

The Ownership of Clearinghouses: When “Skin in the Game” Is Not Enough, the Remutualization of Clearinghouses

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A central question for corporate law scholarship has revolved around the ownership structure of enterprises. Why are some businesses owned by employees, some by customers, and some by investors? Until now, the question has centered on the relative benefits offered to these stakeholders by one form or another. This Article explores how ownership structure can be a matter of public importance for financial stability, and proves that it is so by delving into an institution of immense importance and timeliness: the clearinghouse, a critical financial market infrastructure.

Clearinghouses process, settle, and guarantee the performance of several trillion dollars in securities and derivatives trades daily. By operating as central counterparties, they act as private stability mechanisms, reducing counterparty credit risk and sharing default risk among their members. Clearinghouses achieve this result via a unique economic structure, which includes a double layer of capital: the traditional equity capital and the so-called mutual guaranty fund (the clearinghouse’s loss sharing fund).

Historically, clearinghouses have been mutual enterprises owned by their members (users), who contributed to the firm’s mutual guaranty fund. But most clearinghouses have recently demutualized their ownership structure, opening their equity capital to external investors and transforming into for-profit public corporations, while keeping members on the hook for losses. This structural evolution has catalyzed new agency costs between the now coexisting and “competing” stakeholders: members and external shareholders. These costs, which have been further exacerbated by the post-crisis systemic role of clearinghouses, are exemplified by shareholders with control and economic

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rights but limited “skin in the game,” and members who bear the final risk and losses if things go south, but who have no control or monitoring rights. This Article identifies how the agency costs between members and shareholders threaten the financial stability of clearinghouses and argues that aligning control and monitoring rights with final risk-bearing costs is the path clearinghouses should follow to achieve a more resilient ownership and governance structure.

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“When you got skin in the game, you stay in the game.”¹

Introduction

Financial markets rely on the smooth functioning of central infrastructures—exchanges, clearinghouses, and repositories—to ensure efficiency and stability.² Yet, it is an open question as to whether these infrastructures are resilient and systemically reliable, particularly when one assesses their ownership structure. In fact, policymakers and academics have dismissed the significance of the ownership of financial market infrastructures (FMIs) despite their growing systemic importance in the post-crisis financial system,³ focusing instead on their systemic role⁴ and eventual failure.⁵ This Article addresses that absence and brings the ownership and governance of FMIs, specifically clearinghouses, to the center of the debate.

FMIs are multilateral networks that match contractual parties, support contract settlement, and guarantee contract performance. They are structural elements of the quadrillion dollar securities and derivatives markets⁶ and were

1. LIN-MANUEL MIRANDA, *The Room Where It Happens*, in HAMILTON: AN AMERICAN MUSICAL (Atlantic Records 2015).

2. See RUBEN LEE, RUNNING THE WORLD’S MARKETS—THE GOVERNANCE OF FINANCIAL INFRASTRUCTURE (2011).

3. See, e.g., Comm. Payment & Settlement & Tech. Comm., Intentional Org. of Sec. Comm’ns, *Principles for Financial Market Infrastructures*, BANK INT’L SETTLEMENT 21-35 (2012), http://www.bis.org/cpmi/info_pfmi.htm [hereinafter CPSS-IOSCO, *Principles for Financial Market Infrastructures*] (focusing on the governance of FMIs and risk management practices when discussing the organization of FMIs); Comm. Payment & Settlement & Tech. Comm., *Market Structure Developments in the Clearing Industry: Implication for Financial Stability—Report of the Working Group on Post-Trade Services*, BANK INT’L SETTLEMENT 63-69 (2010), <http://www.bis.org/cpmi/publ/d92.pdf> (dismissing the relevance of the ownership structure in creating more resilient FMIs and contributing to superior risk management and incentives). For some academic references, see *infra* note 13.

4. See *infra* note 13.

5. See, e.g., Darrell Duffie, *Resolution of Failing Central Counterparties*, in MAKING FAILURE FEASIBLE—HOW BANKRUPTCY REFORM CAN END “TOO BIG TO FAIL” 87 (Kenneth E. Scott et al. eds., 2015); Comm. Payments and Market Infrastructures & Tech. Comm., Intentional Org. of Sec. Comm’ns, *Recovery of Financial Market Infrastructures*, BANK INT’L SETTLEMENT (2014), <http://www.bis.org/cpmi/publ/d121.pdf> [hereinafter CPMI-IOSCO, *Recovery of FMIs*]; Comm. Payments and Market Infrastructures & Tech. Comm., Intentional Org. of Sec. Comm’ns, *Consultative Report—Resilience and Recovery of Central Counterparties (CCPs): Further Guidance on the PFMI* BANK INT’L SETTLEMENT (2016), <http://www.bis.org/cpmi/publ/d149.pdf>.

6. For example, in 2010, the Depository Trust and Clearing Corporation, a leading clearinghouse group that provides clearing, settlement, and securities depository services for major U.S. exchanges, reported processing more than one and a half quadrillion dollars-worth of trades at a group level. *DTCC 2015 Annual Report: Leveraging Our Global Assets: One DTCC*, DEPOSITORY TR. & CLEARING CORP. 37 (2015), <http://www.dtcc.com/annuals/2015/index.php>. In 2015, the Chicago Mercantile Exchange Group, a leading derivatives trading and clearing powerhouse, reported more than a quadrillion dollars-worth of monitored and processed trades. *Daily Exchange Volume and Open Interest*, CME GRP. (last visited Apr. 6, 2017), <http://www.cmegroup.com/market-data/volume-open-interest/exchange-volume.html>.

assigned a critical role by the Dodd-Frank Act (Dodd-Frank)⁷ to stabilize the financial markets after the 2007-2008 financial crisis. Given the volume of transactions they process, as well as their central roles as efficiency enhancers, risk managers, stability buffers, and transparency providers, FMIs are often considered “too-important” and “too-big-to-fail” institutions. Yet, the ownership structure of FMIs is not uniform. They are divided into two camps: investor-owned enterprises and member-owned mutual enterprises. This begs the question: is one ownership structure superior to the other?

This Article demonstrates how the ownership structure of clearinghouses is a matter of public importance, due to the ways in which that structure affects the incentives of the firms’ main stakeholders, which in turn affects systemic financial stability. Clearinghouses, particularly when organized as investor-owned firms, manifest unique agency costs between shareholders and members (users) of the firm, which, as of now, have not yet been explored by academics.⁸ These agency costs—as described later in this Article—have the potential to threaten the financial stability and the systemic resilience of these firms.

The Article claims that the optimal ownership model for clearinghouses is the one that more fully aligns the interests, incentives, and risks of shareholders and members. Or, put differently, an ownership model that assigns control and monitoring rights to the stakeholders with higher final risk-bearing costs. To support this position, the Article offers a spectrum of market and policy solutions, as well as alternatives to the “mutual structure,” that could be used to achieve hybrid ownership and governance models and would lead to economic outcomes akin to a “remutualization” of the firm. These solutions and alternatives, along with a possible remutualization of these firms, would ultimately create stable and reliable clearinghouses.

Of all existing FMIs, clearinghouses present unique features that make answering the question whether one structure is superior to the other particularly interesting.

The clearinghouse operates in the post-trading environment and serves as a middleman in financial transactions. Once a contract has been agreed upon, the clearinghouse ensures it will be honored, even if one of the original counterparties goes bust. The clearinghouse achieves this result by operating as a central counterparty for the market. By novating contracts, it becomes the buyer to every seller and the seller to every buyer. Beyond guaranteeing contract settlement and performance, the clearinghouse operates as a risk

7. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376-2223 (2010) [hereinafter Dodd-Frank Act] (codified as amended in scattered sections of 7 U.S.C., 12 U.S.C., 15 U.S.C.).

8. REINIER KRAAKMAN ET AL., *THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH* (3d ed. 2017) (identifying three main agency costs within a corporation: between managers and dispersed shareholders; between majority shareholders and minority shareholders; and between shareholders and creditors).

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manager and a systemic private stability buffer.⁹ If one of its members should default, the clearinghouse manages this event in an orderly fashion and eventually shares the residual losses among all of its non-defaulted members, thus reducing externalities and internalizing the risk.

Despite their previous reputation as unglamorous back office firms, over the last ten years, clearinghouses have caught the attention of lawmakers, markets, and the academic community. In the aftermath of the 2007-2008 financial crisis, clearinghouses had a climactic and even dramatic comeback.¹⁰ Policymakers codified a central role for clearinghouses—requiring that all liquid and standardized derivatives be centrally cleared—in order to stabilize the 700 trillion dollars market for over-the-counter (OTC) derivatives¹¹ and mitigate the risk therein.

Although hundreds of pages have been written on the adequacy of the Dodd-Frank policy reforms¹² and the impact of clearinghouses on systemic risk,¹³ the evolution and challenges posed by their ownership structure have

9. See Paul Tucker, Deputy Governor for Fin. Stability at the Bank of England, Speech at Depository Trust & Clearing Corporation (DTCC)-Centre for the Study of Financial Innovation (CSFI) Post Trade Fellowship Launch: Clearing Houses as System Risk Managers (June 1, 2011), <http://www.bis.org/review/r110608g.pdf> (referring to clearinghouses as risk managers).

10. See *G-20 Leaders' Statement: The Pittsburgh Summit*, EUR. COMMISSION 7 (2009), http://ec.europa.eu/commission_2010-2014/president/pdf/statement_20090826_en_2.pdf; see also, e.g., Michael S. Barr, *The Financial Crisis and the Path of Reform*, 29 YALE J. ON REG. 91 (2012) (analyzing the role given to clearinghouses in mitigating risk in the OTC derivatives markets).

11. This was the notional amount of outstanding derivative contracts in the first half of 2011, immediately after the passing of the Dodd-Frank Act. Monetary & Econ. Dep't, *Global OTC Derivatives Market*, BANK INT'L SETTLEMENTS, (last visited Apr. 7, 2017), <http://stats.bis.org/statx/srs/table/d5.1?p=20111&c>.

12. See, e.g., VIRAL V. ACHARYA ET AL., REGULATING WALL STREET: THE DODD-FRANK ACT 367-426 (2011); RANDALL S. KROSZNER & ROBERT J. SHILLER, REFORMING U.S. FINANCIAL MARKETS – REFLECTION BEFORE AND BEYOND DODD-FRANK (2011); HESTER PEIRCE ET AL., REFRAMING FINANCIAL REGULATION—ENHANCING STABILITY & PROTECTING CONSUMER (2016); DAVID SKEEL, THE NEW FINANCIAL DEAL—UNDERSTANDING THE DODD-FRANK ACT AND ITS (UNINTENDED) CONSEQUENCES AND THE NEW ARCHITECTURE OF GLOBAL FINANCE (2011); Colleen M. Baker, *Regulating the Invisible: The Case of Over-the-Counter Derivatives*, 85 NOTRE DAME L. REV. 1278 (2010); Adam J. Levitin, *The Politics of Financial Regulation and the Regulation of Financial Politics: A Review Essay*, 127 HARV. L. REV. 1991 (2014) (offering a critical review of a few relevant pieces of post-crisis literature).

13. The academic discussion about the role of clearinghouses in the post-crisis financial markets is quite broad. See, e.g., Julia Lees Allen, *Derivatives Clearinghouses and Systemic Risk: A Bankruptcy and Dodd-Frank Analysis*, 64 STAN. L. REV. 1079, 1082 (2012); Colleen M. Baker, *When Regulators Collide: Financial Market Stability, Systemic Risk, Clearinghouses, and CDS*, 10 VA. L. & BUS. REV. 343 (2016); Darrell Duffie & Haoxiang Zhu, *Does a Central Clearing Counterparty Reduce Counterparty Risk?*, 1 REV. ASSET PRICING STUD. 74 (2011); Sean J. Griffith, *Governing Systemic Risk: Towards a Governance Structure for Derivatives Clearinghouses*, 61 EMORY L.J. 1153 (2012) [hereinafter Griffith, *Governing Systemic Risk*]; Sean J. Griffith, *Substitute Compliance and Systemic Risk: How To Make a Global Market in Derivatives Regulation*, 98 MINN. L. REV. 1291 (2014); Kristin Johnson, *Clearinghouse Governance: Moving Beyond Cosmetic Reform*, 77 BROOK. L. REV. 681 (2012) [hereinafter Johnson, *Clearinghouse Governance*]; Kristin N. Johnson, *Governing Financial Markets: Regulating Conflicts*, 88 WASHINGTON L. REV. 185 (2013) [hereinafter Johnson, *Regulating Conflicts*]; Jeremy C. Kress, *Credit Default Swaps, Clearinghouses, and Systemic Risk: Why Centralized Counterparties Must Have Access to Central Bank Liquidity*, 48 HARV. J. ON LEGIS. 49 (2011); Adam J. Levitin, *Response: The Tenuous Case for Derivatives Clearinghouses*, 101 GEO. L.J. 445 (2013); Stephen J. Lubben, *Failure of the Clearinghouse: Dodd-Frank's Fatal Flaw?*, 10 VA. L. &

been left at the periphery of the debate.¹⁴ Policymakers have not considered how the ownership structure of clearinghouses (or the ownership structure of other financial infrastructures, for that matter) has evolved over the past two decades and what issues this evolution have raised, especially given their growing systemic role.

This Article fills the gap by bringing together insights from the theory of the firm literature and financial stability considerations. It sheds new light on the unique agency costs that affect clearinghouses and identifies how separating control rights from final risk-bearing costs unbalances stakeholders' incentives and destabilizes the firm structure. Finally, it highlights how the ownership of a firm can have repercussions on systemic financial stability.

As far as I am aware, this is the first contribution that advances the theory that addressing or adjusting the ownership structure of a clearinghouse can create a more resilient firm, mitigate systemic risk, and enhance financial stability. Specifically, this Article analyzes the evolution of clearinghouses' ownership structure and assesses the capacity of different organizational models to address agency costs and internalize systemic risk concerns. Ultimately, it argues that member-owned mutual FMIs more effectively address agency costs among their stakeholders and internalize systemic risk concerns.

To arrive at this conclusion, this Article proceeds as follows. Part I sets the stage by introducing the concepts and characteristics of financial market infrastructures. Specifically, it identifies clearinghouses as the quintessential "systemically important financial market infrastructure" subject to investigation.

Part II identifies what makes clearinghouses unique enterprises. In doing so, it examines the economic functions of clearinghouses and their unique economic and ownership structure. Clearinghouses intervene in the market as central counterparties for their members and, in so doing, reduce (default)

BUS. REV. 127 (2015); Jeffrey Manns, *Insuring Against a Derivative Disaster: The Case for Decentralized Risk Management*, 98 IOWA L. REV. 1575, 1602 (2013); Craig Pirrong, *Clearing Up Misconceptions on Clearing*, 31 REG. 22 (Fall 2008); Craig Pirrong, *The Clearinghouse Cure*, 31 REG. 44 (Winter 2008-2009); Craig Pirrong, *The Economics of Clearing in Derivatives Markets: Netting, Asymmetric Information, and the Sharing of Default Risks Through a Central Counterparty* (Jan. 8, 2009), <http://ssrn.com/abstract=1340660>; Craig Pirrong, *The Inefficiency of Clearing Mandates*, CATO INST. (2010), <http://www.cato.org/publications/policy-analysis/inefficiency-clearing-mandates>; Craig Pirrong, *The Economics of Central Clearing: Theory and Practice*, INT'L SWAPS & DERIVATIVES ASS'N (2011), http://www2.isda.org/attachment/MzE0Ng==/ISDAdiscussion_CCP_Pirrong.pdf [hereinafter Pirrong, *The Economics of Central Clearing*]; Mark J. Roe, *Clearinghouse Overconfidence*, 101 CALIF. L. REV. 1641 (2013); Hal Scott, *Reduction of Systemic Risk in the United States Financial System*, 33 HARV. J. L. & PUB. POL'Y 671 (2010); Richard Squire, *Clearinghouses as Liquidity Partitioning*, 99 CORNELL L. REV. 857 (2014); Yesha Yadav, *The Problematic Case of Clearinghouses in Complex Markets*, 101 GEO. L.J. 387 (2013) [hereinafter Yadav, *The Problematic Case of Clearinghouses*]; Yesha Yadav, *Clearinghouses and Regulation by Proxy*, 43 GA. J. INT'L & COMP. L. 161 (2014); Yesha Yadav, *The Extraterritorial Regulation of Clearinghouses*, 2 J. FIN. REG. 1 (2016).

14. Only a few scholars have attempted to address different aspects related to the governance and risk management of clearinghouses. See LEE, *supra* note 2; Griffith, *Governing Systemic Risk*, *supra* note 13; Johnson, *Regulating Conflicts*, *supra* note 13.

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counterparty credit risk, mutualize default risk (and costs), and mitigate (on a broad level) systemic risk. The clearinghouses' ability to act as a risk mitigator and mutualizer is directly related to their unique "double-layered capital" economic structure. In this double-layered structure, the traditional equity capital is provided by the firm's shareholders (investors), while the mutual guaranty fund is financed by the members of the firm. In this Article, I call this feature the "member-shareholder divide."¹⁵

As with other FMIs, clearinghouses are organized along two distinct organizational models:¹⁶ (1) member-owned mutual enterprises, in which the roles of shareholders and members overlap; and (2) investor-owned enterprises (often public companies, but also private corporations), in which shareholders and members are different stakeholders. In investor-owned enterprises, the shareholders are the equity investors, and the members are the users of the firm's services who mutually bear the risks and final losses of the firm.¹⁷

After identifying this unique member-shareholder divide, the Article posits that the clearinghouse's economic and ownership structure results in serious, distinct agency conflicts between the clearinghouse's members and shareholders—a result that may threaten system-wide stability. The Article then moves to determine whether there is an optimal ownership model for systemically important clearinghouses.

To answer this question, Part III builds a theoretical framework to evaluate the ownership structure of clearinghouses. Then, Part IV conducts a cost-benefit analysis of the two ownership models adopted by the clearing industry, assessing how control, economic rights, and final risk-bearing costs are allocated in the two models and how this allocation interacts with stakeholders' monitoring and risk-taking incentives—i.e., moral hazard. For example, in an investor-owned clearinghouse, economic and control rights are not aligned between shareholders and members with final risk-bearing costs. Shareholders provide the firm's equity capital, retain voting and control rights in the clearinghouse governance, and share the profits. Members, in contrast,

15. The conceptual and theoretical framework of this Article has benefited from John Morley's theory on the organization of investment funds—"separation of funds and managers"—and by Peter Molk's theory on the ownership of health insurers. John Morley, *The Separation of Funds and Managers: A Theory of Investment Fund Structure and Regulation*, 123 YALE L.J. 1228 (2014); Peter Molk, *The Ownership of Health Insurers*, 2016 U. ILL. L. REV. 873.

16. For the sake of simplicity, I will use a synecdoche: when talking about clearinghouses, I will refer to the financial market infrastructure group to which they belong.

17. Interestingly, the two most iconic FMI groups operating in the U.S. each adopted one of these patterns of ownership. The Chicago Mercantile Exchange (CME) operates as an investor-owned enterprise, in which the holding company is listed as a public company that fully owns two clearinghouses: CME Clearing and CME Europe Clearing. See CME GROUP (last visited Apr. 7, 2017), <http://www.cmegroup.com>. On the other hand, the Depository Trust & Clearing Corporation (DTCC) is organized as a member-owned firm, in which the holding company is owned by the members of its post-trading firm subsidiaries. See DEPOSITORY TR. & CLEARING CORP. (last visited Apr. 7, 2017), <http://www.dtcc.com>. DTCC is the holding company of the DTCC group, which combines the Depository Trust Company, the National Securities Clearing Corporation, and the Fixed Income Clearing Corporation. *Id.*

provide the mutual loss-absorbing capital required to deal with the potential default of a member and keep the clearinghouse alive and operating. Thus, despite their direct exposure to the clearinghouse's risk and their full "skin in the game" in the loss mutualization mechanism, members do not have the control or economic rights that shareholders have. On the basis of this analysis, the Article examines whether there is an optimal ownership model that permits systemically important clearinghouses to fully address the agency costs raised by their unique ownership and economic structure and internalize the risks of their systemically important function.¹⁸

Ultimately, Part V contends that member-owned firms are better equipped to align ownership rights with final risk-bearing costs and to address the agency costs between shareholders and members. In sum, member-owned firms are better equipped to internalize the systemic risk concerns raised by "too-important-to-fail" post-crisis clearinghouses. Moreover, it shows how the current regulatory framework falls short in addressing this issue and presents a few alternative policy and market solutions to achieve similar economic outcomes. The Conclusion briefly sums up the findings.

I. An Introduction to Financial Market Infrastructures

Generally speaking, we use the term "infrastructure" to refer to "the underlying foundation or basic framework (as of an organization or a system)"¹⁹: bridges, roads, water, electricity, gas distribution facilities, and so on. When discussing the financial system, however, the word "infrastructure" refers to the multilateral networks and systems that provide trading, clearing, settlement, and reporting services for the securities and derivatives markets. FMIs are the structural foundations that contribute to the efficiency and stability of these markets.²⁰

18. The conclusions of this Article can have application also for non-systemically important clearinghouses.

19. See *Infrastructure*, WEBSTER'S THIRD NEW INT'L DICTIONARY ENG. LANGUAGE (3d ed. 1993).

20. Lee identifies eight nonexclusive factors and attributes that contribute to the identification of a firm as an infrastructure. These eight factors and attributes can be summarized as follows:

1. An infrastructure may be, or provide, the *basic* equipment, facility, foundation, framework, installation, system, or services that *support* or *underly* [sic] some form of structure, system or activity . . .
2. An infrastructure may be *critical*, *essential*, or *necessary*, to support commerce, economic activity and development . . .
3. An infrastructure may be, or provide, a *network* . . .
4. An infrastructure may exhibit *economies of scale*.
5. An infrastructure may require *large*, *long-term*, *immobile*, and *sunk investments*.
6. An infrastructure may be, or operate, a *natural monopoly*.
7. An infrastructure may provide beneficial *public goods* or *services*, in addition to the specific goods and services it delivers directly. . .
8. An infrastructure may have some form of *government* or *public sector* involvements . . .

LEE, *supra* note 2, at 10.

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More concretely, exchanges, trading venues, clearinghouses, trade repositories, and securities depositories are the entities that together serve as the infrastructures of the financial market.²¹ Each of them has a specific role in the mechanics of the system and in the lifespan of a financial transaction. Trading venues, for instance, connect various counterparties, reduce transaction costs, and distribute information. They facilitate trades by offering a place where buyers and sellers can meet and agree to conclude a deal. Clearinghouses—which step in once parties have agreed on a trade—confirm the trade, manage its settlement (for instance, the transfer of securities from the seller to the buyer, and the cash from the buyer to the seller), guarantee its performance, manage counterparty credit risk, and ultimately share default losses among their members.²² Finally, securities depositories facilitate and support trades by keeping records of the ownership of traded instruments, while trade repositories foster market transparency by keeping records of transactions and making those data available to market participants and regulators.

