Financial Regulation, Corporate Governance, and the Hidden Costs of Clearinghouses

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Clearinghouses are systemic nodes in financial markets that handle trillions of dollars’ worth of transactions. Yet, these critical market infrastructures stand on fragile foundations. The Dodd-Frank Wall Street Reform Act of 2010, the sweeping financial reform that followed the 2008 financial crisis, embraced clearinghouses as systemic risk managers for the over-the-counter derivatives markets. While policymakers used clearinghouses to remove some counterparty risk from the markets, they ended up concentrating that risk onto them, making them systemically important.

This Article warns that while clearinghouses may have addressed some of the failures of the pre-crisis derivatives markets, they have created new issues that still remain unaddressed. The economic and governance structure set in place by the existing regulatory regime and the private rules adopted by clearinghouses in their self-regulatory capacity have important and as-yet overlooked fragilities that can undermine clearinghouses’ mission as financial stability bastions and transform them into systemic risk spreaders.

Clearinghouses operate in a framework of misaligned incentives. They face unique agency costs that spill from what this Article defines as the “member-shareholder divide” and the “separation of risk and control.” Because of their economic structure, the ultimate risk of the

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business is passed down to the members (i.e., users) of the clearinghouses and not borne by their shareholders, which creates moral hazard. This dynamic is further exacerbated by the tension between the public policy role bestowed on clearinghouses as systemic risk buffers and the for-profit nature of the financial conglomerates to which they belong. In addition, while clearinghouses were embraced as countercyclical mechanisms to stabilize the markets, the operation of their loss-absorption and mutualization function have procyclical features that put strong pressure on clearing members, while clearinghouses' shareholders have a small equity at stake.

After offering a political economy explanation of the current regulatory regime for clearinghouses, this Article urges policymakers and the industry to intervene in order to re-align the incentives of clearinghouses' shareholders with those of their members in order to ultimately enhance financial stability. Building on insights from the corporate governance and finance literature, this Article proposes reforms to address the unique agency costs that clearinghouses face, to enhance their governance and resilience, and to ensure their role as private systemic stability infrastructures. Clearinghouses should have more skin in the game in their business and their capital structure should be complemented with hybrid convertible financial instruments to more effectively allocate losses, recapitalize the business, and better align the economic incentives of clearinghouses’ stakeholders. A multi-stakeholder board should be established to enhance the participative governance of these firms and support the legitimacy and accountability of their operations. Finally, a new approach to the recovery and resolution of troubled clearinghouses that could result in their remutualization should be implemented in order to provide certainty in times of distress, as well as an ultimate realignment of members’ and shareholders’ incentives.

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I. INTRODUCTION

Every major financial crisis is followed by major financial reforms.¹ The devastating events of the 2008 financial crisis triggered sweeping legislative responses across the globe.² In the United States, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (“Dodd-Frank Act”) substantially reformed the U.S. financial system.³ The over-the-counter (OTC)


²See, e.g., ORGANISATION FOR ECON. CO-OPERATION & DEV., POLICY RESPONSES TO THE ECONOMIC CRISIS: INVESTING IN INNOVATION FOR LONG-TERM GROWTH 18–24 (June 2009).

derivatives markets in particular, deemed to be both catalysts of the crisis and contributors to the spread of risk and panic in the system, underwent a radical makeover. Policymakers mandated central clearing for OTC derivatives: most standardized and liquid derivatives are now required to be processed—i.e., cleared—by clearinghouses, more precisely, central counterparties clearinghouses or “CCPs”—market infrastructures specialized in risk mitigation and containment. Clearinghouses have operated in the financial markets for at least two hundred years, but post-crisis policymakers have furthered their importance by entrusting them as systemic “shock absorbers” and “stability buffers”, and centralized risk managers.

These historical yet often overlooked, institutions pose new and challenging issues for policymakers. First, the decision to centralize risk in clearinghouses made them critical for the stability of the financial system, to
the point that they are considered not only too-big-to-fail, but also too-important-to-fail institutions. Second, clearinghouses’ financial structure, which is comprised of different layers of loss-absorbing resources, makes them unique financial intermediaries and *sui generis* corporations. The modern clearinghouse challenges the traditional paradigms of corporate finance and governance. In a modern clearinghouse, risk and control are decoupled: the firm’s shareholders are the residual claimants of the business with formal control rights over it, but with limited and remote final risk-bearing costs. While shareholders participate in the upsides of the business, the downsides are shifted onto the clearing members, the primary users of the clearing services. Clearing members are, de facto, the ultimate risk bearers of the business, but have no control rights over it. They are required to provide clearinghouses with collateral against their open positions and to contribute to a pre-funded guaranty fund that mutualizes residual and ultimate losses among clearing members, but no governance rights are attached to these financial obligations. Third, and finally, what policymakers believe to be bastions against systemic risk are in fact built on potentially shaky foundations that could make them the trigger of a systemic crisis. At the same time, the existing regulatory framework underestimates and fails to address both the misaligned incentives that spill over from the agency costs of the separation of risk and control and from the member-shareholder divide, and the tension between the for-profit nature of the firms and their systemic stability function.

This Article addresses these three unsolved issues and develops and completes the analysis on clearinghouses begun in two companion pieces.

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12 See infra Part II.B.

13 See infra Part III.A.

14 See infra Part III.A.

15 See infra Part III.A.

16 See infra Part II.B.2.

17 See infra Part IV.

18 See infra Part III.A.

19 See infra Part III.B.

The first companion piece documents the historical evolution of the ownership structure of clearinghouses and analyzes the costs and benefits of different ownership models using insights from the literature on the theory of the firm. The second, building on the theoretical framework cemented in the present Article, dives into the existing regulatory regime for clearinghouses analyzing how, in practice, clearinghouses are governed. The current Article completes the investigation of clearinghouses’ organization, with a focus on clearinghouses’ governance and capital structure, and identifies, in the decoupling of risk and control and the resulting misaligned incentives between clearinghouses’ members and shareholders, the source of their critical structural failures. It then challenges the current regulatory and academic approach to clearinghouse governance and economic resilience, arguing that,


if not addressed, these failures might undermine the stability of financial markets and be the catalyst of the next financial crisis.

Clearinghouses are intermediaries: they stand between two parties in a trade, effectively acting as the “buyer to every seller” and as the “seller to every buyer.”

By acting as central counterparties, clearinghouses centralize and bear certain risks of the processed transactions, the biggest being counterparty risk. They manage and reduce them, agreeing to eventually guarantee the obligations under the cleared contracts if one side defaults and


Id. at 5–7.

See infra Part III (discussing the economics and functions of clearinghouses).
internalizing, but ultimately mutualizing, the residual losses among all clearing members, thus preventing the fallout from spilling over into the markets.27

While finance jargon can be esoteric, the clearinghouse business model is quite familiar: operationally, it is quite similar to StubHub’s business model.28 In addition to being a trading platform,29 StubHub also guarantees the performance of both legs of its processed transactions: that sellers get paid and buyers get their tickets.30

Clearinghouses do the same: they break a derivative contract into two new contracts and guarantee each.31 One major difference is who pays for the risk of transactions gone awry. In the StubHub model, the platform internalizes and pays for the costs of its guaranty program, assumes the risk of the default of one of the parties, and guarantees the performance of the contracts with its own capital.32 StubHub prices include the risk and costs associated with its guaranty function in its service fees.33 Clearinghouses, however, have in place a unique guaranty scheme whose features and risk allocation mechanisms often go overlooked.34 While clearinghouses formally assume the risk of the transactions they process, they externalize the ultimate risk of failure by passing down the costs of counterparty default and non-performance to their members.35 Those members, who are the users and customers of clearinghouses, are primarily investment banks that trade regularly among themselves, and were also required, by the Dodd-Frank Act, to use clearinghouses’ services to process their derivatives trades and, indirectly, to agree to clearinghouses’ rulebooks, including signing on to the obligation to


29 Clearinghouses do not provide a trading function, they only operate in the post-trading phase of a deal once the contractual parties have already agreed on the terms of the contract. See RECOMMENDATIONS FOR CENTRAL COUNTERPARTIES, supra note 24, at 5.


31 See infra Part II.

32 StubHub guarantees the payment to the seller, and the transfer of the ticket (or of a comparable replacement, or a complete refund) to the buyer. FanProtect Guarantee, STUBHUB, https://www.stubhub.com/legal/?section=fp (last visited June 22, 2021).

33 See id.

34 See infra Part II.B.2 (discussing in depth the mechanism of the default guaranty fund, the “guaranty program” of clearinghouse).

35 See infra Part II.B.
eventually bear and share—i.e., *mutualize*—any risk associated with the failure of a peer member.36

Clearinghouses are thus unconventional corporations.37 In a traditional corporation, shareholders are the residual claimants and own the equity interest in the firm.38 As residual claimants, those shareholders are entitled to receive distributions of the firm’s profits.39 However, in the unfortunate scenario in which the firm’s assets are insufficient to cover all of its liabilities, shareholders bear the final risks and losses up to the amount of their investment.40 Because of their role as residual claimants and final risk bearers, shareholders are granted information and control rights over the firm: they elect directors, who are responsible for managing the business; they vote on important corporate matters; they are owed fiduciary duties by the board of directors and the officers; and they have formal rights to monitor and influence the firm.41

However, this is not the case for modern clearinghouses.42 Clearinghouses are generally private close corporations, subsidiaries or business units of large public financial holding companies.43 Their controlling shareholder is a publicly traded corporation that has control and voting rights over the clearing firm and receives its earnings.44 Nevertheless, the controlling firm (and,

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36 See *infra* Part II.B. (discussing the risk management toolkit available to clearinghouses).

37 To some extent, the unique organizational structure of a clearinghouse resembles a “reversed” limited partnership. See *infra* Part II.A.


40 Id.

41 Clearinghouses are generally either a business unit of a future or swap exchange or an independent wholly owned subsidiary of a futures or swaps exchange. They have generally one controlling shareholder, namely the holding company of the larger market infrastructure group, that appoints the totality of the members of the board of directors. See Frank H. Easterbrook & Daniel R. Fischel, *Close Corporations and Agency Costs*, 38 STAN. L. REV. 271, 277–83 (1986) (discussing governance arrangements and agency costs in close corporations).

42 This Article focuses on derivatives clearinghouses. See Saguato, *The Ownership of Clearinghouses*, *infra* note 21, at 629–30 (discussing the different organizational structures and regulations of securities and derivatives clearinghouses).


indirectly, its shareholders) is substantially shielded from the risks of the clearing business because of the firm’s unique economic structure. 45 The potential losses that the clearinghouse might face are, in fact, in largest part borne by the clearinghouse’s members, the clearing services users, that are required to provide financial support to their service provider if it faces financial distress. 46 Despite their role as final risk-bearers in the clearing business, however, clearing members are not assigned any formal control rights over the governance of the clearinghouse. 47 This “separation of risk and control” 48 creates misaligned incentives and unique agency conflicts 49 between the clearinghouse and its controlling shareholder on one side and its members on the other 50—conflicts that undermine the financial resilience of the clearinghouse, potentially increase its moral hazard, 51 and ultimately threaten financial stability. 52

This Article looks at clearinghouses’ governance, capital, and recovery and resolution mechanisms and completes the analysis of the issues stemming from their unconventional corporate structure by answering three main questions:

First, clearinghouses have a unique capital structure that decouples risk-taking from risk-bearing incentives. 53

Copious law and finance literature have

45 See infra Part IV.A.
46 See infra Part II.B.2.
47 See infra Part IV.B.
50 See infra Part II (analyzing the unique economic and governance structure of clearinghouses).
51 On the general problem of moral hazard, see Jensen & Meckling, Theory of the Firm, supra note 49, at 308–10, and GEOFFREY MILLER, TRUST, RISK, AND MORAL HAZARD IN FINANCIAL MARKETS 73–88 (2011) (defining moral hazard as the situation where an actor loses some of her incentives to take precautions to prevent harm because she externalizes or transfers the risks and costs of the harms on a third party).
53 See infra Part II.
looked at the benefits and costs of this limited liability,\textsuperscript{54} and discussed the phenomenon of the decoupling of economic and control rights in the corporate law and bankruptcy contexts.\textsuperscript{55} Scholars have warned of the concerning risks of “empty voting,”\textsuperscript{56} where shareholders can cast their votes and affect the governance of a corporation without bearing the potential negative costs of their decision,\textsuperscript{57} or even extract private advantage to the detriment of the firm’s remaining stakeholders.\textsuperscript{58} How does the separation of risk and control present in clearinghouses?

Second, clearinghouses face unique agency costs that stem from the separation of risk and control.\textsuperscript{59} The agency conflicts and misaligned incentives between the clearinghouse (and indirectly its shareholders) and its members might result in excessive moral hazard.\textsuperscript{60} How can regulators intervene to better align the incentives of members and the clearinghouses (and its shareholders) to increase clearinghouses’ systemic resilience? To answer this question, the Article engages with two important streams of legal and finance literature, the growing corporate law literature on stakeholders’ governance\textsuperscript{61} and the critical law and finance literature on capital regulation and moral hazard.\textsuperscript{62}

Third, clearinghouses have become super-systemic financial firms: they are both “too important” and “too big to fail,”\textsuperscript{63} they are subsidiaries of large


\textsuperscript{56} Hu & Black, \textit{Equity and Debt}, supra note 55, at 640–52.

\textsuperscript{57} Id.

\textsuperscript{58} Id.


\textsuperscript{60} See \textit{infra} Part III.

\textsuperscript{61} See the recent bill proposed by Senator Elizabeth Warren, \textit{Accountable Capitalism Act}, S. 3348, 115th Cong. \S 5 (2018).

\textsuperscript{62} See \textit{infra} Part III.

infrastructural financial groups with their members representing a concentrated group of global financial institutions, and they are strongly interconnected with the major players in the financial markets. How can authorities effectively deal with and handle a clearinghouse in financial distress, and more narrowly, what recovery and resolution plans can be effectively deployed to avoid a systemic meltdown?

Building on the existing corporate governance and finance literature of financial institutions, this Article fills a critical gap in the existing academic and policy debate on the regulation of financial markets and addresses serious, but still unsolved, issues in the governance, accountability, and financial resilience of clearinghouses. The Article makes three main contributions. First, effective risk management in financial institutions can be achieved only if the final risk bearers have a voice in the governance of the firm. Second,
capital requirements and recapitalization mechanisms that operate
countercyclically are essential to create systemic resilience in financial
institutions.69 Third, clear and certain recovery and resolution plans are an
essential element to avoid financial panic and to achieve effective crisis
management.70

This Article contributes to a better-informed policy dialogue on the
regulation of clearinghouses and offers policymakers both a functional
perspective71 and some refined concrete policy recommendations on how to
retune some provisions of the Dodd-Frank Act, strengthen clearinghouses’
resilience and accountability, and hopefully complete the regulatory journey
begun by the Dodd-Frank Act.72 At the end of the day, post-crisis reforms
were reactive measures driven by the necessity to promptly stabilize the
markets and, understandably, reflected a specific situation and related
animosity against financial institutions and derivatives dealers in particular.
Ten years after the new regime for financial markets was rolled out,
unforeseen market developments have occurred, and policymakers have a
more comprehensive understanding of how markets have adapted to the Dodd-
Frank Act and what structural flaws have presented themselves.73 Hence, a re-
assessment of crisis-driven regulation is needed.74 Action must be taken before
a new financial crisis occurs and before systemic risk managers become
systemic risk catalysts.75

The Article is structured in five parts. Part II introduces clearinghouses,
discusses their role in the markets, with a particular focus on their systemic
risk manager function, and briefly analyzes the evolution of clearing markets

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69 See infra Parts V.A.2, V.B.1.
70 See infra Part V.B.2.
71 See Robert C. Merton & Zvi Bodie, A Conceptual Framework for Analyzing the
Financial Environment, in THE GLOBAL FINANCIAL SYSTEM: A FUNCTIONAL PERSPECTIVE
72 See Romano, Regulating in the Dark, supra note 1, at 28–37, 38 (arguing in favor
of sunset requirement for post-crisis reforms).
73 See, e.g., David Arthur Skeel, Five Years After Dodd-Frank: Unintended
Consequences and Room for Improvement, WHARTON PUB. POL’Y INITIATIVE, Dec. 2015,
at 1, 2–4; BETTER MKTS., TEN YEARS OF DODD-FRANK AND FINANCIAL REFORM: OBAMA’S
SUCCESSES, TRUMP’S ROLLBACKS AND FUTURE CHALLENGES 59–67 (July 2020),
https://df5f73903-52ff-4289-8e32-3c3eeff1a9f3.filesusr.com/ugd/87b966_49f0b8d2045d4e22
b733ce51167ebcccc.pdf [https://perma.cc/MTTH4-AYF3]; see also GLENN HUBBARD ET AL.,
REPORT OF THE TASK FORCE ON FINANCIAL STABILITY 22–28 (June 2021),
perma.cc/8R37-XLVX].
74 See generally Hester Peirce & Benjamin Klutsey, Introduction: Market Based
Financial Regulation, in REFRAMING FINANCIAL REGULATION: ENHANCING STABILITY AND
PROTECTING CONSUMERS 1 (Hester Peirce & Benjamin Klutsey eds., 2016).
75 See generally HAL S. SCOTT, CONNECTEDNESS AND CONTAGION: PROTECTING THE
FINANCIAL SYSTEM FROM PANICS (2016) (distinguishing between interconnectedness and
contagion—runs and runnability—as two main features of systemic risk).
and clearinghouse ownership structure. Part III provides a theoretical framework to understand the uniqueness of clearinghouse governance and capital structure, where risk-bearing obligations are decoupled from control rights, creating underestimated and hidden agency costs that manifest in misaligned incentives between clearinghouses’ shareholders and members. These misaligned incentives are then further exacerbated by the tension between the commercial purpose of clearing firms and the financial stability mission bestowed on them by Dodd-Frank. Part IV discusses the main aspect of the post-regulatory framework for clearinghouses with a particular focus on corporate governance provisions, while providing a political economy analysis and explanation of the existing regulatory regime. Part V provides some policy solutions to address and contain the agency costs of the separation of risk and control, in order to create more effective recovery and resolution processes for clearinghouses.

