

**COMPLEXITY, INNOVATION AND THE DYNAMICS OF
OTC DERIVATIVES REGULATION**

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ABSTRACT

Conventional financial theory has played an important – and yet largely unexamined – role in shaping how we regulate modern financial markets. This thesis explores the influence of conventional financial theory on the regulation of over-the-counter (OTC) derivatives markets in the U.S. and U.K. prior to the global financial crisis. More specifically, it explores how conventional financial theory failed to adequately account for both the *complexity* of OTC derivatives markets and the nature and pace of *financial innovation* and, ultimately, how these blind spots became reflected in a ‘non-interventionist’ approach toward their regulation now widely viewed as suboptimal.

This thesis yields three important contributions to the scholarly and public policy debates surrounding the regulation of modern financial markets. First, it articulates a more robust theoretical framework for understanding complexity, financial innovation, and the relationship between these powerful market dynamics. This, in turn, facilitates an examination of the implications of complexity and financial innovation in terms of the ongoing debates respecting the optimal source, form and scope of financial regulation. It also facilitates an examination of both the shortcomings of the pre-crisis regulatory regimes governing OTC derivatives markets and, looking forward, the prospective strengths and weaknesses of embryonic post-crisis reforms. Finally, and more broadly, this thesis enhances our understanding of the relationship between the important insights of financial theory and how we conceptualize and pursue the objectives of financial regulation.

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TABLE OF ABBREVIATIONS

ABS	Asset-backed Security
APRA	Australian Prudential Regulatory Authority
ARROW	Advanced Risk Responsive Operating Framework
ATM	Automated Teller Machine
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BT	Bankers Trust
CAPM	Capital Asset Pricing Model
CBOE	Chicago Board Options Exchange
CBOT	Chicago Board of Trade
CCP	Central Counterparty
CDS	Credit Default Swap
CDO	Collateralized Debt Obligation
CEA	<i>Commodity Exchange Act</i>
CEBS	Committee of European Bank Supervisors
CESR	Committee of European Securities Regulators
CFPB	Consumer Financial Protection Bureau
CFTC	Commodity Futures Trading Commission
CFTCA	<i>Commodity Futures Trading Commission Act of 1974</i>
CFMA	<i>Commodity Futures Modernization Act of 2000</i>
CME	Chicago Mercantile Exchange
COB	Conduct of Business
CPSS	Committee on Payment and Settlement Systems
CRD	Capital Requirements Directive

CRMPG	Counterparty Risk Management Policy Group
CSE	Consolidated Supervised Entities Program
DC	Determinations Committee
DTI	Department of Trade and Industry
EBA	European Banking Authority
EC	European Commission
EIOPA	European Insurance and Occupational Pensions Authority
EMH	Efficient Market Hypothesis
EMIR	European Market Infrastructure Directive
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
ETF	Exchange-traded Fund
E.U.	European Union
FCA	Financial Conduct Authority
FCIC	Financial Crisis Inquiry Commission
FDIC	Federal Deposit Insurance Corporation
FIMBRA	Financial Intermediaries, Managers and Brokers Regulatory Association
FINRA	Financial Industry Regulatory Authority
FIO	Federal Insurance Office
FHFA	Federal Housing Finance Agency
FpML	Financial Products Mark-up Language
FSA	Financial Services Authority
FSB	Financial Stability Board
FSMA	<i>Financial Services and Markets Act</i>
FSOC	Financial Stability Oversight Council

FSA 1986	<i>Financial Services Act 1986</i>
FTA	<i>The Futures Trading Act of 1921</i>
FTA (1982)	<i>The Futures Trading Act of 1982</i>
FTPA (1992)	<i>The Futures Trading Practices Act of 1992</i>
f/x	foreign exchange
GABRIEL	Gathering Better Regulatory Information Electronically System
GAO	General Accountability Office
GLBA	<i>The Graham-Leach Bliley Act</i>
G14	Group of 14 Derivatives Dealers
G20	Group of 20 Finance Ministers and Central Bank Governors
GAAP	Generally Accepted Accounting Principles
GFC	Global Financial Crisis
GIR	Global Information Repository
GM	General Motors
GNMA	Government National Mortgage Association
GSE	Government Sponsored Entity
IASB	International Accounting Standards Board
ICA	<i>The Investment Company Act of 1940</i>
ICE	InterContinental Exchange
ISDA	International Swaps and Derivatives Association
IMF	International Monetary Fund
IMRO	Investment Management Regulatory Organization
IOSCO	International Organization of Securities Commissions
IP	Index Participation Unit
IRR	Integrated Regulatory Reporting System

LAUTRO	Life Assurance and Unit Trust Regulatory Organization
LCFI	Large, Complex Financial Institution
LIBOR	London Inter-Bank Offer Rate
LSE	London Stock Exchange
MBS	Mortgage-backed Security
MiFID	Markets in Financial Instruments Directive
MG	Metallgesellschaft
M&M	Modigliani & Miller
MPBR	More Principles-based Regulation
MPT	Modern Portfolio Theory
NYSE	New York Stock Exchange
OCC	Office of the Comptroller of the Currency
ODRF	OTC Derivatives Regulators Forum
OECD	Organization for Economic Cooperation and Development
OMB	Office of Management and Budget
OTS	Office of Thrift Supervision
PIA	Personal Investment Authority
PRA	Prudential Regulatory Authority
PWG	President's Working Group on Financial Markets
SDR	Swaps Data Repository
SEC	Securities and Exchange Commission
SFA	Securities and Futures Authority
SIB	Securities and Investments Board
SIFMA	Securities Industry and Financial Markets Authority
SRO	Self Regulatory Organization

TAAR	Targeted Anti-Arbitrage Rule
TR	Trade Repository
TRS	Total Return Swap
UCITS	Undertakings for Collective Investment in Transferrable Securities Directive
U.K.	United Kingdom
U.S.	United States
USD	U.S. Dollars
VaR	Value-at-Risk

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‘The dogmas of the quiet past, are inadequate to the stormy present.’¹

¹ Abraham Lincoln, Annual Address to the U.S. Congress (December 1, 1862), reproduced in Roy Basler (ed.), *The Collected Works of Abraham Lincoln* (Rutgers University Press, Rutgers, 1955), vol. 5 at 537.

INTRODUCTION

Complexity, Innovation and the Dynamics of OTC Derivatives Regulation

The intellectual origins of the ongoing global financial crisis (GFC) can be traced back to shortcomings – blind spots – emanating from within conventional financial theory. These blind spots are distorted reflections of the perfect market assumptions underpinning the canonical theories of financial economics: modern portfolio theory (MPT); the Modigliani and Miller (M&M) capital structure irrelevancy principle; the capital asset pricing model (CAPM) and the efficient market hypothesis (EMH).² These theories share a common and highly stylized view of financial markets, one characterized by, *inter alia*, perfect information, the absence of transaction costs and rational market participants. Yet in reality financial markets – and market participants – rarely (if ever) strictly conform to these assumptions.^{3,4} Information is costly and unevenly distributed; transaction costs are pervasive, and market participants

² These theories, their centrality to the field of financial economics, and their underlying assumptions are each discussed in greater detail in [Chapter 1](#).

³ The most notable exception arguably being public secondary markets for equity securities, where a significant body of empirical research exists to support the view that these markets generally conform to the assumptions of the semi-strong form EMH. For a survey of this empirical work, *see* Burton Malkiel, “The Efficient Market Hypothesis and Its Critics” (2003), Centre for Economic Policy Studies Working Paper No. 91, available at www.princeton.edu/~ceps/workingpapers/91malkiel.pdf and Eugene Fama, “Market Efficiency, Long-Term Returns and Behavioral Finance” (1998), 49 *J. Fin. Econ.* 283. Even in this context, however, it is still unrealistic – and, indeed, actually inconsistent with the operation of the arbitrage mechanism at the heart of the EMH – to expect that markets will *always* be in equilibrium; *see* Sanford Grossman and Joseph Stiglitz, “On the Impossibility of Informationally Efficient Markets” (1980), 70:3 *Am. Econ. Rev.* 393.

⁴ As Ron Gilson has observed, it is not altogether clear whether the authors of these theories were initially attempting to describe real world financial markets or, alternatively, provide the basis for a research agenda which – by relaxing the perfect market assumptions – could enhance our understanding of how these markets work in practice; Ron Gilson, “Market Efficiency after the Financial Crisis: It’s Still a Matter of Information Costs” (May 2011) at 17 [working paper on file with author]. Ultimately, at least one of these authors did explicitly adopt the latter view; *see* Merton Miller, “The Modigliani-Miller Propositions After Thirty Years” (1988), 2 *J. Econ. Perspectives* 99 at 100.

frequently exhibit both cognitive biases and bounded rationality.⁵ Despite these seemingly uncontroversial observations, however, the empirically (con)testable assumptions of conventional financial theory have been transformed into the central articles of faith of the *ideology* of modern finance: the foundations of a widely held belief in the self-correcting nature of markets and their consequent desirability as mechanisms for the allocation of society's resources.⁶

The ideology of modern finance has exerted a profound influence on how we regulate financial markets and institutions. Perhaps most significantly, a pervasive belief in the social desirability of unfettered markets drove the sweeping agenda of financial deregulation witnessed in many jurisdictions in the decades leading up to the GFC.⁷ This market fundamentalism was grounded in the conviction that rational and fully informed market participants – utilizing sophisticated quantitative methods and the innovative financial instruments these methods made possible – had effectively mastered risk. Public regulation, by implication, was largely relegated to a supporting role: namely, the provision of private property rights and efficient contract

⁵ Observing this divergence between theory and reality, Fischer Black, the former M.I.T. finance professor, Goldman Sachs executive and co-author of the Black-Scholes option pricing model, once quipped: 'Markets look a lot less efficient from the banks of the Hudson than from the banks of the Charles'; personal conversation quoted in Peter Bernstein, *Against The Gods: The Remarkable Story of Risk* (John Wiley & Sons, New York, 1996) at 7.