In the heated post-crisis derivatives market reform debate,²³ policymakers rediscovered the role of FMIs as crucial elements in the plumbing of the financial market and envisioned a systemic role for them.²⁴ Policymakers demanded that FMIs take on a public policy function: enhancing market efficiency and transparency as well as guaranteeing market safety and stability. Academics have written extensively on the post-crisis reform of the derivatives markets,²⁵ and both international organizations and domestic regulators built the post-crisis derivatives market on three pillars, each of which is supported by a different FMI: mandatory trading of standardized derivatives on trading venues, mandatory central clearing on clearinghouses, and mandatory reporting of any derivative transactions on trade repositories.

This critical role of FMIs contributed to what Professor Guido Ferrarini and I defined as a transition from “private markets” to “public markets”²⁶—a transition from private, opaque, bilateral, non-formal, and discretionary markets to public, transparent, multilateral, formal, and non-discretionary markets.

21. *Id.* at 21-38.

22. See Yadav, *The Problematic Case of Clearinghouses*, *supra* note 13, at 391.

23. See, e.g., VIRAL V. ACHARYA & MATTHEW RICHARDSON, RESTORING FINANCIAL STABILITY: HOW TO REPAIR A FAILED SYSTEM 229-68 (2009).

24. See sources cited *supra* note 12 and accompanying text; see also Darrell Duffie, *Replumbing Our Financial System: Uneven Progress*, 9 INT’L J. CENT. BANKING 252, 259-60 (using the concept of the “plumbing” of the financial system to refer to clearinghouses and post-trading infrastructures).

25. See sources cited *supra* notes 13-14 and accompanying text. On the debate of post-crisis OTC derivatives, see, for example, Paolo Saguato, *Private Regulation in the Credit Default Swaps Markets: The Role of ISDA in the New Regulatory Scenario of CDS*, in THE GOVERNANCE AND REGULATION OF INTERNATIONAL FINANCE 32 (Geoffrey P. Miller & Fabrizio Cafaggi eds., 2013); DARRELL DUFFIE, HOW BIG BANKS FAIL: AND WHAT TO DO ABOUT IT 53-69 (2011).

26. We identified different gradations of this transition from private to public markets. See Guido Ferrarini & Paolo Saguato, *Regulating Financial Market Infrastructures*, in OXFORD HANDBOOK OF FINANCIAL REGULATION 568 (Niamh Moloney et al. eds., 2015).

However, this transition spurred reliance on FMIs as market mechanisms, augmented their size and interconnectedness, expanded the volume of transactions in which they served as intermediaries, and made them an indispensable and vital stability node in the system. Commentators then began referring to FMIs as too-important-to-fail and too-big-to-fail firms. As such, in times of severe market distress, market infrastructures have the potential to magnify financial instability if they are not structurally and financially sound.

For this reason, regulators felt the need to intervene in the FMIs field. At the international level, for instance, the Committee on Payment and Settlement Systems (now the Committee on Payments and Market Infrastructures) at the Bank of International Settlements and the International Organization of Securities Commissions drafted and adopted the “Principles for Financial Market Infrastructures,” which set guidelines and “best practices” for FMIs governance and risk management.²⁷ Domestically, Dodd-Frank (in Title VII and Title VIII of the Act) set up a new and updated regime for FMIs, and clearinghouses in particular.²⁸ Title VII—Wall Street Transparency and Accountability Act—creates a new regulatory framework for derivatives markets and for the clearinghouses operating therein.²⁹ Then, Title VIII,³⁰ also referred to as the Payment, Clearing, and Settlement Supervision Act of 2010,³¹ aims at promoting robust risk management and sound financial infrastructural

27. See CPSS-IOSCO, *Principles for Financial Market Infrastructures*, *supra* note 3.

28. The European Union intervened in the OTC derivatives markets with three main pieces of regulation: the so-called European Market Infrastructure Regulation (EMIR), see Regulation 2012/648/EU of the European Parliament and of the Council on OTC Derivatives, Central Counterparties and Trade Repositories, 2012 O.J. (L. 201) 1; the Market in Financial Instruments Directive (MiFID II), see Directive 2014/65/EU of the European Parliament and of the Council of on Markets in Financial Instruments and Amending Directive 2002/92/EC and Directive 2011/61/EU, 2014 O.J. (L. 173) 349; and the Market in Financial Instruments Regulation (MiFIR), see Regulation 2014/600/EU of the European Parliament and of the Council of 15 May 2014 on Markets in Financial Instruments and Amending Regulation (EU) No. 648/2012, 2014 O.J. (L. 173) 84. See also NIAMH MOLONEY, *EU SECURITIES AND FINANCIAL MARKETS REGULATION 573-627* (3d ed. 2014) (providing a descriptive account of the regulatory framework for OTC derivatives trading and clearing in Europe), Guido Ferrarini & Paolo Saguato, *Reforming Securities and Derivatives Trading in the EU: From EMIR to MIFIR*, 13 J. CORP. LEGAL STUD. 319 (2013) (offering a critical and comparative analysis of the post-crisis reforms of the OTC derivatives markets); Ferrarini & Saguato, *supra* note 26 (looking more broadly at the role of FMIs in post-crisis financial markets).

29. Wall Street Transparency and Accountability Act, 7 U.S.C. § 7a-1 (2012); 15 U.S.C. § 8343 (2012).

30. Payment, Clearing, and Settlement Supervision Act of 2010, 12 U.S.C. §§ 5461-72 (2012). For the sake of precision, the Dodd-Frank jargon references “systemically important financial market utilities.” For clarity and consistency, throughout this Article, I will use the more neutral term “systemically important FMIs.”

31. Title VIII also applies, more broadly, to systemically important payment, clearing, and settlement activities conducted by financial institutions. See Anna L. Paulson & Kirstin E. Wells, *Enhancing Financial Stability: The Case of Financial Market Utilities*, FED. RES. BANK OF CHI. (2010), <http://www.chicagofed.org/~media/publications/chicago-fed-letter/2010/cfloctober2010-279-pdf.pdf>. For the purpose of this Article, I will focus only on systemically important financial market infrastructures and will not explore—although they are included in Title VIII’s jurisdiction—systemically important payment, clearing, and settlement activities.

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services in “systemically important” FMIs,³² with the final aim of reducing systemic risk and creating a safer and more resilient financial system.³³

The new regulatory framework is built upon two pillars: (1) delegated responsibility to the newly constituted Financial Stability Oversight Council (FSOC)³⁴ to identify and designate “those [FMIs that] . . . are, or are likely to become, systemically important;”³⁵ and (2) once identified, these systemically important FMIs are subject to a stringent risk management framework.

In performing its duties,³⁶ FSOC designated eight systemically important FMIs.³⁷ Interestingly, out of the eight designated systemically important FMIs, *five* are clearinghouses operating as central counterparties in the securities and

32. Despite the importance of the new risk management and governance regime for systemically important FMIs, this Article’s focus is on the role of the ownership structure of a systemically important FMIs in addressing systemic risk. As a result, this Part only focuses on the designation process and its outcome. For a comprehensive account of the regulatory layers and framework adopted by the Fed for systemically important FMIs, the reader should look to Section V.A, which analyzes the regime set up by Dodd-Frank for derivatives clearinghouses. As we will address later, the Dodd-Frank governance and risk management regime, despite its aim to create a safer and more resilient financial system, does not assess one of the main sources of the systemic riskiness of FMIs: the ownership structure of investor-owned clearinghouses.

33. Dodd-Frank Act tit. 8, § 802, 12 U.S.C. § 5461(a)(4) (2012).

34. Dodd-Frank Act tit. 1, §§ 111-123, 12 U.S.C. §§ 5321-5333. FSOC has ten voting members: the Secretary of Treasury (who serves as Chairperson of the Council); the Chairman of the Board of Governors of the Federal Reserve; the heads of the Consumer Financial Protection Bureau, Office of the Comptroller of the Currency, SEC, Federal Deposit Insurance Corporation, CFTC, Federal Housing Finance Agency, and National Credit Union Administration; and an independent member with insurance expertise appointed by the President and confirmed by the Senate. The Council also includes five non-voting members: the heads of the newly established Office of Financial Research and the Federal Insurance Office, as well as a state insurance commissioner, banking supervisor, and securities commissioner.

35. Dodd-Frank Act tit. 8, § 804(a), 12 U.S.C. § 5463. The designation process, sketched out in section 804, includes a mandatory consultation of the Council with the relevant Supervisory Agencies and the Fed before making any determination, *id.* § 5463(c)(1); an advance notification and the opportunity to request a hearing by the FMI, *id.* § 5463(c)(2); and the right of the Council, in emergency circumstances, to waive the notice requirement and the hearing by a vote of two-thirds of its members, including its Chairperson, when such a waiver is necessary to prevent or mitigate an immediate threat to the financial system, *id.* § 804(c)(3). This process applies also in “reverse” circumstances, in which FSOC decides to modify or rescind a designation for a systemically important FMI. *See* 12 C.F.R. pt. 1320 (setting the procedure for the designation of systemically important FMIs).

36. FSOC, in identifying systemically important FMIs, shall consider those FMIs whose failure or disruption can “create, or increase, the risk of significant liquidity or credit problems spreading among financial institutions or markets and thereby threaten the stability of the [U.S.] financial system.” *See* Dodd-Frank Act tit. 8, § 803(9), 12 U.S.C. § 5462(9). The Act offers FSOC guidelines to consider when determining the systemic importance of FMIs. The five factors and criteria that FSOC must consider when determining whether an FMI is, or is likely to become, systemically important are: (i) the aggregate monetary value of the transactions processed or carried out by the FMI; (ii) the aggregate exposure of the FMI to its counterparties; (iii) the relationships, interdependencies, or other interactions of the FMI with other FMIs; (iv) the effect that the failure or disruption of the FMI would have on critical markets, financial institutions, or the broader financial system; and (v) any other factors that FSOC deems appropriate. *See id.* § 5463(2)(A)-(E).

37. *See 2012 Annual Report*, FIN. STABILITY OVERSIGHT COUNCIL 110-12, 119, 145-87 (2012) [hereinafter FSOC]. As of February 2017, no additional entities have been included in that list. *See, e.g., Designated Financial Market Utilities*, FED. RES. (last visited Feb. 17, 2017), http://www.federalreserve.gov/paymentsystems/designated_fm_about.htm.

derivatives markets.³⁸ Significantly, clearinghouses represent the largest sample of FMIs to be designated as systemically important, but do not all have the same ownership structure. In fact, the clearinghouses' landscape is split.³⁹ Some firms are mutual enterprises, owned directly or indirectly (through a holding company) by their members. The others are investor-owned companies, which are subsidiaries of large infrastructural groups, where the parent company is a public company with its shares listed on a public market. Given that these firms are all a part of the same industry, this binary ownership divide is a peculiar development. Table 1 below identifies the eight systemically important FMIs, their business description, ownership structure, and the average daily aggregate monetary value of processed transactions.

Table 1: Landscape of Systemically Important FMIs⁴⁰

Systemically Important FMIs	Business Description	Ownership Structure (Parent and Group)	Average Daily Value of Processed Transactions⁴¹
Chicago Mercantile Exchange Inc.	<i>Clearinghouse:</i> central clearing counterparty of futures, options and swaps	Investor-owned Subsidiary of the CME group Inc. (listed company)	\$4.2 trillion
ICE Clear Credit LLC	<i>Clearinghouse:</i> central clearing counterparty of credit default swaps	Investor-owned Subsidiary of Intercontinental Exchange Inc. (listed company)	\$46 billion
The Options Clearing Corporation	<i>Clearinghouse:</i> central clearing counterparty of US listed options	Exchange-owned	\$7.1 billion
Depository Trust Company	<i>Depository:</i> central depository for all corporate and	Member-owned Subsidiary of DTCC	\$573 billion

38. Of the remaining systemically important FMIs, one is a central securities depository (The Depository Trust Company) and two are payment settlement systems (The Clearing House Company and CLS Bank International).

39. Both the payment systems and the central securities depository are mutual firms owned by their members (either directly owned by their members or as wholly owned subsidiaries of a parent company that is owned by the members).

40. See FSOC, *supra* note 37.

41. See *More Scrutiny for Financial Market Utilities*, PRICEWATERHOUSECOOPERS 2-3 (May 2013), <http://www.pwc.com/us/en/financial-services/regulatory-services/publications/assets/fs-reg-brief-fimu-scrutiny.pdf>.

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	municipal debt and equity securities		
National Securities Clearing Corporation	<i>Clearinghouse:</i> central clearing counterparty of equity securities and corporate/municipal debt	Member-owned Subsidiary of DTCC	\$976.6 billion
Fixed Income Clearing Corporation	<i>Clearinghouse:</i> central clearing counterparty of government securities, mortgage-backed securities	Member-owned Subsidiary of DTCC	\$9.4 trillion
The Clearing House Company	<i>Payment System:</i> private sector real-time, multilateral payment system for large US dollar payments	Member-owned	\$1.6 trillion
CLS Bank International	<i>Payment System:</i> multilateral and multicurrency cash settlement system for foreign exchange transactions	Member-owned Subsidiary of CLS Group Holdings AG	\$4.8 trillion

As the table shows, clearinghouses have a relevant and central role in the functioning of the securities and derivatives markets.⁴² Clearinghouses do not just represent the largest sample of systemically important FMIs—they have become essential for the critical functioning of the derivatives markets. Most importantly, however, the dynamics and interactions between the unique features of their economic function and ownership structure have not been comprehensively studied so far. Thus, the next Part narrows down the investigation to clearinghouses, quintessential systemically important FMIs.

42. In addition to the five systemically important clearinghouses, thirteen more clearinghouses have registered with the U.S. CFTC: (1) Cantor Clearinghouse; (2) CME Clearing Europe Limited, subsidiary of CME Group, Inc.; (3) Eurex Clearing AG, subsidiary of Deutsche Börse AG (investor-owned infrastructural group); (4) ICE Clear Europe Limited, subsidiary of the Intercontinental Exchange, Inc.; (5) ICE Clear US, Inc., subsidiary of the Intercontinental Exchange, Inc.; (6) LCH.Clearnet, LLC, subsidiary of the London Stock Exchange Group (LSEG) (investor-owned infrastructural group); (7) LCH.Clearnet, Ltd., subsidiary of the LSEG; (8) LCH.Clearnet SA, subsidiary of the LSEG; (9) Minneapolis Grain Exchange, Inc.; (10) Natural Gas Exchange, Inc.; (11) Nodal Clear, LLC; (12) North American Derivatives Exchange, Inc.; and (13) Singapore Exchange Derivatives Clearing Limited.

Specifically, the next Part explains why clearinghouses are unique enterprises, reviews the singular features of their economic structure, summarizes how the clearing market has evolved to reach its current landscape, and examines what is atypical about their ownership structure.

II. Clearinghouses on the Stage

After Dodd-Frank initiated financial reforms to reduce reliance on financial institutions as market makers in the derivatives markets and to replace them with FMIs, the role of clearinghouses in maintaining market resiliency and efficiency became pivotal.

This Part begins with framing the role and function of clearinghouses in the financial system and analyzing their economics.⁴³ Then, it offers a historical overview of how the clearing industry has evolved over the last two centuries. The main purpose of this historical excursus is to show how the current market landscape has formed: from a clearing industry built on monolithic member-owned enterprises, to a market equally divided into member-owned and investor-owned firms.⁴⁴ Finally, this Part evaluates the organizational and governance features of this essential FMI.⁴⁵

This Part intends to provide any reader with a basic knowledge of the economic function of a clearinghouse. Experts can skip to the next Part and move directly to the discussion on the organizational structure of clearinghouses.

A. *The Economics of Clearinghouses*

Clearinghouses emerged from the synergies among market players to create a mechanism to centralize, pool, and manage their risk, and ultimately, to mutually share any related losses.⁴⁶ They act as private regulators and standard setters,⁴⁷ create the legal framework for accessing their services, and “address . . . concerns about safety, soundness, and broader financial stability.”⁴⁸ In sum, their core role is to provide an effective risk management and loss mutualization function in the financial system.⁴⁹

Within the lifespan of a financial contract, a clearinghouse comes into play once two firms agree on the terms of a contract and register it with the clearinghouse. The clearinghouse then “clears” the original contract through a

43. See *infra* Section II.A.

44. See *infra* Section II.B.

45. See *infra* Section II.C.

46. See Hester Peirce, *Derivatives Clearinghouses: Clearing the Way to Failure*, 64 CLEV. ST. L. REV. 589, 655 (2016).

47. Randall S. Kroszner, *Central Counterparty Clearing: History, Innovation, and Regulation*, ECON. PERSP. 37, 50 (2006).

48. *Id.* at 38.

49. See *id.*

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legal process called *novation* and inserts itself between the original parties, becoming the buyer to the original seller and the seller to the original buyer. Through this process, the clearinghouse takes two identical offsetting positions with the parties. For this reason, a clearinghouse is said to operate with a “matched book.”⁵⁰ In becoming the central counterparty for multiple trades between multiple entities, the clearinghouse simplifies the vast bulk of transactions concluded by its members and becomes the system’s central node.⁵¹

Clearinghouses contribute to the stability of financial markets by providing three main functions: (i) multilateral netting; (ii) mitigation of counterparty credit risk; and (iii) centralization of risk management mechanisms and (eventually) mutualization of losses.⁵²

Such functions are possible because of two legal mechanisms. First, novation makes possible the micro-prudential role of the clearinghouse in managing counterparty risk.⁵³ By novating a contract, the clearinghouse assumes the rights and obligations of the original parties to that contract. Thus, the clearinghouse interposes itself so that each party interacts only with the clearinghouse and not with the original counterparty. Second, the clearinghouse may serve as a crucial, private, macro-prudential stability buffer function because of its economic structure, which includes the presence of a mutual guaranty and loss sharing fund underwritten by all of the clearinghouse members.

To provide further insight into clearinghouses, this Part is structured in three main parts, each of which analyzes the economic functions provided by

50. See Amandeep Rehlon & Dan Nixon, *Central Counterparties: What Are They, Why Do They Matter and How Does the Bank Supervise Them?*, BANK OF ENG. 2-4 (2013), <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2013/qb1302ccpsbs.pdf>; Squire, *supra* note 13, at 859.

51. See *infra* Section IV.A.3.

52. Clearinghouses contribute indirectly to two additional functions: contract standardization and market transparency. Standardization of contracts is the necessary and foundational element for an effective clearing business. Clearinghouses incentivize and promote contract standardization to reduce transaction costs and increase the efficiency of their business—multilateral netting cannot be effective if contracts are not highly standardized. Generally, a clearinghouse clears only those contracts that have been assessed as eligible for clearing because of their standardization and liquidity. Customized contracts are rarely approved for clearing because of the higher costs that the clearinghouse has to incur in order to analyze, price, and monitor such contracts. Thus, clearinghouses are empowered to force their members to standardize financial instruments. As central nodes in the financial transactions network, clearinghouses are able to collect, aggregate, and disseminate relevant information and data on the volume, price, counterparties, underlying assets, and collateral accepted in cleared transactions. This reported data facilitates price comparison and allows more efficient risk-pricing for market participants. See Stephen G. Cecchetti et al., *Central Counterparties for Over-the-Counter Derivatives*, BIS Q. Rev., Sept. 2009, at 45-50; Roe, *supra* note 13, at 1657-61.

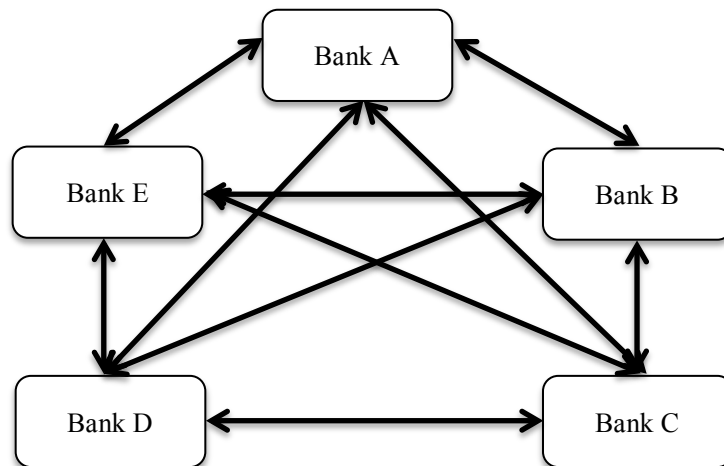
53. Novation is “[t]he act of substituting for an old obligation a new one that either replaces an existing obligation with a new obligation or replaces an original party with a new party. A novation may substitute (1) a new obligation between the same parties, (2) a new debtors, or (3) a new creditor.” *Novation*, BLACK’S LAW DICTIONARY (10th ed. 2014).

the clearinghouse: (1) multilateral netting; (2) mitigation of counterparty credit risk; and (3) centralization of risk management and loss mutualization.

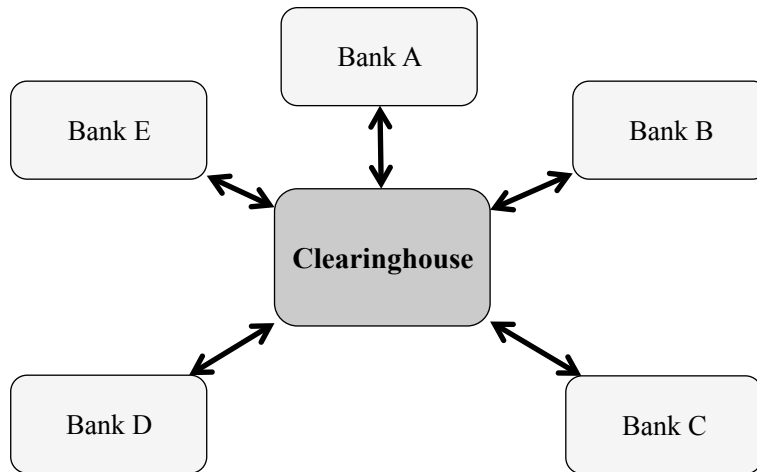
1. Multilateral Netting

By becoming the central counterparty for all cleared transactions, a clearinghouse simplifies the complexity and interconnectedness of what would otherwise be a “web” of myriad trades. In other words, the clearinghouse has contractual positions that run in opposite directions with the same counterparties, which gives it the right to net (cancel out) offsetting positions. For instance, with the same counterparty, the clearinghouse can be “in-the-money” in one trade and “out-of-the-money” in another. In this instance, rather than having two distinct transfers of cash flows or collateral, the clearinghouse can calculate the overall net exposure. In this way, the party with the negative net exposure will be responsible for a payment to the party with the positive net exposure. The pictures below illustrate the dynamics of multilateral netting and trade compressions.

Figure 1: Bilateral Netting Versus Multilateral Netting



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A numerical example might clarify the economic benefit of multilateral netting. Let us first imagine the market scenario depicted in the first graph, with multiple bilateral contractual relationships, and for simplicity, let us focus only on Firms A, B, and C. Imagine that Firm A owes \$200 to Firm B on a derivative contract, for instance an interest rate swap, a credit default swap, and so on. Firm B owes \$150 to Firm C, and finally, Firm C owes \$100 to Firm A. The bilateral gross exposure without (either bilateral or multilateral) netting opportunities is \$450.