II. CLEARINGHOUSES: FUNCTIONS AND EVOLUTION

Clearinghouses are intermediaries that stand between the buyers and sellers of financial contracts, guaranteeing the performance of cleared transactions. Clearinghouses are the products of synergies among market participants that create a mechanism to centralize, pool, manage, and ultimately share the risks and losses of transacting in financial contracts among trading parties. Widely used in the securities and derivatives markets, clearinghouses operate in the post-trading phase of a transaction. After a trade is executed, clearinghouses confirm and reconcile the contractual terms, administer and manage the provision of contractual guarantees (collateral) and ensure the performance of the contract. To effectively manage risk and compress exposures, clearinghouses generally act as central counterparties for a select group of dealer firms—the members of the clearinghouse—that pay fees to receive clearing services and that are

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76 TINA P. HASENPUSCH, CLEARING SERVICES FOR GLOBAL MARKETS 23–24 (2009).
79 See HASENPUSCH, supra note 76, at 17–32.
contractually bound by the clearinghouse’s rules. The clearinghouse breaks the original contract into two new contracts and interposes itself between the original parties, becoming the buyer to the original seller and the seller to the original buyer. After a contract is novated, the clearinghouse has two opposite, matching, and offsetting positions in its balance sheet which operates with a “matched book.” This means that each claim the clearinghouse has against one of its members (i.e., asset) is matched by a claim against the clearinghouse (i.e., liability). By becoming the central counterparty for its members, the clearinghouse is exposed primarily to the risk of their failure (i.e., counterparty credit risk), and, by operating with a matched book, the clearinghouse is able to limit its exposure to market risk: any market fluctuations create no net change in the firm’s liquidity and balance sheet.

80 See infra Part II.B.
81 HASENPUSCH, supra note 76, at 23–24. Novation is a legal process whereby an original obligation or party is substituted with a new one. Novation, LEGAL INFO. INST., https://www.law.cornell.edu/wex/novation [https://perma.cc/RDH3-KX7E].
82 See HASENPUSCH, supra note 76, at 2, 23–24.
83 See Squire, supra note 23, at 870.
84 Id.
85 Counterparty credit risk is the risk that one party of the contract fails to perform it. See BIS REPORT, supra note 52, at 18–19, 36–45.
86 Market risk is the risk associated with fluctuation in market prices, which affects the value assets. See id. at 18, 41.
87 See DAVID MURPHY, OTC DERIVATIVES: BILATERAL TRADING & CENTRAL CLEARING 147 (2013).
Table 1: Bilateral Market v. Market with a Clearinghouse (Centrally Cleared Market)

Because of their role as central counterparties, clearinghouses serve two main functions in the market: they act as information intermediaries and operate as systemic risk managers. The next Parts analyze these two critical functions provided by clearinghouses.88

A. Clearinghouses as Information Intermediaries

As the transactional central nodes for cleared markets, clearinghouses operate as information intermediaries. They have direct access to a large amount of information regarding the volume of cleared transactions and the operations of clearing market participants. They gather information about counterparties’ overall exposure on derivatives; they also have a comprehensive view of the types and quality of assets pledged as collateral, and throughout the operation of the membership agreement, they have the right to access specific financial and prudential information about their members. By gathering, accessing, and processing this information, clearinghouses can more effectively operate as systemic risk managers and oversee market risk; they can more accurately price services for their members; and, eventually, they can proactively adjust their risk management strategies and tune their loss-absorbing resources to better respond to changes in the markets. Because of their role as information intermediaries, clearinghouses are a resource for regulatory bodies to oversee the markets and the building up of risk.

B. Clearinghouses as Systemic Risk Managers

The main function of clearinghouses is to manage risk. To accomplish this, they deploy a staggered arsenal of risk management practices, requirements, and mechanisms.

Clearinghouses’ first and preemptive risk mitigation technique and line of defense is the membership requirements imposed on clearing members. Not

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89 See generally Paolo Saguato, The New Information Intermediaries (Jan. 2019) (unpublished manuscript) (on file with author) (discussing the role of clearinghouses as information intermediaries and the implications on market stability and integrity in light of the growing role and functions provided by the financial market infrastructural group clearinghouses belong to).

90 See Saguato, The Unfinished Business, supra note 22, at 470.

91 See infra text accompanying notes 97–104 (discussing clearinghouse membership requirements).

92 See Saguato, The Unfinished Business, supra note 22, at 470. “From the regulators’ perspective, clearinghouses offer an effective stream of data on the derivatives markets. This was missing in the pre-crisis world.” See id. at 470–71.

93 See generally Saguato, New Information Intermediaries, supra note 89.


95 See BIS REPORT, supra note 52, at 101; see, e.g., CME GRP., CLEARING MEMBERSHIP HANDBOOK 2-1 to 2-3 (Oct. 2018), https://www.cmegroup.com/company
all market participants can directly access the firm’s clearing services; only qualified financial institutions are granted the “privilege” and license to access them. Clearinghouses retain strong powers over setting entry standards: they mandate stringent prudential, financial, and capital adequacy requirements for a financial institution to qualify as a clearing member. Once an institution is admitted as a member, the clearinghouse has the right to oversee and inspect its member’s books, and it subjects members to ongoing financial disclosure and periodic monitoring of internal risk management practices and policies. Clearinghouses retain the right to either suspend or withdraw membership privileges if a member falls short in complying with the prudential standards included in the clearinghouse’s rulebook. Furthermore, and critical to the smooth functioning of the firm, members agree to be bound by and comply with all the conditions and rules included in that rulebook. Once admitted as members, financial institutions are contractually bound to the rulebook, agreeing to contribute to the financial resources that the clearinghouse collects to support the clearing business and eventually internalizing the losses from the default of one of the members and mutualizing those losses across the non-defaulted members.

Before relying on loss-absorbing resources as risk management tools, clearinghouses mitigate counterparty exposures by compressing offsetting


97 See, e.g., CME RULES, supra note 96, § 107; ICE CLEAR RULES, supra note 96, at 26–36.


99 See CME RULES, supra note 96, § 195; ICE CLEAR RULES, supra note 96, at 43.


101 See CME, CLEARING MEMBERSHIP, supra note 95, at 2–1.

102 See CME RULES, supra note 96, § 816; ICE CLEAR RULES, supra note 96, at 102–03.
positions through a process called multilateral netting.\textsuperscript{103} Clearinghouses, simply put, cancel out opposite positions (i.e., “position netting”) and net gains against losses (i.e., “exposure netting”).\textsuperscript{104} Clearinghouses net offsetting positions on a rolling basis to reduce and mitigate counterparty exposure,\textsuperscript{105} to assess the actual risk that clearing members bring to the clearinghouse, and to rightly tune collateral requirements for open positions.\textsuperscript{106} When a clearing member defaults, the clearinghouse “close[s] out” and nets the defaulting member positions,\textsuperscript{107} expediting the liquidation of the positions of the defaulting party or parties.\textsuperscript{108}

Beyond membership requirements and the operation of multilateral netting, clearing members are contractually required to commit to the financial stability of the clearinghouse and to internalize—and eventually mutualize—the costs of members’ default.\textsuperscript{109} Clearing members are required to post margin to collateralize and guarantee their open positions and to contribute loss-absorbing resources to the guaranty fund to make clearinghouse systemic risk absorbers.\textsuperscript{110} These two layers of financial resources—margin and guaranty fund—together with the clearinghouse’s own skin in the game and with the assessment rights on the members are referred to as the “default

\textsuperscript{103} Netting is the process of compressing reciprocal and opposite positions. See Hasenpusch, supra note 76, at 24—27; Paolo Saguato, Unbundling Complexity: The Law and Economics on Netting 16–20 (Aug. 2021) (unpublished manuscript) (on file with author); Squire, supra note 23, at 863–69.

\textsuperscript{104} See Pirrong, The Economics of Central Clearing, supra note 23, at 7. See generally Menkveld & Vuillemey, supra note 88, at 158–59, 164–66 (discussing the findings on finance literature on multilateral netting and collateral efficiencies).


\textsuperscript{106} Collateral are the guarantees a contractual party asks its counterparty to pledge to mitigate credit exposure. If a clearinghouse, through multilateral netting, achieves a reduction of counterparty risk, then it would be able to proportionately reduce the amount of collateral necessary to hedge against counterparty default risk. This effectuates an efficient use of collateral. See Pirrong, The Economics of Central Clearing, supra note 23, at 7–8; BIS Report, supra note 52, at 46–50.

\textsuperscript{107} See, e.g., CME Rules, supra note 96, §§ 818.A–C; Hasenpusch, supra note 76, at 26–27.

\textsuperscript{108} When a member defaults, the clearinghouse liquidates all collateral pledged by the defaulting member and assesses the net final exposure that the members leave to its counterparties. See Squire, supra note 23, at 891–906 (discussing the benefit of clearinghouses and their netting procedures in supporting fast and orderly liquidation of the open positions of defaulting members). But see Roe, Clearinghouse Overconfidence, supra note 23, at 1662–72, 1681–91 (raising concern about the non-distributive nature of close-out netting and the risk externalization features of netting).

\textsuperscript{109} See Menkveld & Vuillemey, supra note 88, at 160.

\textsuperscript{110} See id.
“waterfall”: the ensemble of resources available to clearinghouses to absorb losses. A default waterfall might vary from clearinghouse to clearinghouse, but the core structure and operation are generally the same. The operation of the default waterfall is contractual in nature. As discussed in more detail later in this Article, lawmakers and regulators left to the self-regulatory authority of clearinghouses have the responsibility to set transparent and resilient mechanisms to manage default losses. However, the default waterfall does not directly address how operational losses will be managed and allocated, which remains one of the unsolved and controversial issues in the organization and regulation of clearinghouses.

The following chart summarizes the general structure and operation of a default waterfall. Each layer of financial resources is available at a different stage of the management of a member’s default. The chart uses the concept of the three Rs to refer to the resilience, recovery, and resolution regimes of the clearinghouse, and identifies for each “R”—i.e., for each step in the business

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112 See, e.g., CME RULES, supra note 96, § 702; ICE CLEAR RULES, supra note 96, at 106–11 (both setting the priority in the use of loss-absorbing resources).


114 See id. (manuscript at 1).

115 Counterparty default or credit risk is risk of default of a contractual counterparty on its obligations. See BIS REPORT, supra note 52, at 19.

116 Operational risk is the risk of losses in value, or in interruption, or failure to provide services because of deficiencies and breakdown in the internal process, human errors, management failure, or general disruption in the operation of the clearing business. See id. at 20. Liquidity risk is the risk that a counterparty, or the clearinghouse itself, has insufficient liquid funds to meet its financial obligations. See id. at 19.


of the risk management cycle of the clearinghouse—the available resources in the default waterfall. Resilience includes all pre-funded resources available to the clearinghouse to absorb losses. Recovery includes all non-pre-funded resources on which the clearinghouse can rely when pre-funded resources are exhausted. Finally, resolution is the end scenario for the clearinghouse.

Table 2: Clearinghouses’ Default Waterfall

<table>
<thead>
<tr>
<th>3RS</th>
<th>Typical Clearinghouse Default Waterfall</th>
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<tbody>
<tr>
<td>Resilience</td>
<td>Defaulted Member Margin</td>
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<tr>
<td></td>
<td>Defaulted Member Guaranty Fund Contribution</td>
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<tr>
<td></td>
<td>Clearinghouse “Skin in the Game”</td>
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<td></td>
<td>Non-Defaulted Members Guaranty Fund Contributions</td>
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<tr>
<td>Recovery</td>
<td>Non-Defaulted Members Assessment Rights</td>
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<td>Clearinghouse Equity Capital</td>
</tr>
<tr>
<td>Resolution</td>
<td>Unclear(^{120})</td>
</tr>
</tbody>
</table>

1. Margin as Micro-Prudential Defense

Margin requirements defend against counterparty default risk and operate as a micro-prudential transactional risk management tool, and are the second line of defense.\(^{121}\) Clearinghouses collect margin as collateral to guarantee the performance of cleared and open positions.\(^{122}\) Margin can be either initial margin or variation margin.\(^{123}\) Initial margin, often called “performance

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\(^{120}\) See infra Part V.B.1.

\(^{121}\) See BIS REPORT, supra note 52, at 50–51; Menkveld & Vuillemey, supra note 88, at 164–66; Squire, supra note 23, at 870–71.

\(^{122}\) See CME RULES, supra note 96, §§ 820, 824; ICE CLEAR RULES, supra note 96, at 47–64.

\(^{123}\) See BIS REPORT, supra note 52, at 51.
bond,”124 is collected at the time the transaction is cleared125 and reflects the risk and size of the underlying transaction and the creditworthiness of the clearing party.126 More specifically, initial margin contributions are intended to cover the future exposures that might arise in the interval between the execution of the contract and either its performance or the close-out and liquidation of the cleared position upon the default of the clearing member.127 Variation margin, or “maintenance performance bond,” reflects market fluctuations in the value of the cleared positions or changes in the value of the pledge collateral and is generally recalculated and marked to market daily or intra-daily.128

2. Loss Mutualization Resources: Guaranty Fund and Assessment Rights

In addition to the transactional defenses described above, a clearinghouse has in place a unique risk mitigation resource, the default guaranty fund, as a third line of defense.129 When a defaulted clearing member’s margin contributions are insufficient to absorb the losses of its default, the guaranty fund intervenes to cover the remaining uncollateralized credit losses.130 This acts as a loss mutualization device and provides a countercyclical, pre-funded “cushion” of resources to contain (within the clearinghouse perimeter) and mutualize among all non-defaulting clearing members the losses of the default of one or more of them.131 Each member must contribute to the guaranty fund in proportion to the volume and riskiness of the portfolio of transactions that it

125 See id. at 11.
126 See HASENPUSCH, supra note 76, at 29.
127 See CME CLEARING RISK MANAGEMENT, supra note 124, at 10–11. Margin requirements—i.e., performance bonds—are generally collected by the clearinghouse and held in segregated accounts for each individual clearing member. Id. at 14.
128 See id. at 10.
129 See Saguato, The Ownership of Clearinghouses, supra note 21, at 621–22. The other two lines of defense being the membership standards and margin.
130 See id.
131 See, e.g., CME CLEARING RISK MANAGEMENT, supra note 124, at 12, 20; ICE CLEAR CREDIT, REGULATION, https://www.theice.com/clear-credit/regulation [https://perma.cc/LYQ8-MQPP]. In industry jargon, the ensemble of all financial resources used by a clearinghouse to address the default of a clearing member is referred to as the “default waterfall” mechanism, with transaction-specific resources (margin) being used before tapping into the default guaranty fund (mutualization defense). See Saguato, The Ownership of Clearinghouses, supra note 21, at 619–21.
submits to be centrally cleared, and, for systemically important clearinghouses, the size of the guaranty fund should be adequate to absorb the simultaneous default of the two largest members in extreme but plausible market conditions. The guaranty fund operates in a staggered approach. If, after all the margin pledged by the defaulted member is used, the clearinghouse still needs additional resources to cover the losses of the default and to re-match its book, then the capital contributions to the default fund by the defaulted member are used. Only if all the guarantees provided by the defaulted member are not sufficient to cover its losses are the costs of the default passed down to the non-defaulted members and absorbed by their contributions to the guaranty fund. The guaranty fund proportionally shares the excess losses among all the non-defaulted members.

