuristics, cognitive bias, anomalies and so on. *See* Avgouleas, *supra* note 378, at 30–31.

381. These monitoring mechanisms, such as monitoring the value of a bank's securities and trading accordingly, would perform in turn a signalling function that amounts to market discipline. *See* Hellwig, *supra* note 133, at 3.

382. *See* Avgouleas & Cullen, *supra* note 121.

tions.[383] Instead, shareholders' short-term horizons (elicited by the safety net of government bailout in the event of failure), board myopia (magnified by compensation packages that spurred more risk taking), as well as the homogenization of business strategies (facilitated by financial innovation and the myth of risk diversification), have represented huge incentives to neglect the monitoring of risk, stultifying the idea of market discipline.[384]

The insistence on market discipline under Basel III, as well as under related FSB and EU Regulation on repos, repropose a number of regulatory problems—namely the over-reliance on models, and the acceptance of a methodological approach to risk regulation that has proven to be, at best, problematic. At the same time, relying on market discipline preempts mitigating bank risks in different ways, such as through higher capital ratios, structural reforms,[385] or even through a more robust supervisory structure (which is critically still missing in most jurisdictions).[386] The events of spring 2020 again show that excessive leverage through private debt creation, and related liquidity mismatches, have remained an integral part of capital markets[387] because market discipline mechanisms have been insufficient in curbing these tendencies.

C. *Opportunities for Regulatory Arbitrage*

As explained earlier in this Article, Basel II created opportunities for regulatory arbitrage because banks could optimize their regulatory capital by shifting liabilities off-balance sheet. Despite the announced improvements in the new framework, large financial institutions will still be able to characterize credit as capital markets instruments and thus avoid capital

383. *See id.* at 14–15 (further expounding this specific analysis).

384. *See id.*

385. *See, e.g.*, BLUNDELL-WIGNALL ET AL., *supra* note 19, at 216–18. The authors observe, for instance, that the United States has implemented rules that are tougher than the Basel ones.

386. Bavoso, *supra* note 24, at 6.

387. *See* Mike Harmon & Victoria Ivashina, *When a Pandemic Collides with a Leveraged Global Economy: The Perilous Side of Main Street,* VOX (Apr. 29, 2020), https://voxeu.org/article/when-pandemic-collides-leveraged-global-economy.

charges.[388] More specifically, the use of CDSs (e.g., when employed to short a bond exposure) will still allow banks to reduce their capital exposure to a certain debt, attracting a lower risk weight. This will also allow an expansion of bank leverage because banks can shift promises in areas of the financial system where they are treated differently.[389]

Section II.D demonstrates the capacity of market participants to move legal promises and regulatory obligations around the financial system. In particular, the difficulty in applying risk retention rules to CLO transactions is indicative of the problem, namely, the ease with which new transactional designs manage to bypass regulatory constraints. This was precisely the case with securitization and its interplay with Basel II. Moreover, the current structure of CLOs stultifies the new requirements under Basel III.[390] In a similar vein, the employment of TRSs by institutional investors has facilitated risk taking beyond disclosure and margin requirements set after 2008.[391]

This line of critique brings us back to Basel III, namely the ability of dealer banks to manipulate risk weights.[392] Subjective inputs stultify not only capital requirements but also the leverage ratio.[393] In essence, the centrality of RWA as a methodology to calculate risks allows large banks to minimize the impact of new measures such as LR.[394]

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388. Blundell-Wignall & Atkinson, *supra* note 172, at 12. For example, this has happened with the use of TRSs. For a discussion, see Robert Armstrong, *Archegos Debacle Reveals Hidden Risk of Banks' Lucrative Swaps Business*, FIN. TIMES (Apr. 1, 2021), https://www.ft.com/content/fb364689-9b04-47cb-aba9-5eb15d1cea85.

389. Blundell-Wignall & Atkinson, *supra* note 172, at 13. The authors explain that a CDS allows banks to move a promise to a sector that is beyond banking regulation. With respect to the arbitrage opportunity, on a $1000 bond a CDS allows a reduction of the capital required from $80 to $18.6.

