SECOND-GENERATION MONOPOLIZATION: PARALLEL EXCLUSION IN DERIVATIVES MARKETS

Felix B. Chang*

The reluctance of antitrust to condemn parallel exclusion permits oligopolies to be entrenched. This is because parallel exclusion—multiple-firm conduct that inhibits market entrants—cannot satisfy the current strictures on monopolization, which are understood to prohibit single-firm conduct. Yet this is an outdated way of conceptualizing monopolization. An expansion of monopolization—to cover parallel, non-collusive acts by an oligopoly—is due.

To push the law toward recognizing parallel exclusion, this Article examines concentration in the markets for financial derivatives, which are perennially dominated by the same big banks. Even after losses under first-generation antitrust claims, the dominant derivatives dealers have found ways to retain market power. This Article therefore delves into the market power dynamics that traditional theories have sidestepped.

As a technical exercise, this Article illustrates the relevance of market definition as a paradigm—particularly for illuminating blind spots in financial regulation. As a doctrinal endeavor, this Article buttresses the efforts of other

* Associate Professor, University of Cincinnati College of Law. I am indebted to Tim Wu for his insightful comments. Thanks, too, to Tom Arthur, Sarah Jane Hughes, Ryan Scott, Sandra Sperino, Rick Steuer, and Sasha Volokh for their thoughts on earlier versions. This article benefitted greatly from the Next Generation of Antitrust Scholars Conference at NYU, the National Business Law Scholars Conference at the University of Chicago, and presentations at Emory and Indiana University Maurer law schools. I thank Vince Jabour for research assistance and Joel LeoGrande, George Tepe, Erica Che, and the rest of the *Columbia Business Law Review* team for their careful editing. All errors are mine.

scholars to frame parallel exclusion as a form of monopolization.

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I. INTRODUCTION

Imagine if the country's four largest airlines controlled the primary airport serving Los Angeles ("LAX").[1] Such an arrangement likely strikes us as unseemly, though the degree of our discomfort might depend on several factors.[2] Antitrust categorizes the potential harms of this arrangement,[3] while devising a schema for when to intervene. For instance, collusion among the large airlines to shut out their competitors would violate Section 1 of the Sherman Act,[4] while the purchase of LAX by the world's largest airline may run afoul of Section 2.[5]

However, if the four large airlines merely sat on a committee that oversaw LAX's safety standards and advocated for blocking rival airlines on safety grounds, an antitrust violation would be much harder to establish—even if, year after year, the same four airlines dominated commercial flights serving the airport. Without explicit agreement or single-firm conduct, current antitrust doctrine provides little recourse.

Such is the quandary of parallel exclusion: "conduct, engaged in by multiple firms, that blocks or slows would-be market entrants."[6] Despite robust evidence of

1 On the collision of cultures borne of LAX's (in)famous congestion, see generally Pico Iyer, *Where Worlds Collide: In Los Angeles International Airport, the Future Touches Down*, HARPER'S MAG., Aug. 1995, at 50.

2 E.g., how much of the market do the four airlines control; how much of the city's traffic runs through LAX; and how exactly do the airlines "control" LAX?

3 E.g., leveraging, foreclosure, and exclusion. *See* Patrick Rey & Jean Tirole, *A Primer on Foreclosure*, *in* 3 HANDBOOK OF INDUS. ORG. 2145 (Mark Armstrong & Rob Porter eds., 2007); Jonathan B. Baker, *Exclusion as a Core Competition Concern*, 78 ANTITRUST L.J. 527, 527 n.1 (2012).

4 15 U.S.C. § 1 (2012).

5 *Id.* § 2. This is especially true if the purchasing airline commands the vast majority of its relevant market.

6 C. Scott Hemphill & Tim Wu, *Parallel Exclusion*, 122 YALE L.J. 1182, 1185 (2013).

anticompetitive, self-entrenching conduct by oligopolies,[7] the law remains stagnant.[8] This Article attempts to move the law by showing that parallel exclusion suppresses competition in the financial derivatives markets, causing harms consistent with monopolization.[9]

While the air traffic illustration above is hypothetical, two gargantuan financial services markets are converging similarly today. In the derivatives trading market, derivatives instruments are bought and sold.[10] In the derivatives clearing market, financial intermediaries known as clearinghouses process derivatives trades.[11] Clearinghouses perform "back office" functions, such as clearing, settling, and guaranteeing trades.[12] Since 2010, financial reform laws have required most derivatives trades to run through these intermediaries.[13] Characterized by strong economies of scale, clearinghouses are natural

7 *See id.* at 1191–95, 1202–04 (analyzing parallel exclusion in the credit card, piping, shipping, and tobacco industries, among others).

8 *See infra* Section II.A.

9 Derivatives are financial instruments whose values fluctuate on the basis of other variables, such as interest rates, stock prices, and whether an unaffiliated party might default on a loan. *See* Arthur E. Wilmarth, Jr., *The Transformation of the U.S. Financial Services Industry, 1975–2000: Competition, Consolidation, and Increased Risks*, 2002 U. ILL. L. REV. 215, 337–73 (2002).

10 *See* Bank for Int'l Settlements, *Derivatives Statistics*, BIS Q. REV., Sept. 2014, tbl.19, http://www.bis.org/statistics/dt1920a.pdf [http:/ /perma.cc/877H-SL8C?type=pdf] (quantifying the notional size of the OTC derivatives market at $710 trillion as of December 2013).

11 *See* John McPartland, *Clearing and Settlement Demystified*, CHI. FED LETTER, no. 201, Jan. 2005, at 1.

12 *Id. See also infra* Section III.A.1.

13 *See* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§ 723, 763, 124 Stat. 1376, 1675–82, 1762–84 (2010) (codified at 7 U.S.C. § 2, 15 U.S.C. § 78c-3); Parliament and Council Regulation 648/2012, On OTC Derivatives, Central Counterparties and Trade Repositories, art. 4, 2012 O.J. (L 201) 1, 17–18 (EU).

monopolies that financial regulations have rendered indispensable to trading.[14]

Yet clearinghouses are also member-driven entities, whose members are also the dominant players in the adjacent trading (or dealer) market.[15] Invariably, these dominant dealers are the largest financial institutions in the world.[16] In the post-financial crisis derivatives landscape, clearinghouses function as bottlenecks through which adjacent markets' activities must pass.

Derivatives markets serve as a compelling example of parallel exclusion and its harms for several reasons. First, the same four or five players perpetually capture these markets, especially for over-the-counter ("OTC") derivatives.[17] These players preserve the oligopoly despite market and regulatory changes. For instance, after financial reform laws mandated centralized clearing for credit default swaps, the top dealers conspired to funnel trades into the clearinghouse that they controlled while denying rivals access to the same clearinghouse.[18] Even after settling a class action for, among other claims, collusion and monopolization,[19] these dealers have not surrendered market

14 *See* Felix B. Chang, *Financial Market Bottlenecks and the "Openness" Mandate*, 23 GEO. MASON L. REV. 69, 70–72 (2015).

15 *Id.* at 84–87.

16 *See infra* Section III.B.

17 Derivatives can be divided into exchange-traded and over-the-counter: the first category is traded on open markets, such as futures and options exchanges; the second category is customized between the parties to a trade. *See* Norman Menachem Feder, *Deconstructing Over-the-Counter Derivatives*, 2002 COLUM. BUS. L. REV. 677, 731–36 (2002); Henry T.C. Hu, *Misunderstood Derivatives: The Causes of Informational Failure and the Promise of Regulatory Incrementalism*, 102 YALE L.J. 1457, 1464–65 (1993) (focusing on the OTC markets).

18 *See In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112, at *4–5 (S.D.N.Y. Sept. 4, 2014).

19 Katy Burne, *Big Banks Agree to Settle Swaps Lawsuit*, WALL ST. J. (Sept. 12, 2015, 2:40 AM), http://www.wsj.com/articles/banks-wall-street-groups-agree-to-settle-credit-swaps-antitrust-case-1441988741 [https://perma.cc/4LHH-Z5TQ]. Interestingly, the monopolization claim

share.[20] Therefore, the traditional antitrust frameworks of collusion and monopolization have proven insufficient to deter the oligopoly.

Second, parallel exclusion has spurred the clearing and dealer markets to coalesce in a manner that replicates the anticompetitive effects of monopolization. Critics of the link between clearinghouses and dealers point to harms such as foreclosure and leveraging,[21] whereby a monopolist's control of a bottleneck facility enables the monopolist to exclude rivals from the more lucrative downstream market.[22] Traditionally, foreclosure and leveraging were seen as monopolization offenses.[23] Yet, tradition also says that monopolization can only be attributed to one dominant firm.[24] In their seminal article *Parallel Exclusion*, Professors Scott Hemphill and Tim Wu propose a "shared monopoly" theory, whereby Section 2 of the Sherman Act is stretched to encompass monopolization by multiple firms.[25] The mechanisms of exclusion in the derivatives markets validate

could not move past the motion to dismiss. *See In re Credit Default Swaps*, 2014 WL 4379112, at *16.

20 *See infra* Section II.B.

21 *E.g.*, 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 (2013); Wallace C. Turbeville, *Derivatives Clearinghouses in the Era of Financial Reform* 13 (2010), http://rooseveltinstitute.org/wp-content/uploads/2010/12/derivatives_clearinghouses_in_the_era_of_financial_reform.pdf [https://perma.cc/WL9S-P3PA].

22 *See* CFTC & SEC, Public Roundtable on Governance and Conflicts of Interest in the Clearing and Listing of Swaps 32–33, Washington, D.C., Aug. 20, 2010 [hereinafter CFTC Roundtable] (statement of Randy Kroszner, Professor of Economics, University of Chicago, Booth School of Business).

23 *See* Baker, *supra* note 3, at 533 (noting that exclusionary claims are most commonly framed as challenges to vertical agreements or monopolization).

24 *See* Hemphill & Wu, *supra* note 6, at 1187.

25 *See id.* at 1236–40.

this proposal to house parallel exclusion within monopolization.

Third, certain types of parallel exclusion are harmful for reasons beyond antitrust. Parallel exclusion in derivatives markets shuts out rivals and injures consumers.[26] Yet, it also perpetuates concentration among the major dealers, and concentration is a surefire conduit of systemic risk.[27] Combatting the dominance of incumbent dealers underpins much of the corporate and financial regulation of clearinghouses.[28] In fact, breaking up dealer dominance has been an implicit goal of the Commodity Futures Trading Commission's rules on derivatives clearing organizations.[29] So far, though, regulatory efforts have failed in this respect.[30]

All in all, parallel exclusion in derivatives markets is likely to constitute a pernicious kind of exclusion—more anticompetitive than efficient, and altogether risky for the

26 *See infra* Part IV.

27 *See* Mark J. Roe, *Clearinghouse Overconfidence*, 101 CAL. L. REV. 1641, 1677–78 (2013).

28 *See, e.g.*, U.S. DEP'T OF JUSTICE, TREAS-DO-2007-0018, REVIEW OF THE REGULATORY STRUCTURE ASSOCIATED WITH FINANCIAL INSTITUTIONS, COMMENTS BEFORE THE DEP'T OF THE TREASURY (2008), https://www.justice.gov/atr/comments-united-states-department-justice-review-regulatory-structure-associated-financial [https://perma.cc/PHV5-7BL5] [hereinafter DOJ COMMENT]; U.S. DEP'T OF JUSTICE, COMMENTS ON PROPOSED RULES LIMITING OWNERSHIP AND REGULATING GOVERNANCE FOR DERIVATIVES CLEARING ORGANIZATIONS, DESIGNATED CONTRACT MARKETS, AND SWAP EXECUTION FACILITIES, COMMENTS BEFORE THE U.S. COMMODITY FUTURES TRADING COMM'N (Dec. 28, 2010), http://www.justice.gov/atr/comments-proposed-rules-limiting-ownership-and-regulating-governance-derivatives-clearing [https://perma.cc/2RFU-QJWW]; Derivatives Clearing Organization General Provisions and Core Principles, 76 Fed. Reg. 69,334, 69,355 (Nov. 8, 2011) [hereinafter CFTC, DCO General Provisions].

29 *See* CFTC, DCO General Provisions, *supra* note 28, at 69,355; Roe, *supra* note 27, at 1690.

30 *See* Chang, *supra* note 14, at 94–101.

financial system.[31] Here, the inability of monopolization to check parallel exclusion is an immense blind spot within antitrust, amounting to hundreds of trillions of dollars.[32]

This Article ultimately concludes that the clearing markets perpetuate concentration in the dealer markets and, hence, exclusion is at play. Yet, in some ways, the conclusion is less important than the analysis. By analyzing market power, this Article injects a modicum of precision into the debate over competition in the derivatives markets.[33] An assessment of market power is the first step in a fight over exclusion.[34] Before proving that clearinghouses perpetuate dealer dominance, detractors must work through several steps, including whether the scheme's anticompetitive effects outweigh the enhanced efficiencies. In measuring the market power of the key players and then tethering the findings to a cohesive framework, this Article accomplishes a back-to-basics analysis missing from the debate.[35]

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31 *See infra* Part IV; *see also* Hemphill & Wu, *supra* note 6, at 1213 ("[O]nly some fraction of parallel conduct is exclusionary and some fraction of that is both exclusionary and anticompetitive.").

32 *See infra* Section III.A.2, III.B.2 (discussing the size of the OTC derivatives markets). *See generally* Baker, *supra* note 3, at 528 (discussing antitrust's difficulty in dealing with exclusion).

33 On the relationship between stability of and competition between clearinghouses, compare CFTC Roundtable, *supra* note 22, at 67 (comments of Roger Liddell, CEO, LCH ClearNet Group), and *supra* note 22, at 71 (comments of Jonathan Short, ICE Trust), with *supra* note 22, at 47 (statement of Jason Kastner, Vice Chairman, Swaps and Derivatives Markets Association.).

34 *See* HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE § 6.4 (5th ed. 2011); Hemphill & Wu, *supra* note 6, at 1237–38.

35 Prior work has been done on the market shares of clearinghouses for exchange-traded derivatives. *See generally* TINA P. HASENPUSCH, CLEARING SERVICES FOR GLOBAL MARKETS: A FRAMEWORK FOR THE FUTURE DEVELOPMENT OF THE CLEARING INDUSTRY (2009). Clearing markets for OTC derivatives have been harder to assess, due to the newness of the markets. For one of the few analyses in this area, see generally Li Lin & Jay Surti, *Capital Requirements for Over-the-Counter Derivatives Central Counterparties* (Int'l Monetary Fund, Working Paper No. 13/3, 2013). On

Yet market power analysis of the derivatives markets is a difficult endeavor. In antitrust, the proper measure of market power has been fraught with controversy.[36] The prevailing paradigm—using market share as a proxy for market power—is the target of fierce criticism.[37] By undertaking a methodical, if traditional, study of market definition and market share in the derivatives world, this Article broadly blends antitrust and financial reform scholarship. This Article validates the market definition/market share paradigm by showing its ability to illuminate blind spots in financial regulation.[38]

The remainder of this Article unfolds as follows: Part II introduces parallel exclusion and the derivatives markets. Part III delves into market power analysis to create a fuller picture of the upstream clearing and downstream dealer markets.[39] Part IV examines the harms of parallel exclusion

concentration in the dealer markets, see OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, FIRST QUARTER 2014 tbl.1 (2014), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq114.pdf [https://perma.cc/2U2A-MHL5] [hereinafter OCC, 2014 Q1 REPORT] and David Mengle, *Concentration of OTC Derivatives among Major Dealers*, ISDA RESEARCH NOTES, no. 4, 2010 at 1 (Nov. 1, 2010).

36 Debate rages, for instance, over whether market share is an appropriate proxy for market power. *See* Louis Kaplow, *Why (Ever) Define Markets?*, 124 HARV. L. REV. 437, 440 (2010) [hereinafter Kaplow, *Why (Ever) Define Markets?*]; Gregory J. Werden, *Why (Ever) Define Markets? An Answer to Professor Kaplow*, 78 ANTITRUST L.J. 729, 740 (2013).

37 *See, e.g.*, Kaplow, *Why (Ever) Define Markets?*, *supra* note 36, at 440; Daniel A. Crane, *Market Power Without Market Definition*, 90 NOTRE DAME L. REV. 31, 31 (2014).

38 *See infra* Section III.B.2.

39 In upstream (wholesale) markets, firms sell to other firms; in downstream (retail) markets, firms sell products to end-users. *See generally* ORG. FOR ECON. CO-OPERATION & DEV., DEFINING THE RELEVANT MARKET IN TELECOMMUNICATIONS 14 (2014). For this Article's purposes, the clearing market is upstream; the trading (or dealer) market is downstream.

in the derivatives markets. Finally, Part V discusses the benefits.

II. PARALLEL EXCLUSION AND THE DERIVATIVES MARKETS

Scholars have long recognized the difficulty of antitrust in coherently dealing with exclusion.[40] Broadly construed, exclusion "is designed by the perpetrator to discipline or exclude rivals so that it can attain or maintain monopoly power."[41] Such practices include monopolization, attempts to monopolize, predatory pricing, tying, and some forms of vertical integration.[42] In doctrine, exclusion typically surfaces as a violation of Section 2 of the Sherman Act.[43] In practice, exclusion often implicates two markets, whereby the perpetrator manipulates one market to foster its dominance over an adjacent market.[44] This Article explores just such an arrangement: five derivatives dealers controlling a derivatives clearinghouse to protect their dominance over the trading market.

While there has been a sea change to bring exclusionary concerns to the forefront of competition policy,[45] the impulse

40 *See, e.g.*, Baker, *supra* note 3, at 527. The difficulty can be attributed in part to the decades-long dominance of the Chicago School, which has been skeptical of the place of exclusion within antitrust. *See id.* at 528.

41 HOVENKAMP, *supra* note 34, § 17.2c, at 715.

42 *Id.*

43 *See* Baker, *supra* note 3, at 533–34 (discussing the nuances of this association).

44 *See, e.g.*, Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 408 (2004); Eastman Kodak Co. v. Image Tech. Servs., Inc., 504 U.S. 451 (1992); United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001).

45 Leaders in this effort include the Post-Chicago School and the Nobel Prize-winning economist Jean Tirole. For excellent summaries, see generally Steven C. Salop, *Economic Analysis of Exclusionary Vertical Conduct: Where Chicago Has Overshot the Mark, in* HOW THE CHICAGO SCHOOL OVERSHOT THE MARK: THE EFFECT OF CONSERVATIVE ECONOMIC

to cabin exclusion within Section 2 of the Sherman Act lingers on.[46] This tendency confines the prosecution of exclusion to acts by a single perpetrator.[47] Recently, Hemphill and Wu's work has illuminated the gray area where *multiple* actors are engaging in parallel exclusive behavior *without express agreement*. For the most part, courts have declined to recognize parallel exclusion.[48] Nonetheless, antitrust would benefit from a sustained study of one industry over time, where an oligopoly has engaged in recidivist exclusion, moving from one scheme to another to maintain market power.

To that end, this Section serves as a primer on two fronts. First, this Section discusses Hemphill and Wu's work on parallel exclusion, noting in particular the judicial reception of this theory. Next, this Section introduces the derivatives markets and provides analysis that corroborates parallel exclusion and its harms.

A. Parallel Exclusion

Parallel exclusion is "self-entrenching conduct, engaged in by multiple firms, that harms competition by limiting the competitive prospects of an existing or potential rival to the excluding firms."[49] Notably, the phenomenon occurs in the absence of explicit agreement,[50] which makes it hard to fit parallel exclusion within antitrust's current framework. Without express agreement, anticompetitive behavior by

ANALYSIS ON U.S. ANTITRUST 141 (Robert Pitofsky ed., 2008); Thomas G. Krattenmaker & Steven C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power Over Price*, 96 YALE L.J. 209 (1986); Rey & Tirole, *supra* note 3.

46 *See* Baker, *supra* note 3, at 533–34 (discussing the nuances of this association).

47 *See* Hemphill & Wu, *supra* note 6, at 1188, 1236.

48 *See infra* Section II.A.

49 Hemphill & Wu, *supra* note 6, at 1189.

50 *Id.* at 1190.

multiple actors does not constitute collusion;[51] simultaneously, the behavior cannot satisfy monopolization, which is an offense committed by one actor.[52]

While not all parallel conduct is anticompetitive or exclusive, some pernicious types of parallel exclusion do satisfy both thresholds.[53] For instance, it is common practice for firms to mimic a successful product or follow a fashion trend; this would not exclude other market players or hurt competition.[54] On the other hand, four major airlines sitting on a committee that oversees safety standards for LAX and independently advocating for rigorous safety standards may indeed exclude the operators of shoddily maintained aircraft.