On top of contributing to the guaranty fund, members are also contractually bound to provide for the clearinghouse’s financial resilience with additional injections of resources. When even the guaranty fund is depleted and its resources are insufficient to cover the losses of the default of one or more clearing member, the clearinghouse can call or assess the members for additional default fund contributions. Members are contractually required to replenish the guaranty fund when losses are so egregious that they cannot be contained using the pre-funded resources. In contrast to the members’ contributions to the guaranty funds—which are countercyclical, prefunded, and adjusted to the risk profile of each member’s cleared portfolio—

\[\text{See CME CLEARING RISK MANAGEMENT, supra note 124, at 14–20.}\]
\[\text{See 17 C.F.R. § 39.33(a)(1) (2021).}\]
\[\text{See Saguato, The Ownership of Clearinghouses, supra note 21, at 619–22.}\]
\[\text{See id. at 620.}\]
\[\text{See CME CLEARING RISK MANAGEMENT, supra note 124, at 19.}\]
\[\text{See id.}\]
\[\text{See, e.g., CME RULES, supra note 96, § 802.B; ICE CLEAR RULES, supra note 96, at 107–10.}\]
\[\text{See, e.g., CME RULES, supra note 96, §§ 816, 824; ICE CLEAR RULES, supra note 96, at 111–12 (stating that if a member fails to meet the assessment call, it will default and, in addition to closing out and liquidating its position, the clearinghouse can use the margin posted by the defaulted member to cover the outstanding assessment obligations).}\]
\[\text{See, e.g., CME RULES, supra note 96, § 802.B; ICE CLEAR RULES, supra note 96, at 112. In theory, clearinghouse members can be exposed to unlimited liability to keep the clearinghouse business afloat and cover all losses. See CME RULES, supra note 96, § 802.B; ICE CLEAR RULES, supra note 96, at 112.}\]
\[\text{See CME CLEARING RISK MANAGEMENT, supra note 124, at 19–20.}\]
assessment rights are not prefunded and are triggered only after the losses cannot be contained within the guaranty fund. By the way they operate, assessment rights are pro-cyclical and can impose additional liabilities on financial institutions in a market environment that is likely expressing severe distress.

Finally, in addition to all financial resources provided by clearing members, the clearinghouse traditionally contributes to its financial resilience with its own capital, the so-called “skin in the game.” Before the clearinghouse can access the guaranty fund to cover open and unmatched positions, the clearinghouse generally uses its own capital contributions to the default waterfall. The clearinghouse’s skin in the game plays a role in absorbing a fraction of default losses: it is a critical mechanism in internalizing any operational risk-related losses, and it is intended to align the interests of the clearinghouse to those of its members. However, as the next Part will discuss in more detail, the ratio between members’ guaranty fund contributions and the clearinghouse’s own skin in the game is quite unbalanced, polarizing the positions of the clearinghouse and its members rather than aligning them and giving rise to potential frictions and misaligned incentives between the firm and its main stakeholders.

In summary, loss mutualization occurs only after all the defaulted members’ resources are used up and the clearinghouse’s equity takes the first hit. Because of the specific features of the default waterfall and because of

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142 See id.

143 See Saguato, The Ownership of Clearinghouses, supra note 21, at 631–32.


the presence of pre-funded and countercyclical resources—that is, they are readily available for the clearinghouse when a crisis situation occurs—the clearinghouse performs a macroprudential function in mitigating systemic risk:149 the pre-funded and countercyclical nature of the guaranty fund increases the capacity of the clearinghouse to absorb systemic shocks, reduces the likelihood of contagion, and strengthens contractual links among derivatives counterparties even during times of systemic financial distress.150

C. Clearinghouses and Their Evolution

Clearinghouses have been stitched into the weaves of financial markets for the last two centuries.151 Securities, derivatives, and payment markets substantially rely on clearinghouses as primary enhancers of their efficiency and stability.152 Born from the private initiative of market participants to reduce transaction costs and manage counterparty default risk in an orderly

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Some firms call for the complete use of the clearinghouse’s “skin in the game” before losses can be passed down to the non-defaulted members; others call for a proportional sharing of losses between the clearinghouse’s “skin in the game” and the guaranty fund. See id.

149See Steven L. Schwarcz, Systemic Risk, 97 GEO. L.J. 193, 204 (2008) (defining systemic risk as “the risk that (i) an economic shock such as market or institutional failure triggers...either (X) the failure of a chain of markets or institutions or (Y) a chain of significant losses to financial institutions, (ii) resulting in increases in the cost of capital or decreases in its availability, often evidenced by substantial financial-market price volatility”).

150Clearinghouses collect margin and guaranty fund contributions in good times, so that they are readily available in bad times when capital becomes scarce and more expensive. See CME CLEARING RISK MANAGEMENT, supra note 124, at 10. More theoretically, countercyclical financial resources aim at anticipating macro-financial shocks. See BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT’L SETTLEMENTS, FREQUENTLY ASKED QUESTIONS ON THE BASEL III COUNTERCYCLICAL CAPITAL BUFFER 1 (Oct. 2015), https://www.bis.org/bcbs/publ/d339.pdf [https://perma.cc/U2M7-DV5N]. Considering macro-financial and macro-economic conditions, firms collect (or are required to collect) countercyclical resources during periods of “excess aggregate credit growth,” when risk is potentially building up in the system, so that the firm has sufficient financial resources to absorb losses during a recession or if financial markets experience distress and defaults of banks. See, e.g., id.; see also Countercyclical Capital Buffer (CCyB), BANK FOR INT’L SETTLEMENTS (Dec. 18, 2020), https://www.bis.org/bcbs/ccyb/ [https://perma.cc/ARH4-KMDP]; Randal K. Quarles, Vice Chair for Supervision, Fed. Rsrv. Bank, Speech at the Meeting of the Manhattan Institute’s Shadow Open Market Committee: Frameworks for the Countercyclical Capital Buffer (Mar. 29, 2019) (transcript available at https://www.federalreserve.gov/newsevents/speech/quarles20190329a.htm [https://perma.cc/QWT7-4QPR]).

151See Yadav, The Problematic Case of Clearinghouses, supra note 23, at 389; NORMAN, supra note 9, at 54.

152See generally NORMAN, supra note 9 (describing the historical formation and transformation of clearinghouses).
fashion, clearinghouses developed as mutual firms and were originally organized as member-owned enterprises, either directly owned by the clearing members or as wholly owned subsidiaries or business units of an exchange, which were in turn owned by the very same clearing members.\footnote{For a more comprehensive account of the historical evolution of the clearing industry, see Saguato, The Ownership of Clearinghouses, supra note 21, at 623–30, and Kroszner, supra note 77, at 602–06.} Being a clearing member was linked to being an owner (either shareholder or partner) of the clearing firm, and the two qualities could not be decoupled.\footnote{See, e.g., Lee, supra note 9, at 145–46.} Clearinghouses were operated as “cooperatives” responsible for managing the financial risk of their members, reducing the overall exposure and risk of their members, and providing a clear mechanism for the orderly management of the eventual default of members.\footnote{See Randall S. Kroszner, Central Counterparty Clearing: History, Innovation, and Regulation, 30 ECON. PERSPS., no. 4, Nov. 2006, at 37, 37–38.} Traditionally, clearinghouse members \textit{ex ante} agreed to internalize and share any costs associated with the eventual default of the other members, and in return all participated in the governance of the firm.\footnote{See id. at 38.} Simply put, the firm’s stakeholders with full skin in the game were the stakeholders that managed the risk of the firm and were completely accountable for the clearinghouse’s operations.\footnote{See id.}

The 2000s represented a turning point in the evolution of the organizational structure of clearinghouses, particularly in the United States, where securities and derivatives markets have embraced two different market structures and ownership models.\footnote{Worldwide clearinghouses can be placed in three main categories based on their ownership structure: (1) government-owned clearinghouses; (2) member-owned clearinghouses; and (3) investor-owned clearinghouses. See Saguato, The Ownership of Clearinghouses, supra note 21, at 665; Saguato, Securities and Derivatives Central Counterparties, supra note 22.} Securities and derivatives exchanges decided to demutualize their ownership structure,\footnote{For a historical analysis of the evolution of the stock exchange industry, see Reena Aggarwal & Sandeep Dahlia, Demutualization and Public Offerings of Financial Exchanges, J. APPLIED CORP. FIN., Summer 2006, at 96, 96; Andreas M. Fleckner, Stock Exchanges at the Crossroads, 74 FORDHAM L. REV. 2541, 2554–65 (2006) (looking at the conflicts of interest in demutualized for-profit stock exchanges and their role as private regulators of their operated markets); Oliver Hart & John Moore, The Governance of Exchanges: Members’ Cooperatives Versus Outside Ownership, OXFORD REV. ECON. POL’Y, Dec. 1996, at 53, 55 (analyzing the evolution of the organizational ownership structure of stock exchanges); Roberta S. Karmel, Turning Seats into Shares: Causes and Implications of Demutualization of Stock and Futures Exchanges, 53 HASTINGS L.J. 367, 400–30 (2002) (analyzing the demutualization of securities and commodities exchanges and the consequences on self-regulation of the industry); Jonathan Macey & Hideki Kanda, The Stock Exchange as a Firm: The Emergence of Close Substitutes for the New York and}
The next Part analyzes why clearinghouses are unconventional corporations. All derivatives clearinghouses operate with a “double layered
capital”166: the equity capital provided by the firm’s shareholders is “shielded” by the guaranty fund fully contributed by the members.167 The clearinghouse and its shareholders rely on the clearing members not just for their business—and the revenues that they extract from it—but also, critically, to financially support the risk management business.168 In addition, even when the clearinghouse financially contributes to its default waterfall, the size of the capital at risk (i.e., skin in the game) contributed by the firm is a small fraction compared to the members’ contributions to the guaranty fund.169 Such imbalance in contributions to loss-absorbing resources reflects also an imbalance in control and governance rights, in which the misaligned incentives and interests of clearing members and clearinghouses give rise to agency costs that manifest in moral hazard.170 Derivatives clearinghouses have demutualized their ownership to external shareholders, but still mutualize their risks and losses on their members; thus, as some commentators noted, clearinghouses experienced an “incomplete demutualization,”171 with all its unintended and unsolved problems.

As the next Part analyzes in more detail, the existing derivatives markets structure and the organizational model adopted by derivatives clearinghouses pose new challenges to policymakers—challenges that were overlooked when derivatives exchanges demutualized their ownership structure in the early 2000s and when derivatives dealers were not yet mandated to use clearinghouses to process their derivatives trades.172 The next Part develops a novel theoretical framework to understand the uniqueness of the economic and governance structure of clearinghouses, which flips traditional concepts of corporate law and finance and manifests with new agency conflicts.

III. THE HIDDEN COSTS OF CLEARINGHOUSES

A. The Agency Costs of the Separation of Risk and Control

Clearinghouses are corporations flipped upside down. As previously mentioned, derivatives clearinghouses are for-profit corporations owned by a publicly listed company, but they operate with a capital structure that allocates the ultimate costs of losses onto the members—that is, the providers of the guaranty fund—and not onto the shareholders.173 Control rights over the...

166 The notion of “double layered capital” was developed in my previous work. See Saguato, The Ownership of Clearinghouses, supra note 21, at 632–35.

167 Id. at 633–34.

168 See id. at 634.

169 See id. at 622, 634; supra Table 2.

170 See infra Part III.A.


172 See Saguato, The Ownership of Clearinghouses, supra note 21, at 607–08.

173 Id. at 601.
clearing firms and election rights for the members of the board of directors are retained by the firm’s shareholders. The economic rights of participating in the profits of the clearing business are held by the shareholders too, however the ultimate risks and costs of the business are all allocated on the clearing members via the structure and operation of the default waterfall. The firm’s stakeholders with actual skin in the game in the business and direct interest in establishing robust risk management policies and practices do not have any formal legal right to representation on the board of directors of the clearinghouses, nor any formal or ultimate say in the business and in risk management decisions.

This situation is peculiar. The decoupling of final risk-bearing costs from control rights creates a unique economic and governance structure that reverses the traditional view of a corporation, where shareholders are the residual claimants: shareholders are entitled to the firm’s revenues, they are liable for corporate losses up to the amount of their capital investment, and they bear any residual business risk—and for this very reason, they are assigned ownership rights (or indirect control rights) over the firm. Here, shareholders shift the costs of running the business onto the firm’s users. This imbalance of incentives creates a new type of delicate and risky agency problem between the clearinghouse and its shareholders (the agents) and the members/users (the principals). This new agency conflict that stems from the separation of risk and control and from the “member-shareholder divide” misaligns the incentives of the clearinghouse from those of its members and plants the seed for moral hazard for the clearinghouse itself, which threatens the systemic resilience of the firm and ultimately the stability of the financial system.

174 Id. at 601–02.
175 It can be said that taxpayers are the ultimate risk-bearers in the case of a clearinghouse’s failure. See id. at 665.
176 Id. at 608.
179 See Saguato, The Ownership of Clearinghouses, supra note 21, at 639.
180 See id. at 635–40 (defining this unique feature of the ownership structure of modern clearinghouses).
A different—and less conventional—example that helps to illustrate the agency problems in the governance of clearinghouses can be built using a limited partnership as a model business entity.\textsuperscript{182} A regular limited partnership has two main classes of investors: general partners, who have full control and management rights over the partnership but are also personally and severally liable for the partnership’s obligations,\textsuperscript{183} and limited partners, who have limited control and management rights over the partnership, but at the same time have limited liability and are not personally liable for the limited partnership’s obligations.\textsuperscript{184} The delicate balance achieved by the drafters of the Uniform Limited Partnership Act precisely aims at addressing the costs associated with the separation of risk and control and at aligning risk-taking incentives with risk-bearing responsibilities. General partners are thus assigned full control rights because they are the final risk bearers of the limited partnership.\textsuperscript{185} On the other hand, limited partners have limited control rights over the enterprise because they bear only the risk of losing their initial investment in the partnership.\textsuperscript{186} Thus, clearinghouses can be seen as “reversed” limited partnerships\textsuperscript{187}: a form of limited partnership where the “general partners,” aka the clearinghouse’s members, have virtually unlimited liability, but no general control rights, while the “limited partners,” aka the clearinghouse and its shareholders, have all the control rights but limited liability. This type of governance arrangement flips the business law paradigm that those who bear the residual costs of the venture should have the right to influence the governance of the venture itself.\textsuperscript{188}

The economic and governance structure of clearinghouses, as described by the analogy of a “reversed” limited partnership structure, misaligns the risk-taking incentives of the firm’s main stakeholders and creates moral hazard for the clearinghouse and its shareholders because they do not ultimately bear the costs of their decisions. Clearinghouses face a serious governance problem: the agency costs of the separation of risk and control undermine the stability of the firm.\textsuperscript{189} But does the Dodd-Frank Act and its implementing regulations

\begin{footnotesize}
\begin{itemize}
\item[\textsuperscript{183}]\textit{See Unif. Ltd. P’ship Act} § 402 (“General Partner Agent of Limited Partnership”); \textit{id.} § 404 (“General Partner’s Liability”).
\item[\textsuperscript{184}]\textit{See id.} § 302 (“No Agency Power of Limited Partner as Limited Partner”); \textit{id.} § 303 (“No Liability as Limited Partner for Limited Partnership Obligations”).
\item[\textsuperscript{185}]\textit{See Bainbridge, supra} note 182, at 202–05.
\item[\textsuperscript{186}]\textit{See id.}
\item[\textsuperscript{187}] “Reverse” partnerships are not a legal business form but rather a fictional business entity that provide a useful comparison for the economic structure of clearinghouses.\textsuperscript{188} Henry Hansmann & Reinier Kraakman, \textit{The End of History for Corporate Law}, 89 Geo. L.J. 439, 440–41 (2001).
\item[\textsuperscript{189}]\textit{See Marnie Rosenberg, Managing Dir. & Glob. Head of Clearinghouse Risk & Strategy, J.P. Morgan Chase, Remarks at the Meeting of the U.S. Commodity Futures}
\end{itemize}
\end{footnotesize}
take into account this new manifestation of agency conflicts that spill from the incomplete demutualization of clearinghouses? The answer is no; actually, as discussed in the next Part, some provisions can even exacerbate the problems.\textsuperscript{190}

Corporate governance has traditionally been the primary mechanism to reduce agency costs deriving from the separation of ownership and control in publicly held corporations—i.e., the holding firms of clearinghouses.\textsuperscript{191} Directors and officers of the firm (i.e., agents) are rational and self-interested actors who might have incentives to advance their personal interest at the detriment of the shareholders (i.e., principal). To align the incentives of the corporate agents and the corporate principal, agents (board of directors and officers) have a duty to pursue the maximization of the firm value (i.e., shareholders’ value),\textsuperscript{192} and are subject to fiduciary duties to the principal (corporation and indirectly its shareholders).\textsuperscript{193} The transposition of the

\textsuperscript{190} See infra Part IV.B.