Now, look at the second graph and envision the central clearing of all three bilateral contracts through the clearinghouse. By novating the original contracts, the clearinghouse now becomes the central counterparty for Firms A, B, and C. In this scenario the clearinghouse holds different positions vis-à-vis the counterparties and offsetting positions can be now netted by the clearinghouse. For instance, Firm A will owe only \$100 to the clearinghouse—i.e., the clearinghouse is now the only counterparty to Firm A, which will owe \$200 to the clearinghouse (originally owed to Firm B), but which will receive \$100 from the clearinghouse (originally owed by Firm C). Applying the same procedure to the other contractual relationships, the clearinghouse will owe \$50 to Firms B and C, but it will receive \$100 from Firm A, compressing the overall exposure to \$200.⁵⁴ A similar reasoning can easily be applied to the

54. This numerical example also clearly shows how a clearinghouse operates on a matched book, with zero net total exposure to its counterparties.

transfer of collateral posted or expected to be posted by any firm to guarantee the performance of the contracts.⁵⁵

Now imagine applying this mechanism to multiple parties and to multiple transactions. Central multilateral netting provides three critical benefits in this context. First, netting reduces the overall exposure on the market (both direct counterparty and systemic exposure) by a process generally referred to as “trade compression.”⁵⁶ Second, when netting is performed by the clearinghouse on a rolling basis, it maximizes the use of collateral in the system. Third, when netting is triggered in the occurrence of a default event (oftentimes referred to as a “set-off”), it speeds up and simplifies the liquidation of the defaulting member’s positions, reducing the risk and the cost of liquidating a large portfolio of multiple transactions.⁵⁷

2. Mitigation of Counterparty Credit Risk

In bilateral markets, each participant has to invest time and resources to monitor and manage the risk that any of its counterparties might default on the contractual obligations that bind them together. Furthermore, in a bilateral non-cleared market scenario, participants incur transaction costs when gathering information on the creditworthiness of their counterparties. Oftentimes, such information is not easily or fully available, which leads to significant monitoring and discovery costs, as well as elevated and less accurate pricing of trades.

In contrast, in a centrally cleared market, the clearinghouse becomes the transactional node and the sole counterparty for all of its members.⁵⁸ All clearing members interface only with the clearinghouse. They are, therefore, only exposed to the (default) counterparty credit risk of the clearinghouse of which they are a member, and which they finance via the guaranty fund. Parties must only care for and monitor the creditworthiness of the clearinghouse that clear their portfolio of transactions. Monitoring the creditworthiness of all of its members is the responsibility of the clearinghouse.

With this in mind, clearinghouses mitigate counterparty credit risk in four major ways. First, as analyzed in the previous Section, by novating multiple

55. The numerical example offered above can be easily adapted to the collateral scenario. Collateral is generally pledged by one contractual party as a guarantee for performance of the contract (collateral can be cash, gold, Treasury bills, securities, etc.). Reshuffling the scenario described above, Firm A has to post \$200 worth of T-Bills to Firm B; Firm B \$150 T-Bills to Firm C; and Firm C \$100 T-Bills to Firm A. In total, \$450 worth of T-Bills have to be posted in a non-centrally cleared market. However, if a clearinghouse were to intervene in the market, the net amount of T-Bills to be posted as collateral to guarantee the performance of the contracts would be reduced to \$200.

56. On the role of central clearing in reducing counterparty risk, see Duffie & Zhu, *supra* note 13.

57. Regarding the benefits of multilateral netting and the role of the clearinghouse as liquidity partitioning firm, see Squire, *supra* note 13, at 891-906.

58. To learn more about clearing members, see *infra* Section II.D.1.

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contracts, clearinghouses can reduce the overall exposure to a counterparty by offsetting the open positions with that counterparty, thereby mitigating its counterparty risk. Second, as we will discuss in the next Section, clearinghouses mutualize default risk, guarantee the performance of all transactions, and use unique economic and risk management structures to achieve these results. By having qualified transactions centrally cleared, market participants and clearing members channel their resources to monitor one single counterparty, not multiple counterparties. Third, clearinghouses possess more comprehensive and accurate information on the cleared market than other market participants possess. Compared to each individual member, clearinghouses are in a better position to more easily and cheaply gather information on their counterparties. Clearinghouses know the volume of cleared transactions, pledged collateral, and exposure on specific instruments of each of their members. Clearinghouses monitor and subject their members to strict membership requirements and ongoing oversight. Such knowledge facilitates the clearinghouse's ability to effectively price and monitor the risk of the cleared contracts and eventually take appropriate actions against a member. Finally, clearinghouses reduce counterparty credit risk through the enforcement of robust risk management standards and through risk mutualization mechanisms, a unique feature of clearinghouses.⁵⁹

3. Centralization of Risk Management and Mutualization of Default Risk and Losses

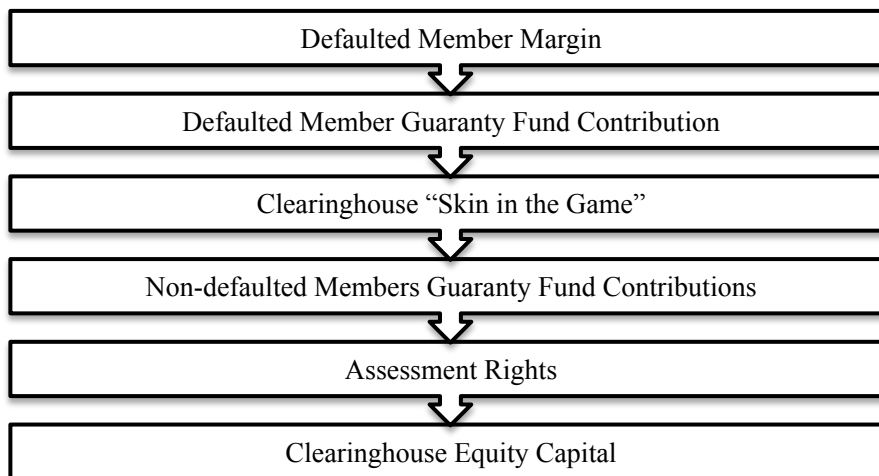
Clearinghouses have strong risk management mechanisms in place to support their continued stability and to eventually respond to the default of one or more of their members. The toolkit of risk and default management instruments is generally referred to as the "default waterfall" procedure. This procedure is triggered when a clearing member defaults on its obligations to the clearinghouse. All of these mechanisms operate to contain the effects of the default, internalize the eventual spillovers, and ultimately share the remaining losses among the non-defaulted members. In contrast with defaults in a non-cleared market,⁶⁰ a clearinghouse can manage the default of one of its members in a more orderly and less costly way, eventually redistributing the losses among its non-defaulted members, and therefore internalizing the potential externalities and shocks of a default.

59. See Bruno Biais et al., *Clearing, Counterparty Risk and Aggregate Risk* (Eur. Cent. Bank Working Paper No. 1481, 2012) (identifying the mutualization of counterparty default risk as the benefit of centralized clearing).

60. Generally, if a party defaults on its contractual obligations, it gives the counterparty a legal cause of action for breach of contract. The counterparty can then sue for specific performance of the contract and/or for damages. If the defaulted party files for bankruptcy, its creditors will be parties in a bankruptcy procedure. Finally, if the defaulted party had entered into a non-centrally cleared financial contract, the counterparty has the right to terminate all the contracts using the same Master Agreement and set off (i.e. compensate) all the obligations due and owed.

The next few paragraphs summarize how the “default waterfall” is structured and how it works in practice. However, it is important to remember that each clearinghouse has in place its own structure of financial resources to deal with defaults, and the specific steps of the “default waterfall” might differ from clearinghouse to clearinghouse.⁶¹ Nevertheless, Figure 2 below highlights the common features.

Figure 2: Structure of the “Default Waterfall”



Upon a member’s default on its contractual obligations to the clearinghouse, the clearinghouse first tries to auction the defaulted counterparty’s positions to other members. In other words, the clearinghouse tries to “re-match” its book with its non-defaulted members, allowing non-defaulted members to step into the open contractual positions of their defaulted peer. If unsuccessful, the resources provided by the defaulted clearing member are the first line of defense. A clearinghouse requires every cleared position to be properly collateralized by the clearing member who enters into it. Assets posted as margin protect the clearinghouse from direct exposure to a member’s cleared transactions and are collected by the clearinghouse either at the moment

61. The first (indirect) line of defense is the membership criteria. Each clearinghouse has a “rulebook,” which—among other things—sets the criteria to admit market participants as clearing members. These criteria include measures of solvency risk (i.e., capital, profitability, etc.), liquidity and operational capability. *See, e.g., CME Rulebook*, CME GRP. ch.1 (last visited Apr. 7, 2017), <http://www.cmegroup.com/rulebook/CME>; *Clearing Rules*, INTERCONTINENTAL EXCHANGE CLEAR CREDIT ch.2 (last visited Apr. 7, 2017), http://www.theice.com/publicdocs/clear_credit/ICE_Clear_Credit_Rules.pdf.

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of clearing (initial margin)⁶² or throughout the life of a cleared contract (variation margin).⁶³ In other words, a margin is the *transaction-specific defense* that each clearinghouse member must post in order to guarantee against the “position risk”⁶⁴ of any cleared transaction. The collateral received can take the form of cash or high-quality securities. Assets posted as margin are kept separated—in financial jargon, “segregated”—for each individual member and do not serve a loss mutualization function.⁶⁵ Instead, if properly calibrated and calculated, margin serves an important risk mitigation function, as it is the first resource used by the clearinghouse to cover the exposure of a defaulted member. Beyond margin, if the collateral pledged by the defaulted member is not sufficient to cover its net exposure to the clearinghouse, the defaulted member’s contributions to the guaranty fund further shore up the clearinghouse’s ability to respond in case of default. Each clearing member is in fact responsible for contributing to the default fund proportionally to the volume and riskiness of its centrally cleared transactions.

With these first two lines of defense, the clearinghouse tries initially to use the resources provided by the defaulted member to cover the net exposure caused by its default. When the defaulted member’s resources are exhausted, however, the clearinghouse can internalize part of the remaining losses by using its own resources—its own “skin in the game.” Every clearinghouse sets aside a specific amount of resources to be used to stem the default of its members, although these self-contributions to the default management mechanism are relatively minor compared to those that the clearing members are called upon to contribute.⁶⁶

By taking the first hit from the default of one of its members, the clearinghouse intends to self-discipline its risk profile and prove to its members that it will absorb the first losses before accessing the default guaranty fund that

62. Initial margin reflects the creditworthiness of the member and the riskiness of the cleared transaction at the time at which it is cleared.

63. Variation margin, conversely, is calculated with regular frequency (daily, bi-daily, etc.) as the contract matures and reflects fluctuations in the contract’s risk and the clearing member’s creditworthiness.

64. Levitin, *supra* note 13, at 453.

65. In some circumstances, before triggering their assessment power, clearinghouses have the right to apply a haircut on margin posted by non-defaulted members on a pro rata basis. In these instances, margin can even become a loss mutualization mechanism.

66. It is interesting to note that Dodd-Frank and existing regulations do not set any minimum thresholds for capital requirements or for the clearinghouse’s “skin in the game.” Each authorized clearinghouse sets its own amount of “skin in the game,” and each clearinghouse can decide at what level of the “default waterfall” its “skin in the game” is placed. On the other hand, European regulators, in implementing the very same recommendations adopted by the Financial Stability Board (FSB) in 2009, required the “skin in the game” of their clearinghouses to be at least 25% of their minimum regulatory capital requirements. See *Improving Financial Stability, Report of the Financial Stability Board to the G20 Leaders*, FIN. STABILITY BOARD (2009), http://www.financialstabilityboard.org/publications/r_090925b.pdf; Regulation (EU) Number 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC Derivatives, Central Counterparties and trade repositories.

they have filled.⁶⁷ However, on average, the clearinghouse’s “skin in the game” in the “default waterfall” is modest: it varies between 5 and 12 percent of the total value of the guaranty fund provided by the members. But, when compared to the firm’s equity, the shareholders’ “skin in the game” is in the range of 0.3 to 1 percent. When compared to the market capitalization of the infrastructural group they belong to, this number drops to a minimum of 0.1 to 0.7 percent.⁶⁸

When the default of one or more clearing members is so catastrophic that the clearinghouse burns through all of the above-mentioned lines of defense, the loss mutualization mechanisms are triggered. The clearinghouse can draw proportionally from the non-defaulted members’ contributions to the guaranty fund. Funded by cash or high-quality liquid collateral, the guaranty fund provides the clearinghouse with the financial cushion necessary to absorb the default of one or more of its clearing members. Unlike initial and variation margin, which are *transaction-specific defenses*, the guaranty fund is a *mutualization defense*, a unique feature of clearinghouses that kicks in only when the defaulted member’s resources—in the form of pledged collateral and contributions to the guaranty fund—are insufficient to cover its exposure to the clearinghouse.⁶⁹ All members are responsible for contributing to the guaranty fund in proportion to the volume and riskiness of their cleared transactions. By requiring its clearing members to contribute on a rolling basis to the mutual guaranty fund in proportion to the volume and riskiness of their cleared transactions, the clearinghouse prices, *ex ante*, the risk of “insuring” its members from the eventual default of one of them. By collecting and keeping

67. It is important to note that there are serious discrepancies between clearinghouses on the amount of “skin in the game” in the “default waterfall” procedure. See, for instance, the procedures adopted by ICE and CME.

68. As mentioned, of the five designated systemically important clearinghouses, only two of them (CME and ICE) are publicly listed, which makes them the only two firms with complete publicly available data. As of March 31, 2017, CME Clearing has a total of \$300 million of “designated corporate contributions” (i.e., “skin in the game”) in the “default waterfall;” and \$6.427 billion in guaranty fund contributions from its clearing members (with the power to assess \$10.585 billion in additional capital contributions from its members). See *Safeguards*, CME GRP. (last visited March 31, 2017), <http://www.cmegroup.com/clearing/cme-clearing-overview/safeguards.html>. CME Group, the parent company of CME Clearing, has an equity capital of \$20.3 billion and a market capitalization of \$40.4 billion. See *CME:US*, BLOOMBERG (last visited March 31, 2017), <http://www.bloomberg.com/quote/CME:US>. Similarly, ICE Clear Credit has \$50 dollars of “skin in the game” and \$403.7 million in guaranty fund contributions, see *Regulation*, ICE, (last visited March 31, 2017), <http://www.theice.com/clear-us/regulation>, and ICE has equity capital of \$15.7 billion and a market capitalization of \$35.53 dollars, see *ICE:US*, BLOOMBERG (last visited March 31, 2017), <http://www.bloomberg.com/quote/ICE:US>.

Firm	Skin in the Game (SiG) (\$)	Total Guaranty Fund (\$)	Market Cap. (\$)	Equity (\$)	SiG/Total Guaranty Fund (%)	SiG/Market Cap. (%)	SiG/Equity (%)
CME	300 M	6 B	40.4 B	20.3 B	5	0.74	1.48
ICE	50 M	413.5 M	35.53 B	15.7 B	12.1	0.14	0.32

69. The clearinghouse draws proportionally from the contributions of all non-defaulted members to the guaranty fund.

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this pool of resources, the clearinghouse maintains a countercyclical “reserve” against the risk of default.

If members’ contributions are insufficient, however, there is one additional mutualization defense: the assessment rights on non-defaulted members. In the unlucky and catastrophic event that all other resources are exhausted, the clearinghouse has the legal right to ask its non-defaulted members for additional cash injections. This is the final and most intrusive defense. It permits the clearinghouse to assess additional financial contributions from non-defaulted members in order to replenish the default fund and to provide additional resources to cover the potential remaining losses. By moving through the levels of the “default waterfall” procedure and using unique capital buffers to absorb and eventually mutualize losses among all of its clearing members and the clearinghouse itself, the clearinghouse is able to internalize and contain the default risk, preventing losses from spreading across markets and reaching systemic proportions.

B. The Evolution of the Clearing Industry: From Mutual Enterprises to Demutualized Public Corporations

Now that we have identified and described the economic functions performed by clearinghouses, this Section offers a brief historical analysis of the clearing industry, which will bring the discussion to the current market landscape and what we mean when we refer to clearinghouses as systemically important firms. Clearinghouses can achieve their most distinctive function—risk mutualization—because of their peculiar economic structure. An economic structure that, interestingly enough, is realized in two competing ownership models: member-owned mutual clearinghouses and investor-owned clearinghouses.

Over the last two centuries, clearinghouses have become effective private regulators of financial risk.⁷⁰ This Section explores the evolution of clearinghouses in the derivatives and securities markets by looking at the history and evolution of the financial system. This Section is particularly relevant in light of the decision of some FMIs to de-mutualize in the early 2000s and to decouple their members’ role from their shareholders’ role. Given the drastic mutations in the regulatory and market landscape that have emerged since the 2007-2008 financial crisis, clearing members may now regret having decided to give up their control over the clearinghouses.

In the derivatives and securities world, commentators trace the establishment of the first central counterparty clearinghouses back to the

70. See Randall S. Kroszner, *Central Counterparty Clearing: History, Innovation, and Regulation*, 30 *ECON. PERSP.* 37, 37 (2006).

nineteenth century.⁷¹ Facing an expanded volume of concluded transactions, market participants (traders, brokers, and then recently established futures exchanges) developed “post-trading” mechanisms to reduce transaction costs and manage default counterparty credit risk through a process of “experience and experimentation.”⁷² Starting in the early years of the twentieth century, exchanges began to set up their own clearinghouses.⁷³ In fact, almost all securities and derivatives exchanges created a vertical corporate structure, the so-called “vertical silo,” where the exchange (organized as a mutual enterprise and owned by its members) owned its own clearinghouse as a wholly-owned subsidiary or as a corporate unit—and the clearinghouse only cleared the trades executed on the parent company’s trading venue.⁷⁴

The trading and post-trading industry operated without interference from public regulators until the 1960s and 1970s,⁷⁵ when public authorities

71. For a comprehensive account of the historical development of clearinghouses, see PETER NORMAN, *THE RISK CONTROLLERS, CENTRAL COUNTERPARTY CLEARING IN GLOBALISED FINANCIAL MARKETS* (2011). For a historical perspective on the evolution of clearing firms in the futures markets, see Franklin R. Edwards, *The Clearing Association in Futures Markets: Guarantor and Regulator*, 3 J. FUTURES MKTS. 369 (1983); James T. Moser, *Contracting Innovations and the Evolution of Clearing and Settlement Methods at Futures Exchanges* (Fed. Reserve Bank of Chi., Working Paper No. WP-98-26, 1998); Randall S. Kroszner, *Can the Financial Markets Privately Regulate Risk?: The Development of Derivatives Clearinghouses and Recent Over-the-Counter Innovations*, 31 J. MONEY, CREDIT & BANKING 596, 598-604 (1999). In the same historical period, clearinghouses also appeared in the stock market, where the “loss mutualization” function of the clearinghouse was a secondary issue, and where its core functions were the settlement and multilateral netting of securities transactions.

72. See Kroszner, *supra* note 70, at 37-38.

73. In 1919, the Chicago Mercantile Exchange (CME), one of the biggest players in the contemporary FMI market, was created as a vertical infrastructural group. Its clearinghouse was endowed with risk mitigation and mutualization mechanisms. See NORMAN, *supra* note 71, at 102-03. Developing in parallel to the commodity and futures markets, stock exchanges set up their own vertically integrated clearing facilities, including the Philadelphia Stock Exchange in 1870 and the New York Stock Exchange (NYSE) in 1892. *Id.*

74. A notorious exception to the vertical silo structure was adopted by the Chicago Board of Trade (CBT), which set up its own clearinghouse (the Board of Trade Clearing Corporation) as an independent mutual firm, owned by the users of its clearing services. To access the clearinghouse, the users (i.e. the members), had to purchase shares in the firm, post margin for their open positions, and be willing to be held mutually liable for the losses from a defaulted member’s positions. See NORMAN, *supra* note 71, at 107 (describing the mechanisms that linked members of the clearinghouse to their shares in the ownership of it); Kroszner, *supra* note 71, at 600-04; Kroszner, *supra* note 70, at 38. Members had to own an amount of shares in the clearinghouse that was proportional to the volume of cleared transactions, but each member/stakeholder had one vote in the stakeholders’ meeting, regardless of the number of shares owned. See NORMAN, *supra* note 71, 103-09 (providing a more complete discussion of the evolution of the clearing services at the CBT).

75. In response to the “paperwork crisis” of the early 1960s, regulators began to involve themselves with the markets. The approach adopted by policymakers gave rise to the creation of two different models of FMIs and two different connections between trading and post-trading firms: vertical silo and horizontal structure. In 1975, Congress established the CFTC. The newly created agency was responsible for supervising and regulating the already well-established futures industry that had, over the years, built its business by adopting a vertical silo integrated structure, in which trading and post-trading services were combined within the same firm or within the same group structure. See NORMAN, *supra* note 71, at 123 (noting that the CFTC adopted a principle-based approach to achieve two main goals: price discovery and risk mitigation); *id.* at 124 (arguing that the Chicago-based futures industry heavily lobbied the CFTC to support the industry practice of vertically integrated trading and clearing); *id.* (noting that CME had a closely integrated exchange and clearinghouse, where the

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contributed to significant changes in the structure of the securities market.⁷⁶ Beginning in the 1970s,⁷⁷ the clearing industry took two distinct paths: derivatives markets maintained a vertical silo structure, while securities markets began the process of consolidating their post-trading firms at a horizontal level with the creation of a single clearinghouse for securities that offered services to multiple trading venues.⁷⁸

Whether they were operating in the derivatives or securities markets,⁷⁹ exchanges and clearinghouses developed together as mutual non-profit enterprises. However, the early 2000s brought a structural revolution in the ownership of the trading and post-trading industry:⁸⁰ the demutualization of FMI groups.⁸¹ During the 2000s, member-owned securities and derivatives infrastructural groups (including their clearinghouses) transformed into investor-owned firms through a process called demutualization.⁸² The

clearinghouse was an “in-house” division of the exchange, while the BTCC and the CBT were closely linked independent firms).

76. In the late 1960s, the “paperwork crisis” revealed that the paper-based back-office activities of stock exchanges and their clearinghouses were inadequate and unable to keep pace with the growing volume of executed and cleared contracts. *Id.* at 124-25.

77. In 1975, Congress passed the 1975 Securities Act Amendments. This new piece of legislation was a milestone in the history and evolution of the securities market. It empowered the SEC to explore regulatory initiatives to foster competition in the securities trading markets and to modernize the industry by establishing a National Market System (NMS) and a nationwide framework for clearing and settling securities. The SEC thus required post-trading infrastructures to offer interoperability arrangements and required trading firms to clear trades concluded on multiple stock exchanges through a single clearinghouse. This allowed market movements to concentrate on and consolidate post-trading services. *See id.* at 124-25.

78. Between 1976 and 1977, the clearinghouses of the NYSE, the American Stock Exchange, and the National Association of Securities Dealers merged to create the National Securities Clearing Corporation (NSCC). *See id.* at 125.