390. Bavoso, *supra* note 7, at 145–46. With CLOs, the origination process is syndicated among numerous banks, making it difficult to apply both risk retention rules and, more generally, capital requirements. The key actor in CLOs is not the originating/sponsoring bank but a private equity firm, crucially falling outside the regulatory spectrum of Basel III.

391. *See* discussion *supra* Section II.D.

392. *See generally* Saguato, *supra* note 210.

393. BLUNDELL-WIGNALL ET AL., *supra* note 19, at 215–16, 225 (noting that if banks manipulate the "denominator of the ratio, there is no effective leverage constraint").

394. *Id.* at 228–29.

Of course, this problem brings us back to market discipline and the role attributed to market participants for regulatory inputs. The determination and impact of the LR are likely affected by the G-SIBs' exposure across different jurisdictions. Banks with heavy derivatives exposure will have more direct ways to shift regulatory promises and minimize their risk weight.[395]

D. *Assessing Risks of Interconnectedness and Spill-Overs*

The perennial challenge at the heart of regulatory reforms in the post-2008 years has been protecting large financial institutions from risks emanating from the riskiest segments of capital markets. The Basel III framework sought to achieve this goal and engineer a way to tackle these regulatory problems. As a result, by design, the Basel III framework is a backward looking exercise, ill-suited to deal with recent innovations in capital markets and the new structures of market-based channels of finance.

One key argument made by industry representatives to justify post-crisis innovations suggests that large banks would be well insulated from defaults occurring in other areas of capital markets.[396] This narrative hinges on the idea that post-2014, market-based finance is designed as an efficient risk sharing mechanism that facilitates the origination of credit to the real economy (i.e., through leveraged loans) and then efficiently allocates these risks to those in the financial system better suited to bear such risks (e.g., through the repackaging of leveraged loans into CLOs, sold to institutional investors protected by TRSs). Accordingly, individual banks are not directly exposed to leveraged loans, which are originated through a syndication process.

However, this view may be an over-simplification. The FSB suggested that there may well be a resurgence of excessive risk taking in capital markets (specifically in the CLO market) and that, contrary to what the industry contends, this could have wider spillover effects across the financial systems.[397] The FSB

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395. *Id.* at 229.

396. *See* Partnoy, *supra* note 7 (pointing to statements to this effect released by Jerome Powell, Head of the Federal Reserve, and Steven Mnuchin, Treasury Secretary).

397. FIN. STABILITY BD., *supra* note 105, at 1–2.

also specified that different types of bank exposures may arise: a) direct exposure to leveraged loans and other credit facilities, which are easier to map; b) exposure arising in the process of arranging the syndication; c) direct exposure to third parties CLOs; and d) exposure through more indirect functions, such as sponsoring and warehousing facilities.[398] While the capacity of banks to withstand shocks has undoubtedly improved due to the phasing in of Basel III,[399] the exposure to shocks in certain markets may be difficult to monitor, and especially to model, especially where the market is characterized by complex products (e.g., CLOs), and where the interconnectedness between entities and markets is unclear.[400]

To put it bluntly, this scenario replicates a game of cat and mouse, with new regulations coming in that constrain risk taking and leverage and with market participants creating new market structures that bypass the effects of those constraints. And in the spring of 2020, that is precisely what transpired.

The traditional claim of efficiency—efficient risk sharing mechanism, efficient flow of credit to the economy—is the crucial legitimizer behind the continuous innovations in capital markets. This innovation process brings financial regulators into a position far too similar to that of the pre-2008 period. Over the past ten years, market-based finance has shown fragilities very similar to those associated with the old shadow banking system. Namely, excessive levels of leverage creation, liquidity problems, interconnectedness, and the ensuing need for central bank intervention with massive injections of liquidity to stabilize markets. The idea of resilient market-based finance never materialized because, once again, the riskier activities migrated beyond the radar of regulatory oversight. Arguably, the idea of efficiency, coupled with market participants' freedom to shift legal and regulatory obligations in complete financial markets, led to the panic experienced in the spring of 2020.

The panic of 2020 resulted from the revived mechanics of debt capital markets. Excessive leveraging and uncontrolled

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398. *See id.* at 18–19.