\textsuperscript{191} See BERLE & MEANS, supra note 48, at 119–26; Fama & Jensen, supra note 48, at 304–11. Agency costs generally fall into three categories: (1) monitoring costs, incurred by the principal in order to monitor the activities of the agent to ensure that the agent acts in the best interest of the principal and commits a proper level of effort in the venture; (2) bonding costs, incurred by the agent to show the principal her commitment and loyalty; and (3) residual costs, all other remaining costs that result from the misalignment of incentives between principal and agent. See BERLE & MEANS, supra note 48, at 119–26; Fama & Jensen, supra note 48, at 304–11.

\textsuperscript{192} It is outside the scope of this Article to discuss the complex issue of the corporate purpose. For completeness, the corporate purpose theory of “shareholders primacy” claims that the duty of the management is to maximize shareholders’ value. See Dodge v. Ford Motor Co., 170 N.W. 668, 684 (Mich. 1919) (one of the most famous corporate law judicial decisions, that states that “[a] business corporation is organized and carried on primarily for the profit of the stockholders”). Even critics of the strict application of this theory agree that it accurately describes the primary, general purpose of most corporate actions. See id. For a discussion on corporate purpose, see generally Hansmann & Kraakman, supra note 188 (describing the increased adherence to a shareholder-centric view of corporate governance); Lynn A. Stout, Bad and Not-So-Bad Arguments for Shareholder Primacy, 75 S. CAL. L. REV. 1189 (2002) (analyzing arguments for and against the inclusion of social responsibility in corporate governance); and William W. Bratton & Michael L. Wachter, Shareholder Primacy’s Corporatist Origins: Adolf Berle and The Modern Corporation, 34 J. CORP. L. 99 (2008) (discussing the historical origins of shareholder primacy theory).

\textsuperscript{193} See Macey & O’Hara, The Corporate Governance of Banks, supra note 66, at 93; John Armour & Jeffrey N. Gordon, Systemic Harms and Shareholder Value, 6 J. LEGAL ANALYSIS 35, 58 (2014) (proposing officer and director risk oversight liability for systemically important firms).
principal-agent framework in the clearinghouse context is quite interesting given the unique economic structure and loss allocation arrangements of the firm. As wholly owned subsidiaries of public corporations, the fiduciary duties of the clearinghouse’s board of directors and officers run to the firm’s shareholder—i.e., the holding company of the financial group—as principal and formal final risk bearer,\textsuperscript{194} and not to the members, who are the actual final risk bearers. Shareholders are granted control rights over some corporate decisions and, most importantly, they have the right to elect the corporate agents—the directors who are going to sit on the board—because of their role as equity capital investors and formal residual claimants; however, members are not given any formal say in the business despite being the providers of the loss absorbing resources and the de facto final risk bearers. In addition, the firm’s corporate purpose is not to safeguard financial stability, but to maximize shareholders’ value—the value to which shareholders are entitled as equity providers.\textsuperscript{195}

The current allocation of control rights and final risk bearing costs creates a potential imbalance in clearinghouses’ governance structure. The stakeholders who set the firm’s risk profile and appetite and who have a formal say in the risk management are not the ones bearing the actual final costs if things go south.\textsuperscript{196} In fact, before the firm’s shareholders see their actual capital used to support and stabilize the clearinghouse,\textsuperscript{197} clearing members might have already absorbed and mutualized the firm’s losses with their prefunded contributions to the guaranty fund, and might even have been required to inject additional resources via assessment calls. The prioritization of members’ contributions to the shareholders’ equity as a loss-absorbing buffer exacerbates the moral hazard for the clearinghouses. In the long term, this might result in a degradation of risk-management standards driven by the commercial for-profit nature of the firm. Clearinghouses and their shareholders are self-interested, rational actors that operate to maximize the value of their business/investment by increasing the profits of the firm. Clearinghouses might decide to expand their clearing volume and consequently increase the revenues from their clearing fees by lowering membership requirements and admitting less financially resilient members, by

\textsuperscript{196} See supra Part II.B.2.
\textsuperscript{197} Formally, shareholders participate in the “default waterfall” with their “skin in the game” before contributions to the guaranty fund of the non-defaulted members are used. See supra Part II.B.2. In addition, the amount of skin in the game is minimal compared to the size of the guaranty fund or the market capitalization of the whole infrastructural group. See supra Table 2.
relaxing their market and member supervision efforts, or by reducing margin requirements to attract more transactions. This conduct could find a rational explanation in the fact that the current structure of the default waterfall externalizes the losses of the clearing business on the members. In addition, as discussed in the next Part, moral hazard might be further exacerbated by the public policy function and financial stability mission bestowed on clearinghouses by lawmakers when they mandated central clearing for derivatives. Clearinghouses and their groups might take on excessive risk, operating under the assumption that a public backstop is implicit in the infrastructural and utility function they provide in the markets or even explicit in the liquidity support provided for by Dodd-Frank.

A second important implication of the agency costs of the separation of risk and control is related to the effects of limited liability on corporations and the regime of capital requirements regulation in financial firms. In general, the limited liability structure of corporations, which partitions the personal assets of the shareholders from the claims of the firm’s creditors, creates negative externalities by incentivizing shareholders to invest and support risky projects because they would not internalize the costs of the venture’s failure, but rather would externalize losses on third parties, be they creditors or the collective. In these situations, the law is primarily concerned with noncontractual creditors, since it assumes that contractual creditors can negotiate to receive guarantees and monitoring rights. To protect noncontractual (generally tort) creditors from the risk of bearing the cost of misconduct, policymakers either require entities to carry insurance sufficient to cover any reasonably expected noncontractual liability or to build and maintain minimum capital requirements.

The clearinghouse context, again, is unique. Members are contractual parties and creditors of the clearinghouse, and they are contractually

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198 See Saguato, *The Ownership of Clearinghouses*, supra note 21, at 642–43. Examples of instances of degradations in risk management could be the acceptance for clearing of highly volatile and risky products, the broadening of types of classes of acceptable collaterals as margin, the re-use of the pledge collateral in leveraged transactions, etc. Id.
199 See *supra* Part II.B.
200 See *infra* Part III.B.
206 See Singer, *supra* note 204, at 18–19.
committed to financially supporting the clearinghouse with additional injections of capital.\textsuperscript{207} One would expect that in order to agree on a substantial financial commitment to the financial stability of the clearinghouse members would be able to negotiate for and obtain strong contractual and governance concessions from the clearinghouse, but that is not the case. While clearing members are sophisticated contractual parties, their bargaining power is severely constrained by the regulatory framework built for the derivatives markets in the aftermath of the 2008 crisis and by the evolution of the clearing market ecosystem, with a few players dominating different segments of the markets.\textsuperscript{208} On one side, derivatives dealers—i.e., the current clearing members—have been mandated either to centrally clear their swaps through clearinghouses, or to comply with costly margin and capital requirements imposed by regulators if they decide not to clear, substantially nudging the markets to clearinghouses.\textsuperscript{209} This substantially reduces the bargaining power of entering voluntarily into a clearing agreement, weakening members \textit{ex ante} contracting power. On the other hand, derivatives dealers have reduced \textit{ex post} contracting power, too. In case of disagreement with a clearinghouse’s risk management policy, clearing members face a complex and hard scenario. The option of threatening to leave a clearinghouse is not particularly effective given the high exit costs. Clearing members, in fact, face four costly exit options if they decide to rescind their membership status with a specific clearinghouse: (1) they can interrupt their derivatives operations; (2) they can offer only highly priced, non-centrally cleared contracts; (3) they can look for an alternative clearinghouse—a challenging task given the natural monopoly structure of clearing services;\textsuperscript{210} or (4) they can try to set up, with other unsatisfied derivatives dealers, a competing clearinghouse—a legally challenging and risky solution given the language of Dodd-Frank.\textsuperscript{211} In this framework, clearing members’ bargaining power is reduced, resulting in less effective capacity for members to influence the clearing business, less effective monitoring power over the business itself, and less effective participation in the risk governance and management of clearinghouses.\textsuperscript{212}

\textsuperscript{207} See supra Part II.
\textsuperscript{208} See infra Part IV.A.
\textsuperscript{209} The intent of regulators to impose high margin requirements for non-centrally cleared swaps on one side is intended to protect against the potentially risk of bespoke contract, on the other is meant to induce---\textit{rectius}---force the industry to centrally clear their swap positions; see BANK FOR INT’L SETTLEMENTS, MARGIN REQUIREMENTS FOR NON-CENTRALLY CLEARED DERIVATIVES 2–3 (2020), https://www.bis.org/bcbs/publ/d499.pdf [https://perma.cc/8NMJ-9W98].
\textsuperscript{210} See infra note 224.
\textsuperscript{211} See infra Part III.B (discussing the Lynch Amendment and its effects on deterring the formation of member-owned clearinghouses).
\textsuperscript{212} In a traditional corporation, creditors bear the residual losses if the business goes bankrupt, however, particularly in the case of contract creditors and of clearing members, commentators argue that is a feature of the markets and sophisticated parties can price the
Finally, the economic misalignment of loss-absorbing capital between the clearinghouse (and its shareholders) and its members is summarized in the following chart. First, it shows the ratio between the clearinghouse’s skin in the game—one of the layers of the default waterfall meant to align the incentives of the clearinghouse to those of its members\(^\text{213}\)—and the overall amount of the pre-funded contributions to the guaranty fund provided by the members. Then, it offers, for framing purposes, the value of the clearinghouse’s equity and the value of the financial market infrastructure group’s equity. The table looks at two derivatives clearinghouses designated as systemically important by the Financial Stability Oversight Council: CME and ICE Clear Credit.\(^\text{214}\)

\(^{213}\) See supra note 135 and accompanying text.

\(^{214}\) FIN. STABILITY OVERSIGHT COUNCIL, supra note 78, at 145. This Article focuses on derivatives clearinghouses under the CFTC jurisdiction. The third derivatives clearinghouse designated by FSOC as systemically important is the Option Clearing Corporation (OCC), however, being the SEC its primary regulator and supervisor, it is outside the analysis of this Article.
Table 3: Clearinghouses’ Skin in the Game in Context

<table>
<thead>
<tr>
<th>Firm</th>
<th>Skin in the Game (SiG) ($)</th>
<th>Guaranty Fund ($)</th>
<th>SiG/Guaranty Fund</th>
<th>FMI Equity ($)</th>
<th>CCP Equity ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CME</td>
<td>250 M</td>
<td>8.6 B</td>
<td>2.9%</td>
<td>26.32B</td>
<td>1.01 B</td>
</tr>
<tr>
<td>ICE</td>
<td>50 M</td>
<td>3.3 B</td>
<td>1.5%</td>
<td>19.5 B</td>
<td>212 M</td>
</tr>
</tbody>
</table>

B. The Tensions Between Commercial Purpose and Financial Stability Mission

In addition to the agency conflicts and moral hazard that result from the separation of risk and control, clearinghouses’ incentives are further misaligned by the tension between the for-profit purpose of the firms and their role as market utilities under a clearing mandate, which can pull the firms in two opposite directions. On the one side, clearinghouses are subsidiaries or business units of profit-maximizing financial market infrastructural groups; on the other, they have been bestowed with a public policy function and entrusted to support financial stability in the derivatives markets, something that was achieved by mandating derivatives dealers to centrally clear their standardized derivatives.

216 Id.
219 The Chicago Mercantile Exchange Inc.’s clearing unit has individual and separate financial safeguard waterfalls for each major asset class in which it provides clearing services. See CME CLEARING RISK MANAGEMENT, supra note 124, at 3. CME base products include futures, options on futures, and cleared swaps products other than interest rate swaps. See id. at 10.
The tension between the for-profit nature of a clearinghouse and its financial stability mission has been modeled in a recent study, which found theoretical evidence that the economic incentives of a for-profit clearinghouse are misaligned with the financial stability mission of the market infrastructure. For-profit clearinghouses generate profits for their shareholders with clearing fees. The larger the volume of cleared transactions, the higher the collected fees; thus, eventually, the shareholders’ profits will be higher. Assuming that the clearing market is a competitive market, to maximize trading volumes, for-profit clearinghouses charge their clearing members low collateral requirements to maximize trading volume. At the same time, evidence shows that when capital requirements (i.e., the amount of the clearinghouses’ skin in the game) are not mandated, for-profit clearinghouses do not have incentives to put up their own capital in the default waterfall, thus externalizing on the members any clearing losses and making them the actual final risk bearers. In addition, even when collateral requirements are mandated on for-profit clearinghouses, the firms have incentives to externalize the costs of their business by imposing higher collateral requirements (i.e., initial and variation margin) onto their members, thus increasing the clearing costs on the latter.

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221 Id. at 1.
222 See id. at 3–4, 27.
223 See id. at 3–4.
224 The question of the actual competitiveness of the clearing market is outside the scope of this paper. The clearing market is not a fully competitive market. Even though there is no de jure monopoly for derivatives clearinghouses, in practice, the entry costs (i.e., sunk cost to start a competing clearinghouse and the scale economy nature of the clearing business) for new clearing ventures are so high that incumbent clearinghouses have a de facto market power within each of the asset classes of derivatives. See Felix B. Chang, The Systemic Risk Paradox: Banks and Clearinghouses Under Regulation, 2014 COLUM. BUS. L. REV. 747, 768, 804–14 [hereinafter Chang, The Systemic Risk Paradox]; Felix B. Chang, Financial Market Bottlenecks and the “Openness” Mandate, 23 GEO. MASON L. REV. 69, 74 (2015) [hereinafter Chang, Financial Market]; Chang, Second-Generation Monopolization, supra note 23, at 682–85; see also Tommaso Padoa-Schioppa, Member, Exec. Bd. of the Eur. Cent. Bank, Clearing and Settlement of Securities—A European Perspective 3 (Sept. 5, 2001) (transcript available at https://www.bis.org/review/r011005c.pdf [https://perma.cc/69P5-DN95]) (“In clearing and settlement, as in other network industries, the tendency towards a fully consolidated infrastructure is driven by positive externalities, economies of scale, economies of scope and need for common standards.”).
225 SKEEL, supra note 5, at 73.
226 See Huang, supra note 220, at 23–26.
227 Cf. id. at 27.
As the study shows, for-profit clearinghouses are incentivized to implement a suboptimal capital structure that externalizes costs onto the members. At the same time, the study also looks at mutual member-owned clearinghouses and how they generally hold a higher level of capital (i.e., skin in the game), while at the same time charging lower initial margin (thus not externalizing the costs of the higher capital contributions on the members).  

Although one of the premises of this very interesting research can be questioned, namely the assumption that the clearing market is a competitive one, the findings can still be robust if we look at the clearing market as a natural monopoly. There is consensus among scholars that post-trading financial markets infrastructures operate in a network environment, which means that as their businesses develop through economy of scale and scope, clearing becomes more and more efficient and the clearing volumes get bigger and bigger. What we have experienced in the market is a concentration of clearing services per asset class among specialized clearinghouses.

Competition generally has occurred at an early stage when new market opportunities present, but when markets mature and pick a winner, i.e., a clearinghouse is able to attract a volume of trades large enough to make its services more appealing to financial institutions, then the non-victorious clearinghouses tend to leave the market and not compete anymore. However, during the “competition” time, when clearinghouses try to lure business from incumbent providers of clearing services for a specific class of contract, the kind of competition that the market experiences is a race to the bottom vis-à-vis risk management standards.

The natural monopoly structure of this market does not exclude the fact that clearinghouses might still have incentives to attract larger volumes of cleared transactions in order to maximize the profits for their shareholders and thus water down their risk management standards—accepting, for instance, fewer liquid products, or easing risk oversight practices, or even being captured by a small group of clearing members and consequently increasing its risk profile. This scenario is currently supported by the imbalance of capital at stake between the clearinghouse and its members, and is further exacerbated by the financial stability mission that has been bestowed on clearinghouses by

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228 See id. at 4–5, 33–36.
229 See Chang, The Systemic Risk Paradox, supra note 224, at 768, 804–14; see also supra text accompanying note 224.
233 See Saguato, The Ownership of Clearinghouses, supra note 21, at 642–43; see also Chang, Financial Market, supra note 224, at 74.
policymakers. Having been expressly and publicly designated by regulators as systemically important firms, clearinghouses can operate under the implicit assumption that authorities are going to support them even in times of severe market distress.\(^{234}\) Loss externalization, mutualization on members, and the implicit public backstop have the potential to severely distort the risk-taking incentives of clearinghouses, drastically increasing their moral hazard.