79. For a historical analysis of the evolution of the stock exchange industry, see Reena Aggarwal, *Demutualization and Corporate Governance of Stock Exchanges*, 15 J. APPLIED CORP. FIN. 105 (2002); 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*, 12 OXFORD REV. ECON. POL’Y 53 (1996) (analyzing the evolution of the 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 (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 Tokyo Stock Exchanges*, 75 CORNELL L. REV. 1007 (1990); Jonathan R. Macey & Maureen O’Hara, *From Markets to Venues: Securities Regulation in an Evolving World*, 58 STAN. L. REV. 563, 566-75 (2005) (providing a very insightful analysis on the organization of stock exchanges); Paul G. Mahoney, *The Exchange as Regulator*, 83 VA. L. REV. 1453 (1997); Craig Pirrong, *A Theory of Financial Exchange Organization*, 43 J.L. & ECON. 437 (2000) (offering an economic analysis of stock exchange governance).

80. *See generally* Johnson, *Regulating Conflicts*, *supra* note 13, at 204-07 (offering a general account on the evolution of exchanges and clearinghouses).

81. *See* Guido Ferrarini & Paolo Saguato, *Governance and Organization of Trading Venues: The Role of Financial Market Infrastructures Groups*, in REGULATION OF THE EU FINANCIAL MARKETS—MIFID II & MIFIR (Danny Busch & Guido Ferrarini eds., 2017).

82. For a comprehensive account of the demutualization of exchanges, see SHAMSHAD AKHTAR, *DEMUTUALIZATION OF STOCK EXCHANGES: PROBLEMS, SOLUTIONS, AND CASE STUDIES* (2002); NORMAN, *supra* note 71, at 179-210; Jennifer Elliott, *Demutualization of Securities Exchanges:*

demutualization of FMIs was the transition of FMI groups from mutual associations of members of an exchange and clearinghouse, to for-profit limited liability companies accountable to shareholders. Demutualized FMIs groups, as we will discuss in further details in Section D.1, separated the ownership of the firm from the membership of it, i.e., the right to access its services.⁸³

Although it began as a European phenomenon,⁸⁴ the demutualization of FMIs soon became a worldwide trend, as almost all exchanges in developed economies demutualized.⁸⁵ FMIs opened up their capital to external equity investors and even decided to list their stocks on public markets at various points.⁸⁶

By examining the market environment of the early 2000s, as well as the financial market regulatory framework at that time, one can identify four main factors that could have driven these groups to demutualize and become for-profit, publicly held corporations. These factors are: (i) technological progress, which reduced entry barrier costs for competing ventures;⁸⁷ (ii) increasing competition driven by deregulation and globalization;⁸⁸ (iii) the OTC derivatives market boom; and (iv) the economic consequences of major external shocks such as the industry private bail-out of Long-Term Capital

A Regulatory Perspective (IMF Working Paper No. WP/02/119, 2012); Fleckner, *supra* note 79, at 2554-55.

83. See Elliott, *supra* note 82, at 4.

84. The European FMIs landscape was the precursor to the demutualization and going-public of exchanges and clearinghouses. In the European Union—or, as it was known then, the European Community—until the early 2000s, FMIs were nation-based institutions; each European member State had its own exchange group structured as a vertical silo in which trading and post-trading services were offered by firms of the same group. Cross-border activities—e.g., cross-listing, or listing on an exchange other than the domestic one—were rare because of strong domestic barriers. The introduction of the Euro as the common currency for the then eleven member States in 1999 and 2002, and the strong policy and regulatory initiatives undertaken by the European Commission to create a single common market without barriers to trade, were two of the *strongest* drivers of the demutualization and the going-public of many of the European financial infrastructures. The incisive policy and regulatory initiatives boosted competition among national exchange group champions. In the years following, the European trading and post-trading industry denationalized, demutualized, consolidated, and integrated, bringing to life European financial services conglomerates. For more regarding the creation of European FMI groups and the challenges they pose to the current regulatory framework, see Ferrarini & Saguato, *supra* note 26.

85. See sources cited *supra* notes 71 & 79, and accompanying text.

86. See Fleckner, *supra* note 79, at 2555-63.

87. At the beginning of the twenty-first century, clearinghouses (and exchanges in particular) were under pressure from evolving technology that contributed to the growth of new competitive market actors. By demutualizing and subsequently selling their shares on public markets, FMI groups identified the cheapest and easiest way to raise the necessary capital to upgrade their trading platforms and increase the efficiency and resilience of their activities. By doing so, they became active players in the more competitive trading markets. In this way, they could compete directly with those who, until recently, had been their owners. See NORMAN, *supra* note 71, at 184; Fleckner, *supra* note 79, at 2565-67 (identifying competition as the main driving factor for demutualization).

88. See Fleckner, *supra* note 79, at 2565-67 (looking at deregulation, technology, and globalization as the three critical determinants that fostered competition).

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Management (LTCM),⁸⁹ the burst of the dot.com bubble, 9/11,⁹⁰ and the Enron scandal.

The first two factors might have provided specific incentives to exchanges to open up their capital to external capital investors, while the last two factors provided specific incentives to members to sell their stakes in FMIs. The development of electronic trading and alternative trading systems created greater competition to mutual stock exchanges;⁹¹ members themselves started to set up competing venues to attract the growing volume of trading; the increasing divergence of members and exchanges' interests and the increase in heterogeneity of members' interests undermined the effective governance of the mutual exchanges. All these forces pushed to the demutualization path.⁹²

The OTC derivatives market boom is an identifiable factor that contributed to the demutualization of derivatives FMIs.⁹³ With the Commodity Futures Modernization Act of 2000,⁹⁴ Congress provided a legal framework for OTC derivatives concluded between sophisticated counterparties to occur outside the regulatory oversight of the CFTC. In response, the OTC derivatives market rapidly boomed and developed as a dealer-market—investment banks and broker-dealers were the real market makers for the OTC market. The very same members of the established futures and derivatives exchanges began to compete with FMIs for market shares. As financial institutions began to rely less on FMIs' services, members reconsidered the benefits of maintaining an ownership stake in the FMIs' capital.

FMI groups then transformed into corporations with freely transferable shares—decoupling the role of member from the role of owner—and offered their shares on public markets. By doing so, the members were able to keep their membership in trading and post-trading firms and thus the access to their related services, while also being able to profit from liquidating their FMI's equity positions. In so doing, they were able to raise capital easily and invest in other ventures. Members may have also considered their shares in

89. See PRESIDENT'S WORKING GRP. ON FIN. MKTS., HEDGE FUNDS, LEVERAGE, AND THE LESSONS OF LONG-TERM CAPITAL MANAGEMENT (1999) [hereinafter LTCM REPORT].

90. See NORMAN, *supra* note 71, at 184.

91. See Elliott, *supra* note 82, at 8-12 (analyzing the roots and forces that contributed to the demutualization of stock exchanges, and identifying technological changes and the increasing competing pressure for liquidity as the main factors that affected the securities industry).

92. See Pamela S. Hughes, *Background Information on Demutualization, in DEMUTUALIZATION OF STOCK EXCHANGES: PROBLEMS, SOLUTIONS, AND CASE STUDIES* 36-40 (Shamshad Akhtar ed., 2002) (discussing the reasons why exchanges demutualized and identifying limited competition and the presence of homogeneous interests of members as the two main elements to support a mutual structure).

93. See Arthur E. Wilmarth, *The Transformation of the U.S. Financial Services Industry, 1975-2000: Competition, Consolidation and Increased Risks*, 2 U. ILL. L. REV. 215, 335-37 (2002).

94. See Commodity Futures Modernization Act of 2000, 7 U.S.C. § 1 (2000); Lynn A. Stout, *Derivatives and the Legal Origin of the 2008 Credit Crisis*, 1 HARV. BUS. L. REV. 1, 21 (2011).

clearinghouses and exchanges to be non-core business investments, making them easier to liquidate in order to cover the costs of the private bailout of LTCM in the late 1990s,⁹⁵ the losses triggered by the burst of the dot.com bubble in the early 2000s,⁹⁶ the market shock caused by the 9/11 terrorist attacks, and the costs of the Enron scandal.⁹⁷

Extensive literature explores the demutualization of securities exchanges and the potential driving factors—deregulation, competition, governance, technology, and globalization⁹⁸—behind this milestone transformation of the trading industry.⁹⁹ It is noteworthy, however, that this literature almost exclusively focuses on the demutualization of stock exchanges and pays minimal attention, if any, to the demutualization of the derivatives exchange.¹⁰⁰ Beyond the factors referenced above, it is also important to briefly consider the structural regulations built for post-trading services in securities and derivatives.

95. See LTCM REPORT, *supra* note 89, at 10-22 (explaining how LTCM was rescued by a consortium of fourteen firms, all counterparties of the failing hedge fund, that invested about \$3.6 billion in new equity in the fund) *Id.* at 13-14. The counterparty firms were heavily exposed to LTCM, whose default would have caused severe losses to LTCM's creditors and counterparties and significant market disruptions. *Id.* at 17, 20. The recapitalization of LTCM by its main counterparties has similar economic features to the economic structure of a clearinghouse. However, the former intervened and mutualized losses *post* default, while a clearinghouse's guaranty fund is an *ex ante* and prefunded cushion of resources.

96. NORMAN, *supra* note 71, at 180.

97. *Id.* at 182.

98. See Roberta S. Karmel, *Motivations, Mechanics and Models for Exchange Demutualizations in the United States*, in DEMUTUALIZATION OF STOCK EXCHANGES: PROBLEMS, SOLUTIONS, AND CASE STUDIES 61-63 (Shamshad Akhtar ed., 2002).

99. See *Issues Paper on Exchange Demutualization—Report of the Technical Committee of the International Organization of Securities Commission*, INT'L ORG. SEC. COMMISSION 4-10 (June 2001), <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD119.pdf> (focusing especially on the conflicts of interest created by the clash between the for-profit nature of demutualized stock exchanges and their role as private regulators of their operated markets); *supra* note 79 and accompanying text.

100. Exceptions include, for example, LEE, *supra* note 2; see also NORMAN, *supra* note 71; Neal L. Wolkoff & Jason B. Werner, *The History of Regulation of Clearing in Securities and Futures Markets, and Its Impact on Competition*, 30 REV. BANKING & FIN L. 313 (2010); Felix Chang, *The Systemic Risk Paradox: Banks and Clearinghouses Under Regulation*, 2014 COLUM. BUS. L. REV. 747, 767-68 [hereinafter Chang, *The Systemic Risk Paradox*]. In the fall of 2002, CME was the first US FMI to demutualize and go public, listing its shares on Nasdaq. See NORMAN, *supra* note 71, at 203-05. Today, the CME Group is one of the largest listed FMIs, and CME Clearing, a wholly owned subsidiary of the CME Group, is one of the largest central counterparty clearinghouses for futures, options, and swaps, and it clears all contracts concluded on the CME group's trading venues. CME is the typical vertical silo, where the group holding owns the exchanges and other trading venues, which all exclusively access the clearing services of the group's clearinghouse. See, e.g., *CME Clearing: Principles for Financial Market Infrastructures Disclosure*, CME GRP. 2, 18 (2015), <http://www.cmegroup.com/clearing/risk-management/files/cme-clearing-principles-for-financial-market-infrastructure-disclosure.pdf>. The Intercontinental Exchange (ICE), which now controls ICE Clear Credit—the largest clearinghouse for the credit default swaps market—was founded as an energy derivatives exchange. It went public on the NYSE in 2005, and through mergers and acquisitions, it became one of the largest conglomerates of exchanges and clearinghouses for financial and commodity derivatives. *ICE at a Glance*, ICE (last visited Apr. 2017), http://www.theice.com/publicdocs/ICE_at_a_glance.pdf; see also NORMAN, *supra* note 71, at 205-10, 299-300.

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While all major stock exchanges demutualized in the early years of the twenty-first century, the securities post-trading services providers maintained their mutual ownership structure. The SEC, via the NSM regulations, envisioned a consolidated, nationwide, horizontally structured securities post-trading industry in which individual independent clearinghouses would serve multiple trading venues.¹⁰¹ For this reason, when stock exchanges demutualized in the early 2000s, under the competing pressures from alternative trading systems, no clearinghouses were involved in the process. Today, two securities clearinghouses—DTCC and OCC—remain mutual enterprises owned by their members (both designated as systemically important).¹⁰²

The narrative is different for derivatives exchanges and clearinghouses. The CFTC used a “softer touch” in setting the operational landscape for the trading and clearing of derivatives. In fact, because the CFTC allowed the industry to mold its own business market structure, the outcome has diverged sharply from the way the securities markets have developed under the SEC’s vision. All main derivatives clearinghouses are part of exchange groups that demutualized in the early 2000s. Both CME Clearing and ICE Clear Credit, the two FSOC designated systemically important FMIs, are vertically integrated within an exchange group. The former is a business unit within the same corporation, while the latter is a wholly owned subsidiary of the holding company of a demutualized infrastructural group.

With our historical overview complete, we have now arrived at the current market landscape, which is characterized by a dual system. The securities and derivatives markets have organized their market structure distinctively. The

101. With the establishment of DTC in 1973 and NSCC in 1976, and their consolidation in DTCC in 1999, the creation of a nationwide consolidated and horizontally structured post-trading industry for securities was finally achieved.

102. By the end of the 1990s, the landscape of securities post-trading services had four main actors: the Options Clearing Corporation (founded in the 1970s by a group of equity derivatives exchanges, OCC is an independent, privately held, for-profit clearinghouse, owned by the exchanges that rely on OCC’s clearing services. *See OCC By-Laws*, OPTIONS CLEARING CORP. (last visited Apr. 7, 2017), <http://www.optionsclearing.com/about/publications/bylaws.jsp>); DTC; NSCC; and the Fixed Income Clearing Corporation (FICC). In November 1999, DTC, NSCC, and FICC merged, creating DTCC (Depository Trust and Clearing Corporation), one of the world’s largest clearing and settlement houses. DTCC—the holding company of the group—is a mutually owned enterprise in which the members of all entities of the group own common shares of the holding company in proportion to the amount of services received. Members of (participants in) the clearing agencies are in some instances required, in others permitted, and in others not allowed to purchase and own DTCC shares. Members who access the core services of at least one of the group’s clearinghouses are required to purchase and own common shares of DTCC (mandatory shareholders); participants using most of the other offered services are permitted, but not required, to purchase and own common shares; and participants using only certain ancillary services are not offered any shares. *See Self-Regulatory Organizations; Fixed Income Clearing Corporation; National Securities Clearing Corporation; The Depository Trust Company; Notice of No Objection to Advance Notices, as Amended, to Amend and Restate the Third Amended and Restated Shareholders Agreement, Dated as of December 7, 2005*, SEC. EXCHANGE COMMISSION (Jan. 27, 2015), <http://www.sec.gov/rules/sro/ficc-an/2015/34-74142.pdf>; Philip Stafford, *DTCC Finalizes \$400m Equity Capital Raising*, FIN. TIMES (Apr. 14, 2015) (discussing the finalization of the \$400 million equity capital raised by DTCC to meet the new capital requirements triggered by its designation as a “systemically important financial market utility”).

securities markets, under the SEC's jurisdiction, are marked by a highly competitive trading environment with multiple trading venues competing for market shares. In contrast, the post-trading clearing and settlement services market developed into consolidated specialized (per asset classes) clearing agencies, and are all wholly owned subsidiaries of a member-owned firm. These agencies operate as horizontally structured businesses and offer post-trading services to multiple trading venues on a non-discriminatory basis. Securities clearing enterprises operate in a regulatory monopoly market scenario. Clearing members, having demutualized the control and ownership of the exchanges, nonetheless kept their ownership stake in the clearing firms where they were also the providers of the loss mutualization capital.

In the futures and derivatives markets, the situation is different. These markets, which traditionally fell within the purview of the CFTC, have developed into vertically-integrated silo groups. Trading venues and clearinghouses are parts of the same group, with the group holding company organized as a for-profit public company that is often listed on a public stock market. In these groups, the clearinghouse is the post-trading service provider for the transactions executed on the group's trading venues. Clearinghouses, after being privately owned firms closely held by their members, became companies (in the majority of cases, subsidiaries of companies) whose shares are publicly listed and traded on a public market.¹⁰³ These FMI groups demutualized their ownership structure, but kept the mutual structure in the loss sharing mechanism of their clearinghouses. In other words, their clearinghouses demutualized the ownership and governance, but they did not demutualize the risk and the potential losses.¹⁰⁴ Members of derivatives clearinghouses access their services and contribute to their loss mutualization fund, but no longer have the right to govern these firms.

C. The Systemic Role of Clearinghouses

As analyzed in Part I, the role and reliance on FMIs (and especially clearinghouses) exponentially increased in the post-crisis regulatory world. With the implementation of the provisions on mandatory central clearing for derivatives, clearinghouses became crucial intermediaries in the financial markets. All of the five main clearinghouses have been deemed systemically important by FSOC. Clearinghouses have been designated "systemically important" because they operate as central nodes for multiple markets, clearing

103. See Johnson, *Clearinghouse Governance*, *supra* note 13, at 696.

104. As Robert T. Cox and Robert S. Steigerwald describe in a recent paper, clearinghouses achieve an "incomplete demutualization" by separating ownership from clearing participation, and having clearing members (rather than the firm's shareholders) underwrite the clearinghouse default risk. See Robert T. Cox & Robert S. Steigerwald, "Incomplete Demutualization" and *Financial Market Infrastructure: Central Counterparty Ownership and Governance After the Crisis of 2008-9*, 4 J. FIN. MKT. INFRASTRUCTURES 25 (2016).

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and guaranteeing the performance of trillions of dollars-worth of transactions.¹⁰⁵ Their role as central counterparties exposes them to the risk of default by their members and contractual parties. Envisioned to detangle the interconnectedness of derivatives markets participants, or more broadly of financial institutions, clearinghouses—as central counterparties—have become themselves deeply connected (or interconnected) to their members, on whom they rely to build their financial buffers, but to whom clearinghouses are exposed in the event of their default. Being designated as stability valves for the derivatives markets where participants must centrally clear their contracts has increased clearinghouses' unique importance. No other infrastructure can effectively substitute for or fill the role that clearinghouses play—and because of this, market participants depend and rely on their smooth and stable functioning. Despite contributing to the stability of the financial system and to the overall mitigation of systemic risk, clearinghouses—precisely because of their function as central counterparties and risk mutualizers—centralize and concentrate risk. And, because of their systemic function, the risk related to their potential failure can be systemic;¹⁰⁶ their eventual default would spread losses elsewhere in the financial system.

What does the failure of a clearinghouse look like? Imagine a roman arch. At the top of the arch, there is a keystone, which maintains pressure on the other stones in the arch so the arch keeps its shape. What happens if you pull the keystone out of the arch? All the remaining stones in the arch fall to the ground in disarray. This is one way to imagine the market impact of a clearinghouse's failure. Replace the keystone in your mind with a clearinghouse; the surrounding stones are all its members and counterparties. If a clearinghouse were to fail, all of the counterparties would lose their connector, their stability buffer. Uncertainty will ensue, trillions of dollars-worth of contracts will suddenly face a defaulted counterparty, a domino default will likely be triggered, and the whole financial system will suffer significant distress.

In practice, the failure of a clearinghouse is something even more complex: something that requires unbundling an enormous number of contractual positions, guaranty accounts, and property rights. The failure of a clearinghouse can be triggered by multiple defaults of clearing members, macro-economic conditions that trigger systemic economic or financial distress as well as operational and risk management failures. Regardless of the causal factors of the default, the clearinghouse is in a situation of distress when it

105. For a discussion of the parameters used by FSOC to designate systemically important clearinghouses, see *supra* note 36

106. See 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”).

exhausts all of its pre-funded and countercyclical resources (i.e., defaulted members' margin, its "skin in the game," its own capital, and the guaranty fund), is unable to contain and internalize the costs of its activities, and fails to provide its infrastructural services.¹⁰⁷ At that point, clearinghouses still have the right to ask their members for additional contributions to re-fund the guaranty fund and absorb the potential remaining losses.¹⁰⁸ However, assessment powers, despite being the last line of internal defenses to internalize the cost of the clearinghouse's default, may exacerbate, rather than contain the risk in the system.¹⁰⁹

D. The Ownership of Clearinghouses and Their "Double-Layered Capital"

Clearinghouses are unique enterprises because of their distinctive ownership and economic structure that permits them to centralize counterparty credit risk and guarantee a mutual loss-absorbing capacity in case of member default. To fully understand the organization of a clearinghouse, one must consider: (i) the *ownership* structure; (ii) the *mutual guaranty fund*; and (iii) the core principle of its *governance*. This Section provides a recap on the organization of clearinghouses and is a launching pad for the next analytical Sections.

1. The Ownership of the Clearinghouse: Two Models for the Same Industry

Clearinghouses emerged from private efforts and initiatives converging to create a private cooperative structure in order to reduce costs in the settlement of trades, guarantee the performance of a contract despite the default of one of the original counterparties, set up private stability buffers to mitigate (default) counterparty credit risk, and eventually absorb and proportionally share and redistribute the costs of the defaults of trading counterparties. Today, clearinghouses are generally organized in a corporate format in which they are owned by shareholders. Clearinghouse shareholders retain voting and control

107. The unwinding of large portfolio of cleared transactions and the sale on the market on large amount of collateral to cover the open exposures left by a defaulted member may also aggravate price volatility. See *2016 Financial Stability Report*, OFF. FIN. RES. 49-57 (2016), http://www.financialresearch.gov/financial-stability-reports/files/OFR_2016_Financial-Stability-Report.pdf (assessing the resilience of central counterparties as contagion channels).

108. Policy makers and regulatory agencies, including the Fed, CFTC, and SEC, are still studying and discussing what is the best solution for dealing with the potential bankruptcy of a clearinghouse. Only very recently has the CFTC published its guidelines on the recovery and resolution (or "orderly wind-down") of a derivatives clearing organization. See Memorandum from Jeffrey M. Bandman, Acting Dir., CFTC, to All Registered Derivatives Clearing Orgs. (July 21, 2016), <http://www.cftc.gov/idc/groups/public/@lrllettergeneral/documents/letter/16-61.pdf>.

109. Clearing members might in fact be asked to inject extra resources into the clearinghouse in a market scenario characterized by the default of other members. At that point, the yet non-defaulted members might be incurring correlated losses, or alternatively, those non-defaulted members might already be in a situation of systemic financial distress.

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rights but are also entitled to economic rights, which are generally structured as dividend distributions.

Shareholders and members are the two main constituencies and stakeholders that cohabit in a clearinghouse, as well as the providers of the two essential financial resources of the firm: the equity capital and the guaranty fund. Yet, while their roles may sometimes overlap, at other times they diverge.¹¹⁰

The roles of clearinghouse's shareholders and members overlap in member-owned enterprises when membership triggers a requirement to become a firm's shareholder.¹¹¹ Generally, a clearing member is required to own an equity stake proportional to the volume and riskiness of the services it accesses. In addition, members contribute proportionally to the guaranty fund. The enterprise is structured as a member-owned mutual firm¹¹² and the profits generated by clearing activities are either used to reinforce the clearinghouse's financial positions or to reinvest in the firm. Alternatively, the profits are distributed to its shareholder-members as rebates and refunds for clearing fees that have already been paid, or as prospective savings on future fees.