399. *See* discussion *supra* Part III. Beyond the provisions examined in Part III of this Article, stress testing also contributes to banks' resilience, because the period tests reveal how banks manage exposures to certain risks.

400. FIN. STABILITY BD., *supra* note 105, at 22.

interconnectedness were again the main problems caused by market-based finance. The long and complex transaction chains brought by CLOs have facilitated the origination of low quality credit and have disseminated the related risks to capital markets investors. In the process, some problematic mechanisms common with pre-2008 securitization were maintained and became mingled with new transactional complexities.[401] With respect to tranching, losses were propagated through the financial system more widely because institutional investors, exposed to specific slices of the CLO, leveraged their positions in the CLO market through TRSs[402] or by entering into repo contracts.[403] The net effect is homogeneity in market participants' balance sheets that inevitably reinforces problems of contagion once a shock occurs. That effect is exactly opposite to the claim of risk diversification proposed by the industry.[404]

The interconnectedness attributed to tranching reveals another source of systemic risk, particularly in connection with the downgrades of CLO tranches experienced in the spring of 2020.[405] It became apparent that a diverse range of investors is exposed to risky CLO tranches. This largely occurs through leveraged positions where investors are not adequately capitalized.[406] As a result, investors are exposed to the risks of margin calls when their underlying investment becomes the subject of downgrades. This dynamic creates layers of leverage in the financial system. The first layer is made up of leveraged loans

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401. Tranching not only facilitates the origination and distribution of higher risks among market participants but is also an engine of interconnectedness. *See* discussion *supra* Part I.

402. *What is a Total Return Swap (TRS)?*, *supra* note 249.

403. Satyajit Das, *Opinion: In a Replay of 2008, Toxic Subprime Loans Could Worsen This Financial Crisis*, MKT. WATCH (May 14, 2020, 5:41 PM), https://www.marketwatch.com/story/these-packaged-subprime-loans-could-collapse-on-investors-in-this-financial-crisis-just-like-they-did-in-2008-2020-05-14.

404. STIJN CLAESSENS ET AL., SHADOW BANKING: ECONOMICS AND POLICY 16 (Int'l Monetary Fund, Staff Discussion Note No. 12, 2012) (describing how sensitivity to market movements, similar to pre-2008 dynamics, exposes the whole financial system to systemic risks).

405. Joe Rennison, *Rating Agencies Put 1,000 CLO Slices on Review for Downgrade*, FIN. TIMES (Apr. 23, 2020), https://www.ft.com/content/d6f78895-671f-4ed9-8039-d9595821ffd4.

406. Laurie DeMarco, Emily Liu & Tim Schmidt-Eisenlohr, *Who Owns U.S. CLO Securities? An Update by Tranche*, FED. RSRV. BD. (June 25, 2020), https://www.federalreserve.gov//econres/notes/feds-notes/who-owns-us-clo-securities-an-update-by-tranche-20200625.htm.

issued to indebted businesses; the second layer is the structure of CLOs, which are in itself highly leveraged; and the final layer is investors in CLOs who leverage their positions through total return swaps and the repo market.[407]

This analysis shows that the wave of financial innovation that materialized after 2014 has replicated some of the mechanics observed before 2008, namely the multiplication of leverage and its amplification and unchecked transmission through capital markets. Because the Basel III regulatory framework is geared towards the risks that had manifested at the outbreak of the 2008 GFC, it seems to be falling short in fully capturing the risks currently flowing from market-based finance. This is so for two reasons. First, market participants have retained substantial freedom to innovate in the name of market efficiency, moving regulatory obligations around the financial system and away from the umbrella of regulated activities. An example of this is the evolution of CLOs. While they give the appearance of effective risk diversification, the slicing of risks elicits the exposure to extremely high risks of default in exchange for high yields.[408]

Second, the regulatory technique at the heart of Basel, and its lengthy implementation stages, have made regulatory arbitrage a possibility. For instance, TRSs, typically entered into by banks and hedge funds, have become a huge source of (often hidden and unreported) profit for banks and an avenue for leveraged investments for investors.[409] Partly, this is because they are non-cleared derivatives, and regulators have deferred implementing the related margin requirements.[410]

While banks are safer, the financial system as a whole is still permeated by the same mechanics of excessive debt creation and interconnectedness. To claim that banks are insulated from the shocks that inevitably emanate from the rest of

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407. Das, *supra* note 403 (explaining that investors in senior tranches can more easily leverage their investment, up to ten times).