A final implication of the status of clearinghouses as for-profit infrastructures that perform a public policy function is the risk of build-up of moral hazard linked to the presence of an implicit guarantee of a public financial backstop justified by the clearing mandate.\(^{235}\) The presence of an implicit guarantee might further exacerbate the moral hazard for clearinghouses; not only would the firms’ shareholders have their risk-taking incentives distorted by the presence of double-layered capital, which in practice transfers the costs of the clearing business to the members, but they would also operate and set their risk profile under the assumption of public support in case of distress.\(^{236}\) This implicit guarantee has its roots in the substantial political capital invested in the central clearing mandate, in the unknown consequences that might follow a clearinghouse failure, and even in the express regime of access to discount window services for clearinghouses under “unusual or exigent circumstances.”\(^{237}\) Again, clearinghouses are not standalone entities, but subsidiaries of large, for-profit financial infrastructural groups.\(^{238}\) Large infrastructure groups have engaged in acquisition campaigns and expanded their activities to new sectors—and, as of today, no legal restrictions would prevent them from engaging in highly leveraged activities.\(^{239}\) A financial market infrastructure group might have incentives to take on morally hazardous behavior by leveraging their role as providers of critical infrastructural services via their clearinghouse and investing in risky ventures. This situation might undermine the systemic resilience of clearinghouses.

**IV. THE REGULATORY FRAMEWORK FOR CLEARINGHOUSES**

Why did Congress mandate the use of clearinghouses as systemic risk managers and absorbers, but support the development of a problematic organizational structure? After having analyzed the role that clearinghouses


\(^{238}\) See generally Ferrarini & Saguato, *Regulating FMIs*, supra note 20.

\(^{239}\) *Id.*
play in the financial markets and the agency costs these firms face, Part IV.A takes the reader back to the 2008 financial crisis and explores the political economy rationales that supported and justified the reform of the derivatives markets and the adoption of Title VII and Title VIII of the Dodd-Frank Act. Part IV.B discusses the current regulatory framework governing clearinghouses and its flaws and shortcomings.

A. The 2008 Financial Crisis and the Political Economy of Derivatives Markets Reform

The 2008 financial crisis wreaked havoc on the global economy.\(^\text{240}\) The engine of financial markets halted, banks suffered substantial losses, and the availability of credit dried up.\(^\text{241}\) Financial institutions and their actions in the years leading up to the crisis were strictly investigated and special committees looked into the causes of the crisis.\(^\text{242}\) Macroeconomic conditions and public policy decisions supported the rapid expansion of credit and liquidity in the markets.\(^\text{243}\) Financial innovation and engineering provided financial institutions with new complex and sophisticated instruments to repackage risky assets into allegedly safer ones, which increased leverage in the system and fueled the demand for new and riskier financial products to hedge against new risks.\(^\text{244}\) Derivatives proliferated in bilateral, over-the-counter (OTC) markets, first as hedging mechanisms and then as speculative tools to replicate synthetic exposures.\(^\text{245}\)

When Bears Stearns, Lehman Brothers, and American International Group (AIG) failed, commentators blamed the firms’ exposure to derivatives, along with the uncertainty and opacity surrounding the network of contractual relationships and how risk would have spread throughout the system,\(^\text{246}\) and pointed at the derivatives markets structure as one of the systemic accelerators

\(^\text{240}\) See Adam Tooze, Crashed: How a Decade of Financial Crises Changed the World 8–9 (2018).
\(^\text{241}\) See id.
\(^\text{244}\) See generally Fin. Crisis Inquiry Comm’n, supra note 242.
\(^\text{245}\) Id. at xxiv–xxv.
\(^\text{246}\) See Blinder, supra note 4, at 271–72, 279–80.
of the financial crisis. Derivatives markets—and the credit default swaps market in particular—were identified as some of the weakest links in the financial system.

Swaps markets were deeply investigated. Commentators pointed at the structure of the pre-crisis derivatives markets and identified structural shortfalls that undermined their stability. They developed as bilateral, decentralized, OTC markets that heavily relied on financial institutions to act as dealers and market makers. Derivatives dealers were the driving force behind the rapid expansion of these markets. Regulators deferred to the expertise and sophistication of the financial industry with regard to the policing of the swaps marketplace, relying substantially on the industry’s internal incentives to create effective risk management mechanisms and to promote self-discipline.

Unfortunately, the events of the summer and fall of 2008 proved regulators wrong and derivatives dealers failed to live up to regulators’ expectations. From being considered trusted, sophisticated, reliable, and self-

See id. at 279–82; Mervyn King, The End of Alchemy: Money, Banking and the Future of the Global Economy 143–44 (2016); Geithner, supra note 4, at 396.


The derivatives markets have grown exponentially since the early 2000s. See generally Gillian Tett, Fool’s Gold: The Inside Story of J.P. Morgan and How Wall Street Greed Corrupted Its Bold Dream and Created a Financial Catastrophe (2010).

Derivatives were not new to the financial system. See Skeel, supra note 5, at 63. For over two centuries, futures contracts have supported the development of the modern industrial economy by providing a means to hedge risks. See id. What was new, however, was the type of derivatives engineered by financial institutions, and the structure and internal dynamics of the pre-crisis derivatives markets. See id. at 64–65. Futures markets historically developed as centralized markets, with trading and post-trading infrastructures. See id. at 61, 64–65.

See Stout, supra note 4, at 14, 29.

See Darrell Duffie, How Big Banks Fail and What to Do About It, at xi, 53–69 (2011) [hereinafter Duffie, How Big Banks Fail] (analyzing the role of dealer banks and the complexity of their structure and activities); Fin. Crisis Inquiry Comm’n, supra note 244, at 46.


Id. at 53.
disciplined market actors, derivatives dealers became “evil dealers” and the target of heavy critiques. The financial industry amassed very large exposures in derivatives positions. The private, bilateral, and OTC nature of the swaps markets deprived regulators and markets of effective information on the actual risks therein. The contractual risk management mechanisms to manage counterparty defaults were miscalibrated, and some dealers further weakened their positions by seeking correlated exposures in their investment strategies. While not the cause of the financial crisis, derivatives exacerbated the liquidity pressure on derivatives dealers. And finally, the lack of clear system-wide mechanisms to manage and internalize the costs of the default of multiple contractual counterparties worsened the panic when the Lehman Brothers filed for bankruptcy on September 15, 2008.

However, a slightly different—and often overlooked—story comes out of Lehman’s bankruptcy. While the events therein can be interpreted as evidence of the structural issues in the derivatives markets, they also tested the actual operations of the private contractual mechanisms built to address the default of derivatives dealers and unraveled some of the benefits that market infrastructures, and clearinghouses in particular, can bring to markets as orderly managers and liquidators of a defaulting financial institution’s open positions. Lehman had a large OTC derivatives portfolio, and its derivatives counterparties were the major global financial institutions that, at that time, were also under severe financial distress. To contain the risk of a complete

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257 See FIN. CRISIS INQUIRY COMM’N, supra note 242, at 300.

258 See Squire, supra note 205, at 1158, 1200 (defining “correlation-seeking” risk as the situation when managers and shareholders seek to correlate the firm’s contingent debt to the firm’s insolvency risk).


262 At the time of Lehman’s bankruptcy, LCH.Clearnet was substantially owned by its users, who controlled 73.3% of the firm outstanding shares. See Lee, supra note 9, at 242–43. LCH.Clearnet, in eight days since Lehman’s filing for Chapter 11, successfully managed the risk exposure from Lehman’s default by more than 90%. See Norman, supra note 9, at 32.

disruption of the OTC derivatives markets, Lehman’s OTC derivatives counterparties, with coordination from the International Swaps and Derivatives Association (ISDA)\(^\text{264}\) and the New York Federal Reserve;\(^\text{265}\) proceeded—when possible\(^\text{266}\)—to centrally close out and net their positions, thereby reducing their exposures to Lehman’s bankruptcy.\(^\text{267}\) In addition, Lehman had open derivatives positions with two major clearinghouses, the U.S.-based CME and the U.K.-based LCH Clearnet.\(^\text{268}\) Both clearinghouses were able to effectively and efficiently liquidate Lehman’s derivatives portfolio,\(^\text{269}\) compressing and netting offsetting exposures and using pre-funded financial resources to cover all remaining losses.\(^\text{270}\) Eventually, they were even able to return funds to the Lehman estate. This successful story of

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\(^\text{264}\) The International Swap and Derivatives Association is the trade organization that represents the participants in the over-the-counter derivatives markets worldwide. See About ISDA, INT’L SWAP & DERIVATIVES ASS’N, https://www.isda.org/about-isda [https://perma.cc/C8J4-YTW9].

\(^\text{265}\) The Lehman case was not the first time the New York Federal Reserve (N.Y. Fed) intervened to coordinate the orderly management of the default of a systemically important derivatives player. See PRESIDENT’S WORKING GRP. ON FIN. MKTS., HEDGE FUNDS, LEVERAGE, AND THE LESSONS OF LONG-TERM CAPITAL MANAGEMENT, at viii, 13–14 (Apr. 1999). In 1998, the NY Fed orchestrated the private bailout of Long-Term Capital Management (LTCM), that required LTCM’s derivatives counterparties to internalize and mutualize the losses of their contractual position. Id. at 13–14. Put differently, the N.Y. Fed required LTCM’s derivatives counterparties to act as a clearinghouse and mutualize losses in order to internalize the shock of the default of their counterparty. Id.


\(^\text{269}\) See Roe & Adams, supra note 268, at 403; see also Press Release, LCH.Clearnet, $9 Trillion Lehman OTC Interest Rate Swap Default Successfully Resolved (Oct. 8, 2008), https://secure-area.lchclearnet.com/Files/2008-10-08%20SwapClear%20Default_tcm6-46506.pdf [https://perma.cc/EC6Z-VUYA] [hereinafter LCH.Clearnet, $9 Trillion].

\(^\text{270}\) See Allen, supra note 23, at 1087–90 (providing a comprehensive descriptive account of LCH’s management of Lehman’s default); NORMAN, supra note 9, at 297–302; Anupam Chander & Randall Costa, Clearing Credit Default Swaps: A Case Study in Global Legal Convergence, 10 CHI. J. INT’L L. 639, 655–58 (2010).
orderly default management and cooperation between derivatives dealers and clearinghouses often goes overlooked, but it provided momentum to the clearing industry to claim a central role as critical market infrastructure in the post-crisis markets.271

In the immediate aftermath of the financial crisis, policymakers scrutinized the derivatives markets to identify their failures and fix them.272 Policymakers pointed to the opacity of the OTC markets.273 The lack of comprehensive and available information about the swaps markets hindered the oversight capacity of public authorities and also undermined the ability of market participants to effectively understand, price, and monitor the risks and exposures in the markets.274 As exposed by the Financial Crisis Report, even highly sophisticated derivatives dealers underestimated the riskiness of the structural fragilities of the OTC markets and misjudged the necessity of having in place pre-funded backstop mechanisms.275 Second, the swaps markets were highly interconnected.276 The largest financial institutions operated as derivatives dealers and as market makers, concentrating the risk among a handful of players.277 The bilateral links built between derivatives dealers created an intricate exposure web that made the market structure particularly prone to chain and correlated defaults. Third, because of the bilateral nature of OTC transactions, the OTC derivatives markets lacked any mechanisms or procedures to systemically address the failure of a derivatives dealer.278 The contractual models used by the derivatives dealers in their operations did not embed any system-wide shock-absorbing mechanisms,279 overlooked the risk of a domino effect that the default of one dealer could impose on the whole derivatives ecosystem, and actually intensified the risk of runs and fire sales.

271 See supra Part II.
272 See FIN. CRISIS INQUIRY COMM’N, supra note 242, at 38–52.
273 See id. at xxiv–xxv.
274 See id at 45–51, 65–66.
275 See id. at 47–51.
277 See FIN. CRISIS INQUIRY COMM’N, supra note 242, at 45–51. See generally Greenberger, Diversifying Clearinghouse Ownership, supra note 23; LITAN, supra note 276.
These market fragilities and failures were further exacerbated by the lack of any comprehensive regulatory and supervisory apparatus. This regulatory vacuum caught regulators unprepared to deal with a crisis scenario and was reflected in the reactive regulatory intervention of the post-crisis derivatives reforms.

The moral hazard of derivatives dealers and the systemic risk posed by their actions were a target of the post-crisis reforms. In the derivatives markets, policymakers intended to carve away dealers’ influence and relevance. The policymakers’ vision was to build the post-crisis OTC swaps markets around the central role of specialized risk managers; the very same firms that operated in the securities and futures markets, which were able to tidily and successfully navigate through the crisis, were going to operate as systemic circuit-breakers. Both domestically and internationally, the post-crisis reforms empowered financial market infrastructures (FMIs) to increase transparency, enhance transactional efficiency, and mitigate systemic risk. Clearinghouses became the cornerstone of this new architecture.

The consensus among scholars and commentators on clearinghouses as effective solutions to stabilize and strengthen the derivatives markets was strong. The historical track record of clearinghouses in successfully supporting the financial stability of securities and futures markets and the market trend towards more central clearing of OTC derivatives by the end of 2009 provided policymakers with a solid rationale to justify and support the clearing mandate. Another political economy explanation, though, has its

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280 See Statement of Mary L. Schapiro, supra note 278.

281 See e.g., SKEEL, supra note 5, at 65–66.


283 Acharya, Shachar & Subrahmanyam, supra note 249, at 373–74 (explaining new regulations for dealers under Dodd-Frank).

284 See Levitin, The Tenuous Case, supra note 23, at 453.

285 At the international level, the Group of Twenty (G20) and the Financial Stability Board (FSB) recommended moving OTC derivatives into centralized and organized markets. The international guidelines set by the G20 and the FSB envisioned three pillars to support a more efficient and stable derivatives market: mandatory trading of standardized derivatives in trading venues, mandatory reporting of all derivatives to trade repositories, and mandatory central clearing of eligible derivatives through central counterparties. See GRP. OF TWENTY, LEADERS’ STATEMENT: THE PITTSBURGH SUMMIT 9 (Sept. 2009), https://www.treasury.gov/resource-center/international/g7-g20/Documents/pittsburgh_summit_leaders_statement_250909.pdf [https://perma.cc/ZP4E-7KR3]. See generally FIN. STABILITY BD., IMPLEMENTING OTC DERIVATIVES MARKET REFORMS (Oct. 2010), https://www.fsb.org/wp-content/uploads/r_101025.pdf [https://perma.cc/96SK-7JJZ].

286 See Ferrarini & Saguato, Regulating FMIs, supra note 20, at 571–74.

287 See, e.g., SKEEL, supra note 5, at 68; KROSZNER & SCHILLER, supra note 7, at 72–74; Acharya, Schacher & Subrahmanyam, supra note 249, at 379.

288 SKEEL, supra note 5, at 70.
roots in the public and legislators’ hostility to OTC derivatives dealers, dovetailed with a popular antagonism to large financial institutions and their concentrated markets. Framing the rationale for the clearing mandate as a way to reduce the influence of too-big-to-fail financial firms in the market and assigning a more central role to “market utilities”—i.e., clearinghouses—supported the regulatory framework for the governance of clearinghouses, where competitiveness concerns prevailed over financial stability issues.289 Titles VII and VIII of Dodd-Frank were adopted after the catastrophic failure of Lehman and AIG and the alleged “uncontrolled” derivatives liabilities built by many derivatives dealers in the run-up to the crisis.290 Lawmakers were pushed to drastically reduce the influence of derivatives dealers in the governance of financial markets because of their morally hazardous behaviors and their incentives to externalize their risks and losses on the system in the run up of the crisis.291 Large infrastructure groups, which successfully navigated the perils of the financial crisis,292 were able to gain from the weaknesses of their former members in the crisis’s immediate aftermath and lobbied lawmakers to require their clearinghouses’ services for all the “vanilla” derivatives that dealers originally developed over the counter and that they had not been able to attract to their markets originally.293


Dodd-Frank mandated standardized OTC derivatives to be centrally cleared through clearinghouses.294 The market outcome of this political decision resulted in a rechanneling of derivatives and their underlying risks from a multitude of bilateral contractual links between derivatives dealers to

289 Allen, supra note 23, at 1100.
290 See Squire, supra note 205, at 1183–91.
291 See id. at 1198–1203.
293 See Kimberly Anne Summe, An Examination of Lehman Brothers’ Derivatives Portfolio PostBankruptcy: Would Dodd-Frank Have Made a Difference?, in BANKRUPTCY NOT BAILOUT 85, 101 (Kenneth Scott & John Taylor eds., 2012).
294 See supra Part II.
specialized (and interconnected) risk managers. The systemic risk that characterized the pre-crisis derivatives markets was not eliminated by the simple intervention of clearinghouses—in fact, it would be naïve to think it was—but the risk was transformed and concentrated among specialized risk managers. There is no clear empirical evidence regarding whether the derivatives markets are more or less risky now than they were before the crisis. However, the post-crisis derivatives markets with built-in clearinghouses potentially have in place more effective mechanisms to manage risks and more countercyclical resources to internalize and absorb systemic shocks. For this reason, the resilience of clearinghouses is now a matter of systemic importance. What is critical, therefore, is the regulatory approach to the internal governance and risk management of clearinghouses.