When the role of member and shareholder diverges, and the firm demutualizes its ownership structure, the clearinghouse is designed as a traditional investor-owned corporation.¹¹³ In the current market landscape, some clearinghouses are a fully-owned subsidiary of a public company—generally a listed exchange group. In this instance, the clearinghouse has external equity investors; its shareholders control and govern the firm and are entitled to dividend payments if the firm produces profit. Members, in contrast, pay fees to access the clearing services and contribute to the mutual loss-absorbing capital, but they are not granted any ownership or control rights.

2. Financial Resources as Systemic Stability Buffers

The clearinghouse economic structure is less straightforward. Clearinghouses have what I call a “double-layered” capital structure: (1) equity capital, and (2) guaranty fund.

110. Shareholders can be internal shareholders—if they are also members of the clearinghouse—or external shareholders—if they are not members, but capital investors. The vast majority of FMI groups' shareholders are external shareholders: they are just equity investors. For simplicity, when referring to shareholders, I will refer to external shareholders or equity investors.

111. The existing literature on the ownership structure of stock exchanges generally refers to customer-controlled or customer-owned entities. See Fleckner, *supra* note 79, at 2552; Carmine Di Noia, *Customer-Controlled Firms: The Case of Financial Exchange*, in *CAPITAL MARKETS IN THE AGE OF THE EURO: CROSS-BORDER TRANSACTIONS, LISTED COMPANIES AND REGULATION 173* (Guido Ferrarini et al. eds., 2002).

112. DTCC defines itself as a “user-owned . . . utility firm.” *A White Paper to the Industry: CCP Resiliency and Resources*, DEPOSITORY TR. & CLEARING CORP. (June 2015), <http://www.dtcc.com/news/2015/june/01/ccp-resiliency-and-resources>.

113. This does not exclude that clearing members can purchase FMIs' shares on a public market like NASDAQ and NYSE.

Organized in a corporate format, clearinghouses issue shares. These shares represent the equity capital of the firm and form its primary financial reserve—its first layer. This layer is provided by the corporate shareholders. This capital buffer does not provide the clearinghouse with the necessary resources to perform its risk mitigation and loss-absorbing functions. In order to achieve both of these tasks, clearinghouses must have an additional cushion of resources from which to draw in order to cover the eventual losses triggered by the default of a member.¹¹⁴ The existence of the guaranty fund, which permits the mutualization and redistribution of losses among the clearinghouse’s members, is the peculiar and unique feature of the clearinghouse structure that differentiates it from an ordinary corporation. The guaranty fund, which constitutes the second capital layer and which sits on top of the equity capital, is supplied by the members of the clearinghouse—the users of the clearinghouse’s services.¹¹⁵

Regardless of whether the clearinghouse is structured as a member-owned or investor-owned enterprise, the economic contributions to the “default waterfall” are structurally similar. However, as Part IV will further analyze, being a member of a clearinghouse *per se* does not imply any control right over the governance of the clearinghouse. The fact that the providers of the loss-absorbing capital in an investor-owned firm are not the same entities that govern the firm gives rise to misaligned incentives and conflicts that might ultimately threaten the financial stability of the firm.

3. The Governance of Conflicting Interests and Incentives

As with other corporations, clearinghouses have a typical corporate governance structure. This includes shareholders, who elect the board of directors and vote on relevant and important “firm life” events; the board of directors, which has the principal authority over the firm’s corporate affairs and whose members sit on a variety of different governance committees,¹¹⁶ including the critically important risk and nomination committees; and the

114. For a comprehensive analysis of the mechanism of the “default waterfall,” see *supra* Section II.A.3.

115. Clearing members are mainly financial firms that require clearing services for their financial transactions. To ensure the successful functioning of the “default waterfall” mechanism and to ensure the resilience of the firm, clearing members are subject to strict membership requirements. To become a clearinghouse member, financial firms must meet specific sets of requirements, including capital requirements and internal risk management characteristics. They are subject to ongoing oversight by the clearinghouse, and they must also sign the terms and conditions of the financial safety net system (or “default waterfall” mechanism) put in place by the clearinghouse. Clearinghouses’ members are generally a small homogenous group of financial institutions. Ice Clear Credit, for instance, has thirty clearing members, and CME has fifty-three (seventeen of which are members of both clearinghouses). See *Ice Clear Credit Participants*, ICE CLEAR CREDIT (last visited Mar. 31, 2017), <http://www.theice.com/clear-credit/participants>; *Clearing Firms*, CME GRP. (last visited Mar. 31, 2017), <http://www.cmegroup.com/clearing/financial-and-regulatory-surveillance/clearing-firms.html#clearingFirms>.

116. See KRAAKMAN ET AL., *supra* note 8, at 11-15.

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management, which is responsible for running the daily firm's business. A critical role in the governance of the clearinghouse is played by the risk committee. Generally speaking, the risk committee oversees and steers the risk profile and management of the clearinghouse; participates in the setting of the membership requirements, the admission and on-going supervision of members; and determines the eligible instruments for clearing and the amount and quality of acceptable margin.¹¹⁷

In contrast with other corporations, because of their economic and ownership structure and the role they perform in the financial system, clearinghouses face distinctive agency costs. These costs, which grow out of the member-shareholder divide and which arise when final risk-bearing costs are not aligned with control rights, will be discussed in more detail in Part III. Specific to clearinghouses, these agency costs manifest when firms demutualize their ownership and governance structure, but retain a mutual mechanism to share losses. This situation occurs in investor-owned clearinghouses where members' incentives for a stable and reliable provider of clearing services potentially clash with the investors' incentives to ensure returns on their investment. Because they are not the ultimate risk-bearers, investors might have incentives to increase the risk profile of the clearinghouse in order to achieve higher returns.¹¹⁸ The next Part offers a theoretical framework for understanding the agency costs created by what I call the member-shareholder divide and sets the structure for the cost-benefit analysis performed in Part IV.

III. A Theoretical Framework for Assessing the Ownership Models of Clearinghouses

Before analyzing the costs and benefits of investor-owned and member-owned clearinghouses, we should first set up a theoretical framework to help us understand and investigate the different ownership structures adopted by the industry and how systemic risk can be exacerbated when agency costs arise in the organization of a systemically important firm.

Clearinghouses are unique enterprises—not only for their crucial role in the financial system, but also for their unique ownership and economic structure. Clearinghouses are multi-stakeholder firms. Whether they are organized as private corporations (e.g., DTCC and OCC) or public corporations

117. See *infra* Section V.A for a detailed analysis of the ownership and governance regime for clearinghouses—or more specifically, clearing agencies under the SEC's supervision, and derivatives clearing organizations, under the jurisdiction of the CFTC.

118. See, e.g., Frank H. Easterbrook, *Two Agency-Cost Explanations of Dividends*, 74 AM. ECON. REV. 650, 653 (1984) (explaining the risk preferring nature of shareholders in contrast to the risk aversion of managers and creditors); Jonathan R. Macey & Geoffrey P. Miller, *Bank Failures, Risk Monitoring and the Market for Bank Control*, 88 COLUM. L. REV. 1153, 1202-23 (1988); Jonathan R. Macey & Geoffrey P. Miller, *Double Liability of Bank Shareholders: A Look at the New Data*, 28 WAKE FOREST L. REV. 933, 934 (1993) (discussing shareholders as residual claimants who capture the excessive returns from excessive risk taking) [hereinafter Macey & Miller, *A Look at the New Data*].

(e.g., CME or ICE, both publicly listed firms), clearinghouses face traditional agency conflicts and costs, which derive from the notorious “separation of ownership and control” in ordinary corporations.¹¹⁹ Nevertheless, clearinghouses face a unique ownership and governance problem that I term the member-shareholder divide.¹²⁰ Beyond dealing with the “ordinary” problems resulting from the separation of ownership and control, which nevertheless have been partially reconciled or controlled by the consolidation of the principle of the “maximization of shareholder value” as the final responsibility of the directors,¹²¹ clearinghouses must also contend with the separation of membership and ownership. Or, put similarly to the traditional corporate scholarship issue,¹²² clearinghouses have to deal with the separation of (i) ownership and control and (ii) final risk-bearing.

119. See generally ADOLF A. BERLE, JR. & GARDINER C. MEANS, *THE MODERN CORPORATION AND PRIVATE PROPERTY* 119 (1933); Eugene F. Fama & Michael C. Jensen, *Separation of Ownership and Control*, 26 J.L. & ECON. 301, 312, 317-18 (1983); Roberta Romano, *Metapolitics and Corporate Law Reform*, 36 STAN. L. REV. 923 (1984). This separation of ownership and control can potentially misalign the interests of managers and shareholders, resulting in conflicts that have been referred to in the literature as “principal-agent problems” or “agency costs.” See Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976) (explaining how the misalignment of interests between shareholders and managers might result in the latter trying to maximize their own utility to the detriment of the firm’s profits, and in shareholders having to incur “agency costs” in order to realign managers’ interests with their own). See KRAAKMAN et al., *supra* note 8, at 29-31 (identifying the main agency costs of modern corporations between: shareholders and managers; controlling shareholders and non-controlling shareholders; and shareholders and creditors).

120. Or, in parallel with the definition of Berle and Means, “the separation of membership and ownership.” BERLE & MEANS, *supra* note 119.

121. Corporate law literature has proven how the separation of ownership and control issue and the related shareholder-manager agency costs have been addressed through changes in the market and in corporate practice. This corporate literature, generally referred to as “shareholder primacy” literature, claims that ultimate control of the corporation rests with the shareholders. Managers must run the corporation in the interest of shareholders, and the advancement of the shareholders’ interest can be observed in the market value of the publicly traded shares of the corporation. Market developments, such as the share-ownership concentration, the rise of activist shareholders, the active development of proxy advisor firms, and the development of performance-based remuneration for managers, are all evidence of “shareholder primacy” and confirm that the primary responsibility of directors is to maximize shareholder value. See, e.g., Barry E. Adler & Marcel Kahan, *The Technology of Creditor Protection*, 161 U. PA. L. REV. 1773 (2013); Lucian A. Bebchuk, *The Myth of the Shareholder Franchise*, 93 VA. L. REV. 675 (2007); William W. Bratton & Michael L. Wachter, *The Case Against Shareholder Empowerment*, 158 U. PA. L. REV. 653 (2010); Henry Hansmann & Reinier Kraakman, *The End of History for Corporate Law*, 89 GEO. L.J. 439, 440-41 (2001); Marcel Kahan & Edward B. Rock, *Embattled CEOs*, 88 TEX. L. REV. 987 (2010); Henry G. Manne, *Mergers and the Market for Corporate Control*, 73 J. POL. ECON. 110 (1965) (theorizing the market for corporate control as a mechanism that reduces the agency costs of the separation of ownership and control, and that aligns the interests of managers—who have an interest in keeping the shares value high, as a deterrence from possible hostile takeover that would result in their ouster—to those of shareholders); Edward B. Rock, *Adapting to the New Shareholder-Centric Reality*, 161 U. PA. L. REV. 1907 (2013). For a different view on firm corporate governance and the central role of the board, see, for example, Margaret M. Blair & Lynn A. Stout, *A Team Production Theory of Corporate Law*, 85 VA. L. REV. 247, 253 (1999); and Lynn A. Stout, *On The Rise of Shareholder Primacy, Signs of Its Fall, and the Return of Managerialism (in the Closet)*, 36 SEATTLE U. L. REV. 1169 (2013).

122. Generally speaking, the traditional theory of corporations is traced to the seminal work of Berle & Means and their theory of the separation of ownership and control in modern corporations. See BERLE & MEANS, *supra* note 119; Adolf A. Berle, *The Modern Corporation and*

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Clearinghouses are multi-stakeholder firms¹²³ with an ownership and governance structure that must balance the interests of three main constituencies: shareholders, management, and members. The balancing of conflicts between managers and shareholders has been extensively debated in the legal and economics literature on corporate governance and is outside the scope of this Article.¹²⁴ What has been left unexplored, however, is the degree to which different ownership models can be more or less suited to address agency costs between the clearinghouse's two main constituencies: members and shareholders.¹²⁵

The “theory of the firm” literature teaches that firms can be organized in different ways, depending on how control and economic rights are assigned to the firm’s “patrons.”¹²⁶ In his seminal work, Henry Hansmann identifies ownership rights as consisting of the right to control the firm and the right to residual earnings (i.e., the right to receive the net profits generated by the firm).¹²⁷ These rights can be decoupled and assigned to different classes of

Private Property, 62 COLUM. L. REV. 433 (1962). For an acute critique of Berle & Means’ positions, see Henry G. Manne, *Current Views on the “Modern Corporation,”* 38 U. DET. L.J. 559 (1961); and Henry G. Manne, *Our Two Corporation Systems: Law and Economics*, 53 VA. L. REV. 256 (1967).

123. Like other firms, clearinghouses have employees, operational creditors, suppliers, and so forth. For the purposes of this Article, references to clearinghouses’ “stakeholders” indicate firm members (i.e., the users of infrastructural services) and taxpayers, who become direct stakeholders once the clearinghouse becomes systemically important. Employees, creditors, and suppliers fall outside of the scope of this Article, as do end-users (i.e., the members’ clients who access the clearinghouse’s infrastructural services through the intermediation of the members). *See, e.g.*, Hansmann & Kraakman, *supra* note 121, at 447 (explaining the category of stakeholders in the context of a stakeholder model of corporate governance).

124. *See supra* note 121 and accompanying text. Regarding the establishment of the duty of managers with regard to systemic risk, see Steven L. Schwarcz, Keynote Address at the National Business Law Scholars Conference at The University of Chicago Law School: Regulating Governance in the Public Interest: The Case of Systemic Risk (June 23, 2016), <http://ssrn.com/abstract=2805668>. *See also* Steven L. Schwarcz, *Misalignment: Corporate Risk-Taking and Public Duty*, 92 NOTRE DAME L. REV. 1, 28-29 (2016) (supporting the implementation of a public governance duty under which “the managers of a systemically important firm would not only have a private corporate governance duty to investors but also a duty not to engage in excessive risk-taking that could systemically harm the public” (footnotes omitted)).

125. The direct relationship between management and members in an investor-owned clearinghouse goes behind the direct scope of this Article; the management does not carry a specific and formal fiduciary duty to the members, but it owes its fiduciary duties only to the firm’s shareholders.

126. *See* HENRY HANSMANN, *THE OWNERSHIP OF ENTERPRISE* (1996) (explaining why different industries adopt different ownership structures). For a general account on the theory firm literature, see BERLE & MEANS, *supra* note 119; OLIVER HART, *FIRMS, CONTRACTS, AND FINANCIAL STRUCTURE* (1995); RANDALL S. KROSZNER, *THE ECONOMIC NATURE OF THE FIRM—A READER* (3d ed. 2009); JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* (1988); OLIVER E. WILLIAMSON, *ECONOMIC ORGANIZATION: FIRMS, MARKETS AND POLICY CONTROL* (1986); Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386 (1937); Frank H. Easterbrook & Daniel R. Fischel, *The Corporate Contract*, 89 COLUM. L. REV. 1416 (1989); Henry Hansmann, *Ownership of The Firm*, 4 *J.L. ECON. & ORG.* 267, 1293-95 (1988); Oliver Hart & John Moore, *Property Rights and the Nature of the Firm*, 98 *J. POL. ECON.* 1119 (1990); Jensen & Meckling, *supra* note 119; Oliver E. Williamson, *The Modern Corporation: Origins, Evolution, Attributes*, 19 *J. ECON. LIT.* 1537 (1981).

127. HANSMANN, *supra* note 126, at 11.

patrons, but are generally held together.¹²⁸ The enterprise can assign its rights to any of the persons with whom it transacts—the so-called patrons.¹²⁹ Thus, a firm can be owned by its employees (e.g., a law firm), by its customers or users (e.g., a mutual insurance company), by its members (e.g., a mutual stock exchange), by its suppliers (e.g., a farm cooperative), or by its investors (i.e., the capital suppliers such as a typical software company). Investor-owned enterprises (or “capital cooperatives”) are the most common form of enterprise,¹³⁰ but a firm can also be owned by the other patrons, in which case it is known as a cooperative firm or a non-investor-owned enterprise.¹³¹

In designing a firm, an entrepreneur has to take into consideration market contracting costs for patrons and the firm, as well as ownership costs. Patrons enter into contractual relationships with the firm in order to access its services, thus incurring market contracting costs.¹³² Therefore, to maximize efficiency, the enterprise should assign ownership rights to the class of patrons that bear the maximum market contracting costs with the firm. In so doing, the enterprise minimizes the aggregate costs for all other patrons and maximizes the aggregate benefits between the firm and the other patrons.¹³³ However ownership comes with “governance costs” and not all patrons are in the position to effectively deal with these costs.¹³⁴ Some patrons may be better equipped than others to address ownership costs.¹³⁵ Overall, the most efficient organizational structure, then, is the one that aggregately minimizes “(1) the cost of market contracting for those classes of patrons that are not owners and (2) the cost of ownership for the class of patrons who owns the firm.”¹³⁶ Finally, firms can decide to be structured as for-profit enterprises, in which case they are managed to maximize owners’ benefits, or as not-for-profit enterprises. In the latter case, the patrons who control the firm are not entitled to receive

128. *Id.* at 12. Henry Hu and Bernie Black identified and theorized the phenomenon of the decoupling of economic rights from control rights achievable through the use of derivatives contracts. See Henry T. C. Hu & Bernard Black, *The New Vote Buying: Empty Voting and Hidden (Morphable) Ownership*, 79 S. CAL. L. REV. 811 (2006); Henry T. C. Hu & Bernard Black, *Hedge Funds, Insiders, and the Decoupling of Economic and Voting Ownership: Empty Voting and Hidden (Morphable) Ownership*, 13 J. CORP. FIN. 343 (2007); Henry T. C. Hu & Bernard Black, *Equity and Debt Decoupling and Empty Voting II: Importance and Extensions*, 156 U. PA. L. REV. 625 (2008).

129. HANSMANN, *supra* note 126, at 21 (ownership should be assigned to the “class of patrons for whom the problems of market contracting are the most severe”).

130. *Id.* at 53-65.

131. To specify the type of entity, one can replace “non-investor” with the appropriate patron’s name (e.g., employee-owned, member-owned, etc.).

132. HANSMANN, *supra* note 126, at 19. The costs of market contracting include, for instance, a situation in which a firm has market power over some classes of patrons, the presence of monopolies or “lock-in” market power, asymmetric information, etc. *Id.* at 24-34.

133. *Id.* at 21-22.

134. *Id.*

135. The costs of ownership include the cost of controlling managers, the cost of collective decision-making among the owners, and the cost of residual risk associated with receipt of residual earnings. *Id.* at 35-49.

136. *Id.* at 22.

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any net-profit distribution, meaning the firm does not have any owners (although it can still generate profits).¹³⁷

Taking this theoretical framework into the clearinghouse context, clearinghouse's members are the users of the firm and must be admitted as members in order to directly access its services. Interestingly, in mapping the current market landscape of clearinghouses, we see that in some instances, clearing enterprises decide to allocate their ownership rights to investors—i.e., external capital providers—thereby organizing as investor-owned firms. In other instances, they are owned by their users and members, thereby taking the form of member-owned or cooperative enterprises. Yet, beyond firm theory's consideration of microeconomic relationships between the firm and its patrons (i.e., how the firm structure reduces the market contracting costs between the firm and its patrons),¹³⁸ I believe we must consider another factor: the final risk-bearing costs. Market contracting costs and ownership costs are altered or have to be redefined by the presence of final risk-bearing costs—especially in cases like clearinghouses, which present a distinctive economic structure.¹³⁹

As already discussed,¹⁴⁰ clearinghouses have a distinctive economic structure. They differ from ordinary companies because of the presence of two layers of capital (or, more generally speaking, of two layers of financial buffers or cushions): the typical equity or risk capital provided by the owners, and the mutual guaranty fund or mutual loss-absorbing capital provided by the members. If a clearinghouse incurs losses in performing its clearing business (e.g., if a member defaults, or the firm incurs operational losses), the mutual guaranty fund provides the backup resources to support the running of the business. The equity capital remains untouched, running counter to the conventional assumption that the firm and its owners are liable for its liabilities. Therefore, when ownership rights are not assigned to the members (the guaranty fund providers and final risk-bearers), but to external investors, this separation of ownership rights (control plus economic rights) from final risk-bearing costs gives rise to agency costs between the firm's members and shareholders,¹⁴¹ which threaten its risk-taking profile, destabilize the incentives of its shareholders, and ultimately might undermine its capacity to serve as a systemic stability buffer and to internalize risk. When maximizing shareholders' value, directors might free-ride off the fact that equity providers are not the final risk-bearers in the clearinghouse and therefore take on a riskier

137. *Id.* at 17, 227-45; Henry Hansmann, *The Role of Nonprofit Enterprise*, 89 *YALE L.J.* 835, 838 (1980).

138. When looking at the cost of ownership, the subcategory of “risk-bearing” was generally associated with the right to residual earnings. HANSMANN, *supra* note 126, at 44.

139. In a traditional corporation, its owners or equity providers are the final risk-bearers. If a firm becomes insolvent, its owners are liable for the full amount they contributed to its equity.

140. *See supra* Section II.A.

141. *See infra* Section IV.A.

profile. When shareholders are not the final risk-bearers of a firm, shareholders and members might have conflicting interests, monitoring incentives, and different risk profiles—and this misalignment might undermine the clearinghouse’s stability and resilience.

As we well discuss in Part V, when assessing which ownership structure for systemically important clearinghouses is better equipped to create a resilient firm, market contracting costs, ownership costs, and final risk-bearing costs should be assessed together. Therefore, the “optimal” ownership model is one that can minimize these costs overall, and can assign ownership rights to the patron that can better internalize the most market contracting and final risk-bearing costs.

IV. Member-Owned Versus Investor-Owned Clearinghouses: A Cost-Benefit Analysis

The existence of two main ownership models for clearinghouses—member-owned and investor-owned enterprises—raises the question of what each model’s costs and benefits are, and whether one model is superior to the other.

As discussed above, clearinghouses are firms with a unique economic structure, containing a double-layered capital structure and a member-shareholder divide. To start, therefore, this Part will first examine the agency costs that arise from the multi-stakeholder structure of clearinghouses. Specifically, this Part will focus on how economic and monitoring incentives flow depending on the allocation of final risk-bearing costs in investor-owned and member-owned clearinghouses. Then this Part finds that being organized as a public corporation or a private (mutual) enterprise might produce different outcomes, both in terms of access to the clearing services and industry competitiveness. Finally, this Part examines how investor-owned and member-owned clearinghouses respond to the quest for innovation and to the receptiveness to end-user customers’ needs.¹⁴²

A. The Member-Shareholder Divide and its Agency Costs

As noted earlier, clearinghouses are unique enterprises. In an ordinary corporation, shareholders—as equity and risk capital providers—have voting and control rights, elect the members of the board of directors, and have voting rights in corporate meetings. Shareholders also have economic rights: they are the residual claimants on the net profits earned by the firm.¹⁴³ This implies that equity investors are entitled to receive a payment from the firm when, after

142. End-users generally include market participants, either belonging to Main Street or Wall Street, that are not clearing members, but that want to access the clearing services through a clearing member.