⁶ Simon Johnson and James Kwak, *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (Pantheon Books, New York, 2010) at 5 and 104-118.

⁷ See Financial Crisis Inquiry Commission, *Final Report of the National Commission on the Causes of the Financial Crisis in the United States* (Public Affairs, New York, 2011) [the "Financial Crisis Inquiry Report"] at xviii; Roman Frydman and Michael Goldberg, *Beyond Mechanical Markets: Asset Price Swings, Risk, and the Role of the State* (Princeton University Press, Princeton, 2011); Richard Posner, *A Failure of Capitalism: The Crisis of '08 and the Descent into Depression* (Harvard University Press, Cambridge, 2009); George Cooper, *The Origins of the Financial Crisis: Central Banks, Credit Bubbles and the Efficient Market Fallacy* (Random House, New York, 2008); Gilson (n 4) at 2-3 and Johnson and Kwak (n 6) at 69. Ultimately, the term 'deregulation' does not entirely capture the breadth or fundamental character of this trend. Indeed, it is perhaps more accurate to say that deregulation during this period was characterized by: (1) significant devolution of regulation from public to private actors, and (2) a non-interventionist stance toward the regulation of many financial markets and institutions which emerged, developed and matured during this period.

enforcement necessary to support private risk-taking.⁸ Ultimately, it was this market fundamentalism which justified turning a blind eye to the potential adverse effects of vast global current account imbalances⁹; acquiescing to the build-up of huge amounts of risk within the so-called ‘shadow banking’ system¹⁰, and devolving significant responsibility for the design and implementation of capital adequacy standards to the very financial institutions which were ultimately subject to this micro-prudential regulation.¹¹ At times, it appeared as if the only question to which ‘more markets’ was not the consensus answer was: *where do we turn when markets fail?*

The GFC has revealed the folly of market fundamentalism as a driver of public policy. It has also exposed conventional financial theory as fundamentally incomplete. Perhaps most glaringly, conventional financial theory failed to adequately account for both the *complexity* of modern financial markets and the nature and pace of *financial innovation*. From sub-prime mortgages, securitization and credit default swaps (CDS), to sophisticated quantitative models for measuring and managing risk, the footprints of complexity and innovation can be observed

⁸ Frydman and Goldberg (n 7) at 9.

⁹ The influence of market fundamentalist thinking on the established wisdom underpinning the post-war push to liberalize international trade and capital flows is reflected in the comments of Stanley Fischer, former First Deputy Managing Director of the International Monetary Fund (IMF): ‘free capital movements facilitate a more efficient allocation of global savings, and help channel resources into their most productive uses, thus increasing economic growth and welfare’; Stanley Fischer, ‘Capital Account Liberalization and the Role of the IMF’, lecture given at the IMF Annual Meetings (September 19, 1997), available at www.imf.org.

¹⁰ Broadly speaking, the shadow banking system includes: (1) non-bank financial *institutions* such as finance companies, structured investment vehicles, securities lenders, money market mutual funds, hedge funds and U.S. government sponsored entities, and (2) financial *instruments* such as repurchase agreements, asset-backed securities, collateralized debt obligations and other derivatives, insofar as these institutions and instruments perform economic functions (i.e. maturity, credit and liquidity transformation) typically associated with more ‘traditional’ banks; see Gary Gorton and Andrew Metrick, ‘Regulating the Shadow Banking System’ (Fall 2010), Brookings Papers on Economic Activity 261 and Zoltan Pozsar, Tobias Adrian, Adam Ashcraft and Halley Boesky, ‘Shadow Banking’, Federal Reserve Bank of New York Staff Reports No. 458 (July 2010).

¹¹ As most infamously epitomized by the ill-fated Consolidated Supervised Entity (CSE) Program administered by the U.S. Securities and Exchange Commission; see *SEC’s Oversight of Bear Stearns and Related Entities: The Consolidated Supervised Entity Program*, Report of the Securities and Exchange Commission Office of the Inspector General, Report No. 446-A (September 25, 2008).

throughout modern financial markets – and, importantly, at almost every significant step along the road to the GFC.¹² Complexity and innovation have combined to generate significant asymmetries of information and expertise within financial markets, thereby opening the door to suboptimal contracting, exacerbating already pervasive agency cost problems and undermining effective external monitoring.¹³ At the same time, the pace of innovation has left financial regulators and regulation chronically behind the curve. Together, complexity and innovation thus give rise to a host of regulatory challenges, the full implications of which we are only just now beginning to understand.

Perhaps nowhere is the myopia of market fundamentalism more evident than in connection with the pre-crisis regulation of over-the-counter (OTC) derivatives markets. Over the course of the past three decades, these markets have grown from an obscure financial backwater into a global behemoth – the \$USD700 trillion gorilla of modern financial markets. Prevailing dogma prior to the GFC viewed the seemingly insatiable demand for many species of OTC derivatives as a rational response to market imperfections. Supply, in turn, was a rational response to this demand. That supply met demand within the marketplace was then generally

¹² And, indeed, the road to many previous financial crises; see for example, John Kenneth Galbraith, *The Great Crash of 1929* (Houghton Mifflin Company, New York, 1954) at 46-50, 72-76, 80-86 and 89, describing the role of financial innovations such as margin trading and so-called ‘investment trusts’ in helping to fuel the speculative bubble which ultimately precipitated the 1929 U.S. stock market crash. More recent examples include both (1) the role of portfolio insurance in the 1987 stock market crash, and (2) the role of high frequency traders, automated execution algorithms and exchange traded funds (ETFs) in the so-called ‘flash crash’ of May 6, 2010; see *Report of the Presidential Task Force on Market Mechanisms*, submitted to the President of the United States, the Secretary of the Treasury and the Chairman of the Federal Reserve Board (January 1988) at v, available at www.archive.org and *Findings Regarding the Market Events of May 6, 2010*, Report of the Staffs of the Commodity Futures Trading Commission and Securities and Exchange Commission to the Joint Advisory Committee on Emerging Regulatory Issues (September 30, 2010), available at www.sec.gov.

¹³ In the context of a principal-agent (or other co-operative) relationship between two or more parties, the term ‘agency costs’ refers to costs incurred by the parties in connection with the monitoring and bonding of the other parties, along with any residual (hidden) losses stemming from the misalignment of incentives as between the parties; see Michael Jensen and William Meckling, “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure” (1976), 3:4 *J. of Fin. Econ.* 305.

interpreted as being dispositive of these instruments' private and social utility. This viewpoint was firmly rooted in the autonomous rational actor framework underpinning much of conventional financial theory. Not coincidentally, conventional financial theory also provided the rationale – forcefully articulated by, amongst many others, U.S. Federal Reserve Board Chairman Alan Greenspan¹⁴ – for why public regulatory intervention was not necessary to ensure the safe and efficient operation of OTC derivatives markets. This stance was ostensibly bolstered by the emergence of private actors such as the International Swaps and Derivatives Association (ISDA), along with various execution, settlement and clearing platforms, to provide the legal and operational infrastructure necessary to support the development and growth of these new markets.

OTC derivatives markets epitomize both the complexity of modern financial markets and the nature and pace of innovation within them. For this reason, they offer us an illuminating window into the regulatory challenges generated by the interaction of these powerful (and yet poorly understood) market forces. Perhaps not surprisingly, these challenges ultimately stem from the availability and allocation of a single and immensely precious commodity: information. *How costly is it to acquire? Who has it? And, importantly, who doesn't?*¹⁵ As we shall see, the answers to these and other related questions manifest significant private and social welfare implications and, accordingly, are highly instructive in terms of how we should approach the regulation of OTC derivatives markets – and the broader financial system – going forward.

¹⁴ Greenspan's statements on this issue – and, more broadly, the approach adopted by the Federal Reserve Board and other regulators toward the regulation of OTC derivatives markets – are explored in greater detail in [Chapter 3](#).

¹⁵ And, indeed, if it can be acquired, manipulated, filtered and/or analyzed within applicable temporal, cognitive, resource and/or technological constraints.

The objective of this thesis is to start us down the path toward a more robust understanding of the regulatory challenges which flow from complexity and innovation within modern financial markets. It does not, however, seek to somehow ‘correct’ the blind spots of conventional financial theory. This is an important point. What follows is not an indictment of the methodologies of positive economics from which the insights of conventional financial theory have largely been derived.¹⁶ Indeed, the rigorous logic and hypothesis testing at the core of this discipline have contributed greatly to our understanding of the economic world. At the same time, however, it must be acknowledged that the intellectual tools of this discipline – and, most importantly, the assumptions upon which they are founded – have been (at best) misconstrued and (at worst) hijacked by those seeking to advance the cause of market fundamentalism. Thus, the problem is not with conventional financial theory *per se* but, rather, with those who fail (for whatever reason) to observe its manifest limitations.¹⁷

Ultimately, it is in response to this pyrrhic victory of rhetoric over reality that this thesis seeks to move us incrementally toward a more stable and constructive equilibrium between the important insights of financial *theory* and how we conceptualize and pursue the objectives of financial *regulation*. Just as market fundamentalism has been found wanting in the wake of the GFC, so too will any approach to regulation which favors ideological purity over the rigorous and ongoing evaluation of the market frictions and market failures which attract regulatory scrutiny

¹⁶ For a robust description (and defense) of these methodologies, see Milton Friedman, “The Methodology of Positive Economics” in Milton Friedman (ed.), *Essays in Positive Economics* (Chicago University Press, Chicago, 1966).