As previously said, clearinghouses are systemically important: they process several trillion dollars’ worth of transactions, they are significantly exposed to clearing members’ counterparty risk, and because of their public role as systemic risk managers, their mismanagement or failure might result in an extremely severe systemic shocks. The failure of a derivative (or even securities) clearinghouse would halt the functioning of financial markets. Clearing members would have billions of dollars of assets trapped in a delicate bankruptcy procedure. Even before reaching a bankruptcy situation, members in the recovery phase of the default waterfall may have already been required to inject new financial resources into a failing clearinghouse to keep it afloat. Furthermore, if a clearinghouse were to fail, markets would likely experience severe panic and widespread fire sales would occur, which might consequently shake the financial system to its foundations.

The political decision to make derivatives clearinghouses systemically important firms might induce the expectation that the regulatory framework built for them incorporates mechanisms and procedures capable of addressing any possible conflict or fragility in the firms, making them bulletproof institutions. However, the post-crisis regime for clearinghouses has a few Achilles’ heels that raise questions about whether policymakers fully assessed

298 Id. at 4.
300 See Bignon & Vuillelémey, supra note 201, at 100.
301 See supra Part II.
the potential costs of regulating clearinghouses. 302 The vulnerabilities of the current regulatory framework and the organizational design of clearinghouses reflect the conditions of the political process under which the post-crisis reforms were adopted and the different power dynamics in that political negotiation. The negotiations of Titles VII and VIII of Dodd-Frank revealed the strong reservations that policymakers had regarding the role of clearing members—the major OTC derivatives dealers who played a role in the 2008 financial crisis—and this was in part reflected in the final rules. 303

Titles VII and VIII set the legislative framework for clearinghouses. 304 Title VII provides the general regime for the new market structure of swaps markets and set the baseline rules that apply to regular clearinghouses. 305 Lawmakers acknowledged that the clearing mandate would have expanded the role of clearinghouses and boosted their importance for the smooth functioning of the markets. 306 For this reason, Title VIII set enhanced prudential and supervisory standards for systemically important clearinghouses.

Leaving aside the provisions that intervened in the derivatives markets structure and the provision of clearing services, 307 Title VII introduced multiple principles-based standards for the governance and financial structure of clearinghouses. 308 It delegated to the CFTC and the SEC a broad authority to set general principles for clearinghouses’ internal organization. 309 It also delegated to the competent agencies the authority to write rules governing the conflicts of interest that, according to its drafters, could threaten the systemic

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303 RENè S. MILLER, CONG. RSCH. SERV., R41715, CONFLICTS OF INTEREST IN DERIVATIVES CLEARING 5–6 (Mar. 2011); see LitAN, supra note 276, at 8; Ferrarini & Saguato, Regulating FMIs, supra note 20, at 570–71.

304 For a comparative analysis see Saguato, Securities and Derivatives Central Counterparties, supra note 22 (discussing the market structure of central counterparties in the United States).


306 Title VIII was intended to provide an enhanced regulatory and supervisory framework to mitigate systemic risk in financial market infrastructure, given their expanded role following the adoption of the clearing mandate. See Dodd-Frank Act §§ 803, 804.

307 Title VII’s most innovative provision was to mandate the use of clearinghouses to clear standardized swaps. See id. § 725. It also requires clearinghouses to offer open access to clearing services and non-discriminatory clearing for equivalent trades that are executed bilaterally or on trading venues that are not affiliated with the FMI group. See id. § 723(a).

308 Id. § 725.

309 Id. § 764.
resilience of clearinghouses—namely, the influence of derivatives dealers (i.e., the members) over the clearing firm.310 Ten years after the passage of Dodd-Frank, both the CFTC and the SEC passed final rules to directly address the internal accountability and corporate governance structure of clearinghouses.311 Interestingly, however—and perhaps a sign of the controversial aspect of the so-called Lynch amendment312—ten years after the passage of Dodd-Frank, the provisions that required the CFTC and the SEC to adopt rules to address conflicts of interest in the ownership structure of clearinghouses, are practically dead letter.313 The competent agencies, the CFTC and the SEC, have not in fact implemented any final rules to fulfill the legislative mandate,314 and the CFTC only in 2019 adopted some very

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310 Id. § 726 (directing the CFTC to review the need for and adopt conflict-mitigating rules); id. § 765 (providing a parallel provision to SEC). The rule delegates to the competent agency the authority to develop rules which may include numerical limits on the control of, or the voting rights with the respect to, any clearinghouses if “necessary or appropriate to improve the governance of, or to mitigate systemic risk, promote competition, or mitigate conflicts of interest.” Id. §§ 726(b), 765(b).
312 See MILLER, supra note 303, at 6–7.
313 The CFTC adopted a proposed rule that was strictly regulating the ownership structures of clearinghouses in October 2010. Id. at 7–10. In February 2011, it withdrew its rules from the Registrar, and only in 2019 adopted new rules on the conflict of interests of clearinghouses that, however, do not include any reference to the ownership structure of clearinghouses. Commodity Futures Trading Comm’n, RIN 3038-AD01, Governance and Possible Limits on Ownership and Control (DCOs, SEFs, and DCMs) (withdrawn Feb. 9, 2011).
314 Both proposed rules impose on clearing members strict restrictions in having voting rights and control over clearinghouses, and they are not given any formal right of participation in the governance of firms’ risk management. These proposed rules (1) cap the control and voting rights of investors and members of derivatives clearing organizations (DCOs) and clearing agencies (CAs); (2) define public (i.e., independent) directors in a very narrow way that excludes directors with a material relationship to clearing members; (3) require a substantial (35%) representation of public members on clearinghouses’ boards of directors and on critical committees (e.g., the nomination committee, risk committee, etc.); and (4) define the roles and competencies of the risk committee. See Requirements for Derivatives Clearing Organizations, Designated Contract Markets, and Swap Execution Facilities Regarding the Mitigation of Conflicts of Interest, 75 Fed. Reg. 63,732–53 (proposed Oct. 18, 2010) (to be codified at 17 C.F.R. pts. 1, 37–40). The CFTC, for example, requires clearinghouses to have a risk management committee in place, of which at least thirty-five percent of the member-directors are public or independent—i.e., with no ties with clearing members—and at least ten percent represent end-users. See id. at 63,750. The risk management committee is responsible for, among other things, advising the board of directors on risk models and the clearinghouse’s default procedure, determining the standards and requirements for initial and continuing clearing membership eligibility, approving or denying membership applications, and determining the products eligible for clearing. See id. at 63,740–41.
principled rules on the conflicts of interest in the governance of clearinghouses.\textsuperscript{315}

In addition, Title VII required clearinghouses to designate a chief compliance officer\textsuperscript{316} and set a series of core risk management principles which clearinghouses need to comply with.\textsuperscript{317} Clearinghouses are left with ample discretion to determine these principles in their own rulebooks and decide how to implement them in practice.\textsuperscript{318} From a governance and risk management perspective, clearinghouses shall ensure that their “governing board or committees” include market participants.\textsuperscript{319} Clearinghouses’ governance arrangement must be transparent in order “to fulfill public interest requirements [and] to permit the consideration of the views of owners and participants.”\textsuperscript{320} Clearinghouses must also have in place a comprehensive risk management framework to deal with the legal, credit, liquidity, operational, and other risks that might arise from its business,\textsuperscript{321} and they are required to effectively measure, monitor, and manage the credit exposure of their members and participants.\textsuperscript{322} To support their financial resilience, clearinghouses are required to hold enough resources to cover the losses triggered by the default of the clearing member that presents the largest financial exposure and to cover operational costs for one year.\textsuperscript{323} If a clearinghouse is systemically important, it is required to maintain sufficient financial resources to meet its obligations to its clearing members, notwithstanding the default of the two with the largest combined financial exposure to the clearinghouse (this requirement is referred to as the “Cover 2”


\textsuperscript{317} Dodd-Frank Act § 725(c); 7 U.S.C. § 7a-1(c)(2); 17 C.F.R. § 39.10.

\textsuperscript{318} See Saguato, The Unfinished Business, supra note 22, at 497–503. In practice, clearinghouses in their capacity as self-regulatory organizations have all created comprehensive and sound risk management procedures, id. at 471, establishing risk committees responsible for advising and supervising the risk management activities of the firm. Id. at 487. While moving in the right direction, however, these structures lack effective checks and balances. Id. These committees have a mere consultative role, with no binding power over the board of directors or access to any procedure that can increase the accountability and transparency of a board that dissents from the committee’s determination. Id. at 487–88. This situation potentially polarizes the incentives of members and shareholders. Id. at 488.

\textsuperscript{319} 7 U.S.C. § 7a-1(c)(2)(Q); 17 C.F.R. § 39.26.

\textsuperscript{320} 7 U.S.C. § 7a-1(c)(2)(O)(i).

\textsuperscript{321} See supra Part II.B.

\textsuperscript{322} See id.

Various resources are available for clearinghouses to use in order to build their capital buffer. A clearinghouse shall maintain “additional prefunded financial resources that are sufficient to cover its credit exposure under a wide range of significantly different stress scenarios,” which include the default of one or two of its participants with the largest aggregate credit exposure to the clearinghouse depending whether the clearinghouse has been designated as systemically important or not. To this end, a clearinghouse is regularly subjected to supervisory stress tests of its resources to make certain that these requirements are met. Furthermore, clearinghouses are required to develop public rules and procedures for the “efficient, fair, and safe” management of the default of their members, and to plan recovery mechanisms for severe distress scenarios.

Aware of the systemic importance of clearinghouses, lawmakers set enhanced prudential requirements and risk-management standards for these firms. These principles have been implemented by clearinghouses in their detailed internal procedural rules covering the regime for margin, the mechanics of the guaranty fund, and the operation of the default waterfall. As self-regulatory organizations (SROs), clearinghouses are responsible for setting their own internal rules, adopting rules and procedures for their members, and enforcing them. A clear stand was taken about the internal governance of clearinghouses. They are each required to have a risk committee—with a majority of independent directors—responsible for setting the risk appetite, overseeing the firm’s activities, and advising the board on risk-related matters. However, this well-designed provision is watered down by the committee’s mere consultative role, with no binding power over the board of directors. No members’ representatives are required to sit on the committee itself. Strict rules impose discipline on the internal governance of

\[324\text{ See 17 C.F.R. § 39.33(a) (2021) (for systemically important DCOs); Peirce, Clearing the Way, supra note 23, at 609. The baseline regime for DCOs requires that firms maintain resources sufficient to cover the default of the member with the largest exposure. See 17 C.F.R. § 39.11(a).} \]

\[325\text{ See 17 C.F.R. § 39.11(b).} \]

\[326\text{ See 17 C.F.R. § 234.3 (2021). See 17 C.F.R. § 39.11(a)(1) for non-covered DCOs. See the financial resources requirements at 17 C.F.R. § 39.33(a)(1) for systemically important derivatives clearing organizations.} \]

\[327\text{ See, e.g., U.S. COMMODITY FUTURES TRADING COMM’N, SUPERVISORY STRESS TEST OF CLEARINGHOUSES 10–43 (Nov. 2016).} \]

\[328\text{ Dodd-Frank Act § 725(c)(2)(G); see also 17 C.F.R. § 39.13.} \]

\[329\text{ Dodd-Frank Act § 725(c); 17 C.F.R. § 39.18(c)(1).} \]

\[330\text{ See Saguato, The Unfinished Business, supra note 22, at 498–99.} \]

\[331\text{ See id. at 504–13.} \]

\[332\text{ See id.} \]

\[333\text{ See id. at 487, 512–13.} \]

\[334\text{ See id. at 487, 503, 512–13.} \]

\[335\text{ See id. at 503 n.223, 515.} \]
Clearing members, the ‘too-big-to-fail’ derivatives dealers whose systemic importance and moral hazard were identified as one of the primary causes of the crisis, saw their role and influence in the running of clearinghouses and their risk management drastically curbed. They are required, on the one hand, to provide all the financial resources necessary to fill the guaranty fund and to preemptively agree to support the clearinghouse in a situation of severe distress, but, on the other, are potentially restricted in the amount of shares they can own and the number of beneficial interests they can build in clearinghouses. In addition, they are not given any formal right in the governance of the firm’s risk management in return to their contributions to the guaranty fund. These limitations on clearing members’ role in the governance and ownership of clearinghouses came out of what is

337 See Saguato, The Ownership of Clearinghouses, supra note 21, at 656–57 (summarizing the SEC and CFTC proposed rulemaking on limitation on clearing members ownership and voting rights in clearinghouses).

339 See supra note 283 and accompanying text. A different approach was taken in the EU. EMIR requires multi-stakeholders’ representation in the risk committee: members’ representatives must sit on the risk committee, whose prescriptions are, however, not binding to the board. At the same time, members are not subject to ownership restrictions and their representatives can meet the independency requirements. See 2012 O.J. (L 201) 31.
generally called the “Lynch Amendment.” In fact, Congressman Lynch originally drafted an amendment that would have limited the major dealer voting interest to twenty percent. It would also have prevented the majority of members of clearinghouse boards from being drawn from major dealers. The original amendment failed to receive enough support to be adopted, and the final and current version of sections 726 and 765 do not impose statutory restrictions on clearinghouses’ ownership, but give the CFTC and the SEC the responsibility to review the conflicts of interest affecting clearinghouses’ governance and to adopt the necessary and appropriate rules to improve governance, mitigate systemic risk, and promote competition in clearinghouses. As previously discussed, the proposed rules to implement these provisions of Dodd-Frank, ten years after it was signed into law, are still mere proposals, signaling that they were not fully thought out during drafting.