Even within the realm of parallel exclusion, not all practices are on balance harmful. In the example above, high standards might lock out some competitors of the four airlines from LAX, but reducing the number of airlines can simplify the airport's operations. Additionally, safety concerns may more than offset the anticompetitive effects. Hence, to separate detrimental and benign parallel exclusion, Hemphill and Wu propose an approach that requires (i) sufficient monopoly power, (ii) anticompetitive effects, and (iii) lack of efficiency justifications.[55]

This weighing of anticompetitive effects and enhanced efficiencies echoes antitrust's treatment of exclusion generally. For example, traditionally antitrust has condemned the exclusionary effects of vertical integration only where (i) the firm or firms involved have substantial

51 *See* Bell Atl. Corp. v. Twombly, 550 U.S. 544, 553 (2007).

52 *See* Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 229 (1993).

53 More precisely, parallel exclusion must, at a minimum, be anticompetitive to be condemned. *See* Hemphill & Wu, *supra* note 6, at 1186 ("[W]e do not insist that all parallel exclusion is anticompetitive, nor do we think that most parallel conduct is exclusionary.").

54 *Id.* at 1214–15.

55 *Id.* at 1237–38. Note that this is one of two broad approaches—shared monopoly (falling under Section 2) and aggregation of contracts (falling under Section 1). *See id.* at 1235–50.

market power, (ii) integration results in significant foreclosure of a vertically related market, and (iii) the case for enhanced efficiencies is very weak.[56] In fact, exclusion, vertical integration, and monopolization are often conflated and subsumed within a larger Section 2 analysis.[57] Hemphill and Wu's decision to house parallel exclusion within Section 2 must therefore contend with all its doctrinal baggage. Most prominently, Section 2 is usually understood to prohibit only single-firm behavior. Hemphill and Wu surmount this obstacle by exploring, among other paths, the "shared monopoly" theory of monopolization, which would harmonize treatment of parallel exclusionary practices by both single and multiple firms.[58]

The "shared monopoly" theory, too, must overcome its set of obstacles, chief among them the Supreme Court's reluctance to extend Section 2 to multiple defendants acting independently. For example, in *Bell Atlantic Corp. v. Twombly* the Court required more than a showing of parallel conduct or independence to move a Section 1 claim past pleading.[59] In *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, the Court cast doubt on whether oligopolistic price coordination or conscious parallelism would injure consumers to the same extent as monopolistic predatory pricing, noting that the general occurrence of price coordination seemed unlikely.[60] Both cases might be read narrowly—and Hemphill and Wu certainly do so, by casting both as cases about parallel pricing or collusion rather than

56 HOVENKAMP, *supra* note 34, § 9.3a, at 422; *see also id.* § 6.4a, at 298.

57 *See* Marina Lao, *Ideology Matters in the Antitrust Debate*, 79 ANTITRUST L.J. 649, 655–56 (2014).

58 Hemphill & Wu, *supra* note 6, at 1236–37.

59 550 U.S. 544, 553–56 (2007).

60 509 U.S. 209, 227–29 (1993). Oligopolistic price coordination or conscious parallelism are practices "by which firms in a concentrated market might in effect share monopoly power, setting their prices at a profit-maximizing, supracompetitive level." *Id.* at 227.

parallel exclusion.[61] Nonetheless, even in recent cases where parallel conduct was the basis for a Sherman Act claim, the concept of parallel exclusion has enjoyed mixed reception at best.

One recent case is *In re Credit Default Swaps Antitrust Litigation*, a consolidated class action against the major players in the trading of credit default swaps ("CDS"), where the plaintiffs alleged that the defendants had illegally cornered the CDS trading market.[62] The causes of action included conspiring to fix the bid/ask spreads of dealers in violation of Section 1 of the Sherman Act[63] and conspiring to block the emergence of alternate trading and clearing platforms in violation of Section 2.[64] Conscious of the vulnerability of a shared monopoly theory, the plaintiffs staked their Section 2 claim on conspiracy to monopolize.[65]

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61 Hemphill & Wu, *supra* note 6, at 1199, 1240–41, 1241 n.246.

62 *See* Second Amended Complaint, *In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476 (S.D.N.Y. Apr. 11, 2014), 2014 WL 1408256 [hereinafter CDS Antitrust Litig. Complaint].

63 The Southern District of New York explained this "spread" as follows:

> Market makers—also referred to as "dealers"—sell to buyers, buy from sellers, and hold inventory until a match emerges. In other words, dealers (the "sell-side" of the market) sell CDS investors (the "buy-side" of the market) liquidity: the ability to trade without having to wait for a counterparty. A dealer offers a "bid" price at which the dealer will purchase and an "ask" price at which the dealer will sell. By keeping their bid lower than their ask, dealers can capture the difference, known as the "bid/ask spread."

In re Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112, at *1 (S.D.N.Y. Sept. 4, 2014).

64 CDS Antitrust Litig. Complaint, *supra* note 62 at para. 269, 273–76.

65 *See* Plaintiff's Consolidated Opposition to Defendant's Motion to Dismiss at 45–46, 91 n.85, *In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112 (S.D.N.Y. Sept. 4, 2014), 2014 WL 2862222, at 25–26, 55 n. 85 [hereinafter CDS Antitrust Litig. Pl.'s Consol. Opp.].

Conspiracy to monopolize is narrower than shared monopoly[66] but rests on surer footing.[67]

> On a motion to dismiss, the Southern District of New York permitted the Section 1 claim to proceed but dismissed the Section 2 claim.[68] The court noted that precedent thwarted the shared monopoly theory.[69] Further, the court would allow the conspiracy to monopolize claim only if the plaintiffs alleged that the defendants conspired to form *a single entity* to harness monopoly power.[70]

On the heels of *In re CDS Antitrust Litigation*, the Fourth Circuit reversed a district court's dismissal of a group boycott claim against several table saw manufacturers. In *SD3, LLC v. Black & Decker (U.S.) Inc.*, the plaintiff invented and sought to commercialize technology to mitigate table saw injuries. The defendants allegedly colluded to develop safety standards that imposed unnecessary costs on the plaintiff and prevented adoption of its device.[71] The court found that the plaintiff had adequately pled parallel conduct and cited to *Parallel Exclusion* as support for the "classically anticompetitive" effect of defendants' conduct.[72] However, the plaintiffs only pled a Section 1 claim.[73] *SD3* therefore adds no new law on monopolization.

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66 Shared monopoly encompasses both independent and interdependent exclusion, while conspiracy to monopolize covers only the latter. *See* Hemphill & Wu, *supra* note 6, at 1236.

67 *In re Credit Default Swaps*, 2014 WL 4379112, at *13–14.

68 *Id.* at *18.

69 *Id.* at *13–14.

70 *Id.* at *11–12.

71 SD3, LLC v. Black & Decker (U.S.) Inc., 801 F.3d 412, 418–21 (4th Cir. 2015).

72 *Id.* at 427.

73 Arguably, *SD3* is a boycott case that falls into the "easier" camp within parallel exclusion, where explicit agreement can be traced and the oligopoly's stability is easy to achieve. *See* Hemphill & Wu, *supra* note 6, at 1189–90.

No recent case has moved toward recognizing parallel exclusion as a form of monopolization.[74] This stagnancy in the law bodes poorly after *In re CDS Antitrust Litigation*, a case this Article will return to several more times, because of the prominence the Southern District of New York plays in finance-related litigation. As the remainder of the Article argues, an outdated conception of Section 2 permits dominant players in the derivatives markets to exclude rivals while steering clear of Section 1's prescriptions, with profound consequences for competition, consumer welfare, and the health of the financial system.

B. The Derivatives Markets

Nowhere is concentration in the derivatives industry more apparent than the CDS trading market, whose evolution exhibits a pattern of recidivist exclusion by the dominant dealers. Due to the high degree of customization and low degree of liquidity that characterize trading, a few dealers—large commercial and investment banks—emerged early on as the dominant market-makers.[75] At first, these dealers were the only institutions capable of managing the

74 The plaintiffs in a Third Circuit case have noted the following in their attempt to combine the defendants' market shares under Section 2:

> The economic reality is that the harm caused by Defendants' collective bundling practices does not hinge on the presence or absence of agreement: the anticompetitive outcome is the same with or without a conspiracy. While some courts have declined to adopt this view, the Third Circuit has never addressed it.

Plaintiff's Memorandum in Opposition to Defendants' Motion to Dismiss at 25 n.28, Schuylkill Health Sys. v. Cardinal Health, Inc., No. 12-CV-7065, 2014 WL 3746817 (E.D. Pa. July 30, 2014), 2014 WL 3817671 at 18–19 n. 28, ECF No. 57 (citing C. Scott Hemphill, *Parallel Exclusion: Is It Time for a Theory of Shared Monopoly?*, American Bar Association Section of Antitrust Law Panel Discussion (Sept. 18, 2013); Hemphill & Wu, *supra* note 6).

75 *See In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112, at *1–2 (S.D.N.Y. Sept. 4, 2014).

peculiar risks of the market, and they profited handsomely for it. Trading revenues for credit derivatives have hovered around 10% of trading revenues for all derivatives ($530 million per quarter, out of $5.517 billion), even though credit derivatives comprise only 4.3% of all derivatives.[76]

With time, however, innovations sprang up to reduce the market's imperfections, thus eroding dealer margins. Trading volumes increased, and the instruments became more standardized, which in turn exerted pressure upon the market to become more transparent.[77] All along, opacity has permitted the large dealers to mark up their bid/ask spreads, so these changes threatened their supracompetitive pricing.[78]

According to the plaintiffs in *In Re CDS Antitrust Litigation*, the large dealers responded by capturing the intermediaries and standard-setting bodies that were ushering in these changes. First, the dealers limited the dissemination of CDS pricing information.[79] They were able to do so because their representatives sat on the board of the Depository Trust & Clearing Corporation ("DTCC"), a

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76 In the first quarter of 2016, trading in credit derivatives generated $334 million in revenue for banks. OFFICE OF THE COMPTROLLER OF THE CURRENCY, QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, FIRST QUARTER 2016, at 4 (2016), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq116.pdf [https://perma.cc/A9NP-RYEX] [hereinafter OCC, 2016 Q1 REPORT]. Revenue from CDS trading has historically swung wildly, from maximum quarterly earnings of $2.727 billion (out of $10.217 billion for trading in all derivatives) to maximum quarterly losses of $10.237 billion (out of $10.580 billion for all derivatives). *See id.* at 28, graph 9.

77 Standardization came about because ISDA introduced a Master Agreement to document derivatives trades and also because of the emergence of CDS indices, which aggregate data for a group of referenced entities. *See, e.g.*, *In re Credit Default Swaps*, 2014 WL 4379112, at *2; Kathryn Judge, *Intermediary Influence*, 82 U. CHI. L. REV. 573, 611–12 (2015).

78 *See* Turbeville, *supra* note 21, at 4; *In re Credit Default Swaps*, 2014 WL 4379112, at *1–3.

79 *See In re Credit Default Swaps*, 2014 WL 4379112, at *2–3.

financial services company that compiles real-time post-trade data.[80] DTCC managed to secure from Markit, a company that circulates DTCC's data, an agreement to delay dissemination of CDS pricing information to Markit's subscribers. Markit was a named defendant in *In re CDS Antitrust Litigation*, and the large dealers held ownership interests in it as well.[81] This agreement was contrary to Markit's own self-interest since its pool of subscribers was broader than the defendant-dealers. However, sacrificing short-term economic self-interest can help to elevate independent parallel behavior to conspiracy.[82]

Later, when an electronic platform emerged to trade CDS, the dealers undermined the venture by collectively directing all their trades to ICE Clear Credit, a clearinghouse in which the dealers held ownership interests and whose risk committee the dealers controlled.[83] It was a creative scheme of exclusion, leverage, and foreclosure: Dodd-Frank required CDS trades to be centrally cleared;[84] a joint venture that operated its own clearinghouse built an alternative trading platform;[85] the dealers commanded the lion's share of CDS

80 *Id.* at *2. *See also Global Trade Repository (GTR)*, DTCC, http://dtcc.com/derivatives-services/global-trade-repository [https://perma.cc/9RZD-QXZU].

81 *See In re Credit Default Swaps*, 2014 WL 4379112, at *11; Memorandum in Support of Markit's Motion to Dismiss at 10, *In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112 (S.D.N.Y. Sept. 4, 2014), 2014 WL 1315324, at 8; CDS Antitrust Litig. Pl.'s Consol. Opp., *supra* note 65, at 36–37.

82 *See* American Needle, Inc. v. Nat'l Football League, 560 U.S. 183, 197 (2010); *In re Credit Default Swaps*, 2014 WL 4379112, at *5.

83 *In re Credit Default Swaps*, 2014 WL 4379112, at *4–5.

84 Dodd-Frank Wall Street Reform & Consumer Protection Act, Pub. L. No. 111-203 §§ 723, 763, 124 Stat. 1376, 1675–82, 1762–84 (2010) (codified at 7 U.S.C. § 2, 15 U.S.C. § 78c-3).

85 *In re Credit Default Swaps*, 2014 WL 4379112, at *3. On the dominance of one of the joint venture partners, CME Group Inc., in the futures market, see Neal L. Wolkoff & Jason B. Werner, *The History of Regulation of Clearing in the Securities and Futures Markets, and Its Impact on Competition*, 30 REV. BANKING & FIN. L. 313, 373–75 (2010).

trading and routed traffic toward their clearinghouse; without this traffic, the upstart clearinghouse could never attain high volumes, and the closely linked exchange could never get off the ground.[86] To bolster this effort, the dealers allegedly convinced Markit and the International Swaps and Derivatives Association ("ISDA"), a trade group that created documentation for derivatives trading, to forego granting licenses to the upstart trading platform.[87] Not surprisingly, the venture folded soon after it started.[88]

For all its intricacies, *In re CDS Antitrust Litigation* was a straightforward case. The defendant-dealers had allegedly held secret meetings to coordinate amongst each other and with DTCC, ISDA, and Markit in violation of Section 1 of the Sherman Act.[89] Horizontal conspiracies such as these have always enjoyed primacy in the antitrust hierarchy.[90] Given the choice, plaintiffs always plead collusion over exclusion.[91] Hence, the case would settle—for $1.87 billion—one year after the Southern District of New York allowed the Section 1 and ancillary claims (but not the Section 2 claim) to go forward.[92]

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86 On how this strategy has been deployed elsewhere, see DOJ COMMENT, *supra* note 28, at 1–2.

87 *See In re Credit Default Swaps*, 2014 WL 4379112, at *4–5. The dealers also sat on the boards of Markit and ISDA. *Id.*

88 *See* Louise Story, *A Secretive Banking Elite Rules Trading in Derivatives*, N.Y. TIMES (Dec. 11, 2010), http://www.nytimes.com/2010/12/12/business/12advantage.html [https://perma.cc/N4NJ-PZBL].

89 *See* In re Credit Default Swaps, 2014 WL 4379112, at *4–5.

90 *See* Thomas C. Arthur, *The Core of Antitrust and the Slow Death of Dr. Miles*, 62 S.M.U. L. REV. 437, 437 (2009); Baker, *supra* note 3, at 527–28.

91 In fact, the class action complaint in *In re CDS Antitrust Litigation* was peppered with references to collusion. *See generally* CDS Antitrust Litig. Complaint, *supra* note 62.

92 *See* Jesse Drucker & Bob Van Voris, *Wall Street Banks to Settle CDS Lawsuit for $1.87 Billion*, BLOOMBERG BUS. (Sept. 11, 2015, 10:16 AM), http://www.bloomberg.com/news/articles/2015-09-11/wall-street-banks-reach-settlement-on-cds-lawsuit-lawyer-says [https://perma.cc/4CXA-5C52].

Yet this Article is interested in the much harder scenario of what happens afterward. So far, the CDS dealer market has not loosened up. Large dealers continue to sit on the risk committee of ICE Clear Credit, whose membership roster has not expanded.[93] We are also not likely to see the type of explosive evidence of conspiracy that came to light, without which this case would have failed.[94] The stasis in the market, despite the settlement, is all the more intriguing because it hews closely to the reality that parallel action is frequently the only thing that plaintiffs can point toward. Evidence of horizontal conspiracy, the easier Section 1 claim, is simply too difficult to gather. Moreover, if the dominant dealers divest ownership in the clearinghouses or own only a minor interest,[95] the more established Section 2 claim of vertical

93 *See infra* Section III.B.

94 *See In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112, at *6 (S.D.N.Y. Sept. 4, 2014) ("Plaintiffs could not have discovered through the exercise of reasonable diligence that they were injured until December 2010, when the existence of secret meetings was first uncovered by the *New York Times*.") (citing Story, *supra* note 88). This is especially true in the aftermath of *Twombly*. For the defendants' *Twombly* challenges to the sufficiency of the plaintiffs' pleadings, see Dealer-Defendant's Memorandum in Support of their Joint Motion to Dismiss the Consolidated Amended Complaint at 22–23, *In re* Credit Default Swaps Antitrust Litig., No. 13-MD-02476, 2014 WL 4379112 (S.D.N.Y. Sept. 4, 2014), 2014 WL 996473, at 17 [hereinafter CDS Antitrust Litig. Dealer Joint Mot.].

95 In 2008, ICE dove into CDS clearing by purchasing The Clearing Corporation, a well-established clearinghouse, with the support of the major dealers. *See* Press Release, IntercontinentalExchange & The Clearing Corporation, IntercontinentalExchange, The Clearing Corporation, and Nine Major Dealers Announce New Developments in Global CDS Clearing Solution (Oct. 30, 2008), http://www.sec.gov/Archives/edgar/data/1174746/000095014408007998/g16353exv99w1.htm [https://perma.cc/VK73-AYCF]. As for Markit, the extent and effect of the dealers' ownership in the company was a contested issue in the case. *See* Memorandum in Support of Markit's Motion to Dismiss the Second Amended Consolidated Class Action Complaint at 7, *In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112, (S.D.N.Y. May

integration is not available. In *In re CDS Antitrust Litigation*, the defendants repeatedly pounced on the dubious status of shared monopoly and parallel conduct in antitrust.[96] The Southern District of New York ascribed to this view. In dismissing the Section 2 claim, the court appeared to endorse conspiracy to monopolize only under very narrow circumstances—where the plaintiffs allege that the defendants conspired to either form a single entity to possess monopoly power or seek to allocate a market.[97] Under these first-generation proscriptions of monopolization, antitrust law cannot catch up to economic realities. Thus, to nudge antitrust toward a more expansive, second-generation vision of monopolization, the rest of this Article shall labor through the mechanics of parallel exclusion in the OTC derivatives markets.

Before moving on, however, this Subsection shall linger on two additional points. First, *In re CDS Antitrust Litigation* should be read as one in a line of cases demonstrating the resilience of the dominant dealers at retaining market power. This line includes a 2011 investigation by the European Commission into tactics by the dominant dealers to maintain their stronghold over the CDS market,[98] as well as private actions by pension funds

23, 2014), 2014 WL 2142262, at 6 [hereinafter CDS Antitrust Litig. Markit Mem.].

96 *See* CDS Antitrust Litig. Dealer Joint Mot., *supra* note 94.

97 *See In re Credit Default Swaps*, 2014 WL 4379112, at *13–14 (citing Arista Records LLC v. Lime Grp. LLC, 532 F. Supp. 2d 556, 580 (S.D.N.Y. 2007)).

98 *See* Press Release, European Comm'n, Antitrust: Commission Probes Credit Default Swaps Market (Apr. 29, 2011), http://europa.eu/rapid/press-release_IP-11-509_en.htm [https://perma.cc/E42G-THD2]. Interestingly, the European Commission was investigating whether the dealers' use of Markit and ICE Clear Europe, the dominant CDS clearinghouse in Europe, constituted "collusion [analogous to Sherman Act Section 1] between them or an abuse of a possible collective dominance [analogous to shared monopoly under Sherman Act Section 2]." *Id.*

and investment banks against the large dealers, ISDA, and Markit for illegally cornering the market.[99] However it is framed,[100] this impulse to exclude has characterized the dominant dealers' behavior for decades, regardless of whether competitors, consumers, and enforcement agencies have prevailed.[101]

Second, the CDS market might be the poster child of recidivist parallel exclusion, but not all markets behave the same way.[102] Some markets enable dominant firms to realize their dreams of perpetual dominance because certain imperfections (including perverse consequences of regulation) create the opportunities to do so. Other markets are perfectly capable of disciplining these impulses through well-functioning competition. Thus, while this Article looks to the OTC derivatives markets to substantiate parallel exclusion, it is careful to distinguish among the markets for

99 *See, e.g.*, Class Action Complaint, MF Glob. Capital LLC v. Bank of Am. Corp., No. 13-CV-05417, 2013 WL 7210066 (N.D. Ill. July 29, 2013).