¹⁷ In this respect, it is irrelevant for the present purposes whether policymakers were ‘true believers’ in market fundamentalism; were exploiting the misunderstandings of others for their own ends, or simply misunderstood the limits of conventional financial theory.

and the anticipated costs and benefits of various forms of regulatory intervention.¹⁸

Put somewhat differently, the only antidote to ideological fervor is the systematic study of how markets – and regulation – work in practice.¹⁹

One further point of clarification is perhaps in order. The objective of this thesis is not to dissect the proximate or root causes of the GFC. Considerable scholarly ink has already been spilled on this subject and, even then, the debate over precisely what happened and why seems poised to rage on well into the new millennium.²⁰ More importantly for the present purposes, however, while the crisis has undoubtedly served to bring these issues into sharper focus, the regulatory challenges generated by complexity and financial innovation existed prior to, and independently of, the events and circumstances which culminated in the GFC.

This thesis proceeds as follows. Chapter 1 lays the theoretical foundations for our exploration of complexity, innovation and the dynamics of OTC derivatives regulation. It begins by articulating a framework for understanding complexity which conceptualizes it as a function of two variables: information costs and bounded rationality. It then examines the key drivers of high information costs (and

¹⁸ This thesis thus adopts as its normative touchstone the evaluative framework provided by welfare economics, pursuant to which ‘optimal’ or ‘efficient’ markets or regulation are understood to be those which maximize net social welfare. Reflective of the real-world limitations facing policymakers, optimal or efficient regulation will be further understood to refer to that which maximizes net social welfare *within resource and technological constraints* – or, cloaked in the jargon of welfare economics, the tangency between the utility possibilities frontier and the highest attainable social welfare indifference curve (i.e. the ‘constrained bliss-point’); see Per-Olov Johansson, *An Introduction to Modern Welfare Economics* (Cambridge University Press, Cambridge, 1991) at 28-29 and John Eatwell, Murray Milgate and Peter Newman (eds.), *The New Palgrave: Allocation, Information and Markets* (Macmillan, New York, 1989) at 1. For a more fulsome discussion of welfare economics and its utility (and limitations) in the domain of financial regulation, see Dan Awrey, “The Dynamics of OTC Derivatives Regulation: Bridging the Public-Private Divide” (2010), 11:2 *Eur. Bus. Org. L. Rev.* 155 at 165-167.

¹⁹ This approach is reflected in Ronald Coase’s statement that ‘satisfactory views on policy can only come from a patient study of how, in practice, the market, firms, and government handle the problem of harmful effects.’; Ronald Coase, “The Problem of Social Cost” (1960), 3 *J. of Law & Econ.* 1 at 10.

²⁰ For a very useful synopsis of this literature, see Andrew Lo, “Reading About the Financial Crisis: A 21-Book Review” (October 26, 2011), available at www.ssrn.com.

information failure) within modern financial markets and their points of intersection with the cognitive and temporal constraints on our ability to process information. These drivers include technology, opacity, interconnectedness, fragmentation, regulation and reflexivity. The chapter then shifts its focus to financial innovation, advancing a framework which seeks to re-conceptualize it as a process of *change* – but not necessarily one of *improvement* – influenced by, *inter alia*, the supply-side incentives of the principal innovators: financial intermediaries. The chapter concludes by examining the multifaceted and mutually reinforcing relationship between complexity and innovation and identifying the regulatory challenges generated by the interaction of these powerful market dynamics.

The principal payoffs from constructing these closely intertwined frameworks are twofold. First, they illustrate that – far from being a benign feature of modern financial markets – complexity has significant (adverse) effects on private and social welfare. These effects arise primarily, although certainly not exclusively, from the fact that some actors enjoy a higher tolerance for complexity and, crucially, are in a position both to exploit this advantage and, in many cases, to introduce yet further complexity into the financial system. Second, and contrary to the (often implicit) view which held sway prior to the crisis, the welfare implications of financial innovation are often, and at best, ambiguous. Moreover, these welfare implications are not randomly determined: they are a product of, amongst other factors, the incentives of financial innovators. As we shall see, these twin observations hold important insights for public policy.

Chapter 2 introduces OTC derivatives markets as a case study in complexity and financial innovation. The chapter commences with a brief overview of the

origins and basic mechanics of different species of OTC derivatives, before drawing out a number of important distinctions – especially in terms of market microstructure and regulation – between exchange-traded and OTC instruments. The chapter then canvasses the potential uses of OTC derivatives, along with their potential benefits for both market participants and society. It also examines their potential risks and the attendant private and social costs. The focal points of this examination are the information costs, asymmetries of information and potential agency costs generated by the (1) dealer-intermediated, quote-driven microstructure of OTC derivatives markets; (2) opacity and interconnectedness of many key market participants, and (3) sophisticated technical aspects of many instruments. The ways in which OTC derivatives markets could theoretically play a role in the build-up and transmission of systemic risk will also be examined. The chapter concludes with an exploration of how these market frictions and potential market failures can (and should) be understood as the direct consequences of complexity and financial innovation.

Chapter 3 examines the pre-crisis regulation of OTC derivatives markets in the U.S. and U.K. Together, these two jurisdictions account for the vast majority of trading activity within global OTC derivatives markets. They are also home to many of the financial institutions at the center of these burgeoning markets. As we shall see, regulators in both jurisdictions have historically pursued what can perhaps best be described as a ‘non-interventionist’ approach toward the regulation of these markets – an approach which effectively disregarded the regulatory challenges flowing from complexity and financial innovation. This approach was influenced by, *inter alia*, the prevailing free market ideology and mounting competitive pressures within the increasingly global market for investment banking services. Chapter 3 also examines the emerging post-crisis regulatory regimes targeting OTC derivatives markets in both

jurisdictions and begins to evaluate what lessons, if any, policymakers have taken away from the GFC.

Having canvassed the regulatory challenges generated by complexity and innovation within OTC derivatives markets – along with the non-interventionist stance historically adopted toward their regulation – the next three chapters embark on three more explicitly normative lines of inquiry: exploring, respectively, the optimal *source, form* and *scope* (or footprint) of regulation. Chapter 4 examines what roles markets, private market participants and public regulators can (and should) play within the emerging regulatory regimes governing OTC derivatives markets. It also explores the strengths and weaknesses of hybrid modes of regulation which seek to bridge the public-private divide. Chapter 5 then examines how the form of regulation can be employed by public regulators as a means of both (1) leveraging the expertise of private actors and (2) generating more responsive, flexible and durable regulatory regimes able to keep pace with the relentless dynamism of modern financial markets. Finally, Chapter 6 examines how can we close the gap between global (and increasingly interconnected) OTC derivatives markets and the fractured (and predominantly domestic) regulatory regimes which govern them.

Importantly, the principal objective of these core chapters is not to evaluate the relative merits and potential drawbacks of various substantive policy options. Indeed, if the exploration which follows teaches us anything, it is that substantive regulation must evolve in response to (inevitable) market and institutional developments. Rather, these chapters seek to identify the modes of public/private ordering; forms of regulation, and regulatory architectures which are likely to prove most expert and nimble in generating, monitoring – and, importantly, *updating* –

substantive regulation in response to the unique challenges posed by complexity and financial innovation. The objective is thus not to identify optimal regulatory institutions *ex ante* but, rather, to identify and implement those institutions most responsive to the dynamism of modern financial markets.

As American essayist H.L. Mencken is reputed to have observed: ‘for every complex problem there is an answer which is clear, simple and wrong’.²¹ Consistent with this axiom, this exploration of the dynamics of OTC derivatives regulation does not generate an obvious or straightforward set of prescriptions. As in virtually all areas of public policy, tradeoffs abound. The final chapter, therefore, seeks to extract and synthesize the common themes (and caveats) which flow from this exploration. These themes underscore the importance and pervasiveness of information costs, asymmetries of information and agency cost problems within modern financial markets and, thus, the manifest need for institutions which (1) subsidize the production and dissemination of information and (2) align the incentives of both public and private actors with broader social welfare. They also highlight the nature and pace of change within modern financial markets and the resulting desirability of regulation (and regulators) designed and built with the objective of ensuring sufficient responsiveness, flexibility and durability. Finally, they emphasize the imperative of global coordination in a world increasingly defined by truly global risks. Viewed in this light, while this thesis does have in mind a specific destination, it can be understood as strongly advocating certain modes – and a general direction – of travel.

²¹ Regrettably, I was unable to unearth the original source for this oft-cited quotation.

CHAPTER 1

Toward A More Robust Theory of Complexity and Innovation within Modern Financial Markets

Modern financial markets are very, very complex. This complexity is compounded by the nature and pace of financial innovation. *But what do we mean when we say that financial markets are ‘complex’ and ‘innovative’? What are the key drivers of complexity and innovation within modern financial markets? Moreover, what is the relationship between complexity and innovation? And, most importantly, what are the regulatory challenges stemming from the interaction of these defining features of modern financial markets and how, if at all, can we address them?*

The objective of this first chapter is to sketch out preliminary – and at this stage largely theoretical – answers to these all-important questions. Part I begins by constructing a framework for understanding complexity which conceptualizes it as a function of two variables: information costs and bounded rationality. It then identifies and examines six key drivers of high information costs (and information failure) within modern financial markets, along with their points of intersection with the cognitive and temporal constraints on our ability to process information. Part II explores the unique and in many respects under-theorized nature of financial innovation and advances a framework which characterizes it as, fundamentally, a process of change influenced by the supply-side incentives of the principal innovators: financial intermediaries. Part III brings these two frameworks together, describing the multidimensional relationship *between* complexity and financial innovation. Part IV then identifies the regulatory challenges flowing from complexity and innovation within modern financial markets. Part V concludes. Ultimately, this

chapter develops the theoretical tools which will be utilized in subsequent chapters to explore how complexity and innovation shape the dynamics of OTC derivatives regulation.