Finally, to address the implicit assumption that public money would be necessary if a clearinghouse faced financial distress, an enhanced supervisory role is reserved for the Board of Governors of the Federal Reserve System. In addition, Dodd-Frank Title VIII grants clearinghouses designated as systemically important the right to have accounts at Federal Reserve Banks, and the right, in “unusual or exigent circumstances,” to special privileges to access public financial support. Uncertainty and discussion still surround the current regulatory regime’s applicability to clearinghouses’ recovery and

340 See Johnson, Clearinghouse Governance, supra note 23, at 702; Miller, supra note 303, at 6–7.
341 See H.R. Rep. No. 111-370, at 191–92 (2009) (“The rules of a clearing agency that clears security-based swaps shall provide that a restricted owner shall not be permitted directly or indirectly to acquire beneficial ownership of interests . . . to the extent that such an acquisition would result in . . . more than 20 percent of the votes entitled to be cast on any matter by the holders of the ownership interests.”).
342 Id. at 189 (“The rules of the derivatives clearing organization shall provide that a majority of the directors of the organization shall not be associated with a restricted owner.”).
344 See supra notes 313–14; see also Sagauto, The Unfinished Business, supra note 22, at 502–03.
346 See e.g. 12 U.S.C. § 5465 (2018); 2012 O.J. (L 201) 2; Dodd-Frank Act § 806(a).
347 See Dodd-Frank Act § 806(b). Interestingly, the language of this provision is softer than section 13(3) of the Federal Reserve Act, which gives the Federal Reserve emergency authority toward financial institutions in “unusual and exigent circumstances.” 12 U.S.C. § 343(3)(A) (emphasis added); see also Kress, supra note 23, at 91–92 (discussing Dodd-Frank’s statutory revisions rendering clearinghouses ineligible for section 13(3) lending but authorizing credit with the Federal Reserve in emergency circumstances).
resolution, which is one of the weakest links in the current regulatory framework.348

In their SRO capacity, clearinghouses have implemented comprehensive rulebooks that touch multiple aspects of their business and governance. The rulebooks, as previously analyzed, identify members’ obligations and qualifications, define the default waterfall regime and provide its operational framework,349 and set governance arrangements. For example, CME Inc. and ICE Clear Credit, both of which are covered DCOs under CFTC jurisdiction, which means that both have been designated as systemically important, assign their risk committees an important role in fulfilling oversight responsibilities over the risk management of the clearinghouse, and, for both firms, the majority of the members need to be representatives of the clearing members.350

The general governance structure of CME Inc., a subsidiary of the CME Group, is comprised of a board of directors whose members are the same individuals who sit on the board of CME Group, the listed holding company.351 CME Inc. acknowledges the potential for two conflicts of interest due to this governance structure: on the one hand, as a private corporation, the firm is committed to maximizing shareholder value; on the other, having been entrusted with a systemic stability function, CME Inc. is aware of its role as systemic stability buffer for the derivatives markets.352 As with many public corporations, the majority of CME’s directors are independent,353 which shows that the firm is committed to both providing accountability to its main constituencies and key market stakeholders, namely its members,354 and to

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349 See supra Part II.B (analyzing the structure and operation of a default waterfall and providing references to the rulebooks of ICE and CME).
350 See, e.g., CME RULES, supra note 96, § 403 (defining the power of the risk committee in enforcing the Rulebook and overseeing and policing clearing members).
351 See CME, CLEARING PRINCIPLES, supra note 105, at 4, 14.
352 Id. at 15.
354 See CME, CLEARING PRINCIPLES, supra note 105, at 17–18. In order to more effectively perform its oversight duties in the clearing business, it established four main committees: the Clearing House Oversight Committee, the Risk Committee, the IRS Risk Committee, and the CME Clearing Risk Committee. Id. at 4. The Clearing House Oversight Committee “is comprised entirely of Board members, works cohesively with the full Board in advising it on its oversight of the risk management activities of the Clearing House, including the effectiveness of CME Clearing’s risk management program.” Id. at 19. Among its responsibilities are the firm’s financial safeguards waterfall (i.e., its lines of defense against risk), the revision and adoption of methods to calculate the guaranty fund, any other change to the clearing business that might affect the risk profile of the firm, and reviewing membership requests. Id.; see also id. at 20 (“The Board Risk Committee, which is comprised entirely of Board members, is tasked with overseeing CME Group’s risk
considering the legitimate interests of its clearing members and end-users. Also, CME’s corporate governance principles recognize that the definition of “independent director” encompasses an employee or officer of a clearing member if all other independence requirements are met. Despite this provision, only two of the twenty-three directors currently represent clearing members, and only one of them clears interest rate swaps.

ICE Clear Credit’s board of directors (rectius managers, because ICE Clear Credit is an LLC, not a corporation) is made up of a majority of independent managers. Of eleven total managers, two are clearing members. However, the risk committee is comprised of a majority of representatives of clearing members, which illustrates that the firm recognizes the necessity of having strong representation from clearing participants “because of the risk mutualization function of [the] clearinghouse” and because clearing members bear the tail risk for the default of their peer members. The risk committee is responsible for designating four board

management practices and to assist the Board in its oversight of the effectiveness of the CME Group’s policies and processes to identify, manage, and plan for its clearing house, compliance, financial, operational, reputational, and strategic and commercial risks . . . .”); CME GRP., CLEARING HOUSE OVERSIGHT COMMITTEE CHARTER 2–3 (May 2021), http://investor.cmegroup.com/static-files/16d6afbf-c684-41eb-ad3f-2abf91234717 [https://perma.cc/25D6-FXRJ].

357 The only member of the Board who represent a swap clearing member is Mr. Michael G. Dennis, who is Principal and Chief Commercial Officer of ABN AMRO Clearing Chicago LLC. See Biography: Michael G. Dennis, supra note 356; see also Clearing Firms, supra note 356. ABN AMRO Clears Interest-rate Swaps with OTC Derivatives Clearing Service, DERIVSOURCE (Oct. 27, 2010), https://derivsource.com/2010/10/27/abn-amro-clears-interest-rate-swaps-with-otc-derivatives-clearing-service/ [https://perma.cc/KP8N-JGWD].
359 See id. The two Board members representing clearing participants are Biswarup Chatterjee (Managing Director, Citigroup) and Amy Hong (Managing Director, Goldman Sachs). Id.; see also ICE Clear Credit: Participants, supra note 98.
360 See ICE CLEAR CREDIT, supra note 358, at 3.
361 See id. Of the twelve members, nine represent the clearing members and “[t]he three additional Risk Committee members include two members of ICE Clear Credit management and an independent member of the ICE Clear Credit Board of Managers, who serves as chairman.” Id.
members to then be elected by ICE—ICE Clear Credit’s parent company—and the board of managers is required to consult with the risk committee on any matter related to risk management policies and standards (i.e., margin, product clearing, guaranty fund contributions, membership qualifications, amendments to the rulebook, etc.). Further, the firm’s rulebook expressly states that the role of the risk committee is primarily an advisory and consultative one, and ICE Clear Credit’s board of members is by no means bound to the determinations of the risk committee.

Clearinghouses’ authority as SROs is particularly delicate, and possibly controversial, on matters related to the firms’ financial stability, particularly their resilience and recovery. As mentioned, the rulebook, particularly with regard to its establishment of various internal committees, affects all aspects of the clearing business, including the adoption of margin rules and requirements, guaranty fund contributions and assessments, and every aspect of the risk governance of the firm. The procedure to adopt new rules or amend the rulebook does not include either the direct involvement of competent regulator—under CFTC jurisdiction, SRO rulemaking is considered adopted if the rule is not challenged by the agency in a specified period of time—or any formal participative mechanism that includes clearing members and users. While members can be asked to participate in the rule-making process, they do not have any formal voting right to accept or reject a rule and, in addition, have only a limited ability to challenge the rules adopted by the clearinghouse as an SRO. This regulatory framework, in conclusion, further explains the misalignment of incentives and interests between the clearinghouse and its members.

362 See id. at 2.
363 See id. at 3.
364 See id.
365 See ICE CLEAR RULES, supra note 96, at 65–76 (analyzing the regime of the Risk Committee). Rule 501 expressly states that:

Notwithstanding anything to the contrary in these Rules, the Board shall not have any obligation to accept any proposal made by, or take any action proposed by, the Risk Committee, and any deliberation and/or decision by the Board with respect to any such proposal shall be made at the sole discretion of the Board, with no obligation whatsoever to the Risk Committee in respect of such deliberation or decision.

Id. at 65.
366 See, e.g., ICE CLEAR CREDIT, supra note 358, at 3 (discussing the required activities of the clearinghouse board and its committees under the Rulebook); see also CME GRP. INC. ET AL., supra note 353, at 1–2 (listing the CME Board’s principal oversight functions).
367 See generally Derek Fischer, Note, Dodd-Frank’s Failure to Address CFTC Oversight of Self-Regulatory Organization Rulemaking, 115 COLUM. L. REV. 69, 90–93 (2015) (discussing the CFTC’s role in oversight of SRO rulemaking); 7 U.S.C. § 7a-2; 17 C.F.R. §§ 40.6, 40.10.
368 See e.g., CME, CLEARING PRINCIPLES, supra note 105, at 10–11.
V. RECOMMENDATIONS FOR POLICYMAKERS AND THE INDUSTRY

Events in 2018 “shiver[ed] down regulators’ spines” all around the world.369 A relatively small clearinghouse, Nasdaq Clearing, faced severe financial distress when one of its members defaulted on their positions.370 The defaulting clearing member’s positions were so large that the clearinghouse used almost the whole guaranty fund to cover the open losses caused by the defaulting member.371 This local, self-contained event revealed that clearinghouses, the financial stability bastion erected by lawmakers, are structurally vulnerable and can run into trouble. Clearinghouses can fail in their risk management role and fall short in their oversight responsibilities.

Dodd-Frank built a regulatory framework on the assumption that resilient derivatives markets can be created if the influence of the largest derivatives dealers is reduced and the responsibility to manage risk is allocated to a specialized risk manager—the clearinghouses.372 Regulators focused on the internal governance and risk management structures to tackle what they deemed to be the concerning conflicts of interest in clearinghouses, namely the anticompetitive influence of the clearing members,373 and backed clearinghouses with access to financial liquidity and public support.374 However, the operation of the new regulatory framework within the market context of profit-maximizing financial market infrastructural groups achieves a dangerous unbalanced allocation of risk-taking obligations and control rights among the clearinghouses’ main stakeholders that undermines the systemic resilience of these firms. Ultimately, the current regime has turned systemic risk managers and risk absorbers into super-systemic firms that can become systemic risk transmitters, amplifiers, and threats.375


371 Id.


373 See id. at 501–03.


This Part contributes to a long-overdue but finally reopened policy discussion on how to achieve and support clearinghouses’ systemic resilience.376 In previous work, I discussed the historical evolution of clearinghouses and focused on the role of the ownership structure of a firm as a mechanism to align members’ and shareholders’ interests in clearinghouses.377 Moving on from those conclusions, this Part identifies novel policy solutions to the agency costs of the separation of risk and control in the three different stages of resilience, recovery, and resolution.378 A multistakeholder board would more effectively represent the interests and positions of the clearinghouses’ main constituencies.379 A re-envisioned capital structure that would include convertible subordinated debt instruments as financial resources for default management would stabilize clearinghouses’ financial resilience and recovery mechanisms. Finally, a novel approach to the recovery and resolution of clearinghouses would fill a critical gap in the post-crisis regime and offer a novel framework to manage and internalize systemic shocks within the clearinghouse and its members and to avoid taxpayer bailouts.

A. Clearinghouse Resilience

Without a doubt, it must be recognized that clearinghouses have concentrated risk and have become systemically important infrastructures in the post-crisis markets. Clearinghouses must be systemically resilient because of the public policy function assigned to them by lawmakers. Their unique capital profile, however, creates structural fragilities and agency costs. The complete misalignment of final risk-bearing costs and control rights among clearinghouse stakeholders increases the moral hazard for the firm: shareholders’ limited equity contributions and skin in the game, along with the imposition of the entire loss-absorbing capacity onto clearing members—who do not per se have any control rights over the firm’s risk management—increase the risk of externalization of the costs of the clearing business onto its


378 Early versions of these policy solutions were anticipated in Saguato, The Ownership of Clearinghouses, supra note 21, at 658–65, and Saguato, The Unfinished Business, supra note 22, at 519–27.

members and diminish clearinghouses’ incentives as risk managers. This unbalanced economic and governance structure, compounded with the systemic role of clearinghouses, creates a new manifestation of systemic risk that has been ignored or, more accurately, overlooked in the crisis-driven regulation.\textsuperscript{380}

The obvious next step in this discussion is to determine how clearinghouses can be made more resilient and how moral hazard can be reduced in clearinghouses where shareholders have demutualized ownership but are still mutualizing risk on members. Policymakers should have paid more attention to the internal structure of clearinghouses and their historical evolution when drafting Titles VII and VIII of Dodd-Frank. Rather than crystallizing the status quo of the for-profit organization of clearinghouses and concentrating primarily on reducing the influence and role of derivatives dealers in the markets and in clearinghouse governance—thereby focusing on the effects of the conflicts of interest of clearing members on competitiveness—policymakers should have also investigated the potential effects of the decoupling of final risk-bearing costs and control rights on the risk-taking profile and moral hazard of clearinghouses, thereby focusing on the effects of clearinghouses’ conflicts of interest on financial stability. Demutualized clearinghouses face the struggle of balancing their public policy function as systemic risk managers with their profit-maximizing nature and their duty to maximize the firm’s value for their shareholders. This struggle is further exacerbated by their economic structure, which externalizes onto members the costs of the risk management. So how can these incentives be better aligned?

The first three policy solutions look at the resilience of clearinghouses and engage with the traditional mechanisms used to mitigate agency costs and reduce moral hazard—namely, corporate governance and capital requirements.

1. \textit{Stakeholder Representation and Governance Arrangements}

Corporate governance arrangements and a rebalancing of the allocation of control rights can be effective solutions to mitigate the agency costs of the member-shareholder divide and contribute to the realignment of the risk-bearing position of the members with formal voices and control rights over the risk governance and management of the clearinghouse. These solutions do not necessitate a legislative or regulatory intervention,\textsuperscript{381} but they could simply result from private actions by the clearinghouses, which would need to amend

\textsuperscript{380} As previously discussed, in the aftermath of the financial crisis lawmakers were captured by the political pressure to heavily regulate and punish the derivatives dealers who, according to the crisis narrative, were the main cause of the financial crisis. See supra Part IV.A. This resulted in increased restrictions on the governance rights of derivative dealers in clearinghouses. See supra Part IV.A.

\textsuperscript{381} A public intervention would be necessary only in case of inertia by clearinghouses.
their articles of incorporation, bylaws, the charters of some of their committees, and their rulebook to achieve the desired outcome of a more inclusive, more representative, better balanced, and aligned governance of risk. Representation of the clearinghouses’ main stakeholders (i.e., members and even end-users) in the firm governance is a solution that will increase their voice in risk-management decisions, strengthen their role in risk oversight, and ultimately reduce the agency costs of the separation of risk and control. This would also align with the spirit of the existing regulatory framework put in place by the CFTC. Stakeholders’ representation can be achieved via two channels: intra-board representation and extra-board representation.

Clearinghouses should consider implementing a hybrid governance structure that would more participatively reflect their double-layered capital structure. A core principle of the post-crisis reforms and the international

384 See, e.g., CME RULES, supra note 96, §§ 230, 300.A, 400.
385 Few scholars have examined the governance arrangement of clearinghouses, and almost all share two premises and one lapse: they share the concerns of the potential conflicts of interest and excessive market power that might result from a direct involvement of large financial institutions as clearing members in the governance of clearinghouses, and the tensions between the public service role of clearinghouses as systemic risk managers and the for-profit nature of these corporations. See, e.g., Greenberger, Diversifying Clearinghouse Ownership, supra note 23, at 263–68; Johnson, Clearinghouse Governance, supra note 23, at 697–98; Johnson, Governing Financial Markets, supra note 23, at 199–207. In addition, they rely on a more direct intervention of regulators in the governance and running of clearinghouses, either justifying it on the inevitable intervention of public money as financial support for solvency, see Griffith, Governing Systemic Risk, supra note 23, at 1236–37, and Lubben, Failure of the Clearinghouse, supra note 23, at 132, 148, or on the systemic relevance and financial stability function of clearinghouses, see Griffith, Governing Systemic Risk, supra note 23, at 1226–39, and Johnson, Governing Financial Markets, supra note 23, at 221–29. However, all contributions have overlooked the agency costs that spill from the separation of risk and control in clearinghouses and the salience of incentive for effective risk management by members in clearinghouses.
386 Professor Johnson supports the adoption of a hybrid board with the appointment (by federal regulators) of a board of monitors or observers (paid by the competent federal agency) to oversee compliance with Dodd-Frank Title VII. See Johnson, Governing Financial Markets, supra note 23, at 239–41. Professor Griffith offers a new governance structure for clearinghouses that envisions the presence of two different classes of directors within the board: the traditional directors who owe fiduciary duties to the shareholders who elect them, and a second class of “supervisory directors” that are “charged with the public
principles for the regulation of the governance of financial market infrastructures was to include a representation of market participants on clearinghouses’ governing boards and committees. Policymakers have stressed how important it is for financial markets’ infrastructures to create collaborative links with their users. Thus, creating a multi-stakeholder board with stronger participation by clearing members would increase the accountability of the firm itself. Clearinghouses could issue a new class of hybrid financial instruments to members that would confer special voting rights. Members could be assigned this new class of instruments with selected voting rights in consideration and in proportion to the amount they contribute to the guaranty fund: the bigger the contribution to the loss-mutualization resources, the more financial instruments—i.e. votes—the member would receive. These instruments would be linked to special voting rights in electing board members and members to the different board committees. Members should have strong representation on the clearinghouses’ boards of directors and on the risk committees, which should be composed of a majority of clearing members’ and users’ representatives. In addition, given the critical role of risk committees, their voices should be made more binding than those of simple advisory committees, by requiring a vote of two-thirds of the directors to overturn a risk committee’s decision and by requiring the governing board, anytime it dissents from the decisions of its risk committee, to provide formal and comprehensive explanations of its decision to the market participants (clearing members and their users) and the competent regulator. The risk committee should be involved in all core risk-management decisions, and members should be asked to have the final vote on all decisions concerning the recovery of the clearinghouse (i.e., variation margin, margin haircut, tear-ups, assessments calls, etc.). Empowered with a stronger voice and representation in setting the firm’s risk profile and management, members would be more inclined and cooperative in accepting the operation of the loss mutualization mechanism.

role of overseeing systemic risk” and elected by federal regulators. See Griffith, Governing Systemic Risk, supra note 23, at 1235–40.