100 That is, whether it is the proclivity of intermediaries to suppress efficiencies, *see* Judge, *supra* note 77, or simply inevitable business practices.

101 In early 2015, the European Commission closed its proceedings against thirteen banks in the CDS investigation. *See* Press Release, European Comm'n, Antitrust: Commission Closes Proceedings Against 13 Investment Banks in Credit Default Swaps Case (Apr. 12, 2015), http://europa.eu/rapid/press-release_MEX-15-6254_en.htm [https://perma.cc/56LQ-AFN4]. In July 2016, the European Commission closed its investigation into Markit and ISDA after receiving legally binding commitments from Markit and ISDA that they would license data relating to CDS "on fair, reasonable and non-discriminatory (FRAND) terms." *See* Press Release, European Comm'n, Antitrust: Commission Accepts Commitments by ISDA and Markit on Credit Default Swaps (July 20, 2016), http://europa.eu/rapid/press-release_IP-16-2586_en.htm [https://perma.cc/WMQ2-ATUL].

102 Thus, it cannot be said that "a market is a market is a market" any more than "a swap is a swap is a swap." *See* Gertrude Stein, *Sacred Emily*, in GEOGRAPHY & PLAYS 178, 187 (Univ. of Wisc. Press 2012) (1922) ("Rose is a rose is a rose is a rose.").

different derivatives and to highlight where the challenges are most pronounced.

III. MARKET POWER ANALYSIS

If the four major airlines were to control LAX, we would have to pursue three lines of inquiry before condemning the arrangement.[103] First, what is the nature of this "control"? Second, what are its harmful effects? Finally, what are its benefits? The first question determines whether there might be parallel exclusion, which this Section attempts to do for the derivatives markets. The remaining two questions, which will be taken up in Sections IV and V, separate harmful from benign forms of parallel exclusion.

No examination of exclusion is complete without market power analysis of the constituent markets.[104] For OTC derivatives, economies of scale and network effects work in tandem to turn providers of clearing services into natural monopolies with significant market power. However, the downstream dealer markets are where the real profits lie; these markets are also concentrated, with virtually the same big banks controlling market activity year after year. If the clearing and dealer markets are working together, then there is a danger that the bottlenecks operating at thin margins (clearinghouses) are being deployed to maintain the dominance of the dealers in the adjacent dealer markets.

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103 This Article adopts Hemphill and Wu's three-part approach. *See* Hemphill & Wu, *supra* note 6, at 1237–38 (citing United States v. Grinnell Corp., 384 U.S. 563, 570–71 (1966); United States v. Microsoft Corp., 253 F.3d 34, 51 (D.C. Cir. 2001) (en banc) (per curiam)). This approach is common to other types of anticompetitive exclusion. *See also* HOVENKAMP, *supra* note 34, § 9.3a, at 422 (vertical integration).

104 *See, e.g.*, U.S. DEP'T OF JUSTICE, NON-HORIZONTAL MERGER GUIDELINES § 4.2 (1984), https://www.justice.gov/sites/default/files/atr/legacy/2006/05/18/2614.pdf [https://perma.cc/MU4X-3B4S] (stating, as the first prong of assessing anticompetitive vertical mergers, a finding that the degree of vertical integration is so extensive that entrants to one market would also have to enter the second market simultaneously).

This Section dissects the intricacies of market power in both upstream and downstream markets to assess the validity of the charge that the clearing markets are the instruments of dealer exclusion.[105] Section II.A examines the market power of derivatives clearinghouses, focusing in particular on clearinghouses for interest rate swaps ("IRS") and credit default swaps ("CDS"), two products that, prior to financial reform legislation, had largely been cleared on bilateral bases.[106] Section II.B examines the market power of derivatives dealers, wading into a longstanding debate over whether this market is concentrated or not. Section II.C examines the mechanisms by which the dominant dealers control the clearinghouses.

In many ways, market power has never been more important. The recent work of economists and legal scholars has produced keen insights into how firms with market power behave.[107] Simultaneously, however, the traditional measurement of market power—that is, the market definition/market share paradigm—has come under intensifying assault.[108] Therefore, any discourse on market

105 *See, e.g.*, Chang, *supra* note 14; Greenberger, *supra* note 21; Turbeville, *supra* note 21.

106 Before the financial crisis, clearing was performed bilaterally, by the counterparties to a trade. In 2009, the Group of Twenty nations made centralized clearing a centerpiece of financial reform. With that push, both the United States and European Union now require clearinghouses to be interposed into derivatives trades. *See* Dodd-Frank Wall Street Reform & Consumer Protection Act, Pub. L. No. 111-203 §§ 723, 763, 124 Stat. 1376, 1675–82, 1762–84 (2010) (codified at 7 U.S.C. § 2, 15 U.S.C. § 78c-3); Parliament and Council Regulation 648/2012, On OTC Derivatives, Central Counterparties and Trade Repositories, art. 4, 2012 O.J. (L 201) 1, 17–18 (EU).

107 *See, e.g.*, ROYAL SWEDISH ACAD. OF SCIS., JEAN TIROLE: MARKET POWER AND REGULATION 2, 18, 28 (2014); s*ee also supra* note 45.

108 *See, e.g.*, Kaplow, *Why (Ever) Define Markets*, *supra* note 36; Herbert Hovenkamp, *Markets in Merger Analysis*, 57 ANTITRUST BULL. 887, 891, 894–95 (2012); William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 947 (1981); Joseph Farrell

power must also thoughtfully defend its methodology for assessment. At the risk of hitching itself to a methodology that is slowly growing obsolete, this Article will utilize the market definition/market share paradigm, both because of its lasting influence on the courts[109] and because of its capacity to uncover subtle trends in the derivatives markets.[110]

Specifically, the market definition/market share paradigm produces the following observations. First, derivatives *trading* is comprised of distinct geographic markets, the largest being the United States and Europe, each dominated by a small oligopoly of approximately five dealers.[111] These large dealers compete fiercely against each other within the oligopoly. However, as a block, they adopt actions that exclude smaller competitors from breaking into the oligopoly. Second, derivatives *clearing* does not necessarily reflect the same geographic fragmentation, since one producer dominates the clearing of IRS while two producers appear to dominate the clearing of CDS.[112] Third, in the U.S. trading market, activity should be tracked at the bank holding company level, rather than the commercial bank level.[113] Doing so broadens the tunnel vision of banking regulators, who tend to focus on lending and ancillary activities.[114] Fourth, understanding the delineation between commercial bank dealers and investment bank dealers helps to parse the sales strategies of the major dealers—in

& Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, 10 B.E. J. THEORETICAL ECON. 1, 1 (2010).

109 *See, e.g.*, Christy Sports, LLC v. Deer Valley Resort Co., 555 F.3d 1188, 1198–99 (10th Cir. 2009).

110 *See infra* Section III.A.2, III.B.2.

111 *See infra* notes 214–215 and accompanying text and Section III.B.3.

112 *See infra* notes 158–159 and 163–164 and accompanying text.

113 *See infra* notes 210–213 and accompanying text.

114 *See infra* notes 205 and 211–213 and accompanying text.

particular, whether major dealers tie IRS and CDS to the provision of credit.[115]

A. The Clearing Markets

1. Network Effects and Natural Monopoly Characteristics

The producers in the upstream clearing markets are derivatives clearinghouses, a type of financial market infrastructure ("FMI") which guarantees the trades of its members.[116] If a member is unable to fulfill its obligations under a trade, the clearinghouse will step in. Membership is determined by complicated criteria subject to regulatory constraint.[117]

By their very design, clearinghouses exhibit strong economies of scale—so strong, in fact, that clearinghouses can be classified as natural monopolies.[118] A natural

115 *See infra* notes 192–194 and accompanying text.

116 On FMIs, see generally BANK FOR INT'L SETTLEMENTS & INT'L ORG. OF SEC. COMM'RS, PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES (2012), http://www.bis.org/cpmi/publ/d101a.pdf [https://perma.cc/Z2DB-JPWP]; *Supervision and Oversight of Financial Market Infrastructures: About*, BOARD GOVERNORS FED. RES. SYS. (last updated Sept. 2, 2009), http://www.federalreserve.gov/paymentsystems/over_about.htm [https://perma.cc/UTW9-TS5X]. The most well-known FMIs are credit cards, such as Visa, and payment messaging systems, such as SWIFT. *See Supervision and Oversight of Financial Market Infrastructures: Private-Sector Systems*, BOARD GOVERNORS FED. RES. SYS. (last updated Jan. 29, 2015), https://www.federalreserve.gov/paymentsystems/over_pssystems.htm [https://perma.cc/QK52-6KMH].

117 Such constraints include an open access mandate. *See* 17 C.F.R. § 39.12(a)(1) (2016). For limitations on capital requirements for membership, see 17 C.F.R. § 39.12(a)(2)(iii) (2016).

118 The notion that clearinghouses are natural monopolies is not universally accepted. *Compare* Chang, *supra* note 14, *with* HASENPUSCH, *supra* note 35, at 50. *See also* RUBEN LEE, RUNNING THE WORLD'S MARKETS: THE GOVERNANCE OF FINANCIAL INFRASTRUCTURE 20–21 (2011); DERMOT TURING, CLEARING AND SETTLEMENT IN EUROPE § 6.41 (2012); Lin & Surti, *supra* note 35, at 5.

monopoly arises when a market is more efficiently serviced by one producer than multiple ones.[119] Common examples of natural monopoly occur in industries such as utilities and telecommunications, which rely heavily on infrastructure. Commentators have also observed FMIs, as infrastructures themselves, to be natural monopolies.[120] For clearinghouses in particular, marginal costs decrease when the intermediary grows, due to its ability to perform two significant trading functions: *netting* and *compression*.

Netting occurs when a clearinghouse offsets member positions. If, for instance, member A owes member B $1 million on a trade, member B owes member C $1 million on another trade, and member C owes member A $2 million on a third trade, a clearinghouse can net all three trades into one clean result: member C owes member A $1 million. Accordingly, member A and member B may not have to post additional margin, or collateral, on these trades. Overall, the margin that members must post to trade diminishes, since the clearinghouse can tap more positions to offset against one another.[121]

Compression, also known as trade "tear ups," is the replacement of a large trade with a set of smaller trades.[122] The fundamental benchmark of a derivatives trade is its notional amount—or the face amount of the contract which acts as the basis for exchange of payments. By way of illustration, if the counterparties to a $5 million (notional) trade have offsetting positions, a clearinghouse can compress the trade by replacing it with a trade whose notional is $1

119 ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS 123–24 (The MIT Press 1988) (1971).

120 *See, e.g.*, Thanh Tu Nguyen, EC Antitrust Law in Payment Card Systems 13–14 (Mar. 8, 2003) (unpublished master thesis, Lund University), http://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=1554679&fileOId=1563407 [https://perma.cc/J7UE-PY5S].

121 For a nuanced analysis of netting, see Roe, *supra* note 27, at 1660–62.

122 *See* INT'L SWAPS & DERIVATIVES ASS'N, INTEREST RATE SWAPS COMPRESSION: A PROGRESS REPORT 2 (2012).

million.[123] The counterparties benefit because the payments they exchange with one another diminish—for example, if one counterparty owes the other 20% of the notional, that payment will be $200,000 under the compressed trade ($1 million notional), as opposed to $1 million under the original trade ($5 million notional). Regulators favor compression because it lowers the notional amounts floating in the derivatives markets, thereby lowering the exposure of trading counterparties.[124]

Due to the network effects of established clearinghouses, potential competitors find it very difficult to penetrate the clearing markets. This pattern has been seen with other FMIs; indeed, the history of payment systems reveals that network effects can quickly propel an early-mover FMI into a dominant one.[125] As an established FMI grows, it becomes increasingly cheaper for the FMI to serve existing customers and attract new ones. Marginal cost decreases because the network attracts customers.[126] This trait is even more pronounced with nontraditional infrastructures such as a clearinghouse; hard infrastructures, such as roads and

123 *See id.*

124 *See triReduce Portfolio Compression: Optimizing Leverage Ratios and Reducing Risk*, TRIOPTIMA http://www.trioptima.com/uploading_images/pdf/triReduce%20EU.pdf [https://perma.cc/6GRB-7MLU].

125 *See, e.g.*, Wolkoff & Werner, *supra* note 85, at 313–14 (futures clearinghouses); DOJ COMMENT, *supra* note 28 at 10 (futures clearinghouses); Nandini Sukumar & Matthew Leising, *LCH.Clearnet in Talks to Buy Nasdaq's Rate Clearinghouse*, BLOOMBERG NEWS (Apr. 24, 2012, 10:24 AM), http://www.bloomberg.com/news/articles/2012-04-24/lch-clearnet-in-discussion-to-buy-nasdaq-s-rate-clearinghouse [https://perma.cc/E884-XQPU] (IRS clearinghouse); Adam J. Levitin, *Priceless? The Economic Costs of Credit Card Merchant Restraints*, 55 UCLA L. Rev. 1321, 1327 (2008) (credit cards); Publication of an Undertaking: Case No IV/36.120 – La Poste/SWIFT + GUF, 1997 O.J. (C335) 3, 4 (EC) (SWIFT).

126 *See* LEE, *supra* note 118, at 71–72 (illustrating the interplay of network effects, economies of scale, and switching costs in the market power of one type of FMI).

telephone networks, face capacity issues,[127] but FMIs do not tend to become congested. An established clearinghouse can also fend off potential competitors because members of the incumbent clearinghouse can trade so cheaply, due to netting and compression.

2. Defining the Market

This Subsection defines the upstream clearing markets for two types of OTC derivatives—IRS[128] and CDS.[129] They are the paradigmatic OTC derivatives, traded in sophisticated markets directly affected by the Dodd-Frank central clearing mandate.[130] During the second half of 2015, IRS comprised roughly 58.6% of all OTC derivatives; IRS are the largest subset of interest rate derivatives, which occupy 80.0% of the OTC derivatives market.[131] CDS occupy roughly 2.3% of the OTC derivatives market.[132]

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127 *See* BRETT M. FRISCHMANN, INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES 3–4 (2012).

128 IRS are derivatives where the referent asset is the fluctuation of interest rates. For instance, assume that a borrower takes out a loan at a rate of LIBOR plus 3%, at a time when LIBOR is hovering around 2%. LIBOR fluctuates up and down. To manage the volatility, the borrower (whom we'll call "Buyer") purchases an IRS from a financial institution (whom we'll call "Seller"), pursuant to which Buyer pays Seller a fixed interest rate of 5% on Buyer's loan, and Seller pays Buyer the variable interest rate of LIBOR plus 3%.

129 CDS are derivatives whose referent asset is the potential default on another obligation. Assume that a borrower takes out a loan from a bank. To hedge against the possibility of the borrower's default, the bank (whom we'll call "Buyer") might purchase a CDS from a financial institution ("Seller"), pursuant to which Seller will pay Buyer the face amount of the borrower's loan in the event that the borrower defaults.

130 *See* INT'L SWAPS & DERIVATIVES ASS'N, SWAPS INFO 2014 YEAR IN REVIEW (2015) [hereinafter ISDA, 2014 YEAR IN REVIEW]; *Financial Reform Dodd-Frank Central Clearing*, GOLDMAN SACHS (2012), http://www.goldmansachs.com/gsam/worldwide/insights/FinReg/clearing-fact-sheet-2.pdf [https://perma.cc/L93Q-H5LR].

131 *See Semiannual OTC Derivatives Statistics*, BANK FOR INT'L SETTLEMENTS, tbl. D5 (2016), http://www.bis.org/statistics/derstats.htm

Traditionally, market power analysis begins with market definition. It is axiomatic that market power is a firm's ability to increase profits by reducing output and charging a supracompetitive price for its products.[133] Mathematically, market power can be expressed as a relationship between price and marginal cost, where the larger the markup of price over marginal cost, the greater the firm's market power.[134] Alternatively, market power can be expressed as an inverse relationship with the firm's elasticity of demand.[135] However, marginal cost and elasticity of demand are notoriously difficult to pin down, so quantifying market power usually defaults to the surrogate of (i) defining the relevant market and then (ii) measuring the market share of the scrutinized firms.[136]

Customarily, market definition unfolds in two parts: the relevant product market and the relevant geographical market.[137] The product market is calibrated to the smallest grouping of sales where the elasticities of demand and supply are low enough that a monopolist controlling the grouping could reduce output and increase price

[https://perma.cc/Q7RB-SW3J] (follow link to "Foreign exchange, interest rate, equity linked contracts" for the "H2 2015" statistics). IRS are the bulk of interest rate derivatives (75.2%). Other types of interest rate derivatives include forward rate agreements and options. *See id.*

132 *See id.* (follow link to "Commodity contracts, credit default swaps" for the "H2 2015" statistics) [https://perma.cc/Q5JM-YV5P].

133 HOVENKAMP, *supra* note 34, § 3.1.

134 This is the Lerner index: $L = (P - MC)/P$, where P denotes price and MC marginal cost. *See* Landes & Posner, *supra* note 108, at 939–41; Kaplow, *Why (Ever) Define Markets?*, *supra* note 36, at 445–46.

135 $L = -1/E_d$, where E_d is the firm's demand curve. Kaplow, *Why (Ever) Define Markets?*, *supra* note 36, at 446.

136 *See id.* at 446–48. Of course, measuring market share is a tricky endeavor. Its predicate step of market definition is prone to ambiguity, and its value as an approximation for market power has come under fire time after time. *See supra* note 108.

137 *See* HOVENKAMP, *supra* note 34, § 3.1d, at 92.

substantially above marginal cost.[138] The definition of the relevant geographical market unfolds along similar lines.[139]

Derivatives markets complicate market definition in several ways. First, clearing markets tend toward amalgamation, while the underlying products remain non-fungible. This tension is one of the fundamental challenges to the central clearing mandate because non-fungible products are difficult to clear.[140] Second, evidence suggests that the IRS and CDS markets are fragmenting along geographic lines.[141] The implications of these two trends will be discussed in turn.

By nature, clearing markets gravitate toward one naturally monopolistic provider. For example, a dominant clearinghouse of IRS can harness its network effects to maintain dominance over the market.[142] By contrast, the underlying products—the derivatives themselves—might be highly customized. Derivatives are often designed and sold as customized products; buyers of derivatives for hedging purposes want products tailored to a narrow risk profile, while buyers for speculative purposes want to bet on a narrow set of circumstances.[143] Either way, these

138 *Id*. at § 3.2, at 92. Over time, this grouping has acquired the shorthand SSNIP: "small but significant and nontransitory increase in price." *Id.* at § 3.2, at 93 n.2.

139 Market definition arguably accounts for the geographical market in a much more rigorous way than do alternative theories. *See* Louis Kaplow, *The Accuracy of Traditional Market Power Analysis and a Direct Adjustment Alternative*, 95 HARV. L. REV. 1817, 1835–45 (1982); Landes & Posner, *supra* note 108, at 963–71.

140 *See* CFTC Roundtable, *supra* note 22, at 49 (statement of Bill Hill, Morgan Stanley) (distinguishing between the clearing of a liquid, easy-to-value single-name CDS based on a corporate obligation versus the clearing of an illiquid, difficult-to-value single-name CDS based on sovereign debt).

141 *See infra* note 154 and accompanying text.

142 *See supra* note 120 and accompanying text; *see also* Darrell Duffie & Haoxiang Zhu, *Does a Central Clearing Counterparty Reduce Counterparty Risk?*, 1 REV. ASSET PRICING STUD. 74, 76 (2011).

143 For instance, the referent in a CDS might be whether a certain entity (e.g., a sovereign country or a large corporation) defaults on an

transactions are intricately customized and inimitable trades.