I. Toward A More Robust Theory of Complexity and its Drivers

It is almost trite to observe that modern financial markets are ‘complex’.¹ Curiously, however, scholars in the fields of both law and finance have expended precious little time or effort attempting to theorize this complexity; systematically identify its potential sources, or explore its welfare implications.^{2, 3} *So what makes modern*

¹ For a small sampling of the legal academic work acknowledging the complexity of financial markets, see Steven Schwarcz, “Regulating Complexity in Financial Markets” (2009), 87 Wash. L. Rev. 211; Emiliios Avgouleas, “What Future for Disclosure as a Regulatory Technique? Lessons from the Global Financial Crisis and Beyond” (2009), available at www.ssrn.com; Gregory Krohn and William Gruver, “The Complexities of the Financial Turmoil of 2007 and 2008” (2008), available at www.ssrn.com, and Steven Schwarcz, “Rethinking the Disclosure Paradigm in a World of Complexity” (2004), U. Ill. L. Rev. 1.

² At least part of the explanation for this lack of attention perhaps stems from the fact that the theoretical and empirical literature examining MPT, the M&M capital structure irrelevancy principle, CAPM and the EHM has historically focused on the public markets for equity (and, to a lesser extent, debt) securities. In a recent review of the literature examining the EMH, for example, 53 of the 54 studies cited were primarily or exclusively concerned with its application in the context of public equity markets; see Burton Malkiel, “The Efficient Market Hypothesis and Its Critics” (2003), Centre for Economic Policy Studies Working Paper No. 91, available at www.princeton.edu/~ceps/workingpapers/91malkiel.pdf. This of course makes perfect sense: these theories implicitly rely on the secondary market liquidity typically associated with public capital markets (in effect, to ensure the efficient operation of the arbitrage mechanism which moves markets toward equilibrium). What is more, it is the *public* nature of these markets which afford scholars access to the information necessary to measure how rapidly new information is impacted into security prices. Simultaneously, however, it must be acknowledged that this research strategy generates an inherently biased (and increasingly myopic) sample if one’s ultimate objective is to measure the informational efficiency of modern financial markets. As we shall see, the vast majority of the complexity – and thus the information costs and bounded rationality – within modern financial markets does not emanate from within the relatively transparent (and static) public markets for equity and debt securities.

³ This is not to say, however, that scholars have not attempted to construct models designed to reflect the complex dynamics of modern financial markets; see for example, Robert May, Simon Levin and George Sugihara, “Ecology for Bankers” (2008), 451 Nature 893; Robert May and Nimalan Arinaminpathy, “Systemic Risk: The Dynamics of Model Banking Systems” (2010), 46 J. of Royal Society Interface 823, and Prasanna Gai, Andrew Haldane and Sujit Kapadia, “Complexity, Concentration and Contagion” (2011), 58:5 J. of Monetary Econ. [forthcoming], available at www.bankofengland.co.uk. Many of these models share a common methodology – first employed by Herbert Simon – which is, in effect, based on identifying similarities between financial systems, on the one hand, and physical, biological or other social systems, on the other; see Herbert Simon, “The Architecture of Complexity” (1962), 106:6 Proceedings of the American Philosophical Society 467. The obvious shortcoming of this methodology, however, is that while such models might mimic the complexity of financial markets (at a given moment of time), they fail to explain *why* financial markets are complex. This is the question at the heart of the present inquiry.

financial markets complex? We can take our first tentative steps toward answering this question by constructing a simple (and hopefully intuitive) framework which conceptualizes complexity as a function of two variables. The first variable encompasses the costs incurred by actors in connection with searching for, acquiring, filtering, manipulating and analyzing information (i.e. information costs). The second variable, then, consists of cognitive and temporal constraints on an actor's ability to process this information (i.e. bounded rationality).⁴

As a starting point, we can envision a perfectly rational and fully informed actor. This actor incurs no information costs and processes information completely free from the distortions of bounded rationality. In effect, the attributes of this hypothetical actor reflect the central assumptions of conventional financial theory. Simultaneously, we can envision a real world actor – be it a single individual or a group of individuals working together in a firm or other organization – attempting to understand a particular constellation of facts or state of the world: a ‘snowball’ interest rate swap; the balance sheet of a large, complex financial institution (LCFI), or the myriad of systemic interconnections between financial markets and institutions, for example. To fully understand this constellation of facts or state of the world, this real world actor must invest in the acquisition, filtering, manipulation and analysis of

⁴ Bounded rationality is a semi-strong form of rationality pursuant to which economic actors are assumed to be ‘*intendedly* rational, but only *limitedly* so’; Oliver Williamson, *The Economic Institutions of Capitalism* (The Free Press, New York, 1985) at 45, citing Herbert Simon, *Administrative Behavior*, 2ed. (Macmillan, New York, 1961) at xxiv. The concept of bounded rationality is grounded in the notion that, if the mind is a scarce resource, there will exist cognitive and temporal constraints on our ability to process information. The sources and species of bounded rationality and related cognitive biases are themselves already the subject of a rich theoretical and experimental literature upon which the present inquiry does not attempt to build. For a survey of this literature, see Nicholas Barberis and Richard Thaler, “A Survey of Behavioral Finance” in George Constantinides, Milton Harris and René Stulz, (eds.), *Handbook of the Economics of Finance* (Elsevier, Amsterdam, 2003). See also, Daniel Kahneman, *Thinking, Fast and Slow* (Penguin, London, 2011).

information.⁵ It may also exhibit some form and measure of bounded rationality. The difference between our hypothetical and real world actors can be understood in terms of their respective *tolerances for complexity*.

The first important insight we can draw from this framework is that an actor's tolerance for complexity is inherently relative.⁶ What one actor views as immediately comprehensible, another may view as too complex to understand. Thus, we can envision a second real world actor attempting to understand the *same* constellation of facts or state of the world, but facing a *different* quantum of information costs and/or measure (and/or kind) of bounded rationality. Ultimately, we would expect the differences between each actor's information costs and bounded rationality – i.e. their relative tolerances for complexity – to be a function of several variables. Variables specific to each actor might conceivably include, *inter alia*, economies of scale in the production and/or analysis of information; technological and/or resource constraints and, importantly, the actor's initial position *within* the constellation of facts or state of the world in question. External variables, meanwhile, might include market structure, regulation and other institutional features which subsidize (or impede) the free flow of information and thus level (or tilt) the informational playing field.

We might thus predict, for example, that an LCFI acting as a market maker within an opaque, dealer-intermediated, quote-driven market might enjoy a higher tolerance for complexity in respect of that market than, say, a pension fund manager, a regulator, or a law professor perched high atop his ivory tower. Put differently, we would expect to observe clear *hierarchies* vis-à-vis different actors in terms of both

⁵ And, where our actor is an organization, coordination costs.

⁶ Unless, of course, we assume that *all* actors are perfectly rational and fully informed.

access to information and the resources needed to effectively process it. As we shall see, such hierarchies abound within modern financial markets: hierarchies between market participants; between market participants and regulators and, indeed, even between regulators. Ultimately, this simple observation – essentially that complexity is a subjective phenomenon and that, as a result, different actors may find themselves asymmetrically exposed to its dangers and opportunities – helps explain the existence and potential value of financial intermediaries. As explored in greater detail below, it is also the source of many of the regulatory challenges stemming from the complexity of modern financial markets.

The second important insight we can draw from this framework is that our tolerance for complexity is not infinite.⁷ More specifically, we can envision a frontier beyond which the combination of high information costs and bounded rationality can be expected to render full comprehension impossible within a given timeframe. Beyond the complexity frontier, actors will be forced to employ heuristics as a second-best strategy for understanding a particular set of facts or state of the world.^{8,9} As we shall see, the mere acknowledgement that there may exist elements of the financial system which are so complex as to render full comprehension a practical impossibility has potentially profound regulatory implications.

With these insights in hand, the next step is to identify the sources (or drivers) of high information costs – and information failure – within financial markets and the

⁷ Unless, once again, we assume that actors are perfectly rational and fully informed.

⁸ This is not to suggest, of course, that actors might not also elect to employ heuristics in less complex circumstances. Ultimately, we are all satisficers.

⁹ There exists a more fundamental question here, although one which resides beyond the scope of this thesis, as to how to conceptualize the behavior of market participants beyond the complexity frontier. Intuitively, the autonomous rational actor model upon which conventional financial theory tends to rely would seem to possess limited explanatory power beyond the point at which high information costs and bounded rationality combine to force the use of heuristics.

points of intersection between these costs and our own bounded rationality. Predictably, of course, complexity itself hampers our ability to construct anything resembling a complete account of these drivers or the various interactions between them. Nevertheless, taking a broad look across the financial system, it is possible to identify at least six – in many respects intertwined and overlapping – sources of complexity: technology, opacity, interconnectedness, fragmentation, regulation and reflexivity. We will examine each in turn.

As we shall see, these drivers of complexity can be broken down into three categories: (1) those influencing our capacity to process information; (2) those impacting on the availability and/or intelligibility of the information itself and (3) those accelerating the velocity of informational change. The lines of demarcation between each of these categories can perhaps be distilled by drawing an analogy with marksmanship. The first category – which includes both financial and information technology – can be understood as relating to both the quality of the rifle and the proficiency of the individual marksman. The second category, meanwhile, includes drivers which – like darkness, fog, foliage or distance – obscure the visibility of the target. Drivers falling into this category include technology (again), opacity, interconnectedness, fragmentation and regulation. Lastly, we must somehow account for the fact that the target itself may be in motion. Thus, we need a category and driver – reflexivity – which reflects the inherent dynamism of modern financial markets. Ultimately, just as we would expect each of these factors to influence the accuracy of the marksman's shot, so too would we expect each driver of complexity to influence the extent to which, in practice, actors are able to understand various constellations of facts or states of the world.

Technology. There is little doubt that advances in information technology, telecommunications and financial theory over the course of the past half century have reduced the costs of acquiring, filtering, manipulating and analyzing information. In the process, these advances have made a positive (gross) contribution toward the informational efficiency of financial markets: increasing the speed with which market prices come to reflect available information.¹⁰ Faster and more powerful computers have enabled market participants to employ sophisticated and data-intensive quantitative (i.e. statistical) techniques to calculate the value of financial assets with greater precision and to better understand and more effectively manage various risks.¹¹ A revolution in telecommunications, meanwhile, has made possible the almost instantaneous transmission of information to every corner of the globe.¹² Finally, breakthroughs in financial theory – perhaps most notably the development of MPT¹³, CAPM¹⁴, the Black-Scholes option pricing model (Black-Scholes)¹⁵ and their

¹⁰ Robert Merton, “Financial Innovation and the Management and Regulation of Financial Institutions”, National Bureau of Economic Research Working Paper No. 5096 (April 1995).