143. See Fama & Jensen, *supra* note 119, at 316.

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deducting the payments to all precedent claimants or stakeholders, the firm has a positive net cash flow. Being an equity investor means that, if the firm defaults on its obligations, all of its assets and equity capital can be used to cover the exposures. Therefore, corporate equity investors face the risk of losing all of their invested capital if the firm fails. This, however, is not the case in a clearinghouse, where the presence of a double-layered capital structure alters the traditional loss allocation priorities.

The clearinghouse's invested equity capital is protected and shielded by the financial contributions bestowed by the clearing members. Clearing members contribute to the clearinghouse's risk mitigation scheme by pledging different layers of resources to cover the potential exposure caused by their default. In fact, members are the *sole* contributors to the default guaranty fund.¹⁴⁴ Equity investors do not contribute directly to either the “default waterfall” or the guaranty fund. The clearinghouse itself has only a limited stake in the waterfall mechanism with its “skin in the game.”¹⁴⁵ So, in a clearinghouse, losses are allocated according to priorities that differ from those of an ordinary corporation.

This means that if a clearinghouse has to incur losses, the firm—before digging into its own equity resources¹⁴⁶—has to exhaust the full amount of the defaulted members' contributions, then the guaranty fund, and the eventual additional replenishment of the guaranty fund by the clearinghouse's exercise of its assessment rights on non-defaulted members. The investors' equity in the clearinghouse is thereby shielded by substantial financial resource cushions provided by the other main stakeholders—the clearing members—who are committed to supporting the financial viability of the clearinghouse even to the point of providing additional resources in the unfortunate event that the guaranty fund contributions evaporate.

Members are fully committed to the financial security of the clearinghouse, but, because they are only members, they are granted no voting or control rights in the governance of the clearinghouse. Members engage in the daily clearing business, provide the necessary resources to absorb the consequences of the default of one of their peers, and monitor the activities of the firm and the other members. But the investors are the ones that govern the firm, set its risk appetite, make strategic decisions, and partake in the profits. Depending on how the firm allocates its control and economic rights and final risk-bearing costs, and depending on how the firm resolves the relationship between members and shareholders, it faces different agency costs.

144. See *supra* Sections II.A.2-3.

145. Formally, and according to SEC, CFTC, and Fed regulations, clearinghouses—being systemically important market utilities, derivatives clearing organizations or clearing agencies—are not required to contribute with “skin in the game” in the “default waterfall” mechanism.

146. The exception being the limited amount of “skin in the game” that a clearinghouse has to contribute to the “default waterfall.”

1. Investor-Owned Clearinghouses

Starting from *investor-owned clearinghouses*, if the firm decided to *demutualize its control, but retain mutualized risk*, it would face shareholders, with control and economic rights, and members, with full “skin in the game” bearing all final risk costs but with no control rights. This misalignment between control and final risk-bearing costs polarizes the positions of the clearinghouse’s main stakeholders and exacerbates the agency costs between them. Having a mutualized mechanism to share potential losses without a mutualized form of control assigned to the final risk-bearers creates an unbalanced and potentially hazardous ownership model.

The presence of shareholders with control rights to steer the management of the firm and set its risk profile, but who are not the ones bearing the direct costs of potentially risky decisions, or even its potential failure¹⁴⁷ results in moral hazards on shareholders.¹⁴⁸ These hazards can manifest in two main ways.¹⁴⁹ Not only do shareholders have limited incentives to invest time and resources in monitoring the firm, but shareholders are also more likely to take on riskier and more profitable projects because they assume that the guaranty fund (and the other resources available in the “default waterfall” mechanism) will absorb the eventual losses.¹⁵⁰ As Professor Squire defines it, shareholders and managers may engage in “correlation-seeking” activities.¹⁵¹ For instance, clearinghouse’s shareholders might decide to maximize profits by pushing to clear more sophisticated and riskier instruments or by cutting down margin or membership requirements to attract more business and expand market share, and so on.¹⁵² Furthermore, clearinghouse’s shareholders can also leverage the

147. Recall that the amount of a clearinghouse’s “skin in the game” in the “default waterfall” is minute compared to the resources committed by the members.

148. Generally speaking, a situation of moral hazard occurs when an agent does not fully internalize the costs of its actions, and instead, those costs are borne by the principal. See Griffith, *Governing Systemic Risk*, *supra* note 13, at 1209.

149. For more on the concept of moral hazard in the financial system, see generally GEOFFREY P. MILLER, TRUST, RISK, AND MORAL HAZARD IN FINANCIAL MARKETS (2011).

150. See Griffith, *Governing Systemic Risk*, *supra* note 13, at 1209 (“[Members] bear, by far, the greatest amount of risk in clearinghouses. Only after the [guaranty fund is] exhausted do the equity holders suffer. This arrangement creates a strong incentive on [shareholders] to impose excessive risk on the clearinghouse because, as owners, they would enjoy the full upside (in the form of additional clearing fees) of this risk and only a fraction of the downside (because [members], through their reserve contributions, are in the first-loss position).”).

151. See Richard Squire, *Shareholder Opportunism in a World of Risky Debt*, 123 HARV. L. REV. 1151, 1153 (2010) (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).

152. See Paul Tucker, *Are Clearing Houses the New Central Banks?*, FED. RES. BANK CHI. 8 (Apr. 11, 2014), <http://www.chicagofed.org/~media/others/events/2014/annual-over-the-counter-derivatives-symposium/tucker-clearinghouses-new-central-banks-tucker-2014-pdf.pdf> (describing the misaligned incentives of clearinghouses that are part of for-profit maximizing groups: “A clearing house is typically part of a profit-maximizing group. So the CCP is like a private-sector securities dealer with a rather unusual portfolio. As such, we should expect it to behave in a pro-cyclical way in the management of its risks—shading margins to the downside during normal times to help sustain market

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systemic and public policy function performed by the clearinghouse to invest in other lines of business or in costly and risky acquisition campaigns. They do this on the assumption that the systemic role of the clearinghouse (in addition to the financial cushions provided by the members) might guarantee public support or back-stops in a situation of financial distress.¹⁵³ Post-crisis regulators were fully aware of the riskiness of dealing with behaviors conditioned by moral hazard. Increasing systemically important firms' "skin in the game" was the selling point for reforms to reduce moral hazard in large financial institutions.¹⁵⁴ Yet, the actual on-the-ground responses to these concerns in clearinghouses were quite limited: so much promise, so little delivery.

First, with regard to the "default waterfall" mechanism,¹⁵⁵ I note that the clearinghouse itself is called upon to contribute and to absorb the first hits before losses are mutually distributed among all non-defaulted members. This is referred to as the clearinghouse's "skin in the game" in the loss-absorbing resources pool. "Skin in the game" has the potential to incentivize the clearinghouse to engage in robust risk management and, most importantly, to align the incentives of the clearinghouse and its investors with the incentives of the clearing members. As of today, however, regulators are still trying to determine the most appropriate level of "skin in the game" that clearinghouses should contribute to their "default waterfall". As expected, clearinghouse's members push for substantial "skin in the game" in order to align the incentives of the clearinghouses to those of its members.¹⁵⁶ FMI's counter that position by claiming there is no need to increase the amount of their contribution to the "default waterfall" because strong risk management mechanisms are already in place.¹⁵⁷ Notably, however, the CFTC, SEC, and Fed all opted to set up

growth or market share, and tightening sharply as and when conditions deteriorate. As described, the clearing house will not behave like a system-risk monitor and manager.").

153. This scenario is more likely to happen in FMI groups where the clearinghouse is part of a larger financial conglomerate group and is one of the subsidiaries of a publicly listed company. See generally Ferrarini & Saguato, *supra* note 81.

154. See, e.g., *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems*, BASEL COMM. ON BANKING SUPERVISION (June 2011).

155. See *supra* Section III.B.3.

156. See *Principles for CCP Recovery*, INT'L SWAPS & DERIVATIVES ASSOC. (Nov. 2014), <http://www2.isda.org/functional-areas/risk-management/>; *Central Clearing Counterparties And Too Big To Fail*, BLACKROCK 5 (Apr. 17, 2014), <http://www.blackrock.com/corporate/en-fr/literature/whitepaper/viewpoint-ccp-tbtf-april-2014.pdf>; *What Is the Resolution Plan for CCPs?*, JP MORGAN 3 (Sept. 2014), <http://www.jpmorganchase.com/corporate/About-JPMC/document/resolution-plan-ccps.pdf> (recommending that CCPs contribute with "skin in the game" the greater of either ten percent of member contributions to the default fund or the largest single clearing member contribution); *Setting Global Standards for Central Clearinghouses*, PIMCO 2 (Oct. 2014), <http://www.pimco.com/insights/viewpoints/viewpoints/setting-global-standards-for-central-clearinghouses> (proposing three alternative levels of "skin in the game": the highest figure among 5% of the guaranty fund, \$20 million, or the size of the third largest clearing member's contribution to the default fund).

157. *Clearing—Balancing CCP and Member Contributions with Exposures*, CME GRP. (Jan. 20, 2015), <http://www.cmegroup.com/education/balancing-ccp-and-member-contributions->

“stringent” risk management guidelines and mechanisms in order to fight the moral hazard of investors and clearinghouses. In so doing, they preferred to discipline conducts *ex post*, rather than focusing on an organizational structure that would align the interests and incentives *ex ante*.

Interestingly, policymakers have not expressed concerns about the member-shareholder divide agency costs. Creating strong risk management mechanisms was embraced as the solution to many of the potentially misaligned interests and incentives in the governance of clearinghouses. Strikingly, policymakers and academics also saw the mutual ownership of clearinghouses more as a threat to competition,¹⁵⁸ rather than as a mechanism to internalize the costs of monopolistic pricing¹⁵⁹ or as an enabler of financial resilience. They proposed stringent restrictions on ownership and voting in clearinghouses, arguing indirectly in favor of a dispersed ownership structure for clearinghouses.¹⁶⁰ The biggest concern was the risk of clearing members imposing overly stringent membership requirements on new applicants in order for the incumbent members to exploit rent-seeking position. This proposal did not find strong support among market participants, and almost six years after its publication, it fell by the wayside.¹⁶¹

In the clearing scenario, members are “all in” in the risk management of the clearinghouse. They have full “skin in the game” in the “default waterfall” mechanism and have strong interest and incentives to have a strong voice in the

with-exposures.html (arguing that the standards by which to set the appropriate level of “skin in the game” should be developed to incentivize market participants, i.e., members, to manage the risk that they create). It is interesting, though potentially superfluous, to note that clearinghouses and members look at balancing the level of “skin in the game” from two completely different perspectives. White papers published by clearinghouse members emphasize that, the more the clearinghouse contributes to the default guaranty funds with its own resources, the more it is predisposed to have robust margin policies for members and robust risk management processes. Conversely, clearinghouses actually experience potentially distortive effects with too many “skin in the game” contributions; rather, they argue in favor of substantial clearing members’ contributions in order to incentivize members to effectively manage their risk.

158. See sources cited *infra* note 206.

159. See Henry Hansmann, *Cooperative Firms in Theory and Practice*, 4 FINNISH J. BUS. ECON. 387, 389-90 (1999).

160. For discussion of the current regulatory framework for clearinghouses, see *infra* Section V.A.

161. 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 (proposed Oct. 18, 2010) (to be codified at 17 C.F.R. pts. 1, 37, 38, 39, and 40), <http://www.cftc.gov/idc/groups/public/@lrfederalregister/documents/file/2010-26220a.pdf> [hereinafter Proposed Requirements for Derivatives Clearing Organization]; Governance Requirements for Derivatives Clearing Organizations, Designated Contract Markets, and Swap Execution Facilities; Additional Requirements Regarding the Mitigation of Conflicts of Interest, 76 Fed. Reg. 722 (proposed Jan. 11, 2011) (to be codified at 17 C.F.R. pts. 1, 37, 38, 39, and 40), <http://www.cftc.gov/idc/groups/public/@lrfederalregister/documents/file/2010-31898a.pdf> [hereinafter, Proposed Governance Requirements for Derivatives Clearing Organizations]. For more information about the pre-rulemaking process and to access submitted comments, see also *Governance & Conflicts of Interest*, COMMODITY FUTURES TRADING COMMISSION (last visited Apr. 10, 2017), http://www.cftc.gov/LawRegulation/DoddFrankAct/Rulemakings/DF_9_DCOGovernance/index.htm.

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oversight and management of the clearing business and to be hands on in the monitoring and running of the clearing business. Members envision a clearinghouse run with a risk-averse profile, performing its services in a safe and sound manner, as a public utility-like model.

However, in an investor-owned clearinghouse, members, simply because of their role as members, lack any control or monitoring powers over the venture. Members do not have a formal role in the governance or risk management of the clearinghouse. They sit on the risk committee, they can bring concerns to the board of directors, but their opinions are not always binding on the shareholders or the management.¹⁶²

When corporate law and governance prove unable to reduce members' agency costs,¹⁶³ as contractual counterparties of the clearinghouse,¹⁶⁴ members would still have market contracting power toward the clearinghouse and two options to address and anticipate excessive risk-taking proclivities of the clearinghouse.¹⁶⁵ In a competitive market environment, members and shareholders can agree on appropriate restrictions on the ability of the firm to engage in risky decisions to the detriment of the members' interest, or on co-decision procedures on matters relating to risk management of the clearing business. The clearinghouse has interests in keeping the members as customers or users of their services, and would rather accept a compromise on the risk management of the firm, than face the risk of losing customers. If reaching an agreement is not a feasible option or the reached terms are not satisfying, the second (and strongest) option available for clearing members to materially influence the governance of the clearinghouse is theoretically the "walk away" option, by threatening to exit the clearinghouse, not using its clearing services anymore, and moving their portfolios of trades to a competing venture. These two contractarian options, despite giving on paper effective tools for members to contract better terms of engagement in the clearinghouse risk management are in practice very weak. This is even more true in the current clearing market scenario, where central clearing of derivatives is mandatory,¹⁶⁶ and where clearinghouses with strong market power dominate the clearing market by asset

162. See *Disclosure Framework*, ICE CLEAR CREDIT 9 (Mar. 31, 2017), http://www.theice.com/publicdocs/clear_credit/ICEClearCredit_DisclosureFramework.pdf; *CME Clearing: Principles for Financial Market Infrastructures Disclosure*, CME GRP. 23-25 (Dec. 31, 2016) (stronger is the role envisioned by CME for the Clearing House Risk Committee) <http://www.cmegroup.com/clearing/risk-management/files/cme-clearing-principles-for-financial-market-infrastructures-disclosure.pdf>.

163. See, e.g., KRAAKMAN ET AL., *supra* note 8, at 111-14 (looking at mechanisms to address shareholder-creditor conflicts).

164. See Jensen & Meckling, *supra* note 119 (developing the concept of the firm as a "nexus of contracts").

165. See Macey & Miller, *A Look at the New Data*, *supra* note 118, at 934 (looking at the limited incentives of federally insured banks' depositors to monitor the risk-taking profile of the banks—with reversed positions, clearinghouses' shareholders who enjoy the protection of the members' guaranty fund have no incentives in monitoring the risk-taking profile of the firm).

166. See Dodd-Frank Act tit. 7, § 723, 7 U.S.C. § 2 (2012).

classes (actually, the clearing market presents many features of a natural monopoly).¹⁶⁷ These two factors, in fact, have significantly reduced members' contracting power vis-à-vis clearinghouses.

Finally, traditional corporate scholarship has identified a potential agency cost coming out of the limited liability nature of a corporation: it allows shareholders to externalize risk.¹⁶⁸ What we see in an investor-owned clearinghouse is a double externalization of risk from shareholders. First, shareholders extract the benefits of shielding their personal liability and limiting it to the capital invested in the firm.¹⁶⁹ Second, their potential liability is further protected by the financial resources posted by the members. This minimizes the monitoring incentives of the shareholders and incentivizes their extracting benefits from the members. Investor-owned clearinghouses thus have fewer incentives (and less capability) to allocate capital for risk mutualization purposes and to address systemic risk. Shareholders are more prone to pass the mutualization and systemic costs on to the members, rather than internalizing them. Finally, although this is only tangentially connected to clearinghouses' organizational structure, shareholders can exploit the infrastructural function of clearinghouses—operating in a natural monopoly environment with limited competition¹⁷⁰—to extract private benefits and maximize their return on equity. For instance, a clearinghouse can impose higher fees on its members and users in order to extract profits for its shareholders.¹⁷¹

167. 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 *infra* note 170.

168. See Jensen & Meckling, *supra* note 119, at 338.

169. “[I]nvestors [i.e. shareholders] in a corporation are not liable for more than the amount they invest.” Frank H. Easterbrook & Daniel R. Fischel, *Limited Liability and the Corporation*, 52 U. CHI. L. REV. 89, 90 (1985).

170. A natural monopoly generally arises in network industries where a market is more efficient if serviced by one firm than multiple and competing ones. The single firm offering the service can minimize costs for its users taking advantage of scale economics and positive externalities. For more on the concept of the clearing industry as a natural monopoly, see Chang, *The Systemic Risk Paradox*, *supra* note 100, at 804-14; Felix Chang, *Financial Market Bottlenecks and the “Openness” Mandate*, 23 GEO. MASON L. REV. 69 (2015); Felix Chang, *Second-Generation Monopolization: Parallel Exclusion in Derivatives Markets*, 2017 COLUM. BUS. L. REV. 657, 682-85. See also Tommaso Padoa-Schioppa, Member of the Executive Board of the European Central Bank, Speech at the Symposium of the Deutsche Bundesbank “Payment and Securities Settlement Systems in Germany against the Background of European and International Developments”, Frankfurt, Germany: Clearing and Settlement of Securities—A European Perspective 3-4 (Sept. 5, 2001), <http://www.bis.org/review/r011005c.pdf> (“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.”).

171. The ownership structure of investor-owned clearinghouses is suboptimal to address the agency costs between members and shareholders. Indeed, it tends to exacerbate them. Furthermore, the ownership structure is suboptimal in addressing systemic risk concerns.

Ownership of Clearinghouses

2. Member-Owned Clearinghouses

Let's now to *member-owned clearinghouses*: a mutual enterprise requiring its members to be both its owners and its loss-absorbing capital providers.

Historically, clearinghouses were the product of financial institutions that aimed to pool their experience, resources, and know-how into a mutual firm that offered an infrastructural function with at-cost services. By doing so, the member firms intended to outsource to a specialized venture the provision of (infra)structural services. This allows them to reduce transaction costs in their dealings with each other, achieve economies of scope and scale, and—especially in the case of clearinghouses—aim for the containment and reduction of counterparty risk.

But, at the same time, financial institutions wanted to retain control of the firm. In a *mutual enterprise*, the role of shareholder and member overlaps. In order to access the services of the clearinghouse, users have to become members of the organization; by virtue of that membership, they agree to become owners of the infrastructure. Today, even mutual clearinghouses are structured in a corporate form in which members provide the equity capital and the guaranty fund (i.e., the financial resources that the clearinghouse needs to support its clearing and loss mutualization business), and contribute to the governance of the firm. Traditional mutual FMI groups (or cooperatives) operated under a one-vote-one-seat principle (each member has one vote in the voting process). Nowadays, the traditional one-vote-one-seat rule, which characterized typical mutual enterprises, has been replaced by the private ordinary corporate form where each member receives a number of shares proportionate to the volume and riskiness of the transactions concluded with firm.

Since the roles of owner and member overlap, member-owned clearinghouses do not face the agency costs raised by multi-stakeholder, investor-owned enterprises. As providers of equity capital, members are clearinghouse's shareholders: they retain control rights, appoint the board's members, set the firm's risk profile and appetite, and contribute to the development and expansion of the business. Members have economic rights in a mutual clearinghouse that is structured in a corporate form. These economic rights are generally incorporated in the form of rebates on paid fees or revenues that are put aside as reserves, or used to apply discounted fees for future transactions. This is because member-owned clearinghouses operate on a cost or quasi-cost basis; therefore, the board of directors is in a position to distribute dividends in only very limited circumstances. However, this does not exclude the fact that member-owned clearinghouses can distribute dividends to their shareholders.

A unique feature of member-owned clearinghouses is the perfect alignment of economic and control rights between members and shareholders, as well as monitoring incentives and final risk-bearing costs among all

stakeholders. Members of mutual clearinghouses provide firms with their equity capital and are also the providers of the loss-absorbing capital. They are fully committed to its financial stability and resilience. They have full “skin in the game” and are committed to achieving the same purpose: to create a stable, multilateral network offering at-cost services and a loss mutualization mechanism in case of the default of one of their co-members.¹⁷²

B. Public Corporation Versus “Members’ Club”

1. Investor-Owned Clearinghouses

When FMI groups demutualized in the early 2000s and opened their capital to external investors, they became public corporations with their shares listed on public markets. The demutualization of clearinghouses, coupled in almost all instances with the decision to go public, raises three sets of considerations.

First, a clearinghouse becoming a publicly listed company provided benefits to shareholders. A publicly listed firm is subject to a strict mandatory disclosure regime: public firms have to disclose information about their financial conditions, their executive and directors’ compensations, the status of the corporate business, and more on. This information can help shareholders to form informed decisions on their investment in the firm. Additionally, by having their shares listed on a public market, an investor-owned clearinghouse is subject to an external governance mechanism: the market for corporate control. On one side, having listed shares opens the FMI group to the possibility of being the target of a takeover. By exposing managers to the risk of being replaced if they do not maximize the firm’s value (i.e., the shares’ value), the market for corporate control disciplines the managers to further shareholders’ interest.¹⁷³ On the other, having the firm’s shares listed on a public market gives investors an easy option to exit their investment: selling their shares in the FMI group on the market.

Second, by demutualizing and selling their shares to the public, the FMI groups to which clearinghouses belonged were able to expand their trading services to new types of derivatives and to face challenges posed by technological innovation. The FMI groups were also able to raise fresh capital to reinvest in new projects and ventures, including competing directly with their members on the trading markets. The corporate form gave them the flexibility and tools required to expand domestically and internationally, and to face competition from international players: the firm’s shares were and could

172. Member-owned clearinghouses are better suited to address and reduce moral hazard and the risk of externalities. Their mutual structure, coupled with members’ full “skin in the game,” provides a firm with better incentives to internalize systemic risk.

173. See Manne, *supra* note 121 (looking at the market for corporate control as an external mechanism to reduce the agency costs between management and shareholders).

Ownership of Clearinghouses

be used as “money” for expansion through mergers and acquisitions, alliances, and so forth.¹⁷⁴

Finally, the decision of the FMI groups to open up their capital to external investors might have contributed to the enhancement of competition in the clearing markets. Member-owned firms are seen by some commentators as “private clubs” of dealers that, by deciding who to admit as a clearing member, might potentially (and even discretionally) alter the competitiveness of the market and preclude new players from accessing the market. Conversely, if the firm is owned by external investors, it would be more prone to open access policies, thus admitting new clearing members more easily, and creating a more competitive environment. However, by having the whole FMI business run as a for-profit enterprise, this may incentivize the group clearinghouse to lower entry costs and standards (i.e., membership costs) and the requirements associated with being a part of the clearing business in order to expand its business. That would degrade the financial reliability of the firm.