The customization of derivatives products is salient not just for the trading market, where these products are sold; the consequences of customization also spill over to the adjacent clearing market. Some IRS and CDS are simply too unique to be cleared.[144] Hence, in circumscribing a relevant product market, we must exclude unclearable derivatives. Other types of uncleared derivatives, too, should be excluded.[145]

i. Clearing of Interest Rate Swaps

For IRS clearing, the relevant product market is most appropriately defined as *the entire worldwide market for cleared IRS*. Unclearable IRS, as well as IRS trades exempt from the clearing mandate, are therefore excluded. An alternative that defines the product market as *all* cleared IRS is too broad, since a clearinghouse cannot functionally guarantee trades in unclearable products and need not guarantee trades between counterparties exempt from the

obligation. This would be a "single-name" CDS. Alternatively, the referent might be whether a group of entities defaults on an obligation (a "multiple-name" CDS).

144 *See* INT'L SWAPS & DERIVATIVES ASS'N, INTEREST RATE SWAPS DERIVATIVES: A PROGRESS REPORT ON CLEARING AND COMPRESSION (2014) [hereinafter ISDA, INTEREST RATE DERIVATIVES]; ISDA, 2014 YEAR IN REVIEW, *supra* note 130. This is despite the fact that clearinghouses are a standardizing force on the derivatives markets. The clearing functionality demands fungibility in derivatives instruments. If a member defaults on a trade, the clearinghouse auctions off that member's positions; "unwinding" the trade substitutes the defaulting counterparty with an altogether unaffiliated party. *See* CFTC Roundtable, *supra* note 22, at 44 (statement of Bill Hill, Morgan Stanley).

145 "Unclearable" is not the same as "uncleared." *Unclearable* trades cannot be handled by clearinghouses, while *uncleared* trades might be clearable but for some reason are not cleared—for instance, trades that are exempt from the central clearing mandate. Organizations that tabulate clearing volumes often switch between the two terms.

clearing mandate. Similarly, defining the market as the clearing of one specific type of IRS is too narrow.

The worldwide market definition should be fairly uncontroversial; it has been adopted by the few academics and industry groups that have sifted through the data necessary to calculate market shares.[146] However, several factors can complicate data analysis. Organizations compile data to varying levels of granularity.[147] Further, some organizations, such as the Bank for International Settlements ("BIS"), will double-count cleared derivatives.[148] In other words, BIS counts a trade between clearinghouse members A and B as (i) one trade between party A and the clearinghouse-guarantor and, separately, (ii) one trade between party B and the clearinghouse-guarantor (see Figure 1). Given these parameters, another approach is to focus on the statistics compiled by one organization while noting its methodological limitations.

In 2014, ISDA undertook an analysis of the interest rate derivatives clearing market that accounted for trade compression and uncleared and unclearable products.[149] According to ISDA's calculations, the resulting upstream clearing market for interest rate derivatives was

146 *See* ISDA, INTEREST RATE DERIVATIVES, *supra* note 144, at 2; Lin & Surti, *supra* note 35, at 37–39. ISDA and Lin & Surti have combed through data compiled by DTCC, Markit, TriOptima, and BIS, all of which track notionals slightly differently.

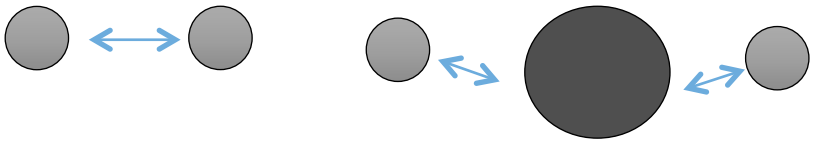
147 *See* ISDA, INTEREST RATE DERIVATIVES, *supra* note 144, at 3 n.1 (discussing its methodology, as well as the approaches of BIS and DTCC).

148 *See* MONETARY & ECON. DEP'T, BANK FOR INT'L SETTLEMENTS, OTC DERIVATIVES STATISTICS AT END-DECEMBER 2014, 11, 18 tbl.4 n.1 (2015), http://www.bis.org/publ/otc_hy1504.pdf [https://perma.cc/K74U-8TH4] [hereinafter BIS, 2014 OTC DERIVATIVES STATISTICS].

149 *See* ISDA, INTEREST RATE DERIVATIVES, *supra* note 144, at 2–5. To be precise, however, it must be noted that ISDA assessed the market for interest rate derivatives, which are primarily (but not entirely) comprised of IRS.

approximately $404 trillion in size as of June 30, 2013.[150] Adjusted for double-counting, the size of the cleared IRS market becomes $202 trillion.[151]

FIGURE 1: DOUBLE-COUNTING OF CLEARED TRADES



Left: One trade between two clearinghouse members.
Right: The same trade novated to the clearinghouse and then booked as two trades.

ii. Clearing of Credit Default Swaps

For CDS clearing, market definition is more protean. In the adjacent trading market, liquidity pools—i.e., trading activity—for most derivatives have been fracturing for some time, so instruments based on U.S. referents are traded primarily among U.S. dealers, and instruments based on European referents are traded primarily among European dealers. This trend is most pronounced in the IRS markets, where in fourth quarter 2014, 87.7% of Euro IRS transactions occurred exclusively between European dealers.[152] No comparable studies of market fragmentation

150 As of June 30, 2013, clearinghouses were handling approximately $404 trillion in interest rate derivatives. *Id.* at 3. Trade compression eliminated $239 trillion in notionals, resulting in $144–157 trillion in uncleared products, comprised of unclearable derivatives ($65 trillion), derivatives products denominated in currencies that cannot be cleared ($10 trillion), and transactions between entities exempt from the clearing mandates ($36 trillion). *Id.* at 3–4.

151 *Id.* at 3.

152 *See* INT'L SWAPS & DERIVATIVES ASS'N, CROSS-BORDER FRAGMENTATION OF GLOBAL DERIVATIVES: END-YEAR 2014 UPDATE 2–3

have been undertaken for the CDS markets; however, at present, there are two major clearinghouses for CDS, both operated by the Intercontinental Exchange ("ICE")—ICE Clear Credit, "the world's first dedicated CDS clearing house," and ICE Clear Europe, which serves the European CDS market.[153]

Fragmentation of the downstream *trading* market has not affected the upstream *clearing* of IRS. As the next Subsection shows, one giant clearinghouse, SwapClear, provides the lion's share of clearing services for the world's IRS trades. Yet the CDS clearing markets are serviced by two dominant providers, whose footprints are beginning to splinter along geographic lines.[154]

For now, there is still geographic overlap between the two ICE clearinghouses. Thus, this Article treats the global market for CDS clearing as one market rather than partitioning it into a U.S. market and a European market.[155] This approach yields a market that, in second quarter 2013,

(2015). As a counterpoint, however, fragmentation in the U.S. dollar IRS market is subtler. *See id*. at 9–10.

153 *Credit Derivatives*, INTERCONTINENTAL EXCH., https://www.theice.com/credit-derivatives [https://perma.cc/D46C-37UH] (last visited Dec. 31, 2016).

154 For products cleared by each entity, see *ICE Clear Credit*, INTERCONTINENTAL EXCH., https://www.theice.com/clear-credit [https://permacc/7FUJ-527W] (last visited Dec. 31, 2016) (follow the link to "CDS Cleared Contracts"); *ICE Clear Europe CDS*, INTERCONTINENTAL EXCH., https://www.theice.com/clear-europe/cds [https://perma.cc/M72W-GMCW] (last visited Dec. 31, 2016) (follow the link to "CDS Cleared Contracts").

155 This is the approach of Lin & Surti, *supra* note 35, at 8. Nonetheless, there are two other possibilities: (i) defining two clearing markets, corresponding to CDS based on U.S. versus European referents, and (ii) defining a submarket for European-based CDS within the broader market for all cleared CDS. Either alternative risks being criticized for prejudicing the ICE clearinghouses by rendering a finding of high market share (and, therefore, market power) inevitable. *See* Kaplow, *Why (Ever) Define Markets?*, *supra* note 36, at 440.

was $5.171 trillion in size.[156] Not adjusted for double counting, the figure becomes $10.342 trillion.[157]

3. Calculating Market Shares

In the IRS clearing market, one entity towers above all else: SwapClear, the IRS clearinghouse owned by LCH.Clearnet.[158] In 2013, SwapClear processed $391 trillion of the $404 trillion IRS clearing market (96.8%) (see Table 1).[159] By contrast, CME Group cleared $6 trillion (1.49%), and the Japan Securities Clearing Corporation ("JSCC") cleared $6.6 trillion (1.63%).[160]

156 Robust analysis of the CDS clearing market was, until recently, fairly difficult to come by. For one study breaking down the CDS market into cleared and uncleared segments, see DEPOSITORY TR. & CLEARING CORP., CENTRALLY CLEARED CREDIT TRADE ANALYSIS (2013), http://www.dtcc.com/repository-otc-data (follow link to "Centrally Cleared Credit Trade Analysis") [https://perma.cc/WJR3-M83H] (calculating new cleared trades at $5.171 trillion, or 27.38%, out of a total gross notional of $18.88 trillion). More recently, the CFTC and OCC have begun to break down the statistics for cleared and uncleared CDS. However, the CFTC's data are compiled from reports by four CFTC-registered swap data repositories ("SDRs") that, though large, do not account for all the SDRs in existence. *See Weekly Swaps Report: Explanatory Notes*, CFTC, http://www.cftc.gov/MarketReports/SwapsReports/ExplanatoryNotes/index.htm [https://perma.cc/MZQ7-THP4]. The OCC's data are compiled primarily from call reports filed by U.S. banks, savings associations, and financial holding companies. *See* OCC, 2016 Q1 REPORT, *supra* note 76, at 3. For consistency with the IRS clearing market analysis, this Subsection examines 2013 figures for the CDS clearing market.

157 DTCC adjusts for double counting. *See* DEPOSITORY TR. & CLEARING CORP., CENTRALLY CLEARED CREDIT TRADE ANALYSIS (2013), http://www.dtcc.com/repository-otc-data (follow link to "Explanation of Centrally Cleared Trade Analysis") [https://perma.cc/LFY9-56H4].

158 For a description of SwapClear's rise to prominence, see Natasha de Terán, *How the World's Largest Default Was Unravelled*, FIN. NEWS (Oct. 13, 2008), http://www.efinancialnews.com/story/2008-10-13/how-the-largest-default-was-unravelled [http://perma.cc/JB66-52TV].

159 ISDA, INTEREST RATE DERIVATIVES, *supra* note 144, at 3; Lin & Surti, *supra* note 35, at 8.

160 ISDA, INTEREST RATE DERIVATIVES, *supra* note 144, at 3.

In the CDS clearing market, ICE Clear Credit and ICE Clear Europe are the largest clearinghouses. ICE reported that these two clearinghouses cleared a combined $10.2 trillion in CDS trades in 2012 and $10.7 trillion in 2013.[161] This comports with the growth of the overall CDS trading and clearing markets from 2012 to 2013.[162] If we assume that, in second quarter 2013, the two ICE clearinghouses handled approximately $10.2 trillion in CDS trades,[163] then it becomes clear that these *two entities are the dominant providers, handling 98.6% of centrally cleared CDS trades ($10.342 trillion).*[164] Compared to the ICE clearinghouses, the other providers—CME CMDX in North America, Eurex Credit Clear and LCH.Clearnet SA in Europe, and JSCC and Tokyo Financial Exchange in Japan—are much smaller.[165]

161 INTERCONTINENTAL EXCH., 2014 ANNUAL REPORT 48 (2015), http://ir.theice.com/~/media/Files/I/Ice-IR/annual-reports/2014/ice-annual-report-2014.pdf [https://perma.cc/K9ZA-XED4].

162 *See* INT'L SWAPS & DERIVATIVES ASS'N, CDS MARKET SUMMARY: MARKET RISK TRANSACTION ACTIVITY 3 Chart 3 (2013) (tracing the growth of CDS new market activity from $15.0 trillion in 2012 to $17.3 trillion in 2013).

163 Trading in derivatives instruments fluctuates wildly. *See* Todd Skarecky, *CDS Clearing Data*, CLARUS FIN. TECH. (Apr. 14, 2015), http://www.clarusft.com/cds-clearing-data [https://perma.cc/PL8R-C7X5]. Data on CDS trading and clearing, therefore, can get murky at times, depending on the time period analyzed. Another variable is the extent to which ICE's figures double-count the CDS based on European referents which are cleared at both ICE Clear Credit and ICE Clear Europe.

164 *See supra* note 153 and accompanying text; Lin & Surti, *supra* note 35, at 8 ("[SwapClear and the two ICE clearinghouses] novate close-to-100 percent of centrally cleared derivatives trades in their respective markets.").

165 BIS, 2014 OTC DERIVATIVES STATISTICS, *supra* note 148, at 11 n.6.

TABLE 1: MARKET SHARES FOR THE DOMINANT IRS AND CDS CLEARINGHOUSES ("CHS")

Clearing Market	Notionals: All Cleared Trades	Dominant CH ("DCH")	Notionals Cleared in DCH	Market Share of DCH
IRS	$404 trillion	SwapClear	$391 trillion	96.8%
CDS	$10.342 trillion	ICE Clear Credit & ICE Clear Europe	$10.2 trillion	98.6%

The dominance of SwapClear, ICE Clear Credit, and ICE Clear Europe corroborates the hypothesis that clearinghouses are natural monopolies. By all estimates, the clearing markets for OTC derivatives are poised to grow as more trades fall into the scope of the central clearing mandate.[166] This trend will only strengthen the lock of SwapClear and ICE on market share; with time, these entities will enjoy greater revenue and be able to net even more trades.

However, for a conclusion of high market power, two other variables are relevant: the elasticity of consumer demand and the elasticity of rivals' supply.[167] Consideration of these two factors shows that the relationship between market share and market power is more nuanced than a straightforward tautology. Although difficult to measure directly, both sets of demand can be easily estimated as fairly inelastic. In the clearing markets, consumers (i.e., traders) must have their trading activities centrally cleared, with few exceptions.[168] Consumers cannot seamlessly switch between clearinghouses because network effects make it

166 *See, e.g.*, ISDA, 2014 YEAR IN REVIEW, *supra* note 130, at 3, 12.

167 *See* Landes & Posner, *supra* note 108, at 939–47.

168 Dodd-Frank includes exceptions for some end-users as well as hedging purposes. Critics have charged that these exceptions are large enough to frustrate the spirit behind the law. *See* Gina-Gail S. Fletcher, *Hazardous Hedging: The (Unacknowledged) Risks of Hedging with Credit Derivatives*, 33 REV. BANKING & FIN. L. 813, 855, 875–76 (2014); William F. Kroener III, *Dodd-Frank Financial Reform and Its Impact on the Banking Industry*, SS038 ALI-ABA 247, 260 (2010).

expensive to choose smaller providers. Thus, the elasticity of demand is low. Antitrust sometimes takes comfort in competition *for* a market, even if there is little competition *within* a market.[169] But regulation erects such high barriers to entry that the few insurgent firms managing to register as clearing organizations will have a difficult time wrenching away market share from incumbents.[170] Hence, the elasticity of supply is low. These patterns are consistent with our observations that the clearing markets are dominated by natural monopolies.

B. The Dealer Markets

1. Concentration and Oligopoly Characteristics

The downstream dealer market is characterized by a high degree of concentration among an oligopoly of four or five large dealers—who, incidentally, happen to be highly regulated banks and bank holding companies. In the United States, the Office of the Comptroller of the Currency ("OCC") publishes quarterly reports on bank derivatives positions.[171] These reports reveal that the same institutions always top the list: since 2000, JPMorgan Chase Bank, Citibank, and Bank of America (or their predecessors) have ranked among the largest five dealers.[172] Goldman Sachs Bank joined that

169 *See* HOVENKAMP, *supra* note 34, § 1.4b, at 34.

170 For the compliance obligations of derivatives clearing organizations, see Dodd-Frank Wall Street Reform & Consumer Protection Act Title VIII, 12 U.S.C. § 5461 et seq. (2015). *But see* Crane, *supra* note 37, at 34 (arguing that exclusion is most concerning not where entry barriers are high, but in a zone of middling power where entry barriers are surmountable absent anticompetitive conduct). Professor Crane's insight is more relevant to the dealer markets than the clearing markets.

171 *See Quarterly Report on Bank Derivatives Activities*, OFFICE OF THE COMPTROLLER OF THE CURRENCY, http://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/derivatives-quarterly-Report.html [https://perma.cc/DT6N-W3K7] (last visited Dec. 31, 2016).

172 *See, e.g.*, OCC, 2014 Q1 REPORT, *supra* note 35, at tbl.1; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK

list during the financial crisis.[173] In its first quarter 2016 report, the OCC noted that "[a] small group of large financial institutions continues to dominate derivative activity in the U.S. commercial banking system. During the first quarter of 2016, four large commercial banks [the above four] represented 91.0 percent of the total banking industry notional amounts."[174]

TRADING AND DERIVATIVES ACTIVITIES, FIRST QUARTER 2010 tbl.1 (2010), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq110.pdf [https://perma.cc/9SW5-C78H] [hereinafter OCC, 2010 Q1 REPORT]; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK DERIVATIVES ACTIVITIES, FIRST QUARTER 2006 tbl.1 (2006), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq106.pdf [https://perma.cc/RD8T-LZ4V]; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC BANK DERIVATIVES REPORT, FIRST QUARTER 2002 tbl.1 (2002), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq102.pdf [https://perma.cc/7HKR-WJZ3]; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC BANK DERIVATIVES REPORT, FIRST QUARTER 2000 tbl.1 (2000), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq100.pdf [https://perma.cc/SVE4-9NQ7].

173 *See, e.g.*, OCC, 2014 Q1 REPORT, *supra* note 35, at tbl.1; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, FIRST QUARTER 2013 tbl.1 (2013), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq113.pdf [https://perma.cc/87WY-FJ2J] [hereinafter OCC, 2013 Q1 REPORT]; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, FIRST QUARTER 2012 tbl.1 (2012), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq112.pdf [https://perma.cc/HS5S-R94B] [hereinafter OCC, 2012 Q1 REPORT]; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, FIRST QUARTER 2011 tbl.1 (2011), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq111.pdf [https://perma.cc/32XH-G2AZ] [hereinafter OCC, 2011 Q1 REPORT]; OCC 2010 Q1 REPORT, *supra* note 172, at tbl.1; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, FIRST QUARTER 2009 tbl.1 (2009), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq109.pdf [https://perma.cc/K8XA-G3Z4] [hereinafter OCC, 2009 Q1REPORT].

174 OCC, 2016 Q1 REPORT, *supra* note 76, at 3.

Facially, at least, a combined market share this high for the largest four dealers (the "four-firm concentration ratio" or "CR4") far exceeds commonly held thresholds for a tight oligopoly.[175] This degree of concentration confers to the top dealers the greatest cut of the lucrative derivatives trading revenues, which can reach $7–8 billion per quarter.[176] However, as the rest of this Subsection explores, concentration in the dealer markets is more complex than the CR4 would suggest.

Concentration has been alleged to be the consequence of central clearing—specifically, the control that dominant dealers exert over the indispensable facility of clearinghouses.[177] JPMorgan Chase, Citibank, Goldman Sachs Bank, and Bank of America are all members of SwapClear, ICE Clear Credit, and ICE Clear Europe.[178] If these institutions set high bars to clearinghouse membership, then rival dealers will be unable to gain entry[179]—a scenario that appears to be playing out because

175 *See, e.g.*, William G. Shepherd, *Concentration Ratios*, *in* 1 THE NEW PALGRAVE DICTIONARY OF ECONOMICS 563 (John Eatwell, Murray Mulgate & Peter Newman eds., 1st ed. 1987) (combined concentration ratio of 90%); DEP'T OF JUSTICE, 1968 MERGER GUIDELINES 6 (1968) (75%).

176 *See* OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, SECOND QUARTER 2015 graph 9 (2015), https://www.occ.treas.gov/topics/capital-markets/financial-markets/derivatives/dq215.pdf [https://perma.cc/H2KC-S8RY]. In recent years, trading revenues have comprised, on average, 10–13% of the gross revenues for the top four banks. *See id*. at graph 10. For Goldman Sachs, a bank with a long history of trading, revenues have reached as high as 65–71% of gross revenues. *See id*.

177 *See* U.S. DEP'T OF JUSTICE, *supra* note 104, § 763.

178 *See Our Clearing Members*, SWAPCLEAR, http://www.swapclear.com/service/our-members.html [https://perma.cc/6RE8-KD75] (last visited Dec. 31, 2016); *ICE Clear Credit Participant List*, INTERCONTINENTAL EXCHANGE, https://www.theice.com/clear-credit/participants [https://perma.cc/YQ8Y-FCMT] (last visited Dec. 31, 2016).