¹¹ Powerful computers, for example, have made possible the use of ‘value-at-risk’ (VaR) methodologies and portfolio stress testing to measure and manage the risk of institutional insolvency; Scott Frame and Lawrence White, “Empirical Studies of Financial Innovation: Lots of Talk, Little Action?” (2004), 42:1 J. of Economic Lit. 116 at 8, available at www.ssrn.com (this and subsequent pinpoint references refer to the SSRN version of this article). See also Scott Frame and Lawrence White, “Technological Change, Financial Innovation, and Diffusion in Banking”, Federal Reserve Bank of Atlanta Working Paper No. 2009-10 (March 2009), available at www.ssrn.com and Lawrence White, “Technological Change, Financial Innovation, and Financial Regulation in the U.S.: The Challenges for Public Policy”, Wharton Centre for Financial Institutions Working Paper 97-33 (1997), available at www.ssrn.com.

¹² Indeed, strong linkages between revolutions in telecommunications and finance are by no means a recent phenomenon. From the telegraph, consolidated ticker tape and electronic fund transfer, to the fax, the internet and the blackberry, the evolution of finance is intricately intertwined with the evolution of how we communicate with one another; see Kenneth Garbade and William Silber, “Technology, Communication, and the Performance of Financial Markets” (1978), 33 J. of Finance 819.

¹³ MPT flows from the premise that there is a tradeoff between risk and return. On the basis of certain assumptions, MPT prescribes for a given level of risk (i.e. variance) how to select a portfolio with the highest possible return (or, conversely, for a given level of return, how to select a portfolio with the least risk). MPT thus makes possible the construction of an efficient frontier from which an investor can choose their desired portfolio on the basis of their individual risk preferences. One of the key insights of MPT is that an asset should not be selected on the basis of its individual risk-return characteristics but, rather, with a view to the effect of its addition in terms of the overall risk-return characteristics of the investor’s portfolio; see Harry Markowitz, “Portfolio Selection” (1952), 7:1 J. of

respective progeny – have given birth to a universe of new financial instruments which have been credited with, amongst other contributions, enhancing price discovery, market liquidity and systemic resilience.¹⁶ In short, there exists a strong *prima facie* argument that these technological advancements have combined to significantly lower information costs within modern financial markets.

Upon closer scrutiny, however, these technological advancements are also the *source* of potentially significant information costs.¹⁷ The origins of this informational dark side can be traced back to conceptual breakthroughs such as MPT, CAPM and Black-Scholes, the resulting emergence of ‘financial science’¹⁸ within the field of economics, and its subsequent rise to prominence within the theory and practice of modern finance.¹⁹ The sophisticated mathematical models residing at the core of this discipline render its theoretical underpinnings largely inaccessible to all but a

Finance 77 and Harry Markowitz, *Portfolio Selection: Efficient Diversification of Investments* (John Wiley & Sons, New York, 1959).

¹⁴ CAPM is used to calculate the expected rate of return on an asset to be added to a diversified portfolio on the basis of (1) the risk free rate of return; (2) the sensitivity of the asset to non-diversifiable (systemic) risk, and (3) the expected market return; see William Sharpe, “Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk” (1964), 19:3 *J. of Finance* 425, and Jack Treynor, “Toward a Theory of Market Value of Risky Assets” (1962) in Robert Korajczyk, (ed.), *Asset Pricing and Portfolio Performance: Models, Strategy and Performance Metrics* (Risk Books, London, 1999).

¹⁵ Black-Scholes is used to calculate the exact theoretical price of a real option; see Fischer Black and Myron Scholes, “The Pricing of Options and Corporate Liabilities” (1973), 81 *J. of Pol. Econ.* 637. While the original Black-Scholes model technically applied to the valuation of European options (i.e. options exercisable only at maturity), its progeny have been adapted to value far more exotic instruments.

¹⁶ The role played by OTC derivatives in enhancing price discovery, market liquidity and systemic resiliency are explored in greater detail in [Chapter 2](#).

¹⁷ This is not to suggest that these costs outweigh the informational benefits of such technological advancements. My point here is simply that the existence of these costs contributes, utilizing my definition, to the complexity of modern financial markets.

¹⁸ See Henry Hu, “Misunderstood Derivatives: The Causes of Information Failure and the Promise of Regulatory Incrementalism” (1992-1993), 102 *Yale L.J.* 1457. The discipline is now generally known as financial economics.

¹⁹ For a historical survey of this rise, see Peter Bernstein, *Capital Ideas: The Improbable Origins of Modern Wall Street* (The Free Press, New York, 1992). See also Robert Merton, “Influence of Mathematical Models in Finance on Practice: Past, Present and Future” (1994), 347 *Philosophical Transactions of the Royal Society of London* 451.

relatively small handful of academic economists, along with the so-called ‘quants’ employed by investment banks, hedge funds and other financial institutions.²⁰ Even in practice, the utilization of these models contemplates both information-intensive quantitative processes and the formulation of subjective judgments on the basis of accumulated technical expertise and experience in order to generate important input variables.²¹ Developing a comprehensive understanding of financial theory and how to utilize these models in practice thus requires an enormous upfront investment in human capital. Moreover, as we shall see, the nature and pace of financial innovation demand significant ongoing investment in order to preserve the value of this human capital. Accordingly, while advances in financial theory are largely responsible for laying the foundations of modern (and at times more informationally efficient) financial markets, they must simultaneously be viewed as a potentially significant driver of information costs and, thus, complexity.²²

Advances in financial theory and information technology have further contributed to the complexity of modern financial markets by making possible the development and wide-spread use of new and increasingly sophisticated financial instruments. Specifically, the existence of relatively robust markets for instruments

²⁰ Richard Whitley, “The Transformation of Business Finance Into Financial Economics: The Roles of Academic Expansion and Changes in U.S. Capital Markets” (1986), 11 *Acct. Org. & Soc’y* 171 at 173 and Hu (n 18) at 1470.

²¹ The Black-Scholes option pricing model is a good example. Prior to the development of Black-Scholes, market participants seeking to determine the value of an option faced a problem: namely, they were required to accurately predict, *inter alia*, the probability distribution of the possible prices for the underlying asset at maturity; Hu (n 18) at 1468, citing Stephen Figlewski, “Theoretical Valuation Models” in Stephen Figlewski, William Silber and Marti Subrahmanyam, (eds.), *Financial Options: From Theory to Practice* (McGraw Hill, New York, 1992). Market participants were thus required to formulate subjective judgments about the state of future market conditions. A significant part of the (perceived) genius of Black-Scholes was that it enabled market participants to calculate the precise theoretical value of a European option without having to construct such a probability distribution. In reality, however, Black-Scholes simply substituted the need to predict future asset prices with the need to predict the future *volatility* of those prices.

²² Hu (n 18) at 1470.

such as swaps²³, asset-backed securities (ABS)²⁴ and collateralized debt obligations (CDOs)²⁵ implicitly rely on two necessary, if not individually sufficient, conditions: (1) the development of rational (algorithmic) models for determining their intrinsic value, and (2) the ability to meet the computational demands of these models within a timeframe which enables market participants to profit from their use.²⁶ Financial theory has satisfied the first condition, advances in information technology the second.

The development of the ‘originate-and-distribute’²⁷ mortgage lending model provides an illustrative example. Recent years have witnessed the increasing use of computer-generated credit scoring tools to process residential mortgage applications. The sub-prime mortgage market in particular was (originally) predicated on the use of sophisticated quantitative tools to assist lenders in better managing their exposure to high risk borrowers.²⁸ The utilization of these tools served to enhance the transparency of mortgage underwriting standards, thereby facilitating the development of a deep secondary market for mortgages repackaged and distributed via the process of securitization.²⁹ In very broad terms, securitization is a financing

²³ For a more detailed description of the definition and mechanics of swaps, *see* [Chapter 2](#).

²⁴ An ABS is a security the income stream from which is backed by a pool of (typically illiquid) underlying assets such as mortgages, automobile loans, credit card receivables or student loans.

²⁵ A CDO is a type of ABS typically created to hold fixed income assets such as bonds, CDS or, frequently, other ABS.

²⁶ In the absence of the first condition, one would expect a wide divergence between bid-ask spreads, ultimately leading either to very thinly traded markets or complete market failure. In the absence of the second condition, meanwhile, one would expect the existence of significant transaction costs to alter the economic incentives of potential market participants, ultimately with much the same effect. A third pre-condition for many instruments – and in particular OTC derivatives – was the development of standardized legal documentation; *see* [Chapter 4](#).

²⁷ Or ‘originate-to-distribute’, depending on your views respecting why financial intermediaries innovate; *see* [Part II](#).

²⁸ Frame and White (2009) (n 11) at 7.

²⁹ *See* John Straka, “A Shift in the Mortgage Landscape: The 1990s Move to Automated Credit Evaluations” (2000), 11:2 J. of Housing Research 207; Michael LaCour-Little, “The Evolving Role of

technique which transforms illiquid assets such as mortgages and loan receivables into more readily alienable ABS (or *MBS* in the case of *mortgages*).³⁰ This is achieved by pooling assets together and then slicing, dicing and reconstituting the associated cash flow rights into separate tranches. On the sell side, the design of these *MBS* – and especially the pricing of the tranches – is itself heavily reliant on, once again, sophisticated financial models and modern information technology.³¹ On the buy side, meanwhile, purchasers employ the same technologies to measure and manage the risks associated with holding these securities in their portfolios.³² At every stage of the process, financial theory and information technology combine to facilitate the development of new financial instruments and markets. While the acronyms may change, this same fundamental story can be observed playing out across modern financial markets.