408. Viral V. Acharya et al., *Private Equity: Boom and Bust?*, 19 J. APPLIED CORP. FIN. 44, 51–52 (2007) (reiterating that a small number of defaults from the more risky tranches can translate into heavy losses).

409. *See, e.g.*, Armstrong, *supra* note 388.

410. *See id.*; Rennison et al., *supra* note 254. For a discussion of margin requirements for non-centrally cleared derivatives, see BANK OF INT'L SETTLEMENTS, MARGIN REQUIREMENTS FOR NON-CENTRALLY CLEARED DERIVATIVES (2020).

the financial system, specifically market-based channels of intermediation, is, at best, optimistic. While zooming in shows a picture of healthier and more resilient banks, zooming out provides a more complex view. Banks are still interconnected with non-bank entities and are likely affected by risks emanating from non-bank channels of intermediation.

Conclusion

Notwithstanding these critiques, the new regulatory framework centered around Basel III provides a sharp improvement to the prudential framework of internationally active banks. There are already signs that banks, both in the United States and Europe, are less risky than before 2008. Despite the dissimilar impact that Basel III will have on different banks across jurisdictions, it is likely that this trend will continue.[411]

Basel, and its attendant regulations, resulted in a voluminous and complex set of rules. This shifts our focus towards the implementation phase and the nature of the supervisory infrastructure. This is an important point: with shocks originating in non-bank market-based channels of intermediation, it is vital that supervisors have the capacity to oversee the macro dimension of the financial system and, particularly, the linkages between banks and non-banks.

While it is difficult to speculate on the degree to which large banks will exploit arbitrage opportunities, it is incontrovertible that there remains a strong emphasis on market discipline. Two problems are likely to arise: 1) large banks having a big input in implementing some key regulatory provisions, and 2) a bias towards market-driven solutions to regulatory problems. The latter phenomenon partly explains the unfettered innovations that have shaped market-based finance after 2008.

Policy trends after 2014 favor the expansion of capital markets segments whose growth inevitably creates risks. One preeminent example is the comeback of opaque forms of securitized debt, which are again employed to repackage high-

411. Onaran, *supra* note 348.

risk assets into tradable securities.[412] The risky assets have now shifted from the pre-crisis subprime mortgages to non-performing loans and high-leveraged loans. These trends are corroborated by the 2019 IMF report on global financial stability highlighting the systemic vulnerabilities arising in the corporate sector due to increasing and unsustainable debt burdens.[413] Of course, these vulnerabilities can easily spread throughout the financial system, particularly through the market-based system.

The capacity of the Basel framework to rein in the risks and instability emanating from the resurgent market-based financial system may soon be tested again, given the increasing levels of debt originated by non-bank financial institutions and the ever-present interconnectedness between banks and non-banks.[414] This Article pointed to several weaknesses that still permeate the architecture of global financial regulation, which may prove decisive in making the financial system resilient. In particular, the Basel framework's capacity to capture vulnerabilities arising in non-bank, market-based channels rests ultimately in the robustness of its macro-prudential focus. It is hard to contend that the lingering faith in market discipline will prove a useful regulatory strategy.

412. ORÇUN KARA, EU MONITOR, SYNTHETIC SECURITISATION MAKING A SILENT COMEBACK 1 (2017). Another example is that of CLOs, discussed in Section II.D of this Article.

413. IMF, *supra* note 8, at 25–36.

414. Pedro Nicolaci da Costa, *The Financial System is Loaded Up with a Lot More Debt Than Wall Street Wants You to Know*, BUS. INSIDER (Apr. 6, 2018), https://markets.businessinsider.com/news/bonds/financial-system-more-debt-than-wall-street-wants-you-to-know-2018-4.