179 *See* Krattenmaker & Salop, *supra* note 45, at 224.

the membership profile of the dominant IRS and CDS clearinghouses has remained unchanged from year to year.[180]

It would be as if, returning to our prior analogy, the four dominant airlines set the access criteria for LAX so high as to exclude smaller airlines.[181] LAX is a labyrinthine infrastructure run nearly at cost by the issuance of bonds subject to voluminous disclosures.[182] Yet, it is also a bottleneck for air traffic into Los Angeles and can be manipulated to suppress competition in the airlines market, where the real revenues lie.[183]

Before charges of exclusion can be leveled, though, market power must be assessed. It turns out that market definition and the calculation of market shares are even trickier for the downstream dealer markets than for the upstream clearing markets. There are strong disagreements over whether the dealer markets truly are concentrated. From the OCC's viewpoint, a perennial four-firm oligopoly cornering over 90% of the trading market means that the market is concentrated.[184] However, ISDA, the derivatives dealer trade group, maintains that trading is a global market, and when dealer notionals are evaluated from a global perspective, concentration diminishes.[185] At the other end, the BIS gauges dealer concentration by slicing the market into discrete products—for example, IRS based on the U.S. dollar, Canadian dollar, euro, Swiss franc, Sterling,

180 *See infra* Section IV.A.

181 Coincidentally, air traffic through LAX is dominated by four carriers. *See* LOS ANGELES INTERNATIONAL AIRPORT TOP 10 CARRIERS, JANUARY 2015 THROUGH AUGUST 2015, L.A. WORLD AIRPORTS, http://www.lawa.org/uploadedfiles/LAX/statistics/aircarrier-2015.pdf [https://perma.cc/R3JY-G8H3].

182 *See Airport Basics*, L.A. WORLD AIRPORTS, http://www.lawa.org/ourLAX/ourLAX.aspx?id=9143 [https://perma.cc/JG5J-VER2] (last visited Dec. 31, 2016).

183 *Cf.* CFTC Roundtable, *supra* note 22, at 47 (statement of Jason Kastner, Vice Chairman, Swaps and Derivatives Markets Association).

184 *See supra* notes 170, 172, 174.

185 *See* Mengle, *supra* note 35, at 1–3, 5.

Swedish krona, and Japanese yen.[186] The result, counterintuitively, is that concentration is rather low.[187] Consistent with Professor Kaplow's analysis, both sides of the debate define the market in the way that best supports their respective arguments.[188]

Even if the market is concentrated, explanations for this result might vary. First, CDS dealers have historically been large, well-capitalized financial institutions because default on an underlying obligation can require the dealer to pay a substantial amount to close out the position.[189] Dealers hedge their positions by entering into offsetting swaps with other large, well-capitalized financial institutions—thereby consolidating the notionals, as well as the risks, within a small circle of big banks.[190]

Second, derivatives products, in particular IRS, may be purchased as a condition for obtaining a loan.[191] In lending to a borrower at a variable rate, a bank might ask that the borrower take out an IRS so as to mitigate the volatility of fluctuating rates and protect the bank's interest in the

186 *See* BIS, 2014 OTC DERIVATIVES STATISTICS, *supra* note 148, at 23 tbl.9a.

187 *See id*.

188 *See* Kaplow, *Why (Ever) Define Markets?*, *supra* note 36, at 470–74.

189 ROBERT E. LITAN, INITIATIVE ON BUS. & PUB. POLICY AT BROOKINGS, THE DERIVATIVES DEALERS' CLUB AND DERIVATIVES MARKETS REFORM: A GUIDE FOR POLICY MAKERS, CITIZENS AND OTHER INTERESTED PARTIES 28 (2010), https://www.brookings.edu/wp-content/uploads/2016/06/0407_derivatives_litan.pdf [https://perma.cc/V8P6-XL8W]. *See also* CDS Antitrust Litig. Markit Mem., *supra* note 95, at 5 (describing the "cliff risks" of CDS).

190 LITAN, *supra* note 189, at 28.

191 For empirical evidence on the prevalence of tying, see generally ASS'N OF FIN. PROF'LS, 2004 CREDIT ACCESS SURVEY: LINKING CORPORATE CREDIT TO THE AWARDING OF OTHER FINANCIAL SERVICES 4 (June 2004); CTR. FOR EUROPEAN POLICY STUDIES, TYING AND OTHER POTENTIALLY UNFAIR COMMERCIAL PRACTICES IN THE RETAIL FINANCIAL SERVICE SECTOR 12, 14–16 (2009), http://ec.europa.eu/finance/consultations/2010/tying/docs/report_en.pdf [https://perma.cc/YY87-3NJT].

underlying credit.[192] Coincidentally, three of the top derivatives dealers are also the nation's largest commercial banks: JPMorgan Chase, Bank of America, and Citibank.[193] This coincidence might be the result of decisions by borrowers to purchase swaps from well-capitalized dealers, or it might be attributed to the tying of swaps to loans—a requirement that the lender imposes upon the borrower to buy swaps from an affiliate of the lender.[194]

For our purposes, the above details affect how the market is defined to either validate or dispel claims of concentration. How broadly we draw the geographic and product markets affects our perspective on concentration. So, too, does how we account for the market shares of (i) large lending institutions that are smaller participants in the derivatives trading market and, conversely, (ii) large derivatives dealers that are smaller participants in the lending market. In defining the dealer market and then calculating the market shares, the remainder of this Subsection addresses these considerations.

2. Defining the Market

i. The Product Market

The easiest way to define the byzantine dealer market is to proceed, as above, with a straightforward analysis of the

192 *See* Anti-Tying Restrictions of Section 106 of the Bank Holding Company Act Amendments of 1970, 68 Fed. Reg. 52,024, 52,032 (Aug. 29, 2003).

193 *See* Statistical Release, FED. RESERVE BD., INSURED U.S.-CHARTERED COMMERCIAL BANKS THAT HAVE CONSOLIDATED ASSETS OF $300 MILLION OR MORE, RANKED BY CONSOLIDATED ASSETS, AS OF JUNE 30, 2015 (2015), http://www.federalreserve.gov/releases/lbr/20150630/lrg_bnk_lst.pdf [https://perma.cc/68WR-Q2MP].

194 If so, then commercial banks are leveraging their dominance in the lending market (where, these days, low interest rates constrict return on investment) into dominance in the dealer market (where the profits are much greater). *See* Felix B. Chang, *Death to Credit as Leverage: Using the Bank Anti-Tying Provision to Curb Financial Risk*, 9 NYU J. L. & BUS. 851, 903–05 (2013).

relevant product and geographic markets.[195] The central question in defining the product market is whether we look at the dealer market for all derivatives or whether we define the market around specific products. The OCC examines notional amounts for all derivatives, as well as futures (exchange-traded),[196] options (OTC and exchange-traded),[197] forwards (OTC),[198] spot foreign exchange,[199] swaps (OTC), and credit derivatives (OTC).[200] BIS breaks down the markets into even smaller slivers—e.g., IRS by referent currency.[201]

This Article opts to combine *all IRS into one market* and *all CDS into another market* so as to align with the product market definition for clearing services. In doing so, this Article uses OCC data on notional amounts for the "swaps" and "credit derivatives" categories, which correspond closely (but not perfectly) to IRS and CDS.[202] For the largest dealers,

195 *See supra* Section III.A.2.

196 A future is the *obligation* to buy or sell a position at a predetermined price (the "strike" price).

197 An option is the *right* to buy or sell a position when the value of that position attains the strike price. Options can either be exchange-traded or OTC.

198 Like futures, a forward is the obligation to buy or sell at a preordained strike price; however, forwards are customized and traded over-the-counter, rather than on exchanges.

199 A spot foreign exchange is a one-time foreign exchange (i.e., currency exchange) transaction between two parties.

200 OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.1.

201 *See* BIS, 2014 OTC DERIVATIVES STATISTICS, *supra* note 148, at tbl.9a.

202 The correspondence is imperfect because "swaps," as used by the OCC, is slightly broader than IRS. The OCC's figures for swaps are taken from call reports that group the figures for interest rate, foreign exchange, equity, commodity, and other swaps together. *See* FED. FIN. INSTS. EXAMINATION COUNCIL, INSTRUCTIONS FOR PREPARATION OF CONSOLIDATED REPORTS OF CONDITION AND INCOME, Item 14.e, at RC-L-17, http://www.ffiec.gov/pdf/ffiec_forms/ffiec031_034inst_200006.pdf [https://perma.cc/93JH-HLBE]. *See also* OCC, 2016 Q1 REPORT *supra* note 76, at 13–14.

IRS constitute 77.2–93.5% of swap notionals.[203] CDS make up 95.0% of all credit derivative notionals.[204]

Beyond antitrust, the tendency of financial regulators is to aggregate notionals for all derivatives products (exchange-traded and OTC) in order to generate an easy snapshot of derivatives notionals as compared to assets held. This snapshot helps regulators gauge the extent of leverage.[205] Yet this is too broad a perspective for our purposes.[206] Alternatively, it might make sense to define the product market around *all OTC derivatives*, since the dealers that dominate the IRS and CDS markets also dominate the OTC forwards and options markets.[207] Because clearinghouses have the capacity to net across different instruments—and will likely do so in the future—amalgamating all OTC derivatives into one market anticipates that shift in the upstream market.[208]

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203 *See* Citibank, N.A., CONSOLIDATED REPORTS OF CONDITION AND INCOME FOR A BANK WITH DOMESTIC AND FOREIGN OFFICES—FFIEC 031 44 (June 30, 2016) (Item 13, Schedule RC-L); JPMorgan Chase Bank, N.A., CONSOLIDATED REPORTS OF CONDITION AND INCOME FOR A BANK WITH DOMESTIC AND FOREIGN OFFICES—FFIEC 031 44 (June 30, 2016) (Item 13, Schedule RC-L); Bank of America, N.A., CONSOLIDATED REPORTS OF CONDITION AND INCOME FOR A BANK WITH DOMESTIC AND FOREIGN OFFICES—FFIEC 031 44 (June 30, 2016) (Item 13, Schedule RC-L); Goldman Sachs Bank USA, CONSOLIDATED REPORTS OF CONDITION AND INCOME FOR A BANK WITH DOMESTIC AND FOREIGN OFFICES—FFIEC 031 44 (June 30, 2016) (Item 13, Schedule RC-L) (all reports available at https://cdr.ffiec.gov/public/ManageFacsimiles.aspx). Note that these figures are taken from the call reports for the large commercial banks rather than bank holding companies. For the significance of the distinction between these two types of financial institutions, see *infra* notes 210–213 and accompanying text.

204 OCC, 2016 Q1 REPORT, *supra* note 76, at 13. For a breakdown by bank, see also *id.* at tbl.12.

205 *See, e.g.*, *id.* at tbl.1.

206 On the other hand, BIS defines the market *too* narrowly, by carving up IRS into referent products. *See supra* notes 186–187 and accompanying text.

207 *See* OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.1.

208 *See, e.g.*, Duffie & Zhu, *supra* note 142, at 90 (arguing that a universal clearinghouse which can net across assets maximizes netting

An ancillary question is whether the product market should track dealers which are commercial banks. Given that IRS and CDS might be tied to loans,[209] trading at the commercial banks would seem the appropriate benchmark. However, this Article argues that the market should be defined around the trading activities of bank holding companies ("BHCs"). A BHC is a company that owns or controls one or more banks;[210] the subsidiaries might be engaged in commercial lending, or they might be engaged in other activities, such as investing or selling insurance. Today, with tighter capital adequacy requirements for banks,[211] derivatives trading activity has migrated away from commercial banks and into the realm of other affiliates.[212] Notional amounts at the BHC level illustrate this movement.[213]

Although trading figures for commercial banks create the impression of a four-firm oligopoly,[214] the figures for BHCs reveal instead that *five* firms have cornered the dealer market: JPMorgan Chase, Citigroup, Goldman Sachs, Bank of America, and Morgan Stanley.[215] A five-firm oligopoly is more difficult to condemn than a four-firm one since

efficiency). At the very least, however, the demarcation between exchange-traded and OTC derivatives should be preserved because the clearing and trading of exchange-traded products is quite different. *See* Wolkoff & Werner, *supra* note 85.

209 *See supra* notes 191–194 and accompanying text.

210 *See* National Information Center, *All Institution Types Defined*, FED. FIN. INSTS. EXAMINATION COUNCIL, http://www.ffiec.gov/nicpubweb/Content/HELP/Institution%20Type%20Description.htm [https://perma.cc/P7RF-5BGB] (last visited Dec. 31, 2016).

211 *See* BASEL COMMITTEE ON BANKING SUPERVISION, BANK FOR INT'L SETTLEMENTS, BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS (2011).

212 *See* OCC, 2016 Q1 REPORT, *supra* note 76, at 4–5.

213 *Compare id.* at 4 tbl.1, *with id.* at 4 tbl.2 (revealing that derivatives notionals are typically higher at the BHC level than the commercial bank level for most institutions). *See also id.* at 5 fig.1.

214 *See id.* at tbl.1.

215 *See id*. at tbl.2.

exclusionary schemes will be harder to create and enforce among five players compared to four.[216] Nonetheless, this is the more accurate approach; as Section III.C demonstrates, clearinghouse membership rosters always include Morgan Stanley, in addition to affiliates of the large commercial banks. Morgan Stanley, like Goldman Sachs, had traditionally been an investment bank that, during the financial crisis, reorganized into a BHC with a commercial bank subsidiary to avail itself of federal funds.[217]

ii. The Geographic Market

This Article advocates carving out the United States as a standalone geographic derivatives market.[218] Derivatives dealers can trade across distances easily, but their consumers' preferences tend to be more local.[219] For example, the trading activities of HSBC North America Holdings, Inc. ("HSBC") reflect the localized nature of the dealer market. A subsidiary of the London-based HSBC Holdings plc, HSBC ranks sixth in its total derivatives notionals according to the

216 *See* Hemphill & Wu, *supra* note 6, at 1230 (stating that oligopoly size is important in determining the stability of parallel exclusion).

217 *See* Michael J. de la Merced et al., *As Goldman and Morgan Shift, a Wall St. Era Ends*, N.Y. TIMES: DEALBOOK (Sept. 21, 2008, 9:35 PM), http://dealbook.nytimes.com/2008/09/21/goldman-morgan-to-become-bank-holding-companies [https://perma.cc/T35A-HWTJ]. Today, Goldman Sachs and Morgan Stanley have diverged slightly in that most of Goldman Sachs' trading activities are undertaken at the commercial bank level, while most of Morgan Stanley's trading activities are conducted outside the commercial bank. *Compare* OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.1, *with id.* at tbl.2.

218 Clearing markets, by contrast, are global because netting can be performed rather effortlessly across borders; clearinghouses also draw members from large financial institutions around the world. *See infra* Section III.C.

219 For instance, a Dallas-based airline might purchase an oil swap from a Houston- or Chicago-based dealer; the dealer itself will hedge its exposure with one of the dominant U.S.-based dealers.

OCC.[220] While HSBC is a global player in the financial markets, especially in Europe and Asia, its position is far weaker in the United States. Indeed, affiliates of HSBC are members of every major clearinghouse,[221] but their market share within the United States cannot compare with the shares of the large U.S. dealers.[222] Thus, the dealer markets are most appropriately defined as *the overall market for IRS* and *the overall market for CDS*—or, alternatively, *all OTC derivatives—sold in the United States.*

Currently, the OCC's quarterly reports are the best source on the size of dealer markets. Relying on the OCC's methodology, however, is vulnerable to criticism because the OCC's methodology factors in the global trading activity of U.S. dealers and it fails to account for the U.S. trading activity of dealers domiciled outside the United States.[223] In the absence of data focusing solely on activity in the U.S. geographic market, we must contend with the OCC's numbers, along with all its drawbacks. Regarding the role of non-U.S. dealers, that concern is less powerful—consumers of derivatives products purchase from the providers in their local or national market. Further, if the tying of swaps to loans is prevalent,[224] then it is all the more likely that derivatives are sold by affiliates of the local or national lender.[225]

From the OCC's numbers, we can calculate the sizes of the dealer markets as approximately $139.603 trillion for

220 OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.2. HSBC's swaps notionals total $5.733 trillion, compared with $15.899 trillion for fifth-ranked Morgan Stanley, and HSBC's credit derivatives total $185 billion, compared with $1.412 trillion for fifth-ranked Morgan Stanley. *Id.*

221 *See infra* Section III.C.

222 *See* OCC, 2016 Q1 REPORT, *supra* note 76, at tbls.1 & 2.

223 Mengle, *supra* note 35, at 1–2.

224 *See supra* notes 191–194 and accompanying text.

225 *But see* Saule T. Omarova, *The Quiet Metamorphosis: How Derivatives Changed the "Business of Banking"*, 63 U. MIAMI L. REV. 1041, 1041–42 (2009) (chronicling how the OCC broadened the business of banking concept to cover dealing in financial risk).

swaps (i.e., IRS), $10.820 trillion for credit derivatives (i.e., CDS), and $225.316 trillion for all OTC derivatives (see Table 2).[226]

TABLE 2: ASSETS AND NOTIONAL AMOUNTS (IN MILLIONS OF DOLLARS) FOR SELECTED U.S. BANK HOLDING COMPANIES ("BHC") IN DESCENDING ORDER OF RANK[227]

BHC	Total Assets	Total Derivatives	OTC Swaps	OTC Credit Derivatives	All OTC Derivatives
1. Citigroup	1,800,967	55,624,082	30,518,526	2,081,895	47,833,660
2. JPMorgan Chase	2,423,808	52,352,138	29,019,815	3,136,988	49,946,925
3. Goldman Sachs	878,102	52,257,748	28,818,811	1,979,810	45,682,587
4. Bank of America	2,188,633	42,998,807	23,890,121	1,964,913	39,381,707
5. Morgan Stanley	807,497	28,281,106	15,899,169	1,412,322	25,456,239
6. HSBC NA	289,057	7,611,043	5,773,336	184,616	6,863,887
7. Wells Fargo	1,849,182	5,908,234	4,012,949	29,207	5,548,936
8. State Street	243,685	1,341,462	11,505	37	1,328,140
9. BNY Mellon	372,870	1,032,454	352,635	405	996,003
Top 25 BHCs Combined	14,116,151	250,182,837	139,602,766	10,819,542	225,316,150

226 OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.2. Importantly, these figures are not adjusted for double-counting from inter-dealer transactions. *See* Mengle, *supra* note 35, at 1. The OCC pulls these numbers from the call reports filed by banks and BHCs. Therefore, if Goldman Sachs and JPMorgan Chase have entered into a $10 million trade, the trade will be reported by both parties in their call reports, for a total of $20 million.

227 The figures are taken from OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.2. Dealers ranked 6–9 are included for comparative purposes.

3. Calculating Market Shares

Market shares at the BHC level show that a five-firm oligopoly has cornered well over 91% of the relevant markets (see Table 3).[228]

TABLE 3: MARKET SHARES FOR THE DOMINANT U.S. DEALERS

BHC (Top 5)	OTC Swaps	OTC Credit Derivatives	All OTC Derivatives
1. Citigroup	21.86%	19.24%	21.23%
2. JPMorgan Chase	20.79%	28.99%	22.17%
3. Goldman Sachs	20.64%	18.30%	20.27%
4. Bank of America	17.11%	18.16%	17.48%
5. Morgan Stanley	11.39%	13.05%	11.30%

But what do these market shares mean? Asked another way, what insights can we glean about market power from the fact that this much of the market belongs to the top five dealers? Without some archetype for appropriate market concentration, these numbers are meaningless.[229]

Fortunately, market share need not be assessed in a vacuum. Other factors demonstrate the market power that these five firms exercise.[230] As we shall see, there might be intense competition *within* the five-member oligopoly,[231] but

228 *Id.*

229 This is one of Professor Kaplow's most emphatic critiques of the market definition/market share paradigm. *See* Kaplow, *Why (Ever) Define Markets?*, *supra* note 36, at 459–62*; see also* Crane, *supra* note 37, at 35–39.

230 Context is important; a five-firm oligopoly in derivatives trading reflects different dynamics than a five-firm oligopoly in other industries. Antitrust devises tools such as anticompetitive effects and procompetitive justifications that inform this context.

231 *See* CDS Antitrust Litig. Dealer Joint Mot., *supra* note 94, at 28 ("[T]here are no factual allegations that the twelve dealer-defendants failed to compete with each other in their OTC trading of CDS (to the contrary, they compete fiercely).").

the oligopoly might nonetheless stifle competition from smaller dealers.

An analysis of market concentration can forecast the behavior of the five dealers. Decades ago, the prevailing measure of concentration was the four-firm concentration ratio ("CR4").[232] Measured at the BHC level, the CR4 is 80.40% for IRS, 84.69% for CDS, and 81.15% for all OTC derivatives.[233] These CR4s surpass the thresholds at which exacting scrutiny of mergers is triggered. A CR4 greater than 75% is ostensibly so high that a market is presumed to be conducive to coercion.[234]

The contemporary approach to market concentration is the Herfindahl-Hirschman Index ("HHI"), which is the sum of the squares of the market shares of all firms within a market. This measure accounts for "both the distribution of the market shares of the top four firms and the composition of the market outside the top four firms."[235] For the relevant dealer markets, the approximate HHIs are as follows: 1785 for IRS, 2049 for CDS, and 1803 for all OTC derivatives.[236] These numbers fall into the "moderately concentrated" range

232 HOVENKAMP, *supra* note 34, § 12.4a1, at 697–98.

233 *See supra* Table 3.

234 *See* HOVENKAMP, *supra* note 34, at 698 (noting that a vague consensus emerged that a CR4 exceeding 75% was conducive to coercion). On the other side, ISDA has measured the CR4 at 40.0% for interest rate derivatives, 40.8% for credit derivatives, and 39.5% for all derivatives. *See* Mengle, *supra* note 35, at 3. This is because ISDA insists that derivatives activity is global in nature and, thus, the market should be defined globally. *See id.* at 1–2. In doing so, global notionals are divided among roughly 14 dealers rather than five. *Id.* at n.2.

235 U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES § 1.5 (1992, rev 1997), https://www.ftc.gov/sites/default/files/attachments/merger-review/hmg.pdf [https://perma.cc/6FRH-2MAM] [hereinafter DOJ, 1992 HORIZONTAL MERGER GUIDELINES].

236 *See* OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.2. Note again that BIS has calculated much smaller numbers, due to its definition of the dealer market as global.

under today's Department of Justice ("DOJ") Merger Guidelines.[237]

It is difficult to determine whether the HHI or the CR4 is the better benchmark in this industry. The CR4 is a better predictor of collusion where the major players are similar in size, while the HHI better depicts a non-cooperative oligopoly where the major players differ in size.[238] The derivatives dealer market is somewhere in between: the largest five dealers are similar, but not identical in size, and each of the five is several times larger than all dealers outside the oligopoly. The slight differences within the group of five are likely not significant enough that any single dealer is the price leader; in fact, the order of the top four dealers has shifted from quarter to quarter.[239] Neither the HHI nor the CR4 alone fully portrays the dynamics of the dealer market, especially since each measure entails its own narrative—collusion for CR4 and non-cooperative oligopoly for HHI. On balance, though, because this Article focuses on parallel (that is, independent) exclusion, the HHI narrative is more fitting. However, *In re CDS Antitrust Litigation* shows that collusion is hardly beyond the pale for the large dealers.

An analysis of entry barriers also clarifies market share calculations. Unlike the clearing markets, the downstream dealer markets are not beset by large sunk costs and high regulatory barriers. Indeed, the OCC's quarterly reports show that a number of firms are active in the derivatives

237 In prior years, the threshold for high concentration was lower. *Compare* U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES, § 5.3 (2010), *with* DOJ, 1992 HORIZONTAL MERGER GUIDELINES, *supra* note 235, § 1.5.

238 HOVENKAMP, *supra* note 34, at 698–704.

239 *See, e.g.*, OCC, 2014 Q1 REPORT, *supra* note 35, at tbl.1; OCC, 2013 Q1 REPORT, *supra* note 173, at tbl.1; OCC, 2012 Q1 REPORT, *supra* note 173, at tbl.1; OCC, 2011 Q1 REPORT, *supra* note 173, at tbl.1; OCC 2010 Q1 REPORT, *supra* note 172, at tbl.1; OCC, 2009 Q1 REPORT, *supra* note 173, at tbl.1.

markets.[240] Yet this does not mean that these "moderately concentrated" markets, under the DOJ's HHI benchmark,[241] are beyond reproach. Far from it. Where a small group of firms enjoys "middling market power," exclusion is arguably of greater concern, since entry barriers are surmountable and anticompetitive conduct is required to keep rivals out.[242] The persistence of concentration—at the hands of the same dealers—therefore suggests that exclusion is at work.

Perennial dominance by the same firms therefore constitutes a third feature that helps interpret concentration in the dealer markets. An oligopoly's stability bespeaks exclusion.[243] As discussed in greater detail in the next Subsection, stability confirms that the dealer oligopoly's high market shares translate into—or are evidence of—substantial market power in a manner that enables exclusion.

The picture that emerges from the calculation of market shares, then, is one where competition is suppressed at the national level. The clearing markets for IRS and CDS might be global, but the trading markets are broken up into countries or regions, each dominated by a small circle of financial institutions that have an uncanny ability to maintain dominance regardless of market transformations.

C. Stability of the Dealer Oligopoly

Parallel exclusion requires a finding that there is sufficient market power to produce anticompetitive effects.[244] Simply noting that two complementary markets are

240 *See supra* note 236. Even beyond regulated banks and BHCs, there are hedge funds actively trading derivatives. *See, e.g.*, Gregory Zuckerman & Katy Burne, *'London Whale' Rattles Debt Market*, WALL ST. J. (Apr. 6, 2012 1:19 PM), http://www.wsj.com/articles/SB10001424052702303299604577326031119412436 [https://perma.cc/G74S-FK3F].

241 *See supra* note 237 and accompanying text.

242 *See* Crane, *supra* note 37, at 34, 52–54.

243 Hemphill & Wu, *supra* note 6, at 1222–26.

244 *Id.* at 1237.

concentrated is not enough to conclude that parallel exclusion is at work, much less pernicious exclusion whose anticompetitive effects outweigh its procompetitive justifications. For this reason, Professors Hemphill and Wu add another factor to the market power inquiry: the stability of the excluders.[245] Where the dominant players are few, exclusionary schemes are more likely to succeed.[246]

This intuition bears out in the derivatives markets, whose infrastructures are susceptible to capture by major dealers. It turns out that the major dealers drive clearinghouse membership and risk standards, and even when those standards change, clearinghouse membership profiles remain the same.[247] This stasis validates the intimations of market power from market share analysis. It also fits within a wider trend: the ingenuity of the dealer oligopoly at preserving dominance.

For years, the five large dealers have controlled trading in OTC derivatives. While their precise order within the oligopoly might have shifted from quarter to quarter, as a block they have pulled far ahead of all other dealers.[248] Thus, other than reorientation inside the oligopoly, no other dealer has managed to break *into* the oligopoly. In this respect, the evolution of the CDS dealer market is especially poignant. The top five dealers dominated this market before *In re CDS Antitrust Litigation* and during its proceedings; in the first two quarters following settlement, the results have not changed.[249] The membership rosters for ICE Clear Credit

245 *Id.* at 1237–38.

246 *Id.*

247 *See infra* notes 252–254 and accompanying text.

248 *See, e.g.*, *supra* notes 227, 239.

249 *Compare* OCC, 2012 Q1 REPORT, *supra* note 173, at tbl.2, *with* OCC, 2014 Q1 REPORT, *supra* note 35, at tbl.2. *See also* OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK TRADING AND DERIVATIVES ACTIVITIES, SECOND QUARTER 2016 tbl.2 (2016), https://www.occ.gov/topics/capital-markets/financial-markets/derivatives/dq216.pdf [https://perma.cc/SZ4S-K6WV]; OFFICE OF THE COMPTROLLER OF THE CURRENCY, OCC'S QUARTERLY REPORT ON BANK

and ICE Clear Europe, which are updated more frequently and which can serve as loose proxies for the headway of smaller dealers, barely changed before, during, and after the case.[250]

This pattern of stagnancy is replicated across the IRS and CDS clearinghouses. As Table 4 shows, there is a remarkable degree of correlation among the members of SwapClear, ICE Clear Credit, and ICE Clear Europe.[251] Affiliates of the major players in the U.S. dealer markets are all represented, along with Wells Fargo in some instances. The other members are drawn from large Canadian, European, and Japanese financial institutions.

TRADING AND DERIVATIVES ACTIVITIES, THIRD QUARTER 2016 tbl.2 (2016), https://www.occ.gov/topics/capital-markets/financial-markets/derivatives/dq316.pdf [https://perma.cc/V68X-RT3H].

250 *See infra* notes 257–259 and accompanying text.

251 On dangers of correlation, see *infra* Section IV.C and Roe, *supra* note 27, at 1677–78.

TABLE 4: CORRELATION AMONG LARGE MEMBERS OF THE MAJOR IRS AND CDS CLEARINGHOUSES[252]

Member	SwapClear[253]	ICE Clear Credit	ICE Clear Europe[254]
Bank of America [255]	X	X	X
Barclays	X	X	X
BNP Paribas	X	X	X
Citigroup	X	X	X
Credit Suisse	X	X	X
Deutsche Bank	X	X	X
Goldman Sachs	X	X	X
HSBC	X	X	X
JPMorgan	X	X	X
Morgan Stanley	X	X	X
Nomura	X	X	X
Société Générale	X	X	X
The Bank of Nova Scotia	X	X	
UBS	X	X	X
Wells Fargo	X	X	

252 *See* SWAPCLEAR, *Our Clearing Members*, *supra* note 178; INTERCONTINENTAL EXCHANGE, *Participants*, *supra* note 178; *ICE Clear Europe Membership*, INTERCONTINENTAL EXCHANGE, https://www.theice.com/clear-europe/membership#iceu-J [https://perma.cc/434K-J5B7] (last visited Dec. 31, 2016). This table consolidates affiliates of the members into one entry.

253 SwapClear has two lists: U.S.-Domiciled Service Members and a much larger group of Global Service Members. All the entries here are taken from the U.S.-domiciled member list, except Bank of America, HSBC, and The Bank of Nova Scotia, which appear under the global members list. *See* SWAPCLEAR, *Our Clearing Members*, *supra* note 178.

254 ICE Clear Europe's members trade in CDS and futures. This table includes only CDS traders. Among these entities, only Bank of America, Citi, JPMorgan, and Morgan Stanley are domiciled in the United States. The other members (e.g., Goldman Sachs) hold membership in the name of European affiliates. *See* INTERCONTINENTAL EXCHANGE*, ICE Clear Europe Membership*, *supra* note 252.

255 Merrill Lynch is counted as an affiliate of Bank of America.

The exclusive nature of clearinghouses was at issue in *In re CDS Antitrust Litigation*, where the plaintiffs alleged that even well-capitalized applicants could not break in as members.[256] Despite the settlement, the membership profiles today are virtually identical to the membership profiles when the case was pending. From June 2015 to February 2016, for instance, the only change to ICE Clear Credit was that The Royal Bank of Scotland pulled out.[257] During this time, ICE Clear Europe saw no change in its members who trade in CDS.[258] Among its U.S.-domiciled members, SwapClear saw no change either.[259]

This inertia is all the more astonishing given the strong regulatory pressure to loosen membership criteria. Since Dodd-Frank mandated central clearing for OTC derivatives, the Commodity Futures Trading Commission ("CFTC") and Securities and Exchange Commission ("SEC") have implemented rules aimed at tempering the likelihood that incumbent dealers would use clearinghouses to shut out insurgent dealers.[260] As a consequence, clearinghouse

256 *See In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112, at *5 (S.D.N.Y. Sept. 4, 2014). *See also* Story, *supra* note 88 (reporting that Bank of New York Mellon, MF Global, and State Street had been unable to gain admission to the CDS clearinghouses).

257 *See* INTERCONTINENTAL EXCHANGE, *Participants, supra* note 178 (archived pages from June, Aug., Oct., and Dec. 2015 and Feb. 2016) (on file with author). On a bi-monthly basis starting from June 2015, the author compiled and compared the membership rosters for the major IRS and CDS clearinghouses to memorialize the changes.

258 *See* INTERCONTINENTAL EXCHANGE, *ICE Clear Europe Membership, supra* note 252 (archived pages from June, Aug., Oct., and Dec. 2015 and Feb. 2016) (on file with author). ICE Clear Europe members who trade only in futures were excluded from this tally.

259 *See* SWAPCLEAR, *Our Clearing Members*, *supra* note 178 (archived pages from June, Aug., Oct., and Dec. 2015 and Feb. 2016) (on file with author). On the differences between SwapClear's U.S.-domiciled and global members, see *supra* notes 252–253.

260 *See, e.g.*, 17 C.F.R. § 39.12(a)(1) (2016) (product and participant eligibility); 17 C.F.R § 39.12(a)(2)(iii) (2016) (minimum capitalization requirement capped at $50 million).

membership requirements have changed dramatically; minimum capitalization requirements, for example, have gone from $1 trillion[261] to $100 million[262] to now $50 million.[263] It is telling, though, that in all this time, the membership profile of the major clearinghouses has hardly changed. If the members of the major clearinghouses are the same institutions that dominate trading, then clearinghouses are merely an artifice whose creation by regulators might have been well intended but whose operation has the unintended effect of cementing the dominant dealers' positions in the downstream markets.

The mechanisms that dominant dealers have deployed to protect their dominance are noteworthy. *In re CDS Antitrust Litigation* teaches that dealers had resorted to naked collusion to shut out their competitors. Dealer actions appear less interdependent now. Collectively, however, the major dealers continue to play an outsized role in setting clearinghouse risk standards. The Risk Committee of ICE Clear Credit, the clearinghouse at the center of the case, is comprised of 12 members, three of whom are independent members, and nine of whom are clearinghouse members. Presently, the nine insider-members are Bank of America, Barclays, BNP Paribas, Citi, Credit Suisse, Deutsche Bank, Goldman Sachs, JPMorgan, and Morgan Stanley.[264] Five of

261 Previously imposed by LCH.Clearnet. *See* TURING, *supra* note 118, at § 5.6(3); CFTC Roundtable, *supra* note 22, at 25–26 (statement of Jason Kastner, Vice Chairman, Swaps and Derivatives Markets Association).

262 *See* ICE CLEAR CREDIT, CLEARING RULES § 201(b)(ii) (2011) (on file with author). Previously, ICE Clear Credit's requirement was $5 billion in adjusted net capital. *See* MF Global Class Action Compl., *supra* note 99, at para. 66, 71.

263 *See, e.g.*, ICE CLEAR CREDIT, CLEARING RULES § 201(b)(ii) (Mar. 29, 2016), https://www.theice.com/publicdocs/clear_credit/ICE_Clear_Credit_Rules.pdf [https://perma.cc/UMW5-D4JH].

264 ICE CLEAR CREDIT, ICE CLEAR CREDIT REGULATION AND GOVERNANCE, 3 (Aug. 2015), https://www.theice.com/publicdocs/clear_credit/ICE_Clear_Credit_Regulation_and_Governance.pdf [https://perma.cc/X2DW-GWPW].

these are the major U.S. dealers; the other four are major European dealers. ICE Clear Credit's Risk Committee is reconstituted annually, but the primary criterion for membership on the committee is high Participation Activities, defined as aggregated volume of trades by notional amount.[265] Even though ICE Clear Credit has promulgated checks on the committee's authority,[266] the committee can shape margin requirements, member contributions to the guaranty fund, and, even more broadly, any "determination" that the clearinghouse makes pursuant to its own rules.[267]

If the nine dealer-members of ICE Clear Credit's risk management committee arrive independently at policies that frustrate the admission of otherwise qualified applicants, what then? For all the structural reforms imposed by financial regulators and the settlement of *In re CDS Antitrust Litigation*, such denials of access would delay the loosening of clearinghouse membership, thereby retaining the lock of large dealers on the downstream market as well as their cut of lucrative trading revenues for as long as possible. As the law stands on monopolization, no recourse is available.

Understandably, the major dealers *should* play some role in shaping clearinghouse policies since they bear the brunt of risk from derivatives trading.[268] After all, notionals are concentrated in the top dealers, who likely post more collateral and contribute more to the guaranty fund than

265 *See* ICE CLEAR CREDIT CLEARING RULE 503(a)(vi) ("Composition of the Risk Committee") (Mar. 29, 2016), https://www.theice.com/publicdocs/clear_credit/ICE_Clear_Credit_Rules.pdf [https://perma.cc/W9RX-29GM].

266 *See, e.g.*, *id.* at Rule 501 (stating that the ICE Clear Credit Board not obligated to abide by the Risk Committee's recommendations). ICE, too, is at the mercy of the dealers. Because dealers have cornered the lion's share of CDS notionals, ICE ensures long-term survival by aligning with the dealers more than it would by admitting more members.

267 *See id.* at Rules 502, 615.

268 *See* ICE CLEAR CREDIT REGULATION AND GOVERNANCE, *supra* note 264, at 2.

smaller dealers. Because clearinghouses work to mutualize risk, they must ensure that membership is restricted to well-capitalized and well-run institutions that can weather the shock of another member's default. It must also be conceded that the outsized role of large dealers in the downstream market is to be expected, given the risks associated with market-making for derivatives.[269] Yet those risks may have been attendant in the markets' early years; today, transparency from the indexing of IRS and CDS and the injection of liquidity from higher trading volumes have greatly mitigated those concerns.[270] As to the control over clearinghouses wielded by large dealers, it is altogether too easy for incumbent members to hide behind risk mitigation justifications for exclusionary practices.[271] More importantly, risk mutualization works best among diverse parties, so a one-dimensional clearinghouse membership profile can end up transmitting, rather than dissipating, systemic risk.[272]

Finally, the trends in the OTC derivatives markets at inception are less relevant today. How the large dealers behave now, in the face of market and regulatory transformations, can subject them to renewed antitrust scrutiny. The evidence above suggests that the dealers are

269 *In re* Credit Default Swaps Antitrust Litig., No. 13-MD-2476, 2014 WL 4379112, at *1–2 (S.D.N.Y. Sept. 4, 2014); CDS Antitrust Litig. Markit Mem., *supra* note 95, at 5–6.

270 *See In re Credit Default Swaps*, 2014 WL 4379112, at *1–2. IRS and CDS markets differ somewhat. IRS moved earlier toward index trading and central clearing than CDS. *See SwapClear History*, SWAPCLEAR, http://www.swapclear.com/why/swapclear-history.html [https://perma.cc/ZUU3-PDHB] (last visited Dec. 31, 2016); *Credit Derivatives*, *supra* note 153; MARKIT, MARKIT CREDIT INDICES: A PRIMER 7 (2008), https://www.markit.com/news/Credit%20Indices%20Primer.pdf [https://perma.cc/82YB-N5GT]. Whether as a result of these trends or not, SwapClear has more members than either of the ICE clearinghouses. *See supra* note 178. Of course, the IRS trading market is far larger, covering referent currencies around the world. *See* BIS, 2014 OTC DERIVATIVES STATISTICS, *supra* note 148, at 2–6.

271 Chang, *supra* note 14, at 85–86.

272 *See infra* Section IV.C.

acting to keep rivals out of the clearinghouses, albeit acting independently without coordination. The dealers certainly have the market power to do so, and the clearinghouses have the market power to facilitate exclusion.

The attention lavished by this Section upon the market definition/market share paradigm may seem unnecessary and even old-fashioned by today's standards. Over the last few decades, antitrust has become comfortable enough with inferring market power from anticompetitive effects that market definition/market share need not be the gauge of market power.[273] Nevertheless, this Article opts for the traditional approach (and, consequently, a long Section on market power) because the ultimate goal is different than a re-examination of market definition—it is to push Section 2 jurisprudence toward recognizing shared monopoly, so as to redress parallel exclusion. In the service of that goal, this Article aims to head off any criticism over the rigor of its analysis of market power. While market definition provides the ancillary benefit of highlighting blind spots in financial regulation,[274] its major benefit is to preempt the distracting arguments that would have flowed from going straight to anticompetitive effects.

IV. HARMS OF PARALLEL EXCLUSION

Plaintiffs cannot prevail against an exclusionary scheme unless the scheme's anticompetitive effects outweigh its enhanced efficiencies.[275] This Section evaluates the harms of parallel exclusion from three perspectives: competition (Section IV.A), consumers (Section IV.B), and systemic risk

273 *See, e.g.*, United States v. Microsoft Corp., 253 F.3d 34, 51 (D.C. Cir. 2001). *See also* Hemphill & Wu, *supra* note 6, at 1237 ("The status of monopoly power could be inferred from the effects of the conduct.").

274 For a summary, see *supra* notes 109–113 and accompanying text.

275 HOVENKAMP, *supra* note 34, § 5.4b2, at 298; Hemphill & Wu, *supra* note 6, at 1237–38.

(Section IV.C), and leaves the benefits and balancing to Section V.

Others have explored the effects of concentration in the derivatives markets.[276] Thus, this Section connects this Article to other scholarly trends. One trend is the burgeoning idea that competition and systemic risk are dueling interests, which is a variation of the old banking debate over whether competition enhances stability.[277] Another trend is a recent pivot to antitrust for solutions to problems in finance—for example, how financial intermediaries impede transparency and efficiency.[278] Channeling the malleability that scholars see in antitrust, this Section frames "harms" broadly so as to encompass not only anticompetitive effects but also negative effects on the health of the financial system.[279]

A. Harm to Competition

Exclusionary schemes harm competition. Under the theories of leveraging and foreclosure, the dominance of a firm in one market (e.g., an airport or a clearinghouse) can be parlayed into dominance in another market (commercial air traffic or derivatives trading) if there is sufficient nexus

276 *See, e.g.*, Chang, *supra* note 14, at 73; Greenberger, *supra* note 21, at 252; Litan, *supra* note 189, at 22; Turbeville, *supra* note 21, at 6.

277 *See* Thorsten Beck, Olivier De Jonghe & Glenn Schepens, *Bank Competition and Stability: Cross-Country Heterogeneity*, 22 J. FIN. INTERMEDIATION 218, 218–219 (2013); Iftekhar Hasan & Matej Marinc, *Should Competition Policy in Banking Be Amended During Crises? Lessons from the EU*, EUR. J.L. ECON. 295, 296, 308–17 (2013).

278 *See* Judge, *supra* note 77, at 626; *see also* Jonathan R. Macey & James P. Holdcroft, Jr., *Failure Is an Option: An Ersatz-Antitrust Approach to Financial Regulation*, 120 YALE L.J. 1368, 1403–08, 1417–18 (2011); Roberta S. Karmel, *Is the Public Utility Holding Company Act a Model for Breaking up the Banks that Are Too-Big-to-Fail?*, 62 HASTINGS L.J. 821, 827 (2011).

279 Of course, this proposition must contend with the antitrust injury standing requirement. *See infra* notes 324–327 and accompanying text.

between the two markets.[280] Leveraging and foreclosure work all the better if one market is controlled by a natural monopoly that is indispensable to an adjacent market, and the dominant firms in the adjacent market direct the natural monopoly.[281]

In derivatives markets, the anticompetitive effects of convergence in clearing and trading are not theoretical, but real. Contemporaneous with *In re CDS Antitrust Litigation*, the brokerage firm MF Global commenced an action against virtually the same set of defendants for cornering the CDS trading market by restricting access to ICE Clear Credit.[282] *In re CDS Antitrust Litigation* itself shows how large dealers allegedly forestalled the development of exchanges and alternative clearinghouses, innovations that would have moved the CDS market more quickly along its trajectory toward transparency and efficiency.[283]

Consolidation and settlement of the cases brought about certain reforms—for example, commitment by ICE to build an open-access, anonymous CDS trading platform similar to

280 *See* HOVENKAMP, *supra* note 34, at 348–49; Rey & Tirole, *supra* note 3, at 2153–58, 2194. For criticisms, see Richard S. Markovits, *Tie-ins, Reciprocity, and the Leverage Theory Part II: Tie-ins, Leverage, and the American Antitrust Laws*, 80 YALE L.J. 195 (1970); Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 929 (1979).

281 With a natural monopoly, market power in at least one market is assured. From this was borne the essential facilities doctrine. *See* Stephen M. Maurer & Suzanne Scotchmer, *The Essential Facilities Doctrine: The Lost Message of Terminal Railroad* 2–4 (UC Berkeley Pub. L Research Paper No. 2407071, 2014), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2407071 [https://perma.cc/4WNW-J5ZY]. Detractors of this doctrine are numerous and eminent. *See, e.g.*, Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 ANTITRUST L.J. 841, 841 (1990); HERBERT HOVENKAMP, THE ANTITRUST ENTERPRISE: PRINCIPLE AND EXECUTION 237 (2005); Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, L.L.P. 540 U.S. 398, 399 (2004).

282 See MF Global Complaint, *supra* note 99, at 1–3.

283 *See supra* text accompanying notes 83–88.

an exchange.[284] Fortuitously, the platform appears to replicate the exchange that the large dealers had driven to the ground, in a move that became the basis for suit.[285] On the surface, the new platform almost certainly spells the demise of dealer dominance—once the venture gets off the ground.[286] In a strange twist, however, the platform's success depends on widespread adoption of central clearing.[287] This is because central clearing provides independent assurance of creditworthiness, without which no trader would agree to transact with an anonymous counterparty.[288] Yet dominant dealers control ICE Clear Credit's risk committee, who are loath to see the platform take off. Even if it does succeed, the platform would only operate for one type of CDS, leaving more complex types of CDS still within the province of large dealers.[289]

It remains to be seen whether ICE Clear Credit's dealer-dominated risk committee will embrace the trading platform or instead find ways of obstructing and delaying the platform's implementation. If the latter transpires, then one casualty will be innovation. While denying rival dealers access to ICE Clear Credit inhibits competition in the dealer markets, blocking an alternate trading platform prevents a

284 As a result of settlement, ISDA also announced its intention to make its decision-making processes more inclusive. *See* Decl. of Darrell Duffie in Support of Pl.'s Mot. for Prelim. Approval of Settlement at para. 9, 13–14, *In re* Credit Default Swaps Antitrust Litig., No. 13-MD-02476, 2016 WL 2731524 at 2 (S.D.N.Y. Apr. 26, 2016), 2015 WL 6869070; Mike Kentz, *ICE Plans Single-name CDS Platform*, REUTERS (Aug. 31, 2015 1:48 PM), http://www.reuters.com/article/2015/08/31/markets-derivatives-cds-idUKL1N1161A520150831 [https://perma.cc/Z2PM-7G73].

285 *See supra* note 83 and accompanying text.

286 The platform is all-to-all and anonymous, which means that buyers and sellers transact with one another much like on an exchange, without having to go through the closed and opaque intermediary of dealers. *See* Kentz, *supra* note 284.

287 *See* Kentz, *supra* note 284.

288 *Id*.

289 That is, single-name CDS. *See id.*; *see also supra* note 143.

seismic transformation that could upend the dealer model altogether. Of course, innovation—in particular, disruptive innovation—is often a tradeoff for the stability of natural monopolies; where a natural monopoly facilitates parallel exclusion, innovation is sure to suffer alongside price.[290]

Competition and innovation can be ethereal concepts. To crystallize the harms of parallel exclusion, we must also identify *who* is harmed. The vast majority of derivatives dealers are not members of SwapClear, ICE Clear Credit, or ICE Clear Europe.[291] This includes State Street and Bank of New York ("BNY") Mellon, the eighth and ninth largest BHCs, respectively, as well as predecessors of the sizeable brokerage firms MF Global and Newedge, all of whom previously failed to join ICE Clear Credit.[292] Exclusion from the clearinghouses primarily harms this set of dealers by suppressing their trade revenues; they can satisfy the

290 On parallel exclusion's capacity to harm price and innovation, see Hemphill & Wu, *supra* note 6, at 1185, 1210–12.

291 *See* SWAPCLEAR, *Our Clearing Members*, *supra* note 178; INTERCONTINENTAL EXCHANGE, *Participants*, *supra* note 178; INTERCONTINENTAL EXCHANGE, *ICE Clear Europe Membership*, *supra* note 252. Citi, Goldman Sachs, JPMorgan, Bank of America, and Morgan Stanley are members of all three clearinghouses. Affiliates of HSBC are as well, but HSBC is a financial conglomerate headquartered outside the United States. Wells Fargo, however, is a U.S.-based entity that, anomalously, belongs to SwapClear and ICE Clear Credit. But Wells Fargo is also a traditional commercial bank—and a goliath at that. Its commercial bank subsidiary is the fourth largest in the United States, with assets of well over $1 trillion. *See* OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.1. Perhaps its forays into the IRS and CDS markets are the result of leveraging (by way of tying) that dominance as a purveyor of credit.

292 *See* Story, *supra* note 88. MF Global would eventually sue the large dealers before going defunct. *See* MF Global Complaint, *supra* note 99, at 1. Newedge, having merged into Société Générale, is on SwapClear. *See* Daniel P. Collins, *New Day for Newedge, Or Should We Say SocGen?*, Futures Mag. (July 11, 2014) http://www.futuresmag.com/2014/07/11/new-day-newedge-or-should-we-say-socgen [https://perma.cc/R3R5-5UJC]; SWAPCLEAR, *Our Clearing Members*, *supra* note 178.

central clearing mandate only by paying to access clearinghouses through the current members.[293]

Focusing on competitors skews our impression of the stakes, though, as a fight between trillionaires and billionaires. Each of the five dominant dealers holds just under or well over $1 trillion in assets, while State Street and BNY Mellon wield hundreds of billions.[294] This is, in reductionist terms, a conflict between big banks and colossal banks, or hedge funds and colossal banks, in which neither side tends to arouse sympathies. For this reason, the remainder of the Section examines the effects of parallel exclusion on consumers and systemic risk, so as to paint a more holistic picture. It is also helpful to bear in mind the ultimate detriments of distorted competition: higher prices and less innovation.[295]

B. Harm to Consumers

Parallel exclusion in derivatives markets both inflates prices for financial products and reduces their availability.[296] Consequently, end-users of derivatives must pay more or

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293 In the first quarter of 2016 alone, the top four commercial banks generated a combined $2.815 billion in trading revenue from interest rate positions (over 91.7% of revenues for the entire market) and $305 million from credit positions (over 91.3%). *See* OCC, 2016 Q1 REPORT, *supra* note 76, at tbl.7.

294 *Id.* Again, Wells Fargo is an outlier: as the lone trillionaire which holds membership to some clearinghouses but is not active in derivatives trading, its bread and butter is lending.

295 On this point, the maxim that "antitrust protects competition, not competitors" is helpful. *See* Brown Shoe Co. v. United States, 370 U.S. 294, 320 (1962). This has been taken to mean, among other things, that injury to "'a single competitor, standing alone, does not prove [the] anticompetitive effect' necessary to establish antitrust injury." HCI Technologies, Inc. v. Avaya, Inc., 241 F. App'x 115, 123 (4th Cir. 2007) (quoting Military Servs. Realty, Inc. v. Realty Consultants of Va., 823 F.2d 829, 832 (4th Cir. 1987)).

296 *See* Louis Kaplow, *An Economic Approach to Price Fixing*, 77 ANTITRUST L.J. 343, 353–55 (2011).

forego hedging options altogether.[297] Thus, customers bear a higher cost.

Because existing literature has already examined these possibilities for the derivatives markets,[298] this Section canvasses them below. In short, this line of analysis unfolds according to traditional antitrust principles, which hold that exclusion constricts consumption by raising prices.[299]

By countering exclusion and price inflation, the law spurs increased consumption of financial instruments whose valuations can fluctuate wildly.[300] Such a prospect might be unsettling given the history of scandals and crises associated with derivatives trading.[301] But then, antitrust is indifferent about the fallout of increased consumption.[302] Its balancing of harms and benefits tends to revolve around an economic vision of consumer welfare—specifically, whether consumers are paying supracompetitive prices.[303] In fact, where natural

297 *See* Story, *supra* note 88 ("Pension funds today use derivatives to hedge investments. States and cities use them to try to hold down borrowing costs. Airlines use them to secure steady fuel prices. Food companies use them to lock in prices of commodities like wheat or beef.").

298 *See* Chang, *supra* note 14, at 84–85.

299 In the context of parallel exclusion, see Hemphill & Wu, *supra* note 6, at 1210.

300 *See* Wilmarth, *supra* note 9, at 337–73.

301 Notable examples are Orange County, Jefferson County, the City of Detroit, Procter & Gamble, AIG, Lehman Brothers, and of course the financial crisis. *See* FRANK PARTNOY, INFECTIOUS GREED: HOW DECEIT AND RISK CORRUPTED THE FINANCIAL MARKETS 53-57, 115-22, (2003); Congressman Spencer T. Bachus, *Federal Policy Responses to the Predicament of Municipal Finance*, 40 CUMB. L. REV. 759 (2009); Henny Sender & Stephen Foley, *Details of Detroit's Troubles Come to Light*, FIN. TIMES (Jul. 25, 2013), https://www.ft.com/content/50a4250e-f53f-11e2-b4f8-00144feabdc0 [https://perma.cc/MVK3-F6SX]; FDIC, *The Orderly Liquidation of Lehman Brothers Holdings Inc. under the Dodd-Frank Act*, 5 FDIC Q. no. 2, 2011, https://www.fdic.gov/bank/analytical/quarterly/2011_vol5_2/lehman.pdf [https://perma.cc/3YH8-NSK7].

302 *See, e.g.*, Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209 (1993).

303 *See* John B. Kirkwood & Robert H. Lande, *The Fundamental Goal of Antitrust: Protecting Consumers, Not Increasing Efficiency*, 84 NOTRE

monopolies serve as gatekeepers to public goods, antitrust does not even care whether public goods are actually *good for the public*. Thus, curtailing parallel exclusion means that financial regulators must step up their game in protecting consumers.[304]

Concrete examples help to explicate this point. Today, Southwest Airlines is one of the four largest commercial air carriers in the country. However, Southwest began as a small carrier in Texas, operating purely intra-state to avoid federal regulation.[305] Two larger, federally regulated carriers sued to enjoin Southwest's operations but lost.[306] For passengers, Southwest has revolutionized air travel, in particular by eschewing the hub-and-spoke method of operation and introducing consumers to discount, no-frills airfare.[307] By comparison, the major IRS and CDS clearinghouses have yet to accommodate the entry of smaller, more nimble dealers who do not fit the profile of dominant dealers in the U.S. markets.[308] If more diverse

DAME L. REV. 191, 196 (2008) ("The primary goal of antitrust is to protect consumers from paying higher prices to firms that have unfairly gained or maintained market power.").

304 For one example of such protections, see 17 C.F.R. § 23.440(c) (2015); Business Conduct Standards for Swap Dealers and Major Swap Participants with Counterparties, 77 Fed. Reg. 9734, 9783 (Feb. 17, 2012). Of course, clearing and standardization of derivatives help as well, by ensuring that trades are adequately collateralized and products are not too illiquid or strange.

305 *See* Tex. Int'l Airlines, Inc. v. Civil Aeronautics Bd., 473 F.2d 1150, 1151 (D.C. Cir. 1972).

306 *Id.*

307 Other innovations include frequent flyer programs for customers and profit-sharing programs for employees. *See History of Southwest Airlines*, AVIATION ONLINE MAG., http://avstop.com/history/historyfairlines/southwest.html [https://perma.cc/4ETA-GR5Q].

308 That is, having approximately $1 trillion in assets, dominating across multiple types of derivatives, and having been a derivatives market-maker from the very beginning. *See* Katy Burne, *Citadel Makes Inroads into Swaps Arena*, WALL ST. J. (June 22, 2015 8:07 PM),

members are permitted to join, then price reductions and innovations for consumers will follow.

Of course, if that happens, then the current dealers are likely to pull back from the market. There are indications that this is beginning to happen. Deutsche Bank has apparently decided to forego trading in certain types of CDS.[309] Since 2008, CDS trading volumes have steadily declined.[310] As derivatives become less bespoke, they command a less supracompetitive premium.

C. Harm to Systemic Risk

Opening up the pool of clearinghouse members diversifies the dealer markets, which has the added benefit of dissipating risk. The risks associated with OTC derivatives are multifaceted and played a major role in the financial crisis.[311] Regulators proposed clearinghouses as one pathway to dissipate risk by having a pool of members mutualize, or share, the risk;[312] however, this process works best when clearinghouse membership is reasonably diverse.[313] In the dominant IRS and CDS clearinghouses, diversification has not happened yet because dealers have managed to exclude

http://www.wsj.com/articles/citadel-makes-inroads-into-swaps-arena-1434997210 [https://perma.cc/DJ4M-B95L].

309 *See* Stephanie Ruhle & Sridhar Natarajan, *Deutsche Bank Exits Credit Swaps Trades on Most Companies*, BLOOMBERG BUS. (Nov. 17, 2014 4:11 PM), http://www.bloomberg.com/news/articles/2014-11-17/deutsche-bank-exits-most-single-name-credit-default-swap-trading [https://perma.cc/4WEJ-VVHZ].

310 *See Credit Default Swaps Statistics Explorer*, BANK FOR INTERNATIONAL SETTLEMENTS http://stats.bis.org/statx/srs/tseries/OTC_DERIV/H.N.A.Y.A.A.A.5A.5J?t=d5.2&c=&p=20152&i=23.4 [https://perma.cc/29FJ-KQ32].

311 *See, e.g.*, FDIC, *The Orderly Liquidation of Lehman Brothers*, *supra* note 301.

312 CFTC, DCO General Provisions, *supra* note 28, at 69,415.

313 "Reasonably" because open access must still be balanced against a clearinghouse's prerogative to screen members for risk. *See* 17 C.F.R. § 39.12(a)(1)(i), (iii) (2016).

rivals, thereby perpetuating the concentration of both notionals and risk within a small circle.[314] Recognizing this propensity to exclusion, financial regulators have crafted rules governing clearinghouses that include mandating open access for dealers and restricting high capitalization requirements for members.[315] Tellingly, in announcing the promulgation of one set of rules, the CFTC suggested that concentration and systemic risk are intertwined and that if more firms join clearinghouses, both sets of concerns will diminish.[316]

Conflating concentration and systemic risk—and thereby intertwining antitrust and financial regulation—is not without precedent. Recently, corporate and finance legal scholars have proposed using antitrust to counter the self-entrenching impulse of financial intermediaries;[317] to set a threshold for liabilities that financial institutions can amass (so as to pre-empt public bailout and the too-big-to-fail phenomenon, or "TBTF");[318] to more precisely define TBTF by correlating it with monopoly power;[319] and to curtail systemic risk by preventing the tying of swaps to loans.[320]

Nevertheless, these are odd ways of conceptualizing antitrust. Just as antitrust does not care whether "public goods" are actually "good for the public," antitrust doctrine likely does not change to accommodate ancillary benefits that are far outside its traditional focus. In other words, before we can turn to antitrust for guidance, we must define

314 *See supra* note 277–278 and accompanying text.

315 *See* 17 C.F.R. § 39.12(a)(1), (a)(2)(iii) (2016).

316 *See* CFTC, DCO General Provisions, *supra* note 28, at 69,355 (stating that a $50 million capitalization requirement for members will increase the number of firms clearing swaps, which will make markets more competitive, increase liquidity, reduce concentration, and reduce systemic risk).

317 Judge, *supra* note 77, at 639.

318 Macey & Holdcroft, *supra* note 278, at 1374.

319 Sharon E. Foster, *Systemic Financial-Service Institutions and Monopoly Power*, 60 CATH. U. L. REV. 357, 359 (2011).

320 Chang, *supra* note 194.

the goals of antitrust, which is an endeavor rife with pitfalls and disagreement.

There is some consensus that consumer welfare is important.[321] Beyond economic goals, academics disagree intensely over whether antitrust accommodates social and political goals, such as dissipating the political power that concentrated industries wield.[322] All in all, financial stability and systemic risk seem to be too far beyond the scope of even liberal constructions of antitrust goals.[323]

Further complicating any attempt to synchronize competition and finance goals is the antitrust injury rule,[324] a requirement imposed upon private litigants to prove

321 Though, of course, the definition of consumer welfare varies wildly. *Cf.* ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 107–15 (1978); Kirkwood & Lande, *supra* note 303, at 196; Alan J. Meese, *Debunking the Purchaser Welfare Account of Section 2 of the Sherman Act: How Harvard Brought Us a Total Welfare Standard and Why We Should Keep It*, 85 N.Y.U. L. REV. 659, 660–61, 670–71 (2010).

322 *Cf.* David Millon, *The Sherman Act and the Balance of Power*, 61 S. CAL. L. REV. 1219, 1219–24 (1988); David W. Barnes, *Nonefficiency Goals in the Antitrust Law of Mergers*, 30 WM. & MARY L. REV. 787, 806, 809–28 (1989); Meese, *supra* note 321, at 664; ROBERT B. REICH, SAVING CAPITALISM: FOR THE MANY, NOT THE FEW 29–48 (2015).

323 On the imprecise correlation between antitrust and TBTF, see Adam J. Levitin, *In Defense of Bailouts*, 99 GEO. L.J. 435, 465 (2011) ("Restricting bigness may mitigate systemic risk, but doing so by no means eliminates it because systemic risk is not solely a function of size."); Barak Orbach & Grace Campbell Rebling, *The Antitrust Curse of Bigness*, 85 S. CAL. L. REV. 605, 651 (2012) ("[T]he antitrust methodology examines whether markets are functioning competitively, but it has no tools to explore whether a financial institution is too big or too systematically significant to fail.").

324 The rule is the last of a three-part inquiry, whereby plaintiffs must show (i) an injury, (ii) caused by the violation of antitrust laws, (iii) that qualifies as an antitrust injury. HOVENKAMP, *supra* note 34, § 16.3a1, at 808. *See also* Assoc. Gen. Contractors of Cal. v. Cal. State Council of Carpenters, 459 U.S. 519, 534 (1983) ("[C]ongress did not intend the antitrust laws to provide a remedy in damages for all injuries that might conceivably be traced to an antitrust violation.") (quoting Hawaii v. Standard Oil Co., 405 U.S. 251, 263 n.14 (1972)).

"injury of the type the antitrust laws were intended to prevent . . . ."[325] The antitrust injury rule has operated as a check on private antitrust actions for decades.[326] It was invoked in *In re CDS Antitrust Litigation* as well, though without success.[327]

The above realities mean that a dealer that is excluded from the IRS or CDS clearinghouses cannot invoke the concentration of systemic risk as an injury in itself. When it comes to the weighing of anticompetitive effects and enhanced efficiencies, systemic risk almost certainly plays no role. At most, plaintiffs can hope for a nod to systemic risk as one of a broad class of harms implicated by concentration in the dealer markets, which can—but need not necessarily—be considered by the court or regulator.

Current scholarly trends do give some hope to the possibility of accounting for systemic risk. While corporate and finance law scholars challenge their traditional paradigms, antitrust scholars are also undergoing introspection. Some question how competition policy could have permitted financial institutions to amass so much power.[328] Others question the relevance of antitrust if it cannot deal with the political and social fallout of concentration in the financial markets.[329] While curtailing systemic risk has no formal place in the current rubric of

325 Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc., 429 U.S. 477, 489 (1977) ("The injury should reflect the anticompetitive effect either of the violation or of anticompetitive acts made possible by the violation.").

326 *See, e.g.*, Assoc. Gen. Contractors, 459 U.S. at 519; Cargill, Inc. v. Monfort of Colo., Inc., 479 U.S. 104, 113 (1986).

327 No. 13-MD-2476, 2014 WL 4379112, at *7 (Sept. 4, 2014).

328 *See* Alan Devlin, *Antitrust in an Era of Market Failure*, 33 HARV. J.L. & PUB. POL'Y 557, 558–60 (2010).

329 Maurice E. Stucke, *Reconsidering Antitrust's Goals*, 53 B.C. L. REV. 551, 624 (2012) ("Antitrust's current objectives of promoting consumer welfare and efficiency are poorly defined. . . . The quest distanced antitrust from important policy issues (such as systemic risk) and rendered antitrust less relevant. Consequently, now is the time to reconsider antitrust's political, social, and moral concerns.").

exclusion, it is drawing attention as a noteworthy consequence of more rigorous application of antitrust law.

V. OFFSETTING BENEFITS

This Section examines how the benefits of parallel exclusion offset, in whole or in part, any resulting harms to the derivatives markets. The Section begins conventionally, with enhanced efficiencies. For parity with this Article's comprehensive approach to harms, this Section also evaluates the argument that narrowing the pool of dealers and clearinghouse members mitigates risk. Finally, this Section provides a framework for balancing.

A. Enhanced Efficiencies

Dealer control over clearinghouses can minimize transaction costs and eliminate double markups—i.e., one set of fees being charged for clearing and another set for execution (trading).[330] This argument is most pertinent to vertically integrated clearinghouses, where the provider of execution services actually owns the clearinghouse. In such instances, the derivatives consumer need only transact once—with the market-maker, who can then procure clearing without having to undergo another round of bargaining. This saves the consumer the trouble of independently searching out a clearinghouse, as well as incurring separate fees for clearing.[331]

Clearing and execution are apt for integration because the services complement each other so well: unless an exception applies, a trade cannot be fully executed without being cleared. Bringing both spheres under common ownership minimizes the impulse of each constituent

330 Craig Pirrong, *Clearing Up Misconceptions on Clearing*, 31 REG. 22, 25 (2008).

331 *See id.* at 24–25.

provider to inflate its prices and externalize the impact of markups to the complementary provider.[332]

Technically, however, IRS and CDS clearinghouses are not vertically integrated. SwapClear is owned and operated by a subsidiary of LCH.Clearnet Group Ltd., a U.K. company.[333] LCH.Clearnet Group is majority owned (57%) by the London Stock Exchange Group, with the remainder owned by its members and other exchanges.[334] ICE Clear Credit and ICE Clear Europe are owned and operated by ICE; these entities, too, are not majority-owned by the downstream dealers.[335] To be sure, vertical integration does abound in the derivatives world, particularly for exchange-traded products.[336] With OTC IRS and CDS, however, the

332 *See id.* at 25.

333 *See SwapClear History*, *supra* note 270; *Company Structure*, LCH.CLEARNET, http://www.lchclearnet.com/en/about-us/company-structure [https://perma.cc/Q6VV-JS9J] (last visited Dec. 31, 2016).

334 *About Us*, LCH.CLEARNET, http://www.lchclearnet.com/en/about-us [https://perma.cc/9CKC-QDQ4] (last visited Dec. 31, 2016).

335 *See* Intercontinental Exch., Inc., Proxy Statement (Form 14A) 50 (Mar. 30, 2015). When ICE purchased The Clearing Corporation ("TCC") to launch its first CDS clearinghouse, *see supra* note 95, the venture was structured around a Cayman Islands exempted limited partnership with two classes of limited partners: one class of interests was held by ICE and its affiliates, and the other class of interests was held by shareholders of TCC, with profits split evenly between the two classes. *See* ICE & TCC, *Request for Exemption from Certain Provisions of the U.S. Securities Exchange Act of 1934 and the Securities Act of 1933 with Respect to Cleared Credit Default Swaps* 7 (Feb. 26, 2009), https://www.sec.gov/rules/exorders/2009/ice-trust-exreq.pdf [https://perma.cc/U3FB-ZRDR]. The TCC shareholders were affiliates of Bank of America, Barclays, Citi, Credit Suisse, Creditext Group, Deutsche Bank, GFInet Inc., Goldman Sachs, ICAP Securities, LabMorgan Corp., Markit, MF Global, Morgan Stanley, UBS, and U.S. Exchange Holdings, Inc. *Id.* at 9 n.9.

336 CME Group, for instance, owns and operates proprietary clearinghouses that only clear products sold on CME exchanges. For criticisms, see U.S. DEP'T OF JUSTICE, COMMENTS BEFORE THE DEP'T OF THE TREASURY, *supra* note 28, at 10–11. In Europe, clearing and execution silos dot the derivatives landscape. For criticisms, see Mike Reece, *Competition or Consolidation?: The Outlook for Interoperability Among European*

upstream and downstream markets coalesce not by common ownership, but by the control that downstream players exert as members of the upstream facility. Thus, the mechanisms of exclusion proceed slightly differently.[337]

In theory, then, because clearinghouses are not majority-owned by dealers, customers cannot automatically avoid extra transaction costs and double markups. The majority owners of clearinghouses may well decide to pursue supracompetitive pricing. Yet transactional and pricing efficiencies still hold in practice because the major dealers, as clearinghouse members, will have negotiated ex ante for clearing services and factored clearing prices into the overall cost of execution charged to end-users. Currently, the costs of clearing are fairly low and continue to decline.[338] This pricing

CCPs, THOUGHT (J.P. MORGAN) (May 1, 2012), https://www.jpmorgan.com/cm/BlobServer/Competition_or_Consolidation_The_Outlook_for_Interoperability_Among_European_CCPspdf.pdf?blobkey=id&blobwhere=1320549706572&blobheader=application/pdf&blobheadername1=Cache-Control&blobheadervalue1=private&blobcol=urldata&blobtable=MungoBlobs [https://perma.cc/NPK7-V9MX].

337 With parallel exclusion, a group of dealers are acting independently, rather than one exchange refusing to allow its clearinghouse to clear products on a rival exchange.

338 For the example of securities clearing by NSCC, see Crystal Bueno, *More Transparency on Clearing Costs*, DTCC CORPORATE NEWSLETTER (Aug. 2009), http://164.109.172.95/news/newsletters/dtcc/2009/aug/clearing_cost_transparency.php [https://perma.cc/XED2-JLZ9]. Similar pricing information is harder to obtain for the IRS and CDS clearinghouses, which have a shorter history. However, on efforts to increase transparency for the industry, see, for example, Stan Ivanov & Lee Underwood, *CDS Clearing at ICE: A Unique Methodology*, FUTURES INDUS., Nov. 2011, at 31, https://www.theice.com/publicdocs/clear_credit/FIA_magazine_CDS_risk_management_article.pdf [https://perma.cc/T562-KUQP]; Order Granting Temporary Exemptions under the Securities Exchange Act of 1934 in Connection with Request on Behalf of ICE Clear Europe Limited Related to Central Clearing of Credit Default Swaps, SEC Interpretive Letter, 2009 WL 10477350 17 (July 23, 2009), https://www.sec.gov/rules/exorders/2009/34-60372.pdf [https://perma.cc/U3FB-ZRDR] (pricing transparency a condition for relief for ICE Clear Europe from temporary registration).

structure may be less a result of vertical integration or dealer control than the clearing functionality itself. Clearing is a regulated process in a highly regulated industry.[339] If the industry were to charge excessive prices, then the central clearing mandate would be eviscerated, drawing even more intense regulatory scrutiny. The closest analog to the industry is, again, that of an infrastructure or public utility operating at close to cost (e.g., an airport); the fear of anticompetitive effects arises not so much from the utility itself but from the self-serving impulses of those who direct the utility, particularly if they also hold a dominant stake in an adjacent market (e.g., airlines).

B. Credit Risk Mitigation

An additional justification of exclusion, one based not on antitrust but on finance, is that restricting clearinghouse membership to large, well-capitalized institutions reduces counterparty credit risk—that is, the risk that one party to a trade might default.[340] After all, the charge of clearinghouses was to reduce systemic risk in the OTC derivatives markets, and keeping out smaller and riskier traders can help achieve that goal.[341] Clearinghouses therefore possess the prerogative to set risk standards.[342] Arguably, large dealers should steer this standard-setting process, since they best understand the risks not only of derivatives but also of diversifying the trading markets. As the dominant sellers of derivatives instruments and go-to institutions for offsetting derivatives positions, large dealers hold most of a market's derivatives notionals. In any given market, large dealers are ubiquitous counterparties. By extension, they also shoulder most of the market's credit risk. Rightfully, then, large

339 *See, e.g.*, Dodd-Frank Title VIII, 12 U.S.C. § 5461 (2015) *et seq*.

340 *See* Feder, *supra* note 17, at 689, 722–27.

341 *See* CFTC Roundtable, *supra* note 22, at 66–67 (comments of Roger Liddell, LCH ClearNet Group).

342 *See id*. at 15–16 (comments of Jonathan Short, ICE Trust U.S.).

dealers should play a significant role in setting clearinghouse standards.[343]

Prior to the central clearing mandate, credit risk and systemic risk were closely linked. Counterparties in an OTC derivatives trade had to bilaterally clear the trade, which meant that each side bore the risk that the other might not honor contractual obligations.[344] Because large dealers were directly connected to far more counterparties than smaller dealers, large dealers also assumed more credit risk. This degree of interconnectivity made large dealers systemically risky. For example, the bankruptcy of Lehman Brothers in 2008 jeopardized not only its multitude of trading counterparties but also the entire financial system.[345] Lehman's default on derivatives trades could have triggered those counterparties to default on other obligations.[346] Thus, Dodd-Frank not only created a system for the orderly liquidation of systemically significant financial institutions,[347] it also required derivatives trades to be centrally overseen and effectively guaranteed by clearinghouses.[348] With the central clearing mandate, lawmakers and regulators ostensibly prioritized credit risk

343 *See supra* note 265 and accompanying text.

344 For a nuanced comparison of bilateral and central clearing, see Zachary J. Gubler, *The Financial Innovation Process: Theory and Application*, 36 DEL. J. CORP. L. 55, 91–93 (2011).

345 *See* FDIC, *The Orderly Liquidation of Lehman Brothers*, *supra* note 301, at 1.

346 *See id.* at 8 ("A complex, systemic financial company can hold very large positions in qualified financial contracts, often involving numerous counterparties and back-to-back trades, some of which may be opaque and incompletely documented. A disorderly unwinding of such contracts . . . can have severe negative consequences for the financial company, its creditors, its counterparties, and the financial stability of the United States.").

347 12 U.S.C. § 5383, 5386, 5390 (2012).

348 *See* 7 U.S.C. § 2(h) (2012); 15 U.S.C. § 78c-3(a)(1) (2012); 15 U.S.C. § 8302(d)(1) (2012).

and systemic risk mitigation above all other concerns, including competition.

Caveats and counterarguments to the credit risk justification abound. The markets' embrace of standardization and transparency have alleviated some of the credit risk concerns.[349] The clearing functionality in particular has greatly reduced the credit risks borne by large dealers, who now novate their positions to clearinghouses.[350] Risk is best mitigated when dispersed across a diverse pool of members, but thus far, the IRS and CDS clearinghouses have not significantly opened up.[351] Ultimately, clearinghouses cede too much of their risk management discretion to entities clouded by strong incentives to keep trading and execution closed off to competitors.[352]

C. Weighing the Harms Against the Benefits

Given the multitude of issues implicated by parallel exclusion in derivatives markets, how should its harms be compared against its benefits? To prevent the balancing framework from becoming too unwieldy, the exclusion analysis could be restricted to traditional antitrust concerns such as anticompetitive effects, consumer welfare, and enhanced efficiencies.[353] Within this rubric, this Article asserts that the anticompetitive effects of parallel exclusion in derivatives markets, along with the harms to consumers, outweigh the efficiencies. The propensity of large dealers to sustain a wide bid/ask spread is too well-documented,[354] and the setbacks to innovation too significant,[355] to be offset by

349 *See supra* note 270 and accompanying text.

350 *See* 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, 65–66 (2011).

351 *See supra* notes 251–254 and 257–259 and accompanying text.

352 *See* Chang, *supra* note 14, at 97.

353 *See supra* notes 35, 55.

354 *See supra* Section II.B.

355 *See supra* Section IV.B.

efficiencies that rest upon dubious assumptions.[356] In sum, this scheme should not be permitted to continue.

What animates this Article, however, is the aim of infusing the exclusion rubric with an awareness of financial risk. To that end, this Section contemplated systemic risk exacerbation as a harm of parallel exclusion and credit risk mitigation as a benefit. Considered in tandem, systemic risk is exacerbated—by keeping clearinghouse membership closed and the dealer oligopoly impermeable—far more than credit risk mitigated by virtue of the same behavior. This tips the scales even more dramatically against parallel exclusion.

However, accounting for extra-antitrust concerns such as financial risk may further muddle an already confused framework. The assessment of market power has been fraught with controversy, and anticompetitive effects and efficiencies have been subjected to similarly intense debate over antitrust's objectives. Piling on financial risk will not simplify the enforcer's task of weighing the harms and the gains.[357] If anything, it vitiates an institutional design that has partitioned competition and financial stability as competences for antitrust and financial regulators, respectively.[358]

356 *See supra* notes 330–339 and accompanying text.

357 For an especially poignant description of the quandary, see RICHARD A. POSNER, REFLECTIONS ON JUDGING 6 (2013) ("What is reasonable or sensible will often depend on moral feelings, common sense, sympathies, and other ingredients of thought and feeling that can't readily be translated into a weighing of measurable consequences."). Due perhaps to the complexity of its substance, antitrust has had a history of obfuscating procedure. *See, e.g.*, Bell Atl. Corp. v. Twombly, 550 U.S. 544, 547–48 (2007) (pleadings); Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 576–77 (1986) (summary judgment).

358 The boundaries are somewhat fluid though. Financial regulators are empowered to consider the effects upon competition in their rulemaking. The literature on regulatory capture proffers antitrust as a countermeasure to wrest control from interested regulators.

The current institutional design need not be sacrosanct. The failure of both sets of regulators to head off the financial crisis suggests that the regulatory design is too rigid to anticipate and correct for its own blind spots.[359] This track record does not bode well for the OTC derivatives markets. Even if monopolization jurisprudence develops to the point of curtailing parallel exclusion, today's dominant dealers will exit the markets, and new hedging strategies will arise in the interstices between financial regulation and antitrust.[360] After all, derivatives themselves were innovations responding to the desire of end-users to transfer or modulate market risks in novel ways.[361]

Market definition, however, may offer a way of thwarting the possibility that new alternatives to derivatives will precipitate another crisis. Anticipating substitute products is a key part of market definition; antitrust regularly contends with competing narratives about substitutability and cross-elasticities in drawing the relevant market.[362] Financial regulators, however, are often slow to predict the unregulated spaces that regulated firms turn to.[363] By

359 For example, as traditional financial intermediaries faced heightened regulation, risk functions were outsourced to less regulated intermediaries in the capital markets. Charles K. Whitehead, *Reframing Financial Regulation*, 90 B.U. L. REV. 1, 16–20 (2010); Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity, and Systemic Risk*, 64 STAN. L. REV. 657, 665–67 (2012). Astonishingly, even where change has been slow and incremental, regulators have failed to exhibit the imagination necessary to rein in the unintended consequences. *See, e.g.*, Omarova, *supra* note 225, at 1041–42.

360 *See supra* note 309.

361 *See* Hu, *supra* note 17, at 1465–67.

362 *See* HOVENKAMP, *supra* note 34, § 3.2, at 110–18.

363 *See* Whitehead, *supra* note 359, at 5–7; Sung Eun (Summer) Kim, *Managing Regulatory Blindspots: A Case Study of Leveraged Loans*, 32 YALE J. ON REG. 89, 92 (2015). This, after all, is the source of the term "shadow banking." *See* Laura E. Kodres, *What Is Shadow Banking?*, FIN. & DEV., June 2013, at 42, 42 (citing Paul McCulley, Remarks at the Federal Reserve Bank of Kansas City's Economic Symposium (Sept. 5, 2007)).

plodding through a rigorous market definition/market share analysis for derivatives and their substitutes, regulators may be able to chase down the market-makers for new products and at least arrest the velocity with which unregulated markets expand.[364] This more nimble, functional approach can help regulators overcome their institutional predispositions to detect the trends linking disparate products and players.[365]

VI. CONCLUSION

One glaring deficiency of the traditional, "first-generation" approach toward monopolization is its insistence on anticompetitive conduct by a single firm. The inability of antitrust to recognize a "second generation" of monopolization harms from parallel exclusion consigns the OTC derivatives markets to a degree of concentration that imperils competition, consumers, and control over systemic risk.

The dominant derivatives dealers wield the market power to harm competition. Today, these dealers drive the standard-setting processes of derivatives clearinghouses, natural monopolies in the upstream market. Large dealers can independently decide to adopt risk guidelines that prevent their rivals from joining clearinghouses—which, due to the indispensability of the clearing function to trading, raises the rivals' costs. This is but the latest in a pattern of recidivist exclusion characterizing the dealer oligopoly. In the past, large dealers have resisted market and regulatory transformations by colluding to stifle innovations in both clearing and trading.

Market power in the clearing and trading markets is made manifest by a rigorous application of the traditional

364 More research must be done to flesh out how this might unfold.

365 *See* Robert C. Merton & Zvi Bodie, *Design of Financial Systems: Towards a Synthesis of Function and Structure*, J. INV. MGMT. First Quarter 2015, at 6, 20–21.

market definition/market share paradigm. For all its infirmities, this paradigm is useful as a way of illuminating blind spots in financial regulation. Of course, this blending of antitrust principles and financial regulation must contend with larger questions on institutional design and the goals of antitrust. This Article anticipates that addressing those issues can help slow the speeds at which financial complexity outpaces regulation.