387 See, e.g., BIS REPORT, supra note 52, at 26.
388 See, e.g., id. at 31.
389 See A PATH FORWARD, supra note 119, at 5–6 (advocating for governance arrangements that capture input from clearing members and end users); see Regulation 648/2021 of the European Parliament and of the Council of 4 July 2012 on OTC Derivatives, Central Counterparties and Trade Repositories (EMIR), 2012 O.J. (L 201) 1, 70 (requiring clearinghouses to have a risk committee composed of representatives of clearing members, independent board members and end-users; and requiring the board to promptly inform the competent authority of any decision in which the board decides not to follow the advice of the risk committee).
390 See A PATH FORWARD, supra note 119, at 5–6.
Finally, clearinghouses should consider two other sets of governance reforms. First they should adopt, implement, and maintain policies regarding officers’ and directors’ remuneration packages that promote robust, sound, and efficient risk management practices and that do not create incentives to relax risk management standards. Clearinghouses’ officers’ and directors’ remuneration packages should not consist of stock or stock options in the holding company and should not be linked to the performance of the holding firm, the revenues generated by the clearinghouse, or the volume of cleared transactions. Officers’ and directors’ compensation packages should comprise of a cash component, but also should be complemented with the same convertible debt instruments that would recapitalize the clearinghouses in case of distress. In addition, compensation packages should be approved by the compensation committee in consultation with the risk committee on the basis of the risk management performance of the firm. Finally, remuneration packages should include the adoption of claw-back provisions, which would be triggered in case the clearinghouses had to tap into non-defaulting members’ contributions to the guaranty fund in order to manage the default of a member. By adjusting the compensation structure of officers and directors, clearinghouses would better align the incentives of their agents to their long-term public policy and financial stability functions. Second, and complementing a stronger presence on the clearinghouses’ board of directors of members representing clearing members and end-users, the holding company of a systemically important clearinghouse should be required to ensure that a majority of its directors elected to serve on the board of the wholly owned clearinghouse subsidiary are unaffiliated with the holding company. This approach would mitigate the risk that a clearinghouse’s holding company might exploit the clearing business for the commercial benefits and profit of the holding group, or underinvest in risk management and in the clearinghouse’s resilience relying on the public safety net created by Title VIII of Dodd-Frank for systemically important clearinghouses.

2. Capital Requirements for Clearinghouses: Skin in the Game

Currently, the amount of the clearinghouse’s skin in the game in the default waterfall is a small percentage compared to the amount of resources at

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392 See, e.g., 2012 O.J. (L 201) 30.
394 See infra Part V.B.1; see also Frederick Tung, Pay for Banker Performance: Structuring Executive Compensation for Risk Regulation, 105 NW. U. L. REV. 1205, 1216–21 (2011).
stake by clearing members.396 While the primary functions of the skin in the game are to align the incentives of the clearinghouse to those of the clearing members and to incentivize robust risk management,397 regulators should consider the capital structure of clearinghouses with the same seriousness as the capital structure of banks.398 Determining the appropriate level of skin in the game that the clearinghouses must have at stake to prove, on one side, the commitment to their members and end-users to strong, efficient, and robust risk management practices, and, on the other, to give the markets and regulators the confidence that their financial resources are solid enough to absorb non-default and operational losses and to contribute meaningfully to their own default waterfall, has proven a challenging task.399 Commentators have proposed the possibility of calculating the skin in the game as a percentage of the total guaranty fund, or of the largest clearing member’s exposure.400 The range of the skin in the game could be set between ten to twenty percent of the overall amount of the default waterfall.401 Clearinghouses could choose voluntary or be required by stature or regulation to set aside reserves or defer dividend payments in order to strengthen their financial resilience and increase skin in the game.

396 See supra Table 1.
398 Just to clarify, the market risk clearing business and the banking business are structurally different, but as lawmakers care for and focus on creating banking regulations that create resilient institutions and that require financial institutions to maintain set amounts of capital to absorb losses and reduce their moral hazard, in the same way, lawmakers should care about the capital structure of clearinghouses, given their equally important role in the markets. See Robert T. Cox & Robert S. Steigerwald, A CCP Is a CCP Is a CCP 1 (Fed. Rsrv. Bank Chi., Working Paper No. 2017-01, 2017), https://www.chicagofed.org/publications/policy-discussion-papers/2017/pdp-1 (on file with the Ohio State Law Journal).
400 See Saguato, The Ownership of Clearinghouses, supra note 21, at 643 n.156; A Path Forward, supra note 119, at 4 (advocating for a material amount of CCP skin in the game, twenty percent of the default fund).
401 These ratios are derived from the existing capital requirements for systemically important banks and the academic literature on capital requirements. See, e.g., Anat Admati & Martin Hellwig, The Bankers’ New Clothes: What’s Wrong with Banking and What to Do About It 172–91 (2013); Charles Calomiris, Reforming Banks Without Destroying Their Productivity and Value, J. Applied. Corp. Fin., Fall 2013, at 14.
3. Ring-Fencing and Intra-Group Guarantee

Two additional requirements that policymakers should consider are: (i) clearinghouses should be ring-fenced from the other activities and risks of the infrastructural group to which they belong, and (ii) clearinghouses’ holding companies should guarantee their liability and solvency. Ring-fencing the clearinghouse from the other subsidiaries and affiliates of the financial market infrastructure group would create a strong firewall around the clearing business; prevent the holding company from leveraging and exploiting the clearing business and its assets to take risks in other business lines; reduce the risk of spillovers from the clearing business to the rest of the financial market infrastructure group’s activities, and vice versa; simplify the oversight of the clearing business; and support the orderly recovery and, in particular, resolution, of the clearinghouses.

In addition, policymakers should adopt the same approach for financial market infrastructural groups as is used in banking groups and embrace the so-called “source of strength” doctrine, which in the banking context requires the bank holding company to provide financial support to its banking subsidiaries. In other words, the listed holding company that controls the clearinghouse should be the last source of safety and soundness for the clearinghouse. This approach, particularly in the context of non-default and operation losses, would stabilize and bring clarity to the financial resilience of clearinghouses.

B. Clearinghouses’ Recovery and Resolution

Acting on the governance and capital structure of clearinghouses would strengthen and support their resilience, attenuating the likelihood of recovery or resolution procedures. When a clearinghouse faces recovery or

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405 See Anat R. Admati, Peter Conti-Brown & Paul Pfleiderer, Liability Holding Companies, 59 UCLA L. REV. 852, 858–59 (2012) (proposing the introduction of a new type of financial institution, the “liability holding company,” to guarantee the debts of systemically important financial institutions).
406 The recovery and resolution toolbox would come into play at the end of the default waterfall after all margins posted by the defaulted member are liquidated, the resources pledged in the guaranty fund depleted, and the additional contributions collected exercising the assessment rights are exhausted. Simply put, a clearinghouse faces a recovery and resolution scenario only if its risk models were completely wrong, and if therefore the firm took too much risk. See Manmohan Singh & Dermot Turing, Central Counterparties Resolution—An Unresolved Problem 6–8 (Int’l Monetary Fund, Working Paper No. 18/65, 2018), https://www.imf.org/en/Publications/WP/Issues/2018/03/20/Central-Counterparties-
resolution, the agency conflicts of separation of risk and control are magnified, and the interests and incentives of shareholders and members become even more polarized. When all pre-funded financial resources have been used to cover the losses of a defaulted member and the clearinghouse is facing a situation of severe financial distress, recovery and resolution tools are deployed to support the continuity of the clearinghouse’s essential services.\textsuperscript{407} However, the package of regulatory solutions to support the continuation of the clearing business is incomplete and miscalibrated.

The existing recovery and resolution regime is purely a contractual one because the law and regulation have neither filled the lacuna of the bankruptcy treatment of clearinghouses nor filled the dangerous gap left by Dodd-Frank, which provided ad hoc Orderly Liquidation Authority for systemically important financial and non-financial firms, but expressly excluded clearinghouses.\textsuperscript{408} This Part offers a few possible policy solutions to establish diversified and countercyclical resources to strengthen the recovery of troubled clearinghouses. It also offers two extreme mechanisms to address the resolution of distressed clearinghouses.

1. Recovery Mechanisms: Convertible Debt and a New Capital Structure for Clearinghouses

To align its risk-taking incentives with those of its members, a clearinghouse’s shareholders should be subject to a contingent liability regime.\textsuperscript{409} Instead of having clearing members replenish the exhausted

\textsuperscript{407} See Jeffrey M. Bandman, CFTC Letter, CFTCLTR No. 16-61, 1–2 (July 21, 2016).


\textsuperscript{409} This solution to the agency problem between members and shareholders was inspired by the work of Professors Miller and Macey on the early nineteenth century double liability regime of banks and shareholders. See Jonathan R. Macey & Geoffrey P. Miller, \textit{Bank Failures, Risk Monitoring, and the Market for Bank Control}, 88 COLUM. L. REV. 1153, 1202–12 (1988); Jonathan R. Macey & Geoffrey P. Miller, \textit{Double Liability of Bank Shareholders: History and Implications}, 27 WAKE FOREST L. REV. 31, 35–55 (1992);
guaranty fund, and even before subjecting them to assessment rights or imposing haircuts on their margins, a clearinghouse’s shareholders should be responsible for re-funding the guaranty fund. By doing so, shareholders would have actual skin in the game in the clearinghouse and would be incentivized to effectively monitor the risk of the clearing business and to implement robust risk models.410

A practical implementation of this solution could be built around the issuance of convertible contingent bonds (co-cos) by the clearinghouse to its shareholders in an amount equal anywhere between the sum of the two largest contributions to the guaranty fund by clearing members and the whole size of the guaranty fund.411 Shareholders of the clearinghouse (i.e., the holding


410 See Saguato, The Ownership of Clearinghouses, supra note 21, at 662–64.

company) should be required to purchase and hold the co-cos. The proceeds of the sales should be invested by the clearinghouse in safe assets, secured financing transactions, or deposited in a Fed account. Co-cos would convert into guaranty fund contributions when the clearinghouse must tap into the non-defaulting members’ contributions to the fund to cover the losses caused by the default of one or more of the members, and in an amount equal to the amount of guaranty fund resources used to cover the losses. At that point, the non-defaulted members would be, in their turn, required to purchase newly issued co-cos that would match the amount of the converted ones. Because of the contingent exposure to the risk of failure, shareholders might be incentivized to monitor the firm more closely. In addition, these instruments could become part of the remuneration package of the directors and officers of the clearinghouse and its parent company. Directors might be in an even better position than shareholders to evaluate risk models and monitor management policies and support strong risk management practices. This policy solution would directly rebalance the operation of the default waterfall without doubling down on members. New recovery mechanisms would affect the resilience of clearinghouses, they would increase the shareholders’ skin in the game, align shareholders’ incentives to members, and create a countercyclical mechanism to recapitalize the clearinghouse in a situation of severe financial distress. A critical aspect, in fact, of the current operation of the default waterfall is the procyclicality of its function: members can be required to inject additional resources in the default waterfall if the guaranty fund is exhausted. A scenario like this is generally imaginable in a situation of systemic financial distress; the current operations of assessments rights would severely damage clearing members, which would have to divert to the clearinghouse resources that could otherwise be used for other business purposes, including stabilizing the financial resilience of the member itself. The issuance and presence in the


412 See A Path Forward, supra note 119, at 7 (advocating for substantial pre-funded resolution resources); Systemic Risk Council, supra note 376, at 9 (advocating for the issuance of subordinated debt by clearinghouses to increase their loss-absorbing capacity). See generally David Murphy & Paolo Saguato, Rescuing Too-Big-to-Fail Clearinghouses: The Role of Convertible Debt Instruments (Oct. 2021) (unpublished manuscript) (on file with author).

capital structure of co-cos would inject a counter-cyclical feature in the recovery of the clearinghouse that would not just strengthen the clearing firm resilience and mitigate the agency cost of the separation of risk and control but also enhance financial stability by reducing procyclicality and the externalization of losses on clearing members.

2. Resolution Mechanisms and the Ultimate Solutions: Remutualization and Nationalization

When all loss absorbing resources have been exhausted, resolution mechanisms come into play. Two quite extreme solutions to the unsolved issue of the resolution of a clearinghouse are the remutualization of the firm or its nationalization. Both solutions address, in different ways, the risk concentration issue and would assign control and governance rights to the stakeholders, who will likely be the final risk bearers of the clearing business.

As I discussed in earlier works, the remutualization of clearinghouses would combine the role of member and shareholder and create a member-owned mutual enterprise. In doing so, the agency costs of the separation of risk and control previously identified between members and shareholders would be completely internalized, with members becoming the shareholders of the new entity. A direct remutualization through a market acquisition or the create of a new firm is highly unlikely. As previously mentioned, clearinghouses are now part of large infrastructural groups; without a regulatory intervention that would incentivize the spinning off the clearing business from the larger financial group, it is unrealistic to imagine a clearinghouse’s parent firm selling its clearing division. However, remutualization could be envisioned as a recovery mechanism of last resort to stabilize ex ante the resilience of a clearinghouse, under the threat, ex post, of a remutualization, if the clearinghouse were to fail. The risk of a remutualization of the clearinghouse by its members would align the incentives of the board to

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418 See Saguato, The Ownership of Clearinghouses, supra note 21, at 612, 660.
make such option a remote one, thus making clearinghouses bastions of stability. To achieve an *ex post* remutualization, the clearinghouses should issue “bail-in-able” instruments in an amount at least equal to the equity of clearinghouses and they should be sold to the clearing members. If a pre-set event occurs—being it the exhaustion of the pre-funded resources, the incapacity of the clearinghouse to cover non-default losses, etc.—that would trigger the conversion of the bail-in instruments into equity, with the consequential recapitalization of the clearinghouse with shareholders completely wiped out—and the resulting change in ownership of the firm—or diluted. In either case, members would acquire control and governance rights over the clearinghouse.

The second extreme (and radical) policy solution would be the nationalization of clearinghouses.419 This proposal shares the same rationales of the remutualization option—they differ only in their primary assumption. If we assume that public money would very likely be used to sustain a clearinghouse if it faced financial distress, then the public, as the final risk bearers of the clearinghouse’s financial risk, should take over the business in case of resolution of the clearinghouse. To get to the point where one would consider this solution, a clearinghouse would have had to fail. Because this would likely occur as a result of the regulatory and supervisory failure of the post-crisis derivatives markets architecture, and because the political and administrative capital at stake would be substantial, nationalization would be the only possible path to keep the system afloat.

Both radical solutions find their potential implementation environment in the resolution phase of the clearinghouse, during or after a clearinghouse crisis or failure, once the firm had already drawn significantly from default waterfall resources, exposing the structural fragilities of the clearinghouse’s organizational structure and the failure of the regulatory approach.

**VI. Conclusion**

Clearinghouses are an essential element of the plumbing of the financial system. They enhance efficiency, ensure the smooth execution and settlement of transactions, increase transparency in the markets, and support stability. Their role has substantially expanded in the aftermath of the 2008 financial crisis—when lawmakers mandated their use for derivatives—and it is likely to

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419 The Fed would not be a “newbie” at running a clearinghouse: its historical foundations are in its payments clearing business; the Chicago Fed’s regional office has been historically engaged with the derivatives markets; and Dodd-Frank empowered the Fed to draft critical regulation on the governance and risk management of systemically important financial market utilities (Title VIII) and assigned the Fed a backstop and support function for a clearinghouse in distress. See id. at 665–66; see also Lubben, *Failure of the Clearinghouse, supra* note 23, at 154–56.
expand even further in the years to come.\textsuperscript{420} Policymakers and market participants have embraced the benefits of central clearing and its centralized risk management function. To effectively manage risk, however, clearinghouses centralize risk, and despite their recent positive track record,\textsuperscript{421} the unique financial and governance structure of clearinghouses might undermine their long-term systemic resilience.

This Article unpacks the implications of the loss mutualization function of clearinghouses and the systemic financial stability responsibility bestowed on them by regulators. It identifies that the separation of risk and control in the governance of clearinghouses, coupled with the tension between the for-profit nature of the firms and their operation under the clearing mandate, creates overlooked agency costs that might undermine the firms’ resilience and increase their moral hazard. This Article proposes policy solutions to better align the incentives of a clearinghouse’s main stakeholders—clearing members and shareholders—and to mitigate the tension between for-profit nature and public policy role, ultimately urging policymakers and the industry to take the necessary steps to enhance and preserve financial stability, by ensuring that clearinghouses are safe and sound institutions.


\textsuperscript{421}See Menkveld & Vuillemey, supra note 88, at 154.