Perpetuating Too Big To Fail: The Threat In Central Clearing

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Abstract

In the wake of the global financial crisis, U.S. legislators implemented ex-post recovery efforts through public recapitalization of insolvent investment firms that were deemed "too big to fail." Regulators now seek to take an ex-ante approach to address systemic risk. The principal response was to mandate most derivative contracts to transact through clearinghouses.

Central clearing is an effective means of mitigating dealer banks' systemic risk, but does so by shifting credit risk from financial institutions onto clearinghouses. This introduces new too big to fail institutions in the financial markets by creating greater concentrations of risk, however, regulators are optimistic that central clearing parties will be more effective then dealer banks in managing risk and absorbing losses. The efficiency of this mechanism is contingent on clearinghouses themselves remaining solvent. Thus, there is an increasing need to review the governance laws and regulations applicable to clearinghouses to ensure sufficient capitalization, establish appropriate operating standards, and commit to ex-post policy resolutions in the case of failure.

This paper suggests aligning the interests of the central clearing party with its members by structuring the clearinghouse such that a greater proportion of its risk resources are comprised of contributions from its members. With "skin in the game," members would have a greater incentive to monitor the clearinghouses' risk management practices, such as its collateral and margin policies. This would have the dual effect of reinforcing its line of defense to safeguard against bankruptcy and adequately restricting the clearinghouses from engaging in the excessively risky behavior that accompanies government protected institutions as a consequence of moral hazard.

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List of Abbreviations

CFTC – U.S Commodity Futures Trading Commission
SEC – U.S. Securities and Exchange Commission
Dodd-Frank – Dodd-Frank Wall Street Reform and Consumer Protection Act
Title VII – Title VII of the Dodd-Frank Wall Street Reform and Consumer Protection Act on Wall Street Transparency and Accountability
ISDA – International Swaps and Derivatives Association
OTC – Over-the-counter derivatives
CCP – Central counterparty clearinghouse
CFMA – Commodity Futures Modernization Act of 2000
AIG – American International Group, Inc.
FMU – Financial Market Utilities

List of Legal Codes Referenced

15 U.S. Code § 8302 – Review of regulatory authority
7 U.S. Code § 1a – Definitions
7 U.S. Code § 6s – Registration and regulation of swap dealers and major swap participants
15 U.S.C. § 78o-10(a) – Registration
7 U.S. Code § 2 – Jurisdiction of Commission; liability of principal for act of agent; Commodity Futures Trading Commission; transaction in interstate commerce
7 U.S. Code § 24a – Swap data repositories
15 U.S. Code § 78c–3 – Clearing for security-based swaps

CHAPTER 1: INTRODUCTION

The financial crisis of 2007-2008 was a global catastrophe, the most destructive economic event since the Great Depression.[1] Increasingly complex and interconnected markets allowed the epidemic to breach geographic and industry confines. When the housing bubble burst, securities tied to the real estate market plummeted.[2] The liquidity shortage led to lost investor confidence, tightened credit, plunging stock values across all asset classes, and a decline in international trade. This culminated in deteriorating economic growth worldwide[3] and ultimately contributed to the global recession and European sovereign-debt crisis.[4]

Governments were under pressure to forestall an impending depression. The United States responded by introducing an economic stimulus package through the American Recovery and Reinvestment Act of 2009,[5] adopting expansionary monetary policy to encourage economic growth,[6] and offering emergency recapitalization bailouts to many faltering investment firms.[7]

The causes of the crisis are multifaceted and complex, "and experts disagree on how much weight to give various explanations."[8] In their analysis of the anatomy of the collapse, the United States Senate Permanent Subcommittee on Investigations concluded, "the crisis was not a natural disaster, but the result of high risk, complex financial products, undisclosed conflicts of interest; and the failure of regulators, the credit rating agencies, and the market itself to rein in the excesses of Wall Street."[9] Governments' archaic regulatory practices had not evolved with the financial markets or "keep pace with financial innovation…"[10] In their final report, the

[1] Davies, H. (2010). *The financial crisis* (p. 1). Cambridge, UK: Polity Press.
[2] Simkovic, M. (2011). Competition and Crisis in Mortgage Securitization. *Papers.ssrn.com*. Retrieved 3 May 2014, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1924831
[3] International Monetary Fund,. (2009). World Economic Outlook. Retrieved 11 May 2014, from http://www.imf.org/external/pubs/ft/weo/2009/01/pdf/text.pdf
[4] Kolb, R. (2011). *Sovereign debt* (p. 389). Hoboken, NJ: Wiley.
[5] American Recovery and Reinvestment Act of 2009 (ARRA) (Public Law 111–5)
[6] Ciro, T. (2012). *The global financial crisis* (p. 103). Farnham, Surrey: Ashgate Pub.
[7] Ritholtz, B., & Task, A. (2009). *Bailout nation* (p. 203). Hoboken, N.J.: John Wiley & Sons.
[8] Chairman Ben S. Bernanke,. (2009). *Four Questions about the Financial Crisis*.
[9] Permanent Subcommittee on Investigations,.*Wall Street and the Financial Crisis: Anatomy of a Financial Collapse*.
[10] The White House,. (2008). *Declaration of the Summit on Financial Markets and the World Economy*.

Financial Crisis Inquiry Commission concurred, "widespread failures in financial regulation and supervision proved devastating to the stability of the nation's financial markets."[11]

The crisis exposed substantial gaps in regulation and elucidated that market participants did not have an appropriate incentive to effectively manage their own risks or disclose the extent of their exposures. Passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2011 represented the most comprehensive banking reform since the Great Depression and brought about a new era in financial regulation.[12]

Derivatives are conceived as a mechanism of systemic risk because they linked many of the financial institutions that collapsed during the crisis or were subsequently bailed out; as such, legislation is heavily focused on regulating this market.[13] CFTC Chairman Gary Gensler affirmed that the "Wall Street reform bill will – for the first time – bring comprehensive regulation to the swaps marketplace."[14] Many contracts are now provisionally required to transact through clearinghouses, large independent institutions that act as an intermediary between two contracting counterparties to guarantee the trade and absorb the losses if a party defaults on its obligations.[15]

Prior research has explored the concept of clearinghouses as too big to fail institutions,[16] considered whether these parties should receive emergency liquidity assistance,[17] and outlined

[11] The Financial Crisis Inquiry Commission,. (2011). *Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*.
[12] Skeel, D. (2011). *The new financial deal* (p. 1). Hoboken, N.J.: Wiley.
[13] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf
[14] Gensler, G. (2014). Dodd-Frank Act - CFTC. *Cftc.gov*. Retrieved 5 May 2014, from http://www.cftc.gov/lawregulation/doddfrankact/index.htm
[15] Law.cornell.edu. Dodd-Frank: Title VII - Wall Street Transparency and Accountability | Wex Legal Dictionary / Encyclopedia | LII / Legal Information Institute. Retrieved 22 May 2014, from http://www.law.cornell.edu/wex/dodd-frank_title_VII
[16] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf
[17] Chamorro-Courtland, C. (2012). The Trillion Dollar Question: Can a Central Bank Bail-Out a Central Counterparty (CCP) Clearing House which is 'Too Big To Fail'?. Retrieved from file:///Users/samanthaszabo/Downloads/SSRN-id1991295.pdf

bankruptcy reforms aimed to curb reliance on government intervention.[18] However, this research builds upon previous work with a greater focus on the governance laws and regulations applicable to clearinghouses to highlight potential deficiencies. Whether clearinghouses will be able to withstand competitive pressures, maintain sound operating standards, appropriately manage the risk exposures they undertake, and how policy will respond if they face imminent insolvency has not been adequately addressed. This field of interdisciplinary research encompasses subject matter from law and economics with an emphasis on capital markets and securities regulation and macroeconomic policy.

This paper opens by defining derivatives in Chapter 2 to introduce a discussion on their role in the financial crisis that instigated mandated central clearing. Chapter 3 justifies why clearinghouses are advantageous to dealer banks in managing risk and absorbing losses. This is juxtaposed with Chapter 4, which highlights the common criticisms of central clearing and argues that clearinghouses have concentrated risk to the degree that they are more systemically significant than their too big to fail predecessors. Finally, Chapter 5 offers suggestions to improve existing regulations and discusses the likely policy responses to recapitalizing an insolvent clearinghouse.

Ultimately, this research aims to explore the consequences of mandatory clearing and hypothesizes that the current regulatory architecture is inadequately prepared for a clearinghouse collapse and that further measures can be employed ex-ante to correct misaligned incentives in an effort to prevent future crises.

[18] Skeel, D. (2010). The New Financial Deal: Understanding the Dodd-Frank Act And its (Unintended) Consequences. *University Of Pennsylvania*. Retrieved from file:///Users/samanthaszabo/Downloads/SSRN-id1690979%20(1).pdf

CHAPTER 2: DEFINING DERIVATIVES AND THEIR ROLE IN THE FINANCIAL CRISIS

2.1 DEFINING DERIVATIVES

Derivatives have a reputation as "exotic, highly complex and specialized instruments" [19] of financial innovation, though they have been used for decades (in simple forms for centuries) and the basic concept behind them is rather intuitive. By definition, a derivative is a "contractual agreement to execute an exchange at some future date,"[20] the value of such contract is "derived from the performance of underlying market factors,"[21] such as a stock, index, interest rate, commodity price, or currency exchange rate.

Under the terms of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank), the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) must collaborate to jointly define key terms related to regulation (See 15 U.S.C. § 8302(d)(1)). Title VII of Dodd-Frank on Wall Street Transparency and Accountability (Title VII) specifically provides a framework for the regulation of "swaps" markets, however the definition is intended to be a catchall. It is atypical for an over-the-counter derivative not to be scoped in.[22][23]

Derivative trading exists mostly for speculating and hedging. Speculating acquires risk to increase expected returns, while hedging reduces risk and is an effective tool in risk management.[24] While derivatives have become synonymous with Wall Street, many industries

[19] Investopedia,. (2009). Introduction - CFA Level 1 | Investopedia. Retrieved 1 June 2014, from http://www.investopedia.com/exam-guide/cfa-level-1/derivatives/default.asp
[20] Whaley, R. (2007). *Derivatives: Markets, Valuation, and Risk Management* (p. 10). Hoboken, N.J.: Wiley.
[21] Occ.gov,. (2014). OCC: Derivatives. Retrieved 1 June 2014, from http://www.occ.gov/topics/capital-markets/financial-markets/trading/derivatives/index-derivatives.html
[22] Law.cornell.edu. Dodd-Frank: Title VII - Wall Street Transparency and Accountability | Wex Legal Dictionary / Encyclopedia | LII / Legal Information Institute. Retrieved 22 May 2014, from http://www.law.cornell.edu/wex/dodd-frank_title_VII
[23] Dhanji, T., & Royall, R. (2013). Dodd-Frank's Title VII — OTC derivatives reform. *Ernst & Young*. Retrieved from http://www.ey.com/Publication/vwLUAssets/Key_questions_board_members_should_ask_about_Title_VII/$FILE/Americas_FAAS_Dodd_Frank_derivatives_reform.pdf
[24] Whaley, R. (2007). *Derivatives: Markets, Valuation, and Risk Management* (p. 10). Hoboken, N.J.: Wiley.

such as farmers, auto manufacturers, and pension funds utilize these instruments to hedge their risks – for example, if crop values plummet, raw material prices spike, or interest rates fall.[25] A 2009 survey by the International Swaps and Derivatives Association (ISDA) found that 94% of the world's largest 500 companies from various sectors employ derivatives to manage business and financial risks[26] (See Figure 1).

Figure 1: Derivatives usage by the world's largest companies by sector

Source: Graph constructed from data provided by the IDSA News Release April 2009 (table below).

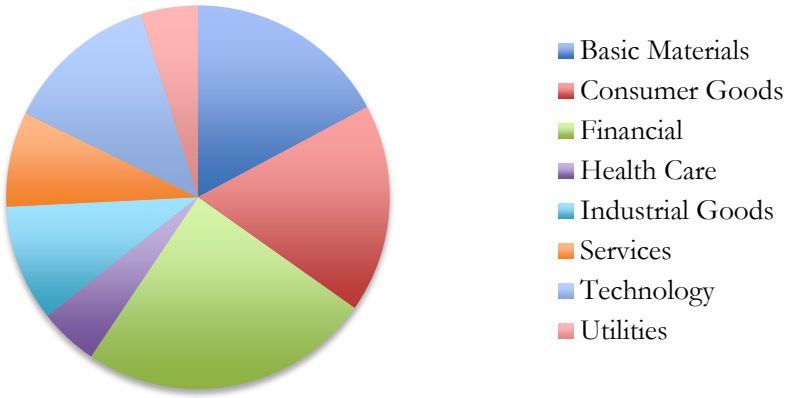


Table 1: Data of derivatives usage by the world's largest companies by sector

Sector Name	Total	% Using Derivatives	% Using Interest Rate	% Using Forex	% Using Commodity	% Using Credit	% Using Equity
Basic materials	86	97%	70%	85%	79%	0%	6%
Consumer goods	88	91%	81%	84%	39%	1%	9%
Financial	123	98%	94%	96%	63%	76%	80%
Health care	25	92%	80%	72%	8%	4%	20%
Industrial goods	49	92%	86%	86%	37%	2%	20%
Services	40	88%	75%	85%	35%	3%	13%
Technology	65	95%	86%	92%	15%	6%	15%
Utilities	24	92%	92%	88%	83%	0%	8%
Total	500	94%	83%	88%	49%	20%	29%

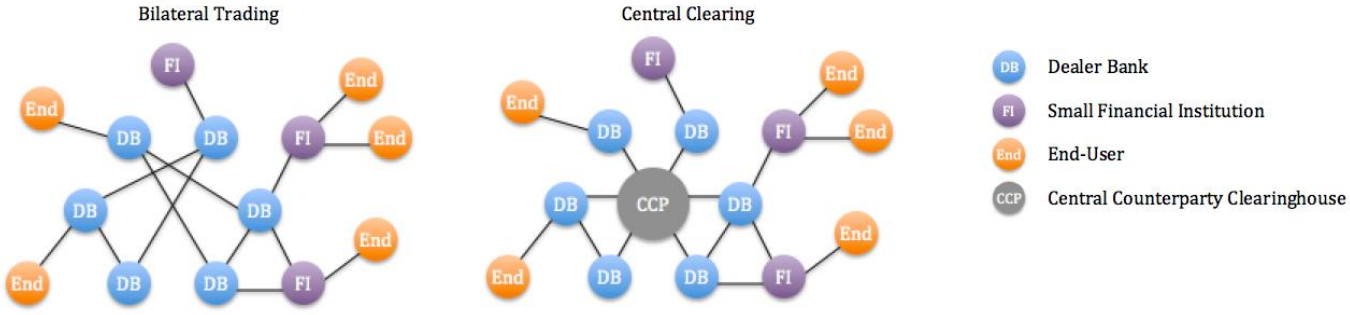
[25] Stevens, G. (2000). *After Taxes: Managing Personal Wealth 8th Edition* (1st ed. p. 102). Google e-book.
[26] Chisholm, A. (2010). *Derivatives demystified* (1st ed.). Chichester: Wiley.

2.2 DIFFERENTIATING OTC VS. CENTRALLY CLEARED

Derivatives fall under two headings: (1) over-the-counter (OTC) via a bilateral contract between two counterparties and (2) centrally cleared or exchange-traded on a regulated market.[27]

Derivatives that are highly customized and cannot be standardized are traded OTC where the terms and conditions of the agreement – such as initial collateral requirements, variation margins, and disclosure of material information about factors that may affect a party's exposure – can be privately negotiated to meet each counterparty's specific business needs.[28] In OTC transactions without a financial intermediary, each party individually assumes the default risk of its counterparty. However, since over-the-counter derivatives lack a formal exchange, end-users – generally firms that seek to hedge a specific risk – employ dealer banks to find a counterparty with whom to contract and then serve as an intermediary to facilitate the trade.[29] (see Figure 2 "Bilateral Trading") In this case, the dealer bank assumes significant credit risk, which if not managed effectively can result in their failure. This presents a significant risk to the system if the entity is highly interconnected, as exemplified in the 2007-2008 financial crisis.[30]

Figure 2: Bilateral trading vs. central clearing



[27] Grellan, O. (2008). Financial Derivatives, Villain or Scapegoat - Accountancy Ireland.*Accountancyireland.ie*. Retrieved 5 May 2014, from http://www.accountancyireland.ie/Archive/2008/December-2008/Financial-Derivatives-Villain-or-Scapegoat/

[28] Beier, R., & Brockwell, M. (2014). OTC Derivatives: Should all customized derivatives be standardized?.*PWC*. Retrieved 5 May 2014, from http://www.pwc.com/en_US/us/point-of-view/assets/PwC_PointofView_OTC.pdf

[29] Investopedia,. (2009). End Users and Dealers - CFA Level 1 | Investopedia. Retrieved 5 June 2014, from http://www.investopedia.com/exam-guide/cfa-level-1/derivatives/end-users-dealers.asp

[30] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf

Centralized clearing provides an alternative to dealer banks, but essentially functions in the same way. Through the legal process of novation, a central counterparty clearinghouse (CCP) interposes itself between two contracting parties, "becoming the buyer to every seller and the seller to every buyer and thereby ensuring the future performance of open contracts."[31] Rather than one bilateral agreement, it replaces the contract with two separate derivatives contracts, each with the clearinghouse (see Figure 2 "Central Clearing") to effectively alleviate the counterparties of any credit risk.

2.3 MARKET DEREGULATION

Prior to recent reform, derivatives were generally exempt from regulation. So as not to inhibit prudent risk management practices, legislators allowed these innovative financial products to operate relatively freely.[32] Federal Reserve Chairman Alan Greenspan argued for deregulation, "Those of us who support market capitalism in its more-competitive forms might argue that unfettered markets create a degree of wealth that fosters a more civilized existence."[33]

The Commodity Futures Modernization Act of 2000 (CFMA) exempted OTC swaps markets from CFTC and SEC oversight.[34] It explicitly prohibited the SEC from imposing reporting, recordkeeping, or disclosure requirements.[35] The opacity of the market made it difficult for both regulators and market participants to identify or quantify others' risk exposures.[36]

[31] Bank for International Settlements,. (2012). Capital requirements for bank exposures to central counterparties. Basel Committee On Banking Supervision. Retrieved from http://www.bis.org/publ/bcbs227.pdf
[32] Beier, R., & Brockwell, M. (2014). OTC Derivatives: Should all customized derivatives be standardized?.*PWC*. Retrieved 5 May 2014, from http://www.pwc.com/en_US/us/point-of-view/assets/PwC_PointofView_OTC.pdf
[33] Greenspan, A. (2002). Regulation, Innovation, and Wealth Creation. *The Federal Reserve Board*. Retrieved from http://www.federalreserve.gov/BoardDocs/Speeches/2002/200209252/default.htm
[34] Beier, R., & Brockwell, M. (2014). OTC Derivatives: Should all customized derivatives be standardized?.*PWC*. Retrieved 5 May 2014, from http://www.pwc.com/en_US/us/point-of-view/assets/PwC_PointofView_OTC.pdf
[35] Sec.gov,. (2014). Dodd-Frank Act Rulemaking: Derivatives. Retrieved 5 June 2014, from https://www.sec.gov/spotlight/dodd-frank/derivatives.shtml
[36] Grellan, O. (2008). Financial Derivatives, Villain or Scapegoat - Accountancy Ireland.*Accountancyireland.ie*. Retrieved 5 May 2014, from http://www.accountancyireland.ie/Archive/2008/December-2008/Financial-Derivatives-Villain-or-Scapegoat/

2.4 ROLE IN THE FINANCIAL CRISIS

The global financial meltdown was characterized by severe volatility in the capital markets resulting in contagion that spread across almost all asset classes.[37] Governments were under pressure to forestall an impending depression. The United States responded by introducing an economic stimulus package through the American Recovery and Reinvestment Act of 2009,[38] adopting expansionary monetary policy to encourage economic growth,[39] and offering emergency recapitalization bailouts to many faltering investment firms who had maintained highly leveraged speculative positions.[40] The U.S. government had to take control of one of the world's largest insurers, American Investment Group (AIG), who was collapsing from huge losses on its credit default swaps.[41]

Congress sought answers and assigned blame on greedy Wall Street investors and an opaque derivatives market for inadequate valuation practices, risk parameters, and risk management practices.[42] Over-the-counter derivatives in particular have been the focus of such criticism. Their weak regulation is believed to have exacerbated the crisis.[43]

[37] Grellan, O. (2008). Financial Derivatives, Villain or Scapegoat - Accountancy Ireland.*Accountancyireland.ie*. Retrieved 5 May 2014, from http://www.accountancyireland.ie/Archive/2008/December-2008/Financial-Derivatives-Villain-or-Scapegoat/

[38] American Recovery and Reinvestment Act of 2009 (ARRA) (Public Law 111–5)

[39] Ciro, T. (2012). *The global financial crisis* (p. 103). Farnham, Surrey: Ashgate Pub.

[40] Ritholtz, B., & Task, A. (2009). *Bailout nation* (p. 203). Hoboken, N.J.: John Wiley & Sons.

[41] Chisholm, A. (2010). *Derivatives demystified* (1st ed.). Chichester: Wiley.

[42] Grellan, O. (2008). Financial Derivatives, Villain or Scapegoat - Accountancy Ireland.*Accountancyireland.ie*. Retrieved 5 May 2014, from http://www.accountancyireland.ie/Archive/2008/December-2008/Financial-Derivatives-Villain-or-Scapegoat/

[43] Dhanji, T., & Royall, R. (2013). Dodd-Frank's Title VII — OTC derivatives reform. *Ernst & Young*. Retrieved from http://www.ey.com/Publication/vwLUAssets/Key_questions_board_members_should_ask_about_Title_VII/$FILE/Americas_FAAS_Dodd_Frank_derivatives_reform.pdf

2.5 POST-CRISIS REGULATION

The financial crisis elucidated that private actors lack the appropriate incentive to manage systemic risk and so it is necessary for regulators to intervene and enforce certain standards.[44] Ultimately, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Public Law 111-203) was signed into law on July 21, 2010 with the intention to:

> …promote the financial stability of the United States by improving accountability and transparency in the financial system, to end the concept of too big to fail, to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes.[45]

Its passage represented the most extensive banking reform since the Great Depression and brought about a new era in financial regulation.[46] Derivatives are perceived as a mechanism of systemic risk because they linked many of the financial institutions that collapsed during the crisis or were subsequently bailed out; as such, legislation is heavily focused on regulating this market.[47] CFTC Chairman Gary Gensler affirmed that the "Wall Street reform bill will – for the first time – bring comprehensive regulation to the swaps marketplace."[48]

Specifically, Title VII of the Act on Wall Street Transparency and Accountability (Title VII) lays out the framework for derivatives market regulation. Its primary goals are to reduce systemic risk and increase transparency in the over-the-counter marketplace.

[44] Griffith, S. (2013). Clearinghouse Hope or Hype? Why Mandatory Clearing May Fail to Contain Systemic Risk | Harvard Business Law Review (HBLR). *Harvard Business Law Review (HBLR)*. Retrieved 14 May 2014, from http://www.hblr.org/2013/04/clearinghouse-hope-or-hype-why-mandatory-clearing-may-fail-to-contain-systemic-risk/

[45] The Dodd-Frank Wall Street Reform and Consumer Protection Act, Public Law 111-203

[46] Skeel, D. (2011). *The new financial deal* (p. 1). Hoboken, N.J.: Wiley.

[47] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf

[48] Gensler, G. (2014). Dodd-Frank Act - CFTC. *Cftc.gov*. Retrieved 5 May 2014, from http://www.cftc.gov/lawregulation/doddfrankact/index.htm

Under the terms of Dodd-Frank, the SEC and CFTC must collaborate to jointly define key terms related to regulation (See 15 U.S.C. § 8302(d)(1)) and coordinate future rulemaking to ensure regulatory consistency across both organizations (See 15 U.S.C. § 8302(a)).[49]

Primary regulatory authority is divided between the CFTC and SEC, while prudential regulators – such as the Federal Reserve Board – also play a role in setting capital and margin requirements for banks that function as swap entities.[50] Title VII delegates jurisdiction over security-based swaps to the SEC, while the CFTC is assigned regulatory authority over all other swaps. Both maintain enforcement authority to impose civil and criminal sanctions for fraud or non-compliance (See 15 U.S.C. § 8302(a)).[5152]

Swaps dealers are subjected to robust capital and margin requirements for their non-cleared trades to provide a buffer of liquid assets for their derivatives portfolios (See 7 U.S.C. § 6s(e)(2)(B)). They must satisfy strict business conduct standards to promote market integrity (See 7 U.S.C. § 6s). In addition, dealers are mandated to meet registration, recordkeeping, and reporting requirements to increase transparency so regulators can effectively police the markets (See 7 U.S.C. § 6s(a); 15 U.S.C. § 78o-10(a); 7 U.S.C. § 2(a); 7 U.S.C. § 24(a)).[5354]

Furthermore, many derivatives contracts are now provisionally required to trade through clearinghouses (See 7 U.S.C. § 2(h); 7 U.S.C. 78c-3(a)(1)), large independent institutions that act as an intermediary between two counterparties to guarantee the trade and absorb the losses if one side defaults on its obligations.[55] This mechanism mitigates a dealer banks' exposure in the

[49] Law.cornell.edu. Dodd-Frank: Title VII - Wall Street Transparency and Accountability | Wex Legal Dictionary / Encyclopedia | LII / Legal Information Institute. Retrieved 22 May 2014, from http://www.law.cornell.edu/wex/dodd-frank_title_VII
[50] Tarullo, D. (2011). Derivatives regulation. Retrieved from http://www.federalreserve.gov/newsevents/testimony/tarullo20110412a.htm
[51] Sec.gov,. (2014). Dodd-Frank Act Rulemaking: Derivatives. Retrieved 5 June 2014, from https://www.sec.gov/spotlight/dodd-frank/derivatives.shtml
[52] Cftc.gov,. (2014). Dodd-Frank Act - CFTC. Retrieved 1 June 2014, from http://www.cftc.gov/LawRegulation/DoddFrankAct/index.htm
[53] Ibid.
[54] Tarullo, D. (2011). Derivatives regulation. Retrieved from http://www.federalreserve.gov/newsevents/testimony/tarullo20110412a.htm
[55] Law.cornell.edu. Dodd-Frank: Title VII - Wall Street Transparency and Accountability | Wex Legal Dictionary / Encyclopedia | LII / Legal Information Institute. Retrieved 22 May 2014, from http://www.law.cornell.edu/wex/dodd-frank_title_VII

financial system by permitting public dissemination of information, imposing stricter collateral and margin requirements, allowing for regulatory oversight, and most importantly, assuming counterparty credit risk by acting as intermediate insurer.[56] [57] Figure 3 indicates that these regulations are taking effect. The gap between the notional amounts of cleared trades versus OTC derivatives is steadily narrowing.

Figure 3: OTC derivatives overview, notional amounts outstanding
Source: ISDA OTC Derivatives Market Analysis Year-End 2012 (table below)

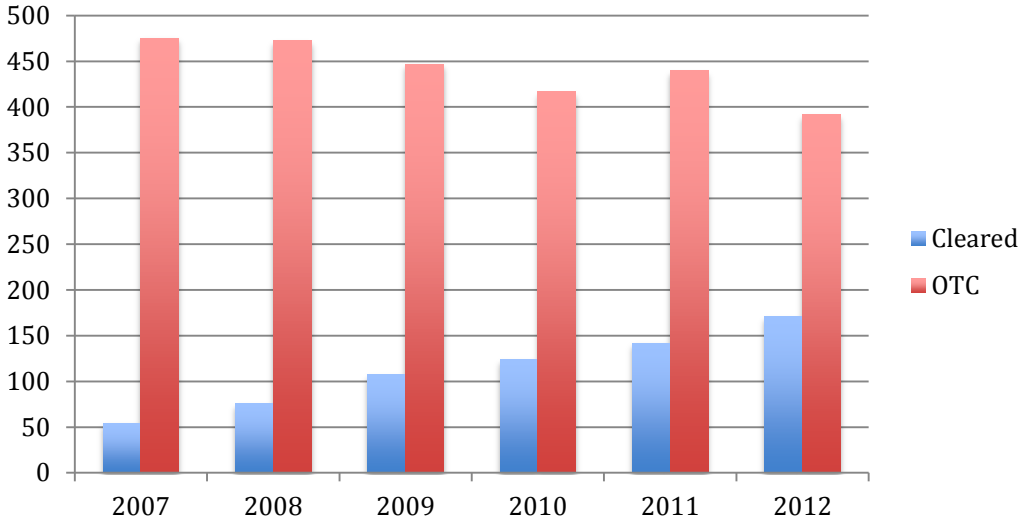


Table 3: Data of OTC derivatives overview, notional amounts outstanding

Notional outstanding - US$ trillions	Dec. 2007	Dec. 2008	Dec. 2009	Dec. 2010	Dec. 2011	June 2012	Dec. 2012
Total contracts - OTC derivatives	585.9	598.1	603.9	601.0	647.8	639.4	632.6
Foreign exchange adjustment	56.2	50.0	49.2	57.8	63.3	66.6	67.4
Cleared IRD volumes, adjusted for double counting	54.4	75.8	107.7	124.2	141.9	152.8	170.7
ICE CDS clearing volumes, adjusted for double-counting				2.2	2.7	2.6	2.5
OTC derivatives, adjusted for FX & for cleared volumes	**475.3**	**472.3**	**447.0**	**416.8**	**439.9**	**417.4**	**392.0**
Amount of OTC derivatives compressed	17.6	45.5	44.1	37.3	38.7	25.7	48.7
Cumulative amount of compression	35.8	81.3	125.9	162.7	201.4	227.1	250.1

[56] Dhanji, T., & Royall, R. (2013). Dodd-Frank's Title VII — OTC derivatives reform. *Ernst & Young*. Retrieved from http://www.ey.com/Publication/vwLUAssets/Key_questions_board_members_should_ask_about_Title_VII/$FILE/Americas_FAAS_Dodd_Frank_derivatives_reform.pdf

[57] Cftc.gov,. (2014). Dodd-Frank Act - CFTC. Retrieved 1 June 2014, from http://www.cftc.gov/LawRegulation/DoddFrankAct/index.htm

CHAPTER 3: THE ADVANTAGES OF CENTRAL CLEARING

3.1 DEFINING SYSTEMIC RISK

Systemic risk refers to "the risk inherent to the entire market or an entire market segment…[and] affects the overall market, not just a particular stock or industry." [58] Similarly, Ben Bernanke, Chairman of the Federal Reserve Board, defined systemic risks as "developments that threaten the stability of the financial system as a whole and consequently the broader economy."[59] Institutions become more systemically significant and thus impose a greater risk to the economy as they become larger, more interlinked and interdependent, such that their failure can cause a cascading effect and impact the entire system. [60]

Addressing systemic risk is at the forefront of regulatory focus. However, there exists no generally accepted definition, standard, or other barometer to determine when an institution is or becomes a systemic risk.

3.2 THE CASE FOR CLEARINGHOUSES

The financial crisis has exhibited that private actors lack an incentive to appropriately manage risk. Stemming from this conclusion, legislators have directed their focus on introducing policy that addresses systemic risk by targeting the market participants that pose it; specifically they have turned to clearinghouses. The hope that is that through mandating a larger volume of OTC derivatives be centrally cleared, CCPs can alleviate the exposures of large dealer banks.

[58] Fontinelle, A. (2014). Systematic Risk Definition | Investopedia. *Investopedia*. Retrieved 5 June 2014, from http://www.investopedia.com/terms/s/systematicrisk.asp
[59] Federal Reserve Bank of San Francisco,. (2010). Responding to the Financial Crisis: The Future of Supervision and Regulation. *Annual Report 2010*. Retrieved from http://www.frbsf.org/files/2010-annual-report.pdf
[60] Schwarcz, S. (2008). Systemic Risk. *Georgetown Law Journal*, *97*(1). Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1008326

They base their case on several arguments:

I. Clearinghouses are organized nodes within the market, providing for transparency and greater regulatory oversight;
II. Clearinghouses are better able to monitor counterparty credit risk;
III. Clearinghouses are better structured to manage risk;
IV. Clearinghouses are better able to absorb losses than their dealer bank counterparts.

3.2.1 Organized Nodes Providing for Transparency and Greater Regulatory Oversight

Clearinghouses rearrange the disarrayed derivatives market into an organized hub-and-spoke configuration.[61] This improves transparency by functioning as a data repository or collection point that can disseminate information to regulators and the public. It also allows for greater regulatory oversight into the previously opaque over-the-counter market by providing a point of entry for regulators to intervene.[62]

3.2.2 Better Able to Monitor Counterparty Credit Risk

Clearinghouses are accorded an ability to monitor counterparty credit quality that may be more efficient than individual dealer banks are capable of in bilateral transactions.[63] CCPs require a greater disclosure of information to more effectively gauge the risks of the trade and the credit quality of the counterparties.

[61] Griffith, S. (2013). Clearinghouse Hope or Hype? Why Mandatory Clearing May Fail to Contain Systemic Risk | Harvard Business Law Review (HBLR). *Harvard Business Law Review (HBLR)*. Retrieved 14 May 2014, from http://www.hblr.org/2013/04/clearinghouse-hope-or-hype-why-mandatory-clearing-may-fail-to-contain-systemic-risk/
[62] Tarullo, D. (2011). Derivatives regulation. Retrieved from http://www.federalreserve.gov/newsevents/testimony/tarullo20110412a.htm
[63] Griffith, S. (2013). Clearinghouse Hope or Hype? Why Mandatory Clearing May Fail to Contain Systemic Risk | Harvard Business Law Review (HBLR). *Harvard Business Law Review (HBLR)*. Retrieved 14 May 2014, from http://www.hblr.org/2013/04/clearinghouse-hope-or-hype-why-mandatory-clearing-may-fail-to-contain-systemic-risk/

3.2.3 Better Structured to Manage Risk

Central clearing necessitates that each counterparty post substantial liquid collateral:[64] an initial margin posting for the trade to be cleared and a variation margin to be made on a daily or intraday basis based upon adverse price movements of members' open contracts to maintain a minimum amount on deposit.[6566]

3.2.4 Better Able to Absorb Losses

Clearinghouses have deep capital structures, putting them at a significant advantage over dealer banks with an exponentially greater capacity to withstand losses. A well-capitalized CCP functions as a "systemic lightning rod" [67] by absorbing and diffusing losses across its membership.[68]

[64] U.S. Congress Office of Technology Assessment,. (1990). *Trading Around the Clock: Global Securities Markets and Information Technology* (1st ed.). Washington, D.C.: U.S. Government Printing Office.
[65] Wilson, D. (2012). *Bloomberg visual guide to financial markets* (1st ed.). Hoboken, N.J.: Wiley.
[66] U.S. Congress Office of Technology Assessment,. (1990). *Trading Around the Clock: Global Securities Markets and Information Technology* (1st ed.). Washington, D.C.: U.S. Government Printing Office.
[67] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf
[68] Rechtschaffen, A. (2014). *Capital markets, derivatives, and the law* (p. 239). Google eBook.

CHAPTER 4: RISKS IN CLEARING

The previous chapter evinces that the reasoning behind provisionally mandating central clearing is sound. Clearinghouses have many obvious advantages – they address several of the major concerns associated with the OTC derivatives market by increasing transparency and providing for regulatory oversight – however, solving the too big to fail problem is not one of them. It seems that the new rule endorsed by Congress and formally introduced through Dodd-Frank presents new risks of its own.

4.1 COMMON CRITIQUES

Although they will not be the focus of this discussion, it is important to note the common critiques of central counterparty clearing.

4.1.1 Ruinous Competition

Competition is a staple of the market economy. In the context of financial markets, it drives down consumer costs, fosters technological and operational innovation, and improves service quality, but with clearinghouses, competition also carries significant risk. It may induce "ruinous" or "cut-throat" competition[69][70], whereby CCPs water down standards[71] and underprice risk – lower margin and capital requirements, for instance – in order to gain market share, increase leverage and, hence, return on equity,[72] but at the cost of undercapitalization and increased exposure.[73]

[69] OECD Glossery. (2014). *Definition Of "Cut-Throat Competition"*. Retrieved from http://www.oecd.org/regreform/sectors/2376087.pdf
[70] ABA Section of Antitrust Law,. (2007). *Federal Statutory Exemptions from Antitrust Law* (p. 66).
[71] The Economist,. (2014). All clear?. Retrieved 1 June 2014, from http://www.economist.com/node/21552209
[72] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf
[73] Zheng, X., & Raynor, L. (2012). The Market for Over-The-Counter Derivatives. *Russell Research*. Retrieved from http://www.russell.com/Public/pdfs/publication/communique_june_2012/Russell_Research_The_market_for_OTC_derivatives_June2012.pdf

4.1.2 Reduced Incentive to Monitor Risk

A highly competitive clearing market may also reduce the incentive for CCPs to monitor clearing members, which would be especially true for the largest firms who would bring the greatest volume of derivative trades (translating to higher profits), but who also present the most significant risk to the economy.

4.1.3 Firms Engaging in Excessively Risky Ventures

If the competitive pressures encourage CCPs to lower margin and capital requirements or other standards for pricing risk, firms may intentionally engage in excessively risky ventures that would then be imposed on the clearinghouses.[74]

4.1.4 Shifting Risk Outside the Clearinghouse

In membership default, the other creditors of the bankrupt estate are subordinated to the clearinghouse (margin collateral is protected to compensate the solvent counterparty) and compensated after the CCP recovers its claim, leaving creditors with fewer assets from which to recover their losses. Therefore, clearing has shifted the risk onto the members' prospective creditors outside the clearinghouse, which could be especially damaging if it is transferred to other systemically important institutions.[75][76]

[74] Griffith, S. (2013). Clearinghouse Hope or Hype? Why Mandatory Clearing May Fail to Contain Systemic Risk | Harvard Business Law Review (HBLR). *Harvard Business Law Review (HBLR)*. Retrieved 14 May 2014, from http://www.hblr.org/2013/04/clearinghouse-hope-or-hype-why-mandatory-clearing-may-fail-to-contain-systemic-risk/

[75] Ibid.

[76] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf

4.1.5 Difficulties in Standardization

Central clearing requires contacts to be standardized to some degree, which could discourage risk management by making hedging impractical or even impossible for firms that necessitate wholly customizable contracts to meet their unique business needs[77] (under new regulatory pressures, banks may be less likely to accept non-cleared trades).[78] If OTC derivatives that cannot be standardized are simply exempt from clearing requirements, then financial engineers are likely to intentionally produce complex derivatives that the CCP cannot accommodate;[79]

4.1.6 Strict Margin Requirements

Subsequent to an initial margin posting for the trade to be cleared, CCPs demand a variable or variation margin to be made on a daily or intraday basis based upon adverse price movements of members' open contracts in an effort to maintain a specific collateral to risk ratio or set exposure.[8081] Immediate margin calls can be difficult for firms who don't hold significant liquid assets (like pension funds)[82] to meet and furthermore, it reduces their working capital.[83]

4.1.7 Fragmented Netting

CCPs engage in multi-lateral netting, thereby simplifying the complex web of the derivatives marketplace.[84] Through this mechanism, clearinghouses counterbalance the value of

[77] Scalcione, R. (2011). *The derivatives revolution* (p. 314). Alphen aan den Rijn: Kluwer Law International.
[78] Zheng, X., & Raynor, L. (2012). The Market for Over-The-Counter Derivatives. *Russell Research*. Retrieved from http://www.russell.com/Public/pdfs/publication/communique_june_2012/Russell_Research_The_market_for_OTC_derivatives_June2012.pdf
[79] Roubini, N. (2010). *Crisis economics* (1st ed.). [S.l.]: Penguin Books.
[80] Investopedia,. (2009). Variation Margin Definition | Investopedia. Retrieved 5 May 2014, from http://www.investopedia.com/terms/v/variationmargin.asp
[81] U.S. Congress Office of Technology Assessment,. (1990). *Trading Around the Clock: Global Securities Markets and Information Technology* (1st ed.). Washington, D.C.: U.S. Government Printing Office.
[82] Zheng, X., & Raynor, L. (2012). The Market for Over-The-Counter Derivatives. *Russell Research*. Retrieved from http://www.russell.com/Public/pdfs/publication/communique_june_2012/Russell_Research_The_market_for_OTC_derivatives_June2012.pdf
[83] Peery, G. (2012). *The post-reform guide to derivatives and futures* (1st ed.). Hoboken, N.J.: Wiley.
[84] Gowers, A. (2012). *Investing in change*. London: Association for Financial Markets in Europe (AFME).

multiple positions to offset the gains in one contract with the losses in another.[8586] Though this is an effective means of increasing efficiency and dispersing shocks, clearinghouses have evolved such that they specialize in a subset of derivatives products,[87] which means that netting is fragmented, their portfolio may not be well-balanced.[88]

4.2 TOO BIG TO FAIL – THE BANKS

U.S. Federal Reserve Chairman Ben Bernanke defined "too big to fail" as a firm "whose size, complexity, interconnectedness, and critical functions are such that, should the firm go unexpectedly into liquidation, the rest of the financial system and the economy would face severe adverse consequences."[89] The government provides "support to too big to fail firms in a crisis not out of favoritism or particular concern for the management, owners, or creditors of the firm, but because they recognize that the consequences for the broader economy of allowing a disorderly failure greatly outweigh the costs of avoiding the failure in some way."[90]

Essentially, the too big to fail phenomenon asserts that certain financial institutions have become so systematically important through their sheer size and interconnectedness that their failure would have significant implications for the whole economy, in other words they are "too big to be allowed to fail."[91] Consequently, they must be protected against insolvency, as occurred in the financial crisis when the U.S. government succumbed to pressure to bailout several investment firms by injecting capital through subsidized government loans.

[85] Choudhry, M. (2010). *The Repo handbook* (p. 365). Oxford: Butterworth-Heinemann.
[86] Radcliffe, B. (2014). Netting Definition | Investopedia. *Investopedia*. Retrieved 1 May 2014, from http://www.investopedia.com/terms/n/netting.asp
[87] Grant, J. (2013). Singapore warns on clearing houses - FT.com. *Financial Times*. Retrieved 14 May 2014, from http://www.ft.com/cms/s/0/48100a5c-8d34-11e2-82d2-00144feabdc0.html
[88] Culp, C. (2002). *The art of risk management* (p. 268). New York: J. Wiley.
[89] Bernanke, B. (2010). Testimony on the Causes of the Recent Financial and Economic Crisis. *Board Of Governors Of The Federal Reserve System*. Retrieved from http://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm
[90] Ibid.
[91] Dash, E. (2009). The New York Times. *Nytimes.com*. Retrieved 1 May 2014, from http://www.nytimes.com/2009/06/21/weekinreview/21dash.html?partner=rss&emc=rss&_r=0

While intervention is necessary to preserve the stability of the markets, there are risks associated with adopting this type of governmental policy. A bailout essentially functions as insurance that gives rise to moral hazard, whereby if firms operate under the assumption that they are shielded from insolvency, they may deliberately take riskier positions. Ben Bernanke concurred that:

> If creditors believe that an institution will not be allowed to fail, they will not demand as much compensation for risks as they otherwise would, thus weakening market discipline; nor will they invest as many resources in monitoring the firm's risk-taking. As a result, too big to fail firms will tend to take more risk than desirable, in the expectation that they will receive assistance if their bets go bad.[92]

To prevent this moral hazard, institutions could be left to fail or broken up. As Alan Greenspan put it, "If they're too big to fail, they're too big."[93]

4.3 TOO BIG TO FAIL – THE CLEARINGHOUSES

Clearinghouses address many of the problems inherent of the OTC derivatives marketplace, but they cannot eliminate systemic risk nor can they solve the too big to fail problem as intended. As a divisive tactic aimed at alleviating the counterparty credit risk exposure of systemically important firms, the clearinghouse effectively undertakes and magnifies this risk by becoming a too big to fail institution that is now a "singular point of failure"[94] in the system.[95] According to their testimony in 2011, the Federal Reserve Board concedes, "financial market utilities such as central counterparties concentrate risk and thus have the potential to transmit shocks throughout the financial markets."[96]

[92] Bernanke, B. (2010). Testimony on the Causes of the Recent Financial and Economic Crisis. *Board Of Governors Of The Federal Reserve System*. Retrieved from http://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm

[93] McKee, M., & Lanman, S. (2009). Greenspan Says U.S. Should Consider Breaking Up Large Banks - Bloomberg. *Bloomberg.com*. Retrieved 1 June 2014, from http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aJ8HPmNUfchg

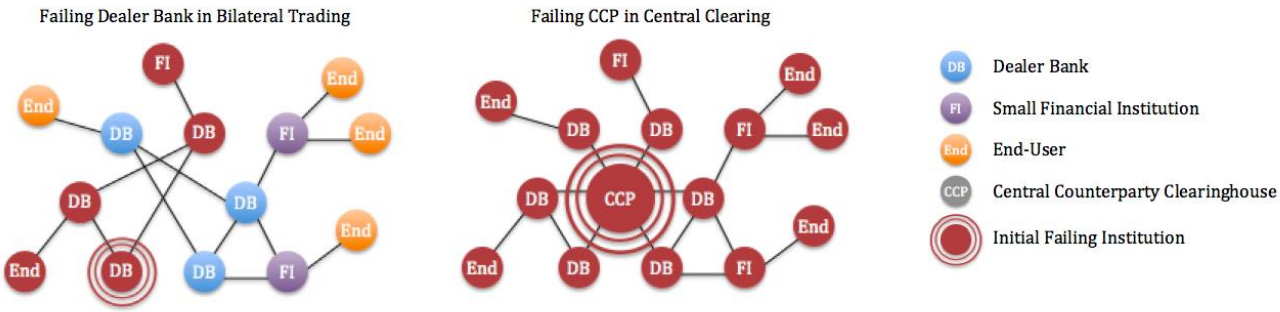
[94] Rechtschaffen, A. (2014). *Capital markets, derivatives, and the law* (p. 239). Google eBook.

[95] Hussain, A. (2000). Managing operational risk in financial markets (p. 54). Oxford: Butterworth-Heinemann.

[96] Tarullo, D. (2011). Derivatives regulation. Retrieved from http://www.federalreserve.gov/newsevents/testimony/tarullo20110412a.htm

Fundamentally, policymakers hope that shifting credit risk from large, systemically important institutions will allow clearinghouses to diffuse losses and prevent contagion in the event of a dealer bank's failure – like a "systemic-risk circuit breaker"[97] – thereby shielding the economy. However, by amassing risk, the clearinghouse itself becomes systemically significant and poses an even greater threat than its too big to fail predecessors.[98] A CCP is not immune to bankruptcy. Due to the concentration of exposures, in the event of failure, not only would its members lose the insurance function of the clearinghouse, but the entire market would be in disarray and the contagion would spread throughout the real economy. Instead of a single dealer bank spreading its exposures among its counterparties, a CCP's failure would be a pandemic with far more substantial consequences (see Figure 4).[99] Which begs the question, "If the failure of an international investment bank such as Lehman Brothers could bring the world to the brink of financial collapse, how much greater would be the impact of several banks going down?"[100]

Figure 4: Failing dealer bank in bilateral trading vs. failing CCP in central clearing



[97] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf
[98] Griffith, S. (2013). Clearinghouse Hope or Hype? Why Mandatory Clearing May Fail to Contain Systemic Risk | Harvard Business Law Review (HBLR). Retrieved 14 May 2014, http://www.hblr.org/2013/04/clearinghouse-hope-or-hype-why-mandatory-clearing-may-fail-to-contain-systemic-risk/
[99] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf
[100] Norman, P. (2011). *The risk controllers* (1st ed.). Chichester: John Wiley.

4.4 LOOKING BACK ON CLEARINGHOUSE FAILURES

As a reflection of their prudent risk management measures, CCP failures are rare, but they do happen. Just within the last few decades, three clearinghouses have collapsed and had devastating widespread effects: Caisse de Liquidation in France in 1974, the Commodities Clearinghouse in Malaysia in 1983, and most significantly, the Hong Kong Futures Guarantee Corporation in 1987.[101][102] When the Hong Kong Clearinghouse failed in the wake of the global stock market crash, both the futures exchange and the stock market shut down,[103] prompting the government to prepare a bailout.[104] After the crash, the Hong Kong Securities Review Committee contended that enforcing operational standards in risk management are perhaps the single most important objective for the regulators.[105]

In response to the Hong Kong CCP failure, Paul Tucker, former Deputy Governor of the Bank of England, proclaimed that "This episode warrants more study than it has received. Had it been London, Chicago or New York, it would have entered the folklore of policy memory."[106] There seems to be a consensus among other legislators as well, who agree that mandated clearing presents a new risk and likewise CCPs need to be closely monitored, or as Ben Bernanke quipped, "If you put all your eggs in one basket, you better watch that basket."[107][108]

[101] Manning, M., Nier, E., & Schanz, J. (2009). *The economics of large-value payments and settlement* (1st ed.). Oxford: Oxford University Press.
[102] Credit Securitisations and Derivatives: Challenges for the Global Marketsby Harald Scheule; Daniel RöschPublished by John Wiley & Sons, 2013 http://www.safariflow.com/library/view/credit-securitisations-and/9781119966050/OEBPS/9781119966050_epub_c_19.htm
[103] Gowers, A. (2012). *Investing in change* (1st ed.). London: Association for Financial Markets in Europe (AFME).
[104] Manning, M., Nier, E., & Schanz, J. (2009). *The economics of large-value payments and settlement* (1st ed.). Oxford: Oxford University Press.
[105] Gowers, A. (2012). *Investing in change* (1st ed.). London: Association for Financial Markets in Europe (AFME).
[106] Tucker, P. (2011). Clearing houses as system risk managers. *Bank Of England Speech*. Retrieved from http://www.bankofengland.co.uk/publications/Documents/speeches/2011/speech501.pdf
[107] The Economist,. (2014). All clear?. Retrieved 1 June 2014, from http://www.economist.com/node/21552209
[108] Bernanke, B. (2011). Clearinghouses, Financial Stability, and Financial Reform. *Board Of Governors Of The Federal Reserve System*. Retrieved from http://www.federalreserve.gov/newsevents/speech/bernanke20110404a.htm

4.5 PREDICTABLE RESPONSES TO FAILURE

Although policymakers recognize the risks embedded in clearinghouses and borne by its membership, they have failed to fully consider the bankruptcy of a CCP[109] or prepare an explicit ex-post policy response.[110] If we draw comparisons with the firms that, following the 2008 collapse of Lehman Brothers, had to be rescued by the government, it seems evident that central clearing parties will be no different.[111] In the case of insolvency, federal intervention and public recapitalization seems inevitable.

Under the new regulatory measures, CCPs fall into a category of financial institutions known as "financial market utilities," (FMUs) designated as "systemically important" by the Financial Stability Oversight Council.[112] As an FMU, clearinghouses are permitted to open accounts at the Federal Reserve, making them eligible for "certain financial services" and allowing the Fed to lend to CCPs in "unusual and exigent circumstances."[113] This suggests that the Federal Reserve will be under pressure to bail out clearinghouses in the event of a crisis and already has the regulatory authority to do so.

[109] Norman, P. (2011). *The risk controllers* (1st ed.). Chichester: John Wiley.
[110] Zheng, X., & Raynor, L. (2012). The Market for Over-The-Counter Derivatives. *Russell Research*. Retrieved from http://www.russell.com/Public/pdfs/publication/communique_june_2012/Russell_Research_The_market_for_OTC_derivatives_June2012.pdf
[111] Zhdannikov, D., & Antonioli, S. (2014). Traders say they are not 'too big to fail', clearing houses may be.*Reuters*. Retrieved 1 June 2014, from http://www.reuters.com/article/2014/04/01/us-traders-clearing-idUSBREA301BW20140401
[112] Tarullo, D. (2011). Derivatives regulation. Retrieved from http://www.federalreserve.gov/newsevents/testimony/tarullo20110412a.htm
[113] Tarullo, D. (2011). Derivatives regulation. Retrieved from http://www.federalreserve.gov/newsevents/testimony/tarullo20110412a.htm

CHAPTER 5: SUGGESTIONS FOR IMPROVEMENT

Regulators have dealt with the problem of clearing up an opaque derivatives market and addressed the risks presented by too big to fail dealer banks, but rather than avoiding another crisis, they simply prevented the banks from being the source by shifting the risk onto other institutions. They dealt with one problem by creating another that must be addressed sooner or later, and preferably before another financial calamity.

As this paper's policy recommendation, the new systemic risk posed by clearinghouses is best approached by implementing stronger ex-ante regulations and committing to explicit ex-post resolutions.

5.1 EX-ANTE POLICY RECOMMENDATIONS

Clearinghouses have a significant advantage over dealer banks – capital.
Their deep capital structures make them exponentially more resilient to losses. A well-capitalized CCP functions as a "systemic lightning rod"[114] by absorbing and diffusing losses across its membership.[115]

Many of the common critiques of central clearing (discussed in Chapter 3) stem from the assumption that clearinghouses may pursue undercapitalization under competitive pressures. However, the greatest threat is that by concentrating risk, clearinghouses have become too big to fail and thus present a vulnerable "singular point of failure"[116] in the interconnected financial markets.[117] Therefore, regulators should focus on implementing measures that ensure CCPs remain solvent and well-capitalized by maintaining robust collateral and margin policies.

[114] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf
[115] European Central Bank,. (2009). Credit Default Swaps and Counterparty Risk. Retrieved from http://www.ecb.europa.eu/pub/pdf/other/creditdefaultswapsandcounterpartyrisk2009en.pdf
[116] Ibid.
[117] Levitin, A. (2013). Response: The Tenuous Case for Derivatives Clearinghouses. *Georgetown Law Journal*. Retrieved from http://georgetownlawjournal.org/files/2013/01/Levitin.pdf

These measures can be realized by aligning the interests of the central clearing party with its members. Clearinghouses require collateral – an initial margin – to be posted for the trade to be cleared. Subsequently, members must satisfy variable margin calls on a daily or intraday basis based upon adverse price movements of members' open contracts. If a counterparty defaults, and these sources are exhausted in meeting its failed obligations, the clearinghouse withdraws from a default fund composed of members' deposits, thereby mutualizing the loss.[118]

Clearinghouses should be structured such that a greater proportion of its risk resources are comprised of contributions from its members calculated pro-rata. Regulations should necessitate that clearinghouses maintain a high ratio of default fund assets to total risk exposures. For example, assume a clearinghouse maintains $1,000,000 net exposures, and CCPs are provisionally required to maintain a 50% asset-to-risk ratio. Then a member representing 10% of a clearinghouse's exposures would be expected to contribute $50,000 (1,000,000 x 0.5 x 0.1).

It would be tedious and impractical to recalculate pro-rata shares on a daily basis. However, it would be feasible for a clearinghouse to request a surplus deposit. Consider the previous example, instead of requiring the provisional $50,000 contribution, the CCP could request a percentage more, say 10%, to account for future increases in exposure. Now the member's deposit is $55,000, which would hold off a margin call for the default fund until the clearinghouse's exposures exceeded $1,100,000 (55,000 ÷ 0.1 ÷ 0.5).

With "skin in the game,"[119] members would have a greater incentive to monitor the clearinghouses' risk management practices, such as its collateral and margin policies. A robust default fund coupled with strong collateral and margin policies reinforces the clearinghouses' line of defense to safeguard against bankruptcy.

[118] Sealy, L., & Milman, D. (2011). *Sealy & Milman* (p. 329). London: Sweet & Maxwell.
[119] Manning, M., Nier, E., & Schanz, J. (2009). *The economics of large-value payments and settlement* (1st ed.). Oxford: Oxford University Press.

5.2 EX-POST RESOLUTIONS

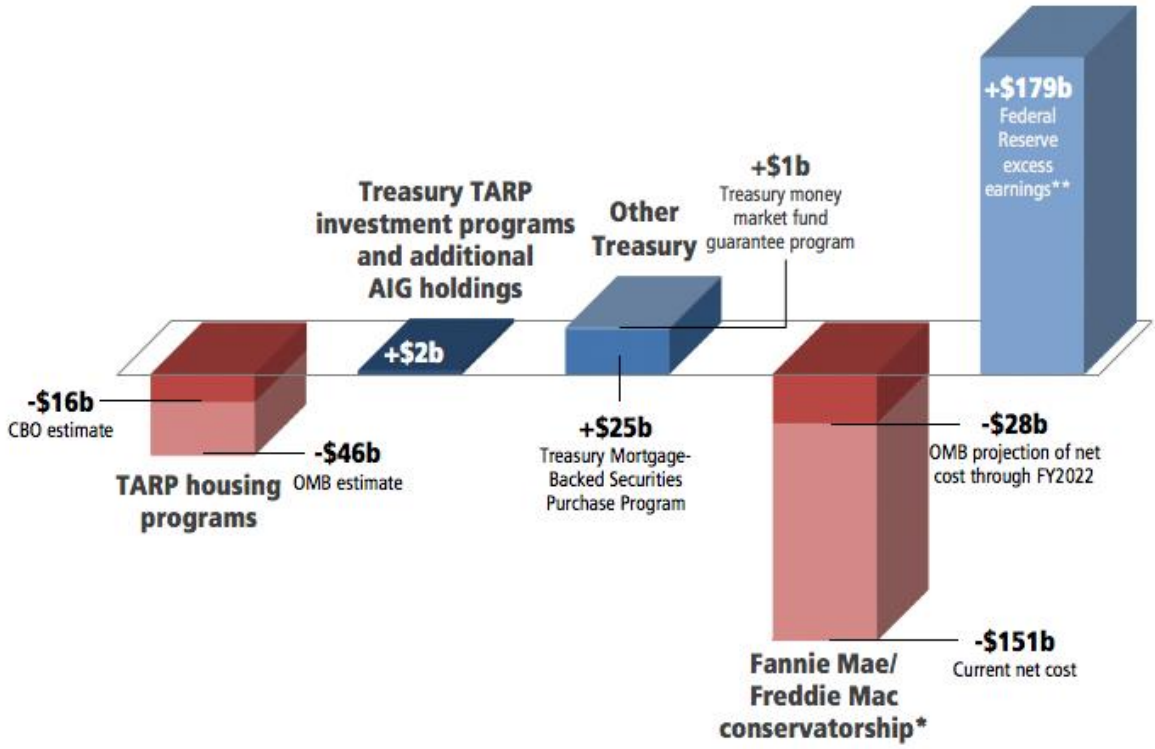
Even with protections in place, it is necessary to commit to ex-post resolutions to enact in the wake of a faltering clearinghouse. Although policymakers recognize the risks embedded in clearinghouses and borne by its membership, there are currently no explicit bankruptcy guidelines outlined in legislation.

The Dodd-Frank Act aims "to end the concept of too big to fail…[and] protect the American taxpayer by ending bailouts,"[120] however, clearinghouses have magnified too big to fail and in the case of insolvency, federal intervention and public recapitalization seems inevitable. Despite the negative connotation, a government bailout is a viable solution, or at least the lesser of two evils. When Henry Paulson first proposed the bailout plan, he claimed that the government should be able to recoup the funds. Some sources have shown that not only did the bailout succeed in forestalling "a worldwide financial meltdown," but produced a profit exceeding $40 billion[121] (See Figure 5).

The difficulty is in adopting a government-back insurance policy that inhibits moral hazard, whereby CCPs will operate under the assumption that they are invulnerable because "they will receive assistance if their bets go bad." [122] If regulators are successful in setting strict standards for pricing risk and mandate a high ratio of default fund assets to total risk exposures, then clearinghouses will be adequately restricted from engaging in excessively risky behavior.

[120] Dodd-Frank Wall Street Reform and Consumer Protection Act (Public Law 111-203)
[121] Sloan, A. (2011). Surprise! The big bad bailout is paying off. *Fortune Magazine*. Retrieved 1 June 2014, from http://fortune.com/2011/07/08/surprise-the-big-bad-bailout-is-paying-off/
[122] Bernanke, B. (2010). Testimony on the Causes of the Recent Financial and Economic Crisis. *Board Of Governors Of The Federal Reserve System*. Retrieved from http://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm

Figure 5: Projections of financial stability program returns/costs



* Treasury currently has a net investment of $151b in Fannie Mae and Freddie Mac, which is expected to be reduced over time as those firms generate positive earnings. OMB projects the eventual cost to fall to $28b by fiscal year 2022. This estimate however could change materially depending on future changes in home prices, enterprise market share, and other operating assumptions.

** Treasury estimates. Based on the President's FY2013 Budget, the Federal Reserve has already remitted $82 billion in excess earnings – above what would be expected in normal times – to the Treasury through fiscal year 2011. Total excess earnings from the Federal Reserve to be remitted to the general fund are currently forecast to reach $179 billion through fiscal year 2015. The amount of future Federal Reserve earnings is uncertain and will depend on future financial, economic, and market conditions.

Note: Estimates are most recently available as of publication and are subject to revision based on future market conditions. Chart includes income and costs for the financial stability programs only. It does not include figures related to the Recovery Act or tax revenues lost from the crisis.

Source: Treasury, Office of Management and Budget. Retrieved from http://www.treasury.gov/resource-center/data-chart-center/Documents/20120413_FinancialCrisisResponse.pdf May 2, 2014

CHAPTER 6: CONCLUSION

This research paper aimed to explore the consequences of mandatory clearing. It accurately hypothesized that the current regulatory architecture of the derivatives market is inadequately prepared for a clearinghouse collapse and offered policy recommendations that can be employed ex-ante to correct misaligned incentives in an effort to prevent future crises.

As discussed, the financial crisis exposed substantial gaps in regulation and elucidated that market participants did not have an appropriate incentive to effectively manage their own risks or disclose the extent of their exposures. Subsequent reform brought about a new era in financial regulation directed at addressing systemic risk and ending the concept of too big fail. Derivatives are perceived as a mechanism of systemic risk because they linked many of the financial institutions that collapsed during the crisis or were subsequently bailed out; as such, legislation is heavily focused on regulating this market. Many contracts are now provisionally required to transact through central clearing parties. Consequently, legislation created new concentrations of risk in the financial system.

Clearinghouses offer a valuable tool to manage counterparty credit and systemic risk, however this is contingent upon their design, management, and oversight. This paper suggests aligning the interests of the central clearing party with its members by structuring the CCP such that a greater proportion of its risk resources are comprised of contributions from its members. With "skin in the game," members would have a greater incentive to monitor the clearinghouses' risk management practices, such as its collateral and margin policies. This would have the dual effect of reinforcing its line of defense to safeguard against bankruptcy and adequately restricting the entity from engaging in the excessively risky behavior that accompanies government protected institutions as a consequence of moral hazard. While this is not a catchall solution – it does not address each of the criticisms of central clearing – regulations cannot be endlessly

flexible to accommodate all market participants and simultaneously achieve the goals laid out in Dodd-Frank.

Regulations' inability to evolve with the financial markets and keep pace with innovation was one of the central causes of the crisis. If regulators do not address this new systemic risk posed by too big to fail clearinghouses by strengthening ex-ante lines of defense and committing to ex-post resolutions, history may repeat itself.

Ultimately, this research has demonstrated that the current regulatory architecture is left wanting and further experimentation is desirable.

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