So how have these developments rendered financial markets more complex?

In the wake of the GFC, it has been widely acknowledged that even the most ostensibly sophisticated counterparties failed to grasp the technical nuances of many of the new instruments and markets made possible by the confluence of advances in

Technology in Mortgage Finance” (2000), 11:3 *J. of Housing Research* 173; Susan Gates, Vanessa Perry and Peter Zorn, “Automated Underwriting in Mortgage Lending: Good News for the Underserved?” (2002), 13:2 *Housing Policy Debate* 369, and Scott and Frame (2009) (n 11) at 14-15.

³⁰ Among other implications, securitization has the effect of reducing (and potentially eliminating) lenders’ exposure to borrower default. As a corollary, it also dilutes the incentives of lenders to screen for and monitor creditor and asset quality.

³¹ Frederic Mishkin, “Financial Innovation and Current Trends in U.S. Financial Markets”, National Bureau of Economic Research Working Paper No. 3323 (April 1990) at 8-9, available at www.nber.org/papers/w3323, and Peter Tufano, “Financial Innovation” in George Constantinides, Milton Harris and René Stultz (eds.), *Handbook of the Economics of Finance* (Elsevier, Amsterdam, 2003) at 321.

³² David Li, for example, developed a formula known as the Gaussian copula which became widely employed prior to the GFC to evaluate the relationships between the default risks associated with various assets held within structured finance vehicles; see Felix Salmon, “Recipe for Disaster: The Formula That Killed Wall Street”, *Wired* (February 23, 2009), available at www.wired.com.

financial theory and information technology.³³ Gary Gorton, for example, has observed that many market participants did not fully appreciate how the unique structure of sub-prime mortgages made the MBS and CDOs into which they were repackaged particularly sensitive to volatility in underlying home prices.³⁴ Along a similar vein, Joshua Coval, Jakub Jurek and Erik Stafford have demonstrated how ratings agencies and other market participants failed to perceive both (1) how the structure of CDOs (and CDO-squared³⁵) amplified initial errors with respect to the calculation of default risk on underlying assets, and (2) the systematic interconnections between these assets.³⁶ Advances in financial theory and information technology have, accordingly, proven themselves to be less than perfect tools for understanding the complex dynamics of the very instruments and markets which they have combined to make possible.³⁷ Put simply, technology has been unable to keep pace with itself. The (net) contribution of technology toward the complexity of modern financial markets must ultimately be measured by the extent of this imperfection.

Opacity. A second significant driver of complexity is the opacity of many financial institutions, markets and instruments. There are in essence two species of

³³ See for example, *Containing Systemic Risk: The Road to Reform*, Counterparty Risk Management Policy Group III (August 6, 2008) [the “CRMPG III Report”], available at www.occ.treas.gov at 53, observing: “there is almost universal agreement that, even with optimal disclosure in the underlying documentation, the characteristics of these instruments were not fully understood by many market participants.”

³⁴ See Gary Gorton, “The Panic of 2007”, prepared for the Federal Reserve Bank of Kansas City, Jackson Hole Conference (August 2008) at 20-34, available at www.ssrn.com. As Gorton explains, the unique structure of sub-prime mortgages (specifically their short duration, step-up rates and prepayment penalties) effectively provided lenders with an implicit embedded option on home prices.

³⁵ In broad terms, a CDO-squared is simply a CDO which has invested in securities issued by other CDOs.

³⁶ Joshua Coval, Jakub Jurek and Erik Stafford, “The Economics of Structured Finance” (2009), 23:1 *J. of Econ. Perspectives* 3.

³⁷ Indeed, many of these imperfections are attributable to the unrealistic assumptions (e.g. the existence of autonomous rational actors, perfect information, liquidity) underpinning many financial models – assumptions which, not coincidentally, largely mirror those of conventional financial theory.

opacity. The first stems from the simple non-availability of information within a particular segment of the marketplace.³⁸ Markets exhibiting this form of opacity – in particular in terms of price transparency and the identity of counterparties – have historically included those for swaps, ABS, CDOs, repurchase agreements (or ‘repos’)³⁹ and, at least in terms of pre-trade transparency, transactions conducted on alternative trading platforms such as electronic communication networks, crossing networks and so-called ‘dark pools’.^{40, 41} Many financial institutions also exhibit this form of opacity: perhaps the most frequently cited example being the historical lack of transparency surrounding the investors, holdings and trading strategies of hedge funds.⁴² Even more traditional commercial banks, however, exhibit opacity of this variety insofar as the marketplace does not generally possess the borrower or asset specific information needed to accurately determine the composition and risk profile of these institutions’ loan books⁴³ and, accordingly, their enterprise value.⁴⁴ Indeed, the very *existence* of commercial banks is often justified on the basis of their

³⁸ That is, the non-availability of information to a particular subset of market participants.

³⁹ A repurchase agreement is essentially a sale of securities under an agreement by which equivalent securities are to be repurchased at a future date. The duration of these agreements vary from overnight to months or even years, with compensation paid to the seller either in the form of interest or as a mark-up incorporated into the repurchase price. The purchaser may also be required by the seller to post collateral; see Louise Gullifer, (ed.), *Goode on Legal Problems of Credit and Security* (Sweet & Maxwell, London, 2008) at 250.

⁴⁰ Dark pools are effectively private OTC trading platforms used to match orders internally (i.e. between clients of the same firm) and between institutional trading desks; see “Big Traders Dive Into Dark Pools”, *Bloomberg Businessweek* (October 3, 2007), available at www.businessweek.com. See also OICU-IOSCO Consultation Report, “Issues Raised by Dark Liquidity” (October 2010), available at www.iosco.org.

⁴¹ However, as will be explored in greater detail in [Chapter 3](#), financial regulators have in the wake of the GFC moved to implement rules designed to bring greater transparency to many of these markets.

⁴² See Andrew Lo, “Hedge Funds, Systemic Risk, and the Financial Crisis of 2007-2008”, written testimony prepared for the U.S. House of Representatives Committee on Oversight and Government Reform (November 13, 2008) and Willa Gibson, “Is Hedge Fund Regulation Necessary?” (2000), *Temple L. Rev.* 681.

⁴³ Let alone their trading books.

⁴⁴ See Robert Bartlett III, “Making Banks Transparent” (2011), *Vanderbilt L. Rev.* [forthcoming]; Donald Morgan, “Rating Banks: Risk and Uncertainty in an Opaque Industry” (2002), *92:4 Am. Econ. Rev.* 874. For an opposing view, see Mark Flannery, Simon Kwan and Mahendrarajah Nimalendran, “Market Evidence on the Opaqueness of Banking Firms’ Assets” (2004), *71:3 J. of Fin. Econ.* 419.

comparative advantage (vis-à-vis capital markets) in terms of screening for and monitoring asset and creditor quality.⁴⁵ Furthermore, while banks and other financial institutions can be expected to possess a reasonable amount of information regarding their own counterparties, one would at the same time expect a marked decline in the extent and quality of the information they possess in respect of their counterparties' counterparties (and so on down the counterparty daisy chain). Investors in ABS, CDOs and especially CDO-squared face an analogous challenge insofar as it is often not possible to penetrate the layers of securitization in order to evaluate the quality of the underlying assets.⁴⁶ This first species of opacity can thus be understood as giving rise to classic asymmetries of information.

The second species of opacity stems from the dense 'information thicket'⁴⁷ generated by the overwhelming volume of data swirling around within modern financial markets. This opacity is the product of information which, while publicly available in a strictly technical sense, is extremely (if not prohibitively) costly to acquire, filter, manipulate and/or analyze.⁴⁸ The balance sheets and operations of LCFIs exemplify this form of opacity. Citigroup, to take just one example, has over 2,500 subsidiaries, operating in 84 countries, across every conceivable segment of the

⁴⁵ Ben Bernanke, "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression" (1983), 73 *Am. Econ. Rev.* 247; Douglas Diamond, "Financial Intermediation and Delegated Monitoring" (1984), 51 *Rev. of Fin. Stud.* 393, and Andrew Haldane, "Accounting for Bank Uncertainty", Speech to the Information for Better Markets Conference (December 19, 2011), available at www.bankofengland.co.uk.

⁴⁶ Gorton (n 34) at 45 and 59. *See also* Howell Jackson, "Loan Level Disclosure in Securitization Transactions: A Problem with Three Dimensions", Harvard Public Law Working Paper No. 10-40 (July 27, 2010), available at ssrn.com.

⁴⁷ *See* Robert Bartlett III, "Inefficiencies in the Information Thicket: A Case Study of Derivatives Disclosures During the Financial Crisis" (2010), 36:1 *J. Corp. L.* 1. This paper is also avail from www.ssrn.com. Subsequent pinpoint citations refer to the [ssrn](http://ssrn.com) version of this article.

⁴⁸ Schwarcz (2009) (n 1) at 222.

financial services industry.⁴⁹ Moreover, the number of positions held by LCFIs; the technical sophistication of the financial instruments used to take these positions, and the intricate (and potentially contradictory) nature of the resulting market and counterparty exposures render it virtually impossible to construct – in a timely fashion – a comprehensive picture of the overall risk profile of these institutions.^{50, 51} Much of the explanation for the growth of this information thicket in recent years can, once again, be traced back to the development of new financial instruments and, in particular, swaps, ABS, CDOs and repos. As described above, the computational demands associated with many of these instruments are exceptionally high.⁵² As Robert Bartlett observes:

‘Valuing even a single CDO investment – let alone a portfolio of such investments – requires a multi-faceted analysis of a considerable amount of both legal and financial data, ranging from an estimation of the default and prepayment risks of hundreds (potentially thousands) of underlying assets, analysis of the particular overcollateralization and subordination provisions attached to particular tranches of CDO securities, and an assessment of potential counterparty risk of the CDO’s various hedge counterparties.’⁵³

⁴⁹ See Richard Herring and Jacopo Carmassi, “The Corporate Structure of International Financial Conglomerates: Complexity and Its Implications for Safety and Soundness” in Allen Berger, Phillip Molyneux and John Wilson, (eds.), *The Oxford Handbook of Banking* (Oxford University Press, Oxford, 2010) and Hamid Mehran, Alan Morrison and Joel Shapiro, “Corporate Governance of Banks: What Have We Learned from the Financial Crisis?”, Federal Reserve Bank of New York Staff Report No. 502 at 4-5, available at www.ssrn.com.