2. Member-Owned Clearinghouses

Moving now to member-owned clearinghouses, they have attracted some critics due to their ownership structure and the perceived nature of the mutual FMI as a “private club of members.”¹⁷⁵ These instances have been recognized by post-crisis regulators who have proposed—as yet without success—stringent restrictions on ownership concentration among members and dealers.¹⁷⁶ The main argument in support of these restrictions is as follows: mutual enterprises are created by the initiative of their members; members set the rules and requirements for becoming new members; incumbent members have incentives to set very high membership requirements to preclude access to new players and exploit their rent-seeking position; and mutual enterprises thereby create closed, inefficient markets. While the starting points can be shared, the last two steps of this progression have not yet been completely agreed upon.

First, clearinghouses, because of their function as central counterparties and their performing of multilateral netting, benefit from scale and scope. The

174. Two clear examples of how the investor-owned (public company) structure facilitates mergers and acquisition in the FMIs markets are: (1) the acquisition of NYSE by ICE in December 2012 (where NYSE shareholders had the option to receive ICE’s shares as payment); and (2) the (soon to fail) merger proposal between the London Stock Exchange Group and Deutsche Börse. Nina Mehta & Nandini Sukumur, *Intercontinental Exchange To Acquire NYSE for \$8.2 Billion*, BLOOMBERG (Dec. 20, 2012), <http://www.bloomberg.com/news/articles/2012-12-20/intercontinentalexchange-said-in-merger-talks-with-nyse-euronext>; James Shotter, *Deutsche Börse Wins Shareholder Approval for LSE Merger*, FIN. TIMES (July 26, 2016), <http://www.ft.com/cms/s/0/b6c24b36-534c-11e6-9664-e0bdc13c3bef.html>.

175. See generally Greenberg, *infra* note 206; Robert E. Litan, *The Derivatives Dealers’ Club and Derivatives Markets Reform: A Guide for Policy Makers, Citizens and Other Interested Parties*, INITIATIVE ON BUS. & PUB. POL’Y BROOKINGS (2010) http://www.brookings.edu/wp-content/uploads/2016/06/0407_derivatives_litan.pdf.

176. For a comprehensive discussion, see *infra* Sections IV.C & V.A.

larger the pool of members, the more efficient the clearing business is. Second, in terms of competitiveness, extensive literature shows that a mutual enterprise (e.g., a cooperative) generally arises primarily as a response to a situation of market power (e.g., a natural monopoly). When a firm is in a situation of market power over its patrons (e.g., clearing members),¹⁷⁷ the patrons have economic incentives to own the firm.¹⁷⁸ By mutually owning a monopolistic firm, member-owners have the potential capacity to charge high rent fees. However, if the reason the members originally decided to own the monopolistic financial services provider was to maintain control over the prices, it would be sub-optimal and inefficient (and also irrational) for the members to then charge monopoly prices to themselves.¹⁷⁹ Furthermore, given the strong competition for market shares in the client clearing services industry that exists today, this result would be counterproductive (and actually counterfactual).

In addition, competitiveness is not the only factor that has to be weighed when assessing the degree of effectiveness of one ownership model over another, especially in those instances where the firm under consideration is an infrastructural service provider and its ownership structure might have systemic implications. As previously discussed, the systemic financial resilience of an FMI can be more effectively achieved if the interests of the FMI's shareholders and members are aligned. Imposing a cap on members' ownership and control rights in an FMI would exacerbate the agency costs of the member-shareholder divide, it might increase the riskiness of the firm and threaten its systemic stability. Increased competitiveness in infrastructural and clearing services can be achieved *ex ante* with non-discriminatory and open access policies for clearing services, and *ex post* by means of antitrust laws, via effective surveillance mechanisms to guard against anticompetitive behaviors and practices by FMIs or their members.¹⁸⁰

Second, membership requirements are a double-edged sword. If they are set too low, they can admit financially unfit members who might threaten the stability of the FMI. Conversely, if set too high, they can discriminate against new members' access and thus create a private club. Setting abstract quantitative requirements for members' admission is a very complex procedure. Membership, as previously noted, entails not only access to clearing and infrastructural services, but also a commitment to financially support the FMI. Therefore, not all market participants will be willing to sign up for these obligations. They might find them too onerous and therefore opt to access

177. See *supra* note 170.

178. See Henry Hansmann, *All Firms Are Cooperatives—And So Are Governments*, 2 J. ENTREPRENEURIAL & ORG. DIVERSITY 1, 2-3 (2013); HANSMANN, *supra* note 126, at 126-29, 389-90.

179. See Henry Hansmann, *Reforming Nonprofit Corporation Law*, 129 U. PA. L. REV. 497, 508 (1981).

180. The legal system has internal mechanisms to guarantee the competitiveness of financial markets; operating on the ownership structure to achieve a similar outcome would be counterproductive.

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infrastructural (clearing) services by means of an intermediary clearing member (i.e., client clearing). Members also have incentives for opening membership access to reliable and stable counterparties. By having the potential to expand the volume of centrally cleared transactions, members can achieve multilateral netting efficiency, maximizing the allocation of their collateral and their contributions to the guaranty fund resources.

C. Innovation Capacity and Receptiveness to End-Users' Needs

Finally, we must examine how the ownership structure of a firm might have repercussions on the clearing business. Investor-owned and member-owned clearinghouses might position themselves at different levels when looking at their capacity to innovate and to internalize end-users' needs. Putting differently, because investor-owned clearinghouses are not controlled by clearing members' interests, they claim to be in a better position to innovate as well as to hear, understand, and process the requests and needs of the clients or "end-users" of their members. But is it actually true that investor-owned clearinghouses have (i) better incentives and resources to innovate and (ii) a better capacity to respond to the need of clients (end-users)? Are these exclusive benefits of investor-owned clearinghouses not achievable by member-owned ones? And if these are not achievable, does it mean that mutual FMI's are not able to achieve these outcomes?

Member-owned clearinghouses have interest, capacity, and resources to innovate as investor-owned have. The capacity to innovate is not a sole characteristic of investor-owned clearinghouses. DTCC, for instance, a member-owned FMI group, has been deeply involved in the development of information and operational technologies for financial markets—the so-called FinTech solutions.¹⁸¹ DTCC is playing a leading role in the development of blockchain or distributed ledger technology in the post-trading industry.¹⁸² From a business ventures perspective, the expansion of DTCC's clearing activities with the setup of a new clearinghouse for the European markets—EuroCCP¹⁸³—is evidence of the incentives of member-owned FMI's to expand

181. See Chris Brummer, *Disruptive Technology and Securities Regulation*, 84 *FORDHAM L. REV.* 977 (2015).

182. See, e.g., *Embracing Disruption, Tapping the Potential of Distributed Ledgers To Improve the Post-Trade Landscape*, DEPOSITORY TR. & CLEARING CORP. (Jan. 2016), <http://www.dtcc.com/news/2016/january/25/blockchain-white-paper>; *Blockchain Related Material*, DEPOSITORY TR. & CLEARING CORP., <http://www.dtcc.com/news/2016/january/25/blockchain-related-material.aspx>; Katharine Paisley, *DTCC Hosts Blockchain Discussion on Capitol Hill*, DTCC (July 12, 2016), <http://dtcc.com/news/2016/july/12/dtcc-hosts-blockchain-discussion-on-capitol-hill>. For an account of blockchain technologies and their role in and effects on financial markets, see Carla L. Reyes, *Moving Beyond Bitcoin to an Endogenous Theory of Decentralized Ledger Technology Regulation: An Initial Proposal*, 61 *VILLANOVA L. REV.* 191 (2016); Angela Walch, *The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk*, 18 *N.Y.U. J. LEGIS. & PUB. POL'Y* 837 (2015).

183. See NORMAN, *supra* note 71 at 234-35; see also *About: Company Info*, EUROCCP (last visited Feb. 18, 2017), <http://euroccp.com/content/company-info>.

their lines of business. However, in member-owned clearinghouses, the fuel for innovation is often provided by either the firm's resources or by contributions from the firms' members. The mutual FMI is formally an independent corporation, but the "voice" of the members is loudest in the boardroom. They might be open to foster innovation aimed at achieving further efficiencies in transacting, or reducing operational costs, or providing new infrastructural and clearing services for new financial products. However, they might have fewer incentives for innovating in areas that might result in competing business with their members.

There are, however, two additional related concerns about mutual FMIs: the capacity of a mutual FMI to internalize the concerns and requests of the members' clients (e.g., Main Street or end-users) and the entry/membership costs of accessing the FMI, coupled with the competitiveness of its private club of members—as mentioned in the previous Section.

Investor-owned FMIs are considered to more openly and effectively acknowledge and process end-users' needs because of their organizational structure, which does not double-link them to their members. There is no empirical evidence of this, however, and the composition of the board of directors does not allow for the inference of this "special" relationship with end-users in investor-owned FMIs.

In member-owned FMIs, end-users' needs are brought in by the members, who directly interface with the end-users. Client clearing and the influence of end-users have increased with the implementation of Dodd-Frank. Due to the new capital and liquidity regulations, many financial institutions have deleveraged their balance sheets and exited businesses now prohibited to them by regulators.¹⁸⁴ This has created more attention and focus on client (end-user) clearing. Main Street therefore has two options to access the trading and post-trading market. The first is to become a member of an FMI, which commits the firm to financial contributions. The second is to access the intermediary role of a dealer who is a member of an FMI. Dealers (and membership criteria) control the gates of the infrastructural services, and the risk of the strong influence of dealers in shaping and controlling the market is a real one. This is true regardless of whether an FMI is member-owned or investor-owned. Members may pass the cost of membership and the cost of clearing onto their clients. However, clearing members have strong incentives to take care of their clients and not to pass along rent fees precisely because members compete with each other for end-users.

184. The Volcker rule bans banks from proprietary trading in securities, derivatives, commodity futures, and options. See Dodd-Frank Act tit. 6, § 619, 12 U.S.C. § 1851 (2012).

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V. How To Solve the Member-Shareholder Divide

Clearinghouses have become a central infrastructure in the post-crisis financial markets. Their capacity to operate as private stability buffers and to internalize and eventually mutualize the costs of the default of one or more of their members make them central nodes in supporting financial system stability. As analyzed in the previous Parts, clearinghouses can achieve these results because of their unique economic structure. This structure, however, creates distinctive agency costs between the firm's main stakeholders: the members—who contribute to the loss mutualization capital—and the shareholders—who provide the equity capital. These distinctive agency costs, which manifest in a misalignment of control rights and final risk-bearing costs, potentially threaten the safety and soundness of the clearinghouse. This final Part, provides a brief overview of the current regulatory framework for clearinghouses and identifies how, in my opinion, it fails to address the agency costs created by the member-shareholder divide. It then offers four possible policy solutions to address the member-shareholder divide and rebalance and align control rights and final risk-bearing costs—i.e., how to align “skin in the game” with control rights.¹⁸⁵

A. The Current Regulatory Framework for Clearinghouses

When looking at the regulatory framework of clearinghouses, what appears is a fragmented and multi-layered regime.¹⁸⁶ Clearinghouses are regulated and supervised by one of two agencies: either the SEC, if they are registered as clearing agencies (CA) and offer post-trading services on securities and securities-based swaps,¹⁸⁷ or the CFTC, if they are registered as derivatives clearing organizations (DCO).¹⁸⁸ On top of this regulatory scheme,¹⁸⁹ if a clearinghouse was deemed systemically important by FSOC, it would be subject to heightened prudential regulation and supervision standards coordinated by the Fed.¹⁹⁰ The regulatory regime for clearinghouses addresses two significant components: (i) risk management¹⁹¹ and (ii) corporate governance.

185. Cf. Pirrong, *The Economics of Central Clearing*, *supra* note 13, at 26-27 (arguing that “[e]fficient and prudent operation of CCPs requires alignment of ownership and control rights on the one, and the incidence of risk on the other”).

186. See generally Peirce, *supra* note 46, at 610-20 (offering a comprehensive analysis of the current regulatory framework of swap clearinghouses).

187. Dodd-Frank Act tit. 7, § 763(b), 15 U.S.C. § 78q-1(g).

188. *Id.* § 725(a).

189. Both DCOs and CAs are self-regulatory organization (SROs): they write and their enforce their rules with their members under the oversight of competent authority.

190. Dodd-Frank Act tit. 8, § 802(a), 12 U.S.C. § 5461(a).

191. *Id.* §§ 802(b)(1)-(2).

The first set of prudential rules targets the soundness and financial resilience of clearinghouses and addresses (default) counterparty credit risk and liquidity risk.¹⁹² A clearinghouse must have in place a comprehensive risk management framework to deal with legal, credit, liquidity, operational, and other risks that might arise from its business. Clearinghouses are required to effectively measure, monitor, and manage the credit exposure of their members and participants and to hold enough resources “to meet [their] financial obligations to [their] members and participants notwithstanding a default by the member or participant creating the largest financial exposure for [the clearinghouse] in extreme but plausible market year (as calculated on a rolling basis).”¹⁹³ Different layers and varieties of resources are available for the clearinghouse to use in order to build its capital buffer.¹⁹⁴ The clearinghouse shall maintain “additional prefunded 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.¹⁹⁵ A clearinghouse have to be regularly subject to supervisory stress tests of its resources.¹⁹⁶ A systemically important clearinghouse must also establish rules and procedures to cover credit losses that surpass the amount of resources and collateral pledged by the defaulting participant.¹⁹⁷

The second set of rules addresses the internal accountability and corporate governance of the clearinghouse and was proposed with the expectation that it would mitigate potential conflicts of interest within a clearinghouse and promote competition in the clearing market.¹⁹⁸ To increase competition in the clearing market and mitigate potential conflicts of interest in its operation, Dodd-Frank delegated authority to the CFTC and SEC to implement rules on the clearinghouse’s structural governance, ownership, and voting rights limits. These two regulatory agencies were empowered to establish: (i) control and voting rights limits on investors and members of DCOs and CAs,¹⁹⁹ (ii) requirements for the number of independent directors to be members of the

192. 12 C.F.R. § 234.3(a)(3).

193. 7 U.S.C. § 7a-1(c)(2)(B)(ii); 17 C.F.R. § 39.11(a).

194. 17 C.F.R. § 39.11(b).

195. 12 C.F.R. § 234.3(a)(4). The Fed may require a clearinghouse to maintain enough resources to cover the credit exposure of the two participants and affiliates with the largest exposures, if it deems the clearinghouse to be involved in activities with a higher risk profile, or if the clearinghouse has been designated as systemically important by another jurisdiction. Interestingly, the CFTC, in addressing the issue of credit risk in its supervised clearinghouses, adopted the “largest members default approach,” while the SEC adopted the “two largest clearinghouse members” approach.

196. See *Supervisory Stress Test of Clearinghouses*, COMMODITY FUTURES TRADING COMMISSION (Nov. 2016), <http://www.cftc.gov/idc/groups/public/@newsroom/documents/file/cftcstressstest111516.pdf>.

197. 12 C.F.R. § 234.3(a)(4). The Fed also regulates how the SIFMI is required to deal with collateral and margin. *Id.* § 234.3(a)(5)-(6).

198. Dodd-Frank Act tit. 7, §§ 726, 765, 15 U.S.C. §§ 8323, 8343 (2012).

199. *Id.* § 726(a).

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board and critical committees (e.g., nomination committee, risk committee, and so on); and (iii) the role and competencies of the risk committee. Almost seven years after the enactment of the Dodd-Frank Act, these proposed rules—although published in draft form on the websites of the two Commissions—have yet to be finalized by the SEC and CFTC.²⁰⁰

In practice, the proposed rules on risk management and corporate governance are substantially identical and can be synthesized in two points. With regard to corporate governance, the clearinghouse has to establish within its board of directors a risk management committee with a solid presence of independent directors.²⁰¹ The risk committee is central in the governance of clearinghouses. With regard to clearinghouses' ownership restrictions, clearinghouses are required to adopt one of two alternative structures for the ownership of voting equity and the exercise of voting rights within the firm.²⁰²

The corporate governance structure envisioned for clearinghouses is quite simple. The CFTC, for example, requires clearinghouses to have a risk management committee in place, in which thirty-five percent of the directors must be public or independent directors²⁰³ and at least ten percent of the board's members must represent end-users (the clearing members' clients).²⁰⁴ The risk management committee is responsible for, among other things,

200. Ownership Limitations and Governance Requirements for Security-Based Swap Clearing Agencies, Security-Based Swap Execution Facilities, and National Exchanges with Respect to Security-Based Swaps Under Regulation MC, 75 Fed. Reg. 65,881 (proposed Oct. 26, 2010) (to be codified at 17 CFR pt. 242), <http://www.sec.gov/rules/proposed/2010/34-63107.pdf>; Proposed Requirements for Derivatives Clearing Organizations, *supra* note 161; Proposed Governance Requirements for Derivatives Clearing Organizations, *supra* note 161.

201. The board of directors of a systemically important clearinghouse should consist of a majority of independent directors, specifically individuals who are not executives, officers, or employees of the firm or one of its affiliates. The board must establish a clear organogram with identified lines of responsibility and accountability. The board's members must possess the experience, skills, and integrity required to discharge their responsibilities. The board must also establish policies and procedures to identify, address, and manage potential conflicts of interest, and must periodically review its own performance and those of its individual directors. Concerning the establishment, composition, and role of the risk committee, the Fed mandates that the board of a systemically important clearinghouse must establish a clear, documented risk-management framework that includes the firm's risk tolerance and assigns risk-related responsibilities and accountabilities, but it does not set a specific mandate on the firm to establish a specific committee. Moreover, it requires the risk management function to be allocated sufficient resources and granted autonomy from the management. *See* 12 C.F.R. § 234.3(a)(2)(iv)(F), (H). Some scholars, concerned about potential anti-competitive behaviors of large clearing members, support the idea having the majority of directors fully independent. *See, e.g.,* Greenberger, *supra* note 206, at 265.

202. Proposed 17 C.F.R. § 39.25 in Proposed Requirements for Derivatives Clearing Organization, *supra* note 161.

203. Public and independent directors refer to those directors sitting on the board of a clearinghouse who do not have a "material" relationship with that clearinghouse; namely, the director (or an immediate family member) is not an officer or employee of the clearinghouse or of any of its affiliates or members.

204. Proposed 17 C.F.R. § 39.13 in Proposed Requirements for Derivatives Clearing Organization, *supra* note 161. The SEC's proposal does not mandate that the clearinghouse board of directors establish a risk management committee, but—to the extent that it has been established—it requires that either thirty-five percent or a majority of directors be independent, depending on the alternative ownership restriction adopted by the clearinghouse.

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.²⁰⁵

The approach adopted by the CFTC and SEC to address the conflicts of interest that might arise between incumbent clearing members and new participants is more critical. Regulators focused on supporting "open and non-discriminatory access" to the clearing market and combatting (alleged) anticompetitive organizational structures for new entrants. However, they skirted around the agency costs, conflicts of interest, and potential systemic implications of investor-owned clearinghouses.

To increase competition in the clearing market, both the CFTC and SEC agreed to impose limits on ownership and voting rights of members and major financial market participants in clearinghouses. The Commissions aim to provide clearinghouses with two possible alternatives for allocating ownership rights. First, no individual members may beneficially own, directly or indirectly, more than twenty percent of any class of voting equity or voting rights either directly or indirectly. Second, the Commissions included an aggregate limit to reduce the impact and influence of large dealers.²⁰⁶ Big financial institutions (such as bank holding companies with \$50 billion in consolidated assets, nonbank financial companies supervised by the Board of Governors of the Federal Reserve System, or derivatives dealers or participants)²⁰⁷ may not own, directly or indirectly, more than forty percent of

205. *Id.*

206. *See CFTC-SEC Public Roundtable on Governance and Conflicts of Interest in the Clearing and Listing of Swaps*, COMMODITY FUTURES TRADING COMMISSION 115 (Aug. 20, 2010), http://www.cftc.gov/PressRoom/Events/opaevent_cftcsec082010. Greenberger defined the large derivatives dealers operating in the run-up to the crisis as "evil dealers." *Id.* at 115. *See also* Michael Greenberger, *Diversifying Clearinghouse Ownership in Order To Safeguard Free and Open Access to the Derivatives Clearing Market*, 18 *FORDHAM J. CORP. & FIN. L.* 245, 263-68 (2013) (supporting limitations on ownership interests of clearing members—or broadly financial institutions—in a clearinghouses on the assumption that this would reduce conflicts of interest); *id.* at 256-57 (claiming that a broader and more diverse membership and ownership of clearinghouses would result in long-term stability and more effective distribution of the costs of default). *But see* Pirrong, *The Economics of Central Clearing*, *supra* note 13, at 27 (supporting the idea that homogeneous membership creates more stable CCPs); Scott, *supra* note 13, at 700-01 (opposing restrictions on control rights on members because they may "give rise to poor governance . . . and they would limit the ability of swap dealers [that contribute to the clearinghouse capital and bear its risk] to exercise influence over the policies and operations of [the] clearinghouse").

207. The proposed CFTC rules use the concept of "enumerated entities" to refer to big financial institutions. This definition refers to:

(A) A bank holding company (as defined in Section 2 of the Bank Holding Company Act of 1956 (12 U.S.C. 1841)) with total consolidated assets of \$50,000,000,000 or more,

(B) A nonbank financial company (as defined in Section 102 of the Dodd-Frank Wall Street Reform and Consumer Protection Act) supervised by the Board of Governors of the Federal Reserve System,

(C) An affiliate of such a bank holding company or nonbank financial company,

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any class of voting equity, nor may they exercise voting rights, either directly or indirectly.²⁰⁸ The second alternative sets a five percent individual limit on beneficial ownership for any class of voting equity or voting rights; this applies to either members or big financial institutions.²⁰⁹

These two proposed regulations aim to support competition in the newly established (by regulatory fiat) centrally cleared derivatives markets. The Commissions were concerned about the influence of derivative dealers in obstructing the transition to multilateral and centrally cleared derivatives markets and in creating closed markets. However, both proposals overlook what I think is the main issue in the regulation of the ownership and governance of clearinghouses—namely, the member-shareholder divide and its underlying agency costs.

Six years after their publication, these regulations have not yet been adopted. The clearing market, however, has expanded significantly, with clearinghouses playing an active role in this expansion. If, at this stage, these rules were to be adopted, they might have disruptive effects on the clearing industry.²¹⁰ That the final risk-bearers are represented on the board of directors and on its risk committee is essential to align the interests of the clearinghouse's main stakeholders and to mitigate the risk of moral hazard brought by shareholders' representatives with no "skin in the game."²¹¹ In addition, the role of the risk committee is crucial in supporting the stable functioning of a clearinghouse. However, imposing an overly strict definition of an independent or public director, such as one that would exclude officers and employees of a member firm, risks reducing the competence of the committee and further exacerbating the member-shareholder divide. Members

(D) A swap dealer (as defined in Section 1a(49) of the Act and any regulations promulgated thereunder),

(E) A major swap participant (as defined in Section 1a(33) of the Act and any regulations promulgated thereunder),

(F) An associated person of a swap dealer or major swap participant (as defined in Section 1a(3) of the Act and any regulations promulgated thereunder).

Requirements for Derivatives Clearing Organizations, Designated Contract Markets, and Swap Execution Facilities Regarding the Mitigation of Conflicts of Interest, 75 Fed. Reg. 63,732, 63,750 (proposed Oct. 18, 2010) (to be codified at 17 C.F.R. § 39.25(b)(ii)).

208. The approaches of the SEC and the CFTC with regard to aggregate ownership are slightly different. The SEC applies aggregate ownership limits across all of the clearing members of an individual clearinghouse. The CFTC, on the other hand, uses a broader approach and applies the limits across all "enumerated entities" and related persons.

209. See Griffith, *Governing Systemic Risk*, *supra* note 13, at 1212-26.

210. See Peirce, *supra* note 46, at 655 (defining the control restrictions set by the Dodd-Frank Act as "ill-considered"); see also Griffith, *Governing Systemic Risk*, *supra* note 13, at 1218-26 (offering a solid critique to the governance lines proposed by regulators for clearinghouses—ownership and voting caps and independence requirements—defining them as "misguided" and "likely to [not] be effective in . . . the effective containment of systemic risk").

211. See Peirce, *supra* note 46, at 655 (arguing that "CCPs are more likely to serve the public interest of promoting financial stability if their ownership and governance structures correspond to economic interests").

would then be deprived of their voice in decisions regarding the risk management of the firm. Finally, caps on ownership rights would, at this stage, be too late in achieving any effective competition-boosting result. More importantly, caps would potentially be systemically dangerous as they might contribute to a further misalignment of incentives between clearinghouse members and shareholders.²¹²

The current regulatory regime therefore falls short in addressing the member-shareholder divide agency costs, which, as previously described, scholars overlooked. The following Section intends to set the stage for future (hopefully near future) policy discussion on the risks and costs of different ownership structures of clearinghouses and—in this direction—offers four possible policy solutions to address these agency costs.

B. Policy Considerations

After sketching out the current regulatory framework for clearinghouses and showing what I think is its inability to address the member-shareholder divide agency costs, two major sets of questions remain. First, how can the agency costs between members and shareholders be more effectively reduced? By extension, how can “skin in the game” be aligned with control rights? Second, is there an optimal ownership model for clearinghouses? And if so, what model is better equipped to internalize these costs and their related risks and create a stable and resilient market infrastructure?

By applying a firm theory framework updated to incorporate final risk-bearing costs into the equation, the optimal ownership model for clearinghouses is the one that assigns ownership rights (i.e., control and economic rights) to the patrons with the highest final risk-bearing costs and highest market contracting costs (with the clearinghouse), and who can most effectively minimize ownership costs.

In theory, this optimal model is the mutual member-owned enterprise.

Clearinghouse members bear the greatest final risk-bearing costs because of their commitment to contribute to the loss-absorbing capital.²¹³ Additionally, clearing members are the patrons with the highest market contracting costs, due to the fact that clearinghouses are—in practice—natural monopolies firms.²¹⁴ In

212. See also Griffith, *Governing Systemic Risk*, *supra* note 13, at 1219 (“[V]oting caps conflict with the basic corporate law premise that voting interest should be align with ownership interests. . . . [T]he misalignment of ownership and voting . . . create moral hazard.”).

213. Shareholders, in contrast, have the least amount of “skin in the game,” and their equity capital contributions can be wiped out only in the event of failure of the clearinghouse—and only after members’ contributions are fully exhausted.

214. For a discussion of the application of the concept of natural monopolies to clearinghouses, see *supra* note 170. In the presence of a natural monopoly, owing to the economy of scale and scope, and high fixed investment costs like those in the clearing market, the clearing firm has market power over its patrons, namely its users and members. Members, therefore, have strong incentives to own the firm and avoid monopoly price exploitation.

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this scenario, the mutual structure would minimize market contracting costs for members.

Finally, members are the patrons who can most effectively minimize ownership costs. Members are a homogenous class of patrons. Members share the same preferences and expectations with regard to the management of the firm: they are all expert and sophisticated patrons, and they all have strong monitoring incentives because they have full “skin in the game.” Thus, member-owned clearinghouses do not just provide stronger and more resilient mechanisms to eliminate the member-shareholder agency costs, but their ownership structure is also better positioned to internalize the natural monopoly costs of the clearing industry.

From this statement, how can we move forward? How can we arrive at the optimal solution for the clearing market: is remutualization the only solution on the table? Are there any other (hybrid) ownership or governance models that would achieve the same result? In the ensuing discussion, I posit four possible policy (and market) solutions to create safer and sounder clearinghouses, each of which entails different degrees of public and regulatory intervention.

1. A Remutualization of Clearinghouses

As previously discussed, a clearinghouse can mitigate the member-shareholder divide agency costs and become a resilient financial infrastructure if control rights follow final risk-bearing costs. Clearing members are the primary and main final risk-bearers. However, in investor-owned clearinghouses, they lack control rights over the firm. The straightforward solution to the problem would be giving clearing members a central role in managing and designing the clearinghouse. In other words, clearinghouses should be remutualized.²¹⁵

In the recent history of financial market regulation, a large number of FMI firms have demutualized,²¹⁶ transitioning from member-owned to investor-owned enterprises. FMI groups demutualized their ownership and governance, while retaining the risk mutualization mechanism of their clearinghouses. The remutualization of a demutualized enterprise, in contrast, is quite a rare event.²¹⁷ Oftentimes, the costs members or users incur to buy out the incumbent external shareholders in the firm to-be-remutualized are too onerous; or the

215. Similar conclusions have been advanced in the past by Kroszner, *supra* note 47, at 39 (arguing that “governance arrangements must provide those with ‘skin in the game’ with substantial influence over the CCP’s risk controls”) and Pirrong, *Economics of Central Clearing*, *supra* note 13, at 26 (claiming that “[t]hose who bear the counterparty risks assumed by a CCP should have the power to make decisions that affect the riskiness of the CCP, and the distribution of that risk”). See generally Peirce, *supra* note 46, at 656 (arguing more recently that “[r]egulations should accommodate and encourage active member involvement in CCP oversight”).

216. For an overview of the evolution of the FMI industry, see *supra* Section II.B.

217. A prime example of industry remutualization is the case of the mutual health insurance company. See Molk, *supra* note 15.

evolution of the regulatory framework makes the remutualization process harder. However, the market and regulatory landscape of clearinghouses has mutated since the demutualization years, and this has changed the state of play for clearing members.

From a market perspective, when clearing members demutualized their ownership stakes in the two derivatives FMI groups (CME and ICE), the derivatives markets moved to the OTC sphere and reliance on central clearing was predominately limited to the commodity futures markets (which is quite modest in size compared to the OTC derivatives markets). Now, with the Dodd-Frank mandates to centrally clear standardized and liquid OTC derivatives on clearinghouses, a consistent and growing volume of transactions is reverting to central clearinghouses, increasing the exposure and reliance of members on the clearing services.²¹⁸ With this in mind, it is possible to infer that members' incentives and interests might have changed and that they might be interested or have stronger economic incentives to consolidate a stronger position in the governance of clearinghouses, and even to begin a "remutualization" campaign.²¹⁹

How can remutualization be achieved in the current market scenario where clearinghouses are part of larger infrastructural groups? To begin, clearing members could buy back the ownership stake of the FMI groups to which they belong or a controlling position in the firm—achieving in this latter scenario a semi-remutualization.²²⁰ While this is a feasible solution, since investor-owned clearinghouses are part of large FMI groups that are public corporations with shares listed in public markets, the economic investment necessary to remutualize will be significantly onerous, more so than if members were able to repurchase the shares just in the clearinghouse itself.²²¹ To facilitate a privately-driven remutualization, regulators could incentivize members by providing financial support and subsidies for the remutualization of clearinghouses. Two potential paths to follow could include tax breaks for transactions concluded on mutual enterprises, or special tax treatment for member-owned clearinghouses, or favorable capital treatment for member ownership and capital contributions to the clearinghouses.

218. Note that clearing members of the securities clearinghouses (i.e., DTCC) never demutualized the governance and ownership of those firms. At the same time, in the securities markets, we have not experienced a boom in the OTC markets as has occurred in the derivatives market.

219. See NORMAN, *supra* note 71, at 359-60 (arguing that "[a]lthough they appear to have had only a limited success, the attempts by exchanges to find common ground with the dealer community through 'remutualization' or putting 'skin in the game' show good intentions").

220. Not only have they become profitable ventures since the creation (by regulatory fiat) of the large, centrally cleared derivatives market, but clearing members are also required to provide larger contributions to the loss-absorbing capital of the firm—a reality that may induce them to acquire more direct control rights in the firm.

221. In theory, members could buy back the ownership of the whole FMI group, spin-off the clearinghouse business, and then sell back the other lines of business they are not interested in, and thus recoup part of the cost of their investment to remutualize the ownership of the clearinghouses.

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A more intrusive intervention, one that would also alter the current structure of the derivatives markets, could be modeled on what the SEC adopted for the securities markets. Regulators could mandate the creation of a nationwide, consolidated clearinghouse for derivatives (or a few specialized clearinghouses per asset class), which clearing members would be required to own.²²² Establishing this new clearinghouse would produce several benefits. It would lead to an increase in the economies of scale and scope of the derivatives clearinghouses, and an expansion of the benefits of multilateral netting. By being a member-owned firm, the new clearinghouse would eliminate the agency costs of the member-shareholder divide, increase the monitoring incentives of members, and better internalize the costs of clearing. Similarly, it would reduce the moral hazard that investor-owned clearinghouses create in the FMIs they belong to. Finally, the consolidated clearinghouse would simplify the potential regulatory and public intervention in a situation of severe systemic financial distress.

A remutualization of clearinghouses, in my opinion, would strongly benefit the stability and resilience of the firm. At the same, however, remutualizing might have two downsides. First, by “going private” and becoming a member-owned enterprise, the clearinghouse would lose access to the capital markets and its external disciplinary mechanisms on the firm. Clearinghouses would fully rely on themselves and their members to raise any financial resources. Another possible downside is the risk of creating FMIs with distorted market incentives. Members might distort competition in the post-trading market by setting membership requirements too high, and therefore extract rent benefits from their dominant position.

Both concerns are serious, but, as already discussed throughout the Article, they might be outweighed by the benefits. With regard to the first concern, the capacity of a member-owned enterprise to fully address the agency costs between the clearinghouse’s main stakeholders renders superfluous (and even unnecessary) the access to the external mechanisms of the market for corporate control. With regard to the second concern, I do agree there are potential risks in creating a private club of market participants. Nevertheless, I want to underline that clearing members have incentives to keep membership open to other financially sound market participants because they benefit from economies of scale and scope achieved by the clearinghouse. Further, antitrust law and enforcement remain the designated gatekeepers to police and assure the competitiveness of the clearing market.

222. This approach would break the current vertical-silo structure that is a peculiar characteristic of the derivatives FMIs and markets.

2. Double Liability Regime for Clearinghouse Shareholders

The second possible policy option is the reverse of the first one, and it is built around the “skin in the game” provided by the firm’s shareholders. Shareholders’ interests and incentives can be aligned with those of members by increasing shareholders’ contingent liabilities if the clearinghouse is depleting its “default waterfall” resources. Regulators and market participants could look at and apply an adjusted and updated version of the principle of the “double liability regime” found in nineteenth century banks to FMI groups and clearinghouses.

As highlighted by Professors Macey and Miller in one of their seminal works, nineteenth century banks subjected their shareholders to a double liability regime,²²³ where, if a bank failed, shareholders were on the hook for an amount up to and including the par value of their stocks. This system increased the “skin in the game” of shareholders in the firm, better aligning their incentives to those of long-term firm stakeholders and achieving a reduction in the bank’s risk profile. The same operating principle could be applied to FMI groups and their clearinghouses. Because clearinghouses’ members are the ones bearing the final losses of the clearing business, the clearinghouse’s shareholders have incentives to take on excessive risk. By increasing the *ex post* “skin in the game” of the clearinghouse’s shareholders, by holding them doubly liable to the firm, shareholders and members’ incentives could become better aligned and consequently, the risk profile of the firm could be reduced. Since clearinghouses are wholly-owned subsidiaries of FMI groups, one can envision the double liability to follow the shareholders of the (listed) holding company of FMI groups, rather than the parent company itself.²²⁴

Unlike the bank scenario, where shareholders were assessed only if and when the bank failed, clearinghouse shareholders’ “double liability” should be triggered at an earlier stage, namely when the guaranty fund is exhausted and before the clearinghouse can exercise its assessment rights on its members. In this way it would be possible to avoid disruption in the provision of a critical infrastructural service in the financial markets. Shareholders should be responsible for re-funding the guaranty fund and guaranteeing the clearinghouse the resources necessary to provide its services.²²⁵ The double

223. Jonathan R. Macey & Geoffrey P. Miller, *Double Liability of Bank Shareholders: History and Implications*, 27 WAKE FOREST L. REV. 31 (1992); Macey & Miller, *A Look at the New Data*, *supra* note 118.

224. *Id.* at 42-48 (addressing how the “double liability” regime worked when the failed bank was owned by a holding company, and describing how courts were able to trace the liabilities to the holding company’s shareholders).

225. In the banks’ double liability regime, shareholders were doubly liable to the amount of the par value of their stock. In the current market and corporate environment the par value would not be the most effective metric to calculate the liability of clearinghouses’ shareholders. A more effective metric for setting the double liability regime of the clearinghouse’s shareholders could be calculating the proportion of the number of shares held by the shareholders in the FMI group holding

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liability regime would effectively discipline FMI's shareholders. Shareholders subject to double liability would be acute and effective monitors of the management of the clearinghouse. They would have incentives to encourage the management to run the business efficiently and profitably, but at the same time they would discourage excessive risk taking because of the potential threat of being assessed in the event the clearinghouse exhausts its pre-funded guaranty fund.²²⁶

This policy solution takes into account the current debate among market participants and policymakers on the role and amount of "skin in the game" of the clearinghouse and its shareholders in the "default waterfall".²²⁷ However, instead of envisioning it as an *ex ante* prefunded cushion of resources in the "default waterfall" mechanism, this approach models the "skin in the game" as an *ex post* liability regime of shareholders—rather than on the firm itself. By structuring the "skin in the game" as an *ex post* liability regime for clearinghouses' shareholders, the firm can achieve two main results. First, it would align members and shareholders' interests, by having them on the hook for a significant amount of money if the clearing business went south. By not pre-funding the "skin in the game," but being subject to a contingent liability, shareholders would have better incentives to invest in strong and prudent risk management mechanisms and to keep the clearinghouse's risk profile low. At the same time, having the shareholders' "skin in the game" intervening only after the complete exhaustion of the guaranty fund, ensures that members are still interested in monitoring the clearinghouse.²²⁸

The double liability regime for shareholders (linked to the replenishment of the exhausted guaranty fund) has the advantage of increasing monitoring and risk taking incentives on both stakeholders with the "skin in the game": the members and the shareholders. Members would keep their interests and incentives in monitoring the business because of their contributions to the

company to the total amount of the guaranty fund, over the total amount of the outstanding shares of the FMI group holding company. The following model exemplifies this metric:

$$\frac{\text{Total number of outstanding shares} : \text{Number of shares owned by the shareholders}}{\text{Total amount of the guaranty fund} : \text{Total amount of the "double liability" for the shareholders (i.e. the amount shareholders have to contribute to the replenishment of the guaranty fund)}} =$$

To be effective, the double liability should be imposed upon the shareholders of the listed holding company of the FMI group.

226. See Macey & Miller, *A Look at the New Data*, *supra* note 118, at 934.

227. See *supra* Section II.A.3 and notes 68, 156-157.

228. As discussed in *supra* note 156, the debate on the right amount and the correct allocation of "skin in the game" in the "default waterfall" is heated and open. Members argue for higher contributions by the clearinghouse and its shareholders and for the "skin in the game" to kick in before the guaranty fund can be touched. On the other hand, the firm and its shareholders support lower contributions and pro-rata sharing of losses between the firm and the members, claiming that loss distribution mechanisms that would rely more on the clearinghouse than on the members would reduce members' incentives to monitor the clearing business.

guaranty fund; doubly liable shareholders, on the other hand, would become appropriate monitors of the clearinghouse's management because of their contingent liability to refund the exhausted guaranty fund.

3. Hybrid Governance Structure

A third policy solution, which would intervene with a softer touch and which is not grounded on the ownership structure of the clearinghouse, has its foundations in the corporate governance of the firm and the presence of the clearinghouse's double-layered capital structure.²²⁹ Regulators and clearinghouses could consider creating sets of rights attached to guaranty fund contributions. A hybrid organizational structure could be created: an organizational model that combines some of the benefits of both traditional ownership models: investor-owned and member-owned. The unique feature of the double-layered capital of the firm could be incorporated into a dual class shares regime.

For instance, investors and shareholders of the FMI group would retain their shares of the listed holding company (with their attached control and economic rights); however, the share structure of the clearinghouse would change. Because of the critical importance of the guaranty fund as one of the two capital layers of the clearinghouse, members would be assigned class A shares in proportion to their contribution to the guaranty fund. These shares would have attached control and monitoring rights over the clearing business. For instance, the shares would come with the right to appoint the majority of

229. Few legal scholars have looked into the governance of clearinghouses. Professor Kristin Johnson in one of her very thoughtful works identifies the possible “tensions [that can] emerge between clearinghouses’ public service role and their private ownership structure” and looks at the role of large clearing members in the governance of clearinghouses and claims that their presence contributes to potential conflicts between “regulators’ expectations and . . . clearinghouse owners priorities” that might result in anti-competitive behaviors by member-owners and in weak risk management. See Johnson, *Regulating Conflicts*, *supra* note 13, at 221-28. Professor Johnson then supports the appointment (by Federal regulators) of board monitors or observers (paid by the competent federal agency) to oversee compliance with Dodd-Frank Title VII. *Id.* at 239-41. Despite providing a very insightful perspective into the debate on the clearinghouse governance, this analysis almost completely focuses on the claimed anti-competitive incentives of large clearing members to foreclose market entry to new participants. It completely overlooks the incentives that the final risk-bearers of the clearinghouse—i.e., the members—have in creating a safe and sound institution with resilient and reliable risk management mechanisms.

A second remarkable contribution to the discussion on clearinghouse governance comes from Professor Sean Griffith. Professor Griffith identifies the moral hazard and free-riding problem that might arise when control and exposure to risk are not aligned. To address this issue, he offers a new governance structure 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” “charged with the public role of overseeing systemic risk” and elected by federal regulators. (This approach is built on the German experience of the dual-board system). Again, this Article despite identifying crucial issues in the governance structure of clearinghouses, favors stronger public intervention to oversee risk, thereby discounting the interests and incentives of members in managing risk through a clearinghouse. See Griffith, *Governing Systemic Risk*, *supra* note 13, at 1221, 1235-39.

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the directors of the clearinghouse's board of directors and its risk committee; stronger voting rights in the matters related to the clearinghouse's risk management and risk profile (e.g., voting on membership requirements, admission of new members, margin level, admission to new clearable instruments, and so on); and stronger voting rights on decisions about the use and eventual distribution of profits. On the other hand, equity investors in the clearinghouse (in the current market scenario, the holding company of the FMI group) would receive class B shares, which would grant the formal ownership of the clearinghouse, but they would come with very limited control rights over the clearing business and residual economic rights.

This hybrid governance regime has the benefits of carrying low implementation costs. The issuance of special shares with control rights to members of the clearinghouse would achieve a realignment of interests and incentives of members and shareholders and a reduction in the member-shareholder divide agency costs without heavily intervening on the ownership structure of the firm.

4. Clearinghouses as Public Infrastructure?

Finally, the most controversial policy consideration would be for lawmakers to transform clearinghouses into public financial infrastructures. Policymakers could move clearinghouses out of the for-profit and even just the private market world and make them a structural element of the public financial system, within the Fed's perimeter. The clearing business has become a vital and essential infrastructural element in the financial markets—and one that poses serious risks to financial system stability. Private market dynamics, conflicts, and misaligned incentives among clearinghouses' stakeholders might make it too risky for them to continue to operate as independent private entities.

Bringing clearinghouses under the Fed's control in order to forcibly stabilize them could be a solution to the problems highlighted throughout this Article. The economic justification for this provocative solution, however, is found in the theoretical framework built earlier. In the current regulatory landscape, because of the (indirect) public policy function of systemically important clearinghouses, Dodd-Frank expands the Fed's power to support systemically important FMIs, especially clearinghouses, in situations of distress.²³⁰ In a situation of distress, the clearinghouse can access public funding. In that instance, the final risk-bearer of the clearing business could be the government—with taxpayers' money. Therefore, the government is the stakeholder with the highest final risk-bearing costs.²³¹

230. Dodd-Frank Act tit. 8, § 802(b)(3), 12 U.S.C. § 5461(b)(3) (2012).

231. At the same time, one must assess who among the clearinghouse's members, the firm's shareholders, or the government, has the lowest ownership costs. By looking at the clearing business and its economic structure, I do still believe, that despite the possibility of a public bailout,

However, bringing clearinghouses within the public sector does not solve the underlying risk of for-profit, investor-owned clearinghouses. First, bringing a firm under public governance does not insulate it from risks. Public authorities face conflicts, misaligned incentives, and risks just like private firms. Public authorities can be subject to regulatory capture²³² and might lack resources and expertise to effectively oversee and manage risk.²³³ Second, transforming clearinghouses into public entities to avoid possible failure is misleading: the assumption of “unfailurability” would create serious distortive incentives for the firm and its users, and clearinghouses can actually be left to fail “so long as [systemic financial] stability is maintained.”²³⁴

Conclusion

This journey into the ownership structure of clearinghouses yields three results. First, it shows that the ownership structure of a firm can be a matter of systemic importance. The ways in which ownership rights are assigned to different patrons of a firm have consequences with regard not just to the firm’s efficiency, but also to its financial resilience. When a firm is systemically important, however, this assignment must also account for final risk-bearing costs and the effects of a potential misalignment of incentives on the systemic stability of the firm. In designing the optimal ownership structure for a clearinghouse, ownership rights should be assigned to the patrons with the highest final risk-bearing costs, for whom ownership rights are the most valuable.

Second, this Article explains the agency costs and systemic risk concerns related to the unique member-shareholder divide found in clearinghouses. When the owners of a firm are not the ones bearing its final risk, the firm is prone to moral hazard and excessive risk-taking. This can make the firm riskier, a riskiness that is further exacerbated when the firm is systemically important.

Finally, examining the ownership structure of clearinghouses and their unique agency costs might offer policymakers a different, more novel perspective on how to evaluate and regulate these firms. Similarly, market participants may use this knowledge to reassess the incentives and opportunities of different ownership and governance structures and ultimately create more resilient market infrastructures.

clearing members are the firm’s stakeholders with the highest final risk-bearing costs and lowest ownership costs, and therefore should be entitled to own the clearinghouse rather than the government.

232. See generally George Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971).

233. See Tucker, *supra* note 152, at 9-10 (debunking the idea of bringing CCPs into the public sector, but rather keeping them in the private one).

234. *Id.* at 10.