⁵⁰ As arguably evidenced by the fact that, in retrospect, the pre-GFC CDS spreads on LCFIs reflected significant under-pricing of the default risks associated with these institutions (the primary counter-argument being that the low spreads reflected the so-called ‘too-big-too-fail’ subsidy). In fact, CDS spreads within the financial services sector suggested that risks were at historically low levels; see Financial Services Authority, *The Turner Review: A Regulatory Response to the Global Banking Crisis* (2009) [the “Turner Review”] at 46. For a somewhat different perspective on the informational value of CDS spreads in the run-up to the crisis, see Oliver Hart and Luigi Zingales, “A New Capital Regulation for Large Financial Institutions” (2011), Fondazione Eni Enrico Mattei Research Paper No. 124.2009 at 27, available at www.ssrn.com.

⁵¹ The information thicket surrounding LCFIs is exacerbated by the existence of the first species of opacity insofar as, for example, Generally Accepted Accounting Principles (GAAP) mandate that many positions need only be reported in the aggregate.

⁵² Schwarcz (2004) (n 1) at 10 and 13 and Gorton (n 34) at 48-49. See also Warren Buffett, Letter to Shareholders (May 2, 2009), available at www.berkshirehathaway.com/letters/2008ltr.pdf and CRMPG III Report.

⁵³ Bartlett (n 47) at 4.

Furthermore, insofar as these instruments facilitate the reconstitution and redistribution of risk within the financial system (often via transactions within relatively opaque markets), they obscure the location, nature and extent of the ultimate exposures.⁵⁴ Like the first species of opacity, the information thicket manifests the potential to generate acute asymmetries of information. Unlike the first, however, this second species of opacity thus raises the additional and rather disturbing prospect that information may become altogether ‘lost’.⁵⁵

Robert Bartlett’s event study involving Ambac Financial provides a compelling illustration of how the information thicket can result in the loss of information.⁵⁶ Ambac was and is a large, publicly-listed monoline insurance company which, prior to the GFC, was active in the business of insuring multi-sector CDOs. As a result of the confluence of (1) statutory accounting rules mandating disclosure by monoline insurers of their largest exposures, and (2) European regulatory requirements mandating disclosure of large volumes of legal and financial documentation in respect of insured CDOs, it is possible to construct a relatively complete picture of Ambac’s exposures and, accordingly, its financial health.⁵⁷ In 2008, a number of CDOs insured by Ambac experienced multi-notch credit rating downgrades. Bartlett’s analysis of the abnormal returns surrounding the announcement of each of these downgrades revealed no significant reaction in Ambac’s stock price, short-selling data, or the CDS spreads on its senior debt securities.⁵⁸ The subsequent disclosure of these downgrades within Ambac’s

⁵⁴ Schwarcz (2004) (n 1) at 10 and 13.

⁵⁵ In the sense of being unknown to *anyone*; Gorton (n 34) at 45.

⁵⁶ See Bartlett (n 47).

⁵⁷ Ibid. at 5 and 8-12.

⁵⁸ Ibid. at 23-35.

quarterly earnings announcement, however, was associated with significant one-day abnormal returns.⁵⁹ Bartlett attributes this inefficiency to the low salience of individual CDOs within Ambac's portfolio and the logistical challenges of processing CDO disclosures.⁶⁰ In effect, however, the density of the information thicket overwhelmed the powerful incentives possessed by market participants to seek out and exploit such pricing anomalies.

Interconnectedness. The ongoing process of market liberalization – aided by advances in telecommunications⁶¹ – has sparked a pronounced trend toward greater globalization and integration of financial markets and institutions. This process has generated complex linkages within and between these markets and institutions and, importantly, the real economies they support. Financial institutions are connected to one another via their (increasingly complex) counterparty arrangements.⁶² The balance sheets of these institutions, meanwhile, are connected to markets – and via markets to the balance sheets of other financial institutions – through mark-to-market accounting methods.⁶³ These balance sheet linkages in turn generate systemic feedback effects between asset values, leverage and liquidity.⁶⁴ At an even higher

⁵⁹ Ibid. at 28. Using a single factor market model, Bartlett reports a one-day abnormal return of -43%.

⁶⁰ Ibid. at 1, 7 and 48-49.

⁶¹ Mishkin (n 31) at 10.

⁶² And, indeed, their counterparties' counterparty arrangements; Ricardo Caballero and Alp Simsek, "Complexity and Financial Panics", National Bureau of Economic Research Working Paper 14997 (May 2009) at 2, available at www.ssrn.com. Furthermore, the widespread use of collateral in connection with many of these arrangements can generate linkages between the relevant counterparties (and markets) and prices within the markets for the collateral assets. During the GFC, for example, decreases in the value of senior tranches of sub-prime MBS held as collateral in the repo market triggered what eventually became the complete paralysis of this market; *see* Gorton (n 34).

⁶³ Mark-to-market or 'fair value' accounting refers to the practice, reflected in GAAP and International Financial Reporting Standards (IFRS), of accounting for the value of an asset on the basis of its current market price, the market price of similar assets or, if neither is available, another metric of 'fair' value.

⁶⁴ The basic (spiral) pattern of these effects can be summarized as follows: (1) rising asset values inflate bank balance sheets, allowing them to extend greater leverage; (2) the resulting expansion of credit stimulates demand for assets and liquidity; and (3) increased demand for assets and liquidity has the effect of inflating prices while simultaneously reducing the liquidity premium on the assets. These

macro level, household savings patterns in China⁶⁵ are linked to global asset values via the resulting demand for (primarily U.S.) government securities, the consequent reduction in yields on these securities, and the incorporation of these lower yields as a proxy for the real risk-free rate into the discount rates used in asset pricing models.⁶⁶

These are but a small sampling of the myriad of intricate, constantly evolving and often undetected interconnections which shape modern financial markets. While we have arguably come some distance in identifying and understanding the dynamics of some of these interconnections⁶⁷, the acquisition, analysis and ongoing monitoring of markets and institutions which this entails comes at a high (informational) cost. Put differently, these interconnections make it more costly to identify and monitor potential sources of risk within the financial system.⁶⁸ What is more, the sheer number of these linkages, their intricacy and their rapid evolution suggest that our ability to identify and understand them will ultimately be constrained by bounded rationality. It is perhaps not surprising, therefore, that many of these interconnections are only revealed (or their importance fully understood) at the point at which they become channels for the transmission of financial shocks. In this respect,

effects operate in reverse in an environment of falling asset prices; *see* Tobias Adrian and Hyun Song Shin, “Liquidity and Financial Cycles”, presentation to the 6th BIS Annual Conference (June 2007), available at www.bis.org and IMF, “Assessing the Systemic Implications of Financial Linkages” in *Global Financial Stability Report*, Volume 2 (April 2009), available at www.imf.org.

⁶⁵ Or, more precisely, China’s resulting current account surplus (combined with its managed exchange rate regime).

⁶⁶ *See* Turner Review at 11-13. This has a double-barreled effect in terms of stimulating demand: (1) lower yields on U.S. government securities reduce real interest rates (thereby making it cheaper to employ leverage to purchase assets) and (2) the incorporation of lower yields into discount rates reduces risk premiums (thereby making the assets themselves cheaper).

⁶⁷ For an overview of some of the tools used to evaluate systemic linkages within the financial system (including the network approach; co-risk models; distress dependence matrices, and default intensity models), *see* IMF (n 64). For a critique of some of these tools, *see* Steven Schwarcz, “Systemic Risk” (2008), 97 *Geo. L. J.* 193 at 206.

⁶⁸ Avgouleas (n 1) at 22.

interconnectedness can thus be understood as representing a significant source of opacity – and thus complexity – within modern financial markets.

Fragmentation. One of the most striking features of modern financial markets is the extent to which they result in the fragmentation of economic interests. The archetypal example of this is securitization.⁶⁹ As Kate Judge explains, by repackaging underlying assets such as mortgages into ABS, repackaging ABS into CDOs, and CDOs into CDO-squared, securitization transforms what was initially in many instances a bilateral relationship into a complex web involving potentially hundreds of dispersed counterparties.⁷⁰ Judge has coined the term ‘fragmentation nodes’⁷¹ to describe this category of transactions. Each successive fragmentation node attenuates the informational and economic relationship between counterparties and the underlying assets in which they have, ultimately, invested.⁷² This attenuation has the double-barreled effect of (1) increasing information and coordination costs for counterparties and (2) diluting their incentives to coordinate their activities and/or invest in the acquisition of information.⁷³ Like interconnectedness, fragmentation thus represents a potentially significant driver of opacity within modern financial markets.⁷⁴

Regulation. The complexity of modern financial markets is further compounded by the complexity of the regulatory regimes which govern them. This

⁶⁹ Although, as we will see in [Chapter 2](#), many species of OTC derivatives – and in particular CDS – result in a similar form and degree of fragmentation.

⁷⁰ Kate Judge, “Fragmentation Nodes: A Study in Financial Innovation, Complexity and Systemic Risk” (2011), *Stanford L. Rev.* [forthcoming] at 3, 4, 25 and 38, available at www.ssrn.com.

⁷¹ *Ibid.* at 3.

⁷² *Ibid.*

⁷³ *Ibid.* at 4 and 61-64.

⁷⁴ *Ibid.* at 4.

regulatory complexity manifests both substantive and structural elements. Substantive regulatory complexity stems from what U.S. Senator Charles Schumer and New York Mayor Michael Bloomberg, speaking in reference to the U.S. regulatory landscape, have characterized as the ‘thicket of complicated rules’⁷⁵ which have built up over time within many regulatory regimes. The recently enacted Dodd-Frank *Wall Street Reform and Consumer Protection Act*⁷⁶, to take one example, runs to 848 pages, is estimated to require up to 243 new federal regulations⁷⁷ and is believed by many – no doubt speaking with a touch of hyperbole – to manifest a ‘trillion unintended consequences’.⁷⁸ This comes on top of the substantial pre-existing edifice of federal securities laws, regulations and jurisprudence governing U.S. financial markets. Synthesizing this regulation – to say nothing of staying abreast of new regulatory developments – represents no small challenge for either market participants or financial regulators.

Structural regulatory complexity, meanwhile, stems from the (growing) disconnect between the increasingly globalized and integrated structure of many financial markets and institutions, on the one hand, and the fragmentation exhibited within and between many regulatory regimes, on the other.⁷⁹ In the U.S., for example, responsibility at the federal level is currently divided between a cacophony of regulators including the Federal Reserve Board; Financial Stability Oversight Council (FSOC); Securities and Exchange Commission (SEC); Commodity Futures

⁷⁵ McKinsey & Co., *Sustaining New York’s and the US’ Global Financial Services Leadership* (City of New York and United States Senate, 2007) [the “Bloomberg Report”] at ii.

⁷⁶ Pub. Law No. 111-203 (2010) [the “Dodd-Frank Act”].

⁷⁷ This estimate was made by New York law firm Davis Polk & Wardwell; see “The Uncertainty Principle”, *The Wall Street Journal* (July 15, 2010), available at www.wsj.com.

⁷⁸ See “A Trillion Unintended Consequences”, *The Wall Street Journal* (July 7, 2010), available at www.wsj.com.

⁷⁹ Merton (n 10) at 31.

Trading Commission (CFTC); Federal Deposit Insurance Corporation (FDIC); Financial Industry Regulatory Authority (FINRA); Office of the Comptroller of the Currency (OCC); Federal Housing Financing Agency (FHFA), and Consumer Financial Protection Bureau (CFPB).⁸⁰ A similar degree of regulatory fragmentation can be observed within the E.U., where the new European Systemic Risk Board (ESRB), European Banking Authority (EBA), European Securities and Market Authority (ESMA) and European Institutional and Occupational Pensions Authority (EIOPA) must coordinate their activities both with each other *and* with national supervisors in each of the bloc's 27 member states.⁸¹ Ultimately, this regulatory fragmentation results in higher information costs for market participants seeking to understand and comply with regulation.⁸² What is more, the inevitable gaps generated by this fragmentation open the door to regulatory arbitrage.⁸³ As we shall see, these gaps can also provide the stimulus for financial innovation and, as a result, contribute still further to the complexity of modern financial markets.

Reflexivity. Complexity does not exist independently of the observer.⁸⁴ It is observers, after all, who incur information costs and who are inevitably constrained by bounded rationality. Yet we are not simply passive observers within financial markets: we are *participants*. Economists develop theories of market behavior which in turn influence the very behavior of market participants which economists seek to

⁸⁰ Compounding this fragmentation, many segments of the U.S. financial services industry are also highly regulated at the state level.

⁸¹ For an overview of the new structure of financial supervision in the E.U., see http://ec.europa.eu/internal_market/finances/committees/index_en.htm. See also Eilis Ferran, "Understanding the New Institutional Architecture of E.U. Financial Market Supervision" (2011), available at www.ssrn.com.

⁸² Dan Awrey, "The FSA, Integrated Regulation and the Curious Case of OTC Derivatives" (2010), 13:1 U. Penn. J. of Bus. L. 101.

⁸³ See Chapters 2 and 6 for a more fulsome discussion of regulatory arbitrage.

⁸⁴ A fact which is reflected in the framework for understanding complexity described in this chapter.

understand.⁸⁵ Asset values effect our perception of risk, which effects the availability of credit, which effects asset values.⁸⁶ Regulators introduce rules designed to constrain the behavior of market participants, incentivizing market participants to find ways of circumventing these constraints, thereby necessitating further regulatory intervention.⁸⁷ The interactions between the cognitive perceptions of market participants and regulators, the actions predicated on these perceptions and the impact of these actions within markets generate complex and often self-reinforcing feedback loops. George Soros has characterized the interference created by these feedback loops as ‘reflexivity’.⁸⁸ As Soros explains:

‘In situations that have thinking participants, there is a two-way interaction between the participants’ thinking and the situation in which they participate. On the one hand, participants seek to understand reality; on the other, they seek to bring about a desired outcome. The two functions work in opposite directions: in the cognitive function reality is the given; in the participating function, the participants’ understanding is the constant. The two can interfere with each other by rendering what is supposed to be given, contingent... Reflexivity renders the participants’ understanding imperfect...’⁸⁹

Further explaining:

‘The imperfection I am concerned with arises because we are participants. When we act as outside observers we can make statements that do or do not correspond to the facts without altering the facts; *when we act as participants, our actions alter the situation we seek to understand.*’⁹⁰

Investment in the acquisition, filtering, manipulation and analysis of information with

⁸⁵ See Donald Mackenzie, *An Engine, Not A Camera* (MIT Press, Cambridge, 2006).

⁸⁶ To clarify, asset values effect our perception of risk (and thus the availability of credit) primarily by impacting the value of the collateral pledged and received in connection with the extension of credit.

⁸⁷ Edward Kane has characterized this interaction as the ‘regulatory dialectic’; Edward Kane, “Technology and the Regulation of Financial Markets” in Anthony Saunders and Lawrence White, (eds.), *Technology and the Regulation of Financial Markets: Securities, Futures and Banking* (Lexington Books, Lexington, 1986) at 187-193.

⁸⁸ George Soros, *The Alchemy of Finance* (John Wiley & Sons, New Jersey, 2003) at 2.

⁸⁹ Ibid. at 2.

⁹⁰ Ibid. [emphasis added].

a view to better understanding the complex dynamics of modern financial markets (whether in search of knowledge or profit or as a means of achieving regulatory ends) will thus invariably alter these dynamics, thereby demanding the incursion of further information costs.⁹¹ It is a game without end. Furthermore, our location *within* the object of study – indeed, ultimately, *as the object of study* – would, intuitively, seem likely to magnify the extent of our bounded rationality. Accordingly, while many economists have tended to shy away from the utilization of concepts such as reflexivity, any systematic attempt to understand the drivers of complexity within modern financial markets must somehow account for this uniquely human element.

Technology, opacity, interconnectedness, fragmentation, regulation and reflexivity together generate significant information costs and set us on a collision course with our own bounded rationality. In the process, they drive financial markets toward – and potentially beyond – the complexity frontier: often leading these markets to function in very different ways from those posited by conventional financial theory. Indeed, this process is in many ways the defining feature of what I have characterized as *modern* financial markets. Yet this is only one half of the story. To more fully appreciate the regulatory challenges posed within modern financial markets we must also examine the unique nature of financial innovation and, ultimately, the important relationship between complexity and innovation. In many respects, this examination boils down to a single question: *who benefits from the complexity of modern financial markets?*

⁹¹ Schwarcz (2009) (n 1) at 238.

II. Toward a Supply-Side Theory of Financial Innovation

The word ‘innovation’ brings to mind products and processes – the printing press, indoor plumbing, penicillin, etc. – which have unequivocally made the world a better place. Economists, in contrast, employ the term in a somewhat more expansive – and, on the surface at least, less normative – fashion to describe unanticipated shocks to the economy.⁹² Beneath this veneer of academic objectivity, however, there survives a marked tendency within the literature to view these unanticipated shocks as being more in the nature of ‘unforecastable *improvements*’.⁹³ Perhaps nowhere is this more clearly reflected than in the conventional economic view of *financial* innovation. Scott Frame and Lawrence White, for example, define financial innovation as “something new that reduces costs, reduces risks, or provides an improved product/service/instrument that better satisfies financial system participants’ demands”.⁹⁴ Robert Merton, meanwhile, rather boldly characterizes financial innovation as the driving force behind the global financial system’s march toward greater economic efficiency.⁹⁵

While it is obviously difficult to ascertain with any certainty, this view appears likely to have been influenced by Joseph Schumpeter’s conception of

⁹² Along with the responses of economic actors to these shocks; Tufano (n 31) at 310.

⁹³ Merton Miller, “Financial Innovation: The Last 20 Years and the Next” (1986), 21:4 J. of Fin. & Quant. Anal. 459 at 460 [emphasis added]. and Merton (n 10) at 6 (‘Looking at financial innovations... one sees them as the force driving the global financial system towards its goal of greater economic efficiency.’).

⁹⁴ Frame and White (2009) (n 11) at 4. See also Frame and White (2004) (n 11) at 5 (‘Profit-seeking enterprises and individuals are constantly seeking new and improved products, processes, and organizational structures that will reduce their costs of production, better satisfy customer demands, and yield greater profits... *When successful, the result is an innovation.*’ [emphasis added]). For more recent work in which the dominance of this demand-side view is evident, see Nicola Gennaioli, Andrei Shleifer and Robert Vishny, “Neglected Risks, Financial Innovation, and Financial Fragility” (2010), National Bureau of Economic Research Working Paper 16068, available at www.ssrn.com, in which the authors explicitly adopt a model which ‘shares with traditional accounts of financial innovation... the view that innovation is driven by investor demand for particular cashflow patterns’; *ibid* at 4.

⁹⁵ Merton (n 10) at 6.

innovation as the catalyst of the ‘Creative Destruction’ which fuels growth within capitalist economies.⁹⁶ As Schumpeter explains:

‘The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers, goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates.’⁹⁷

Continuing:

‘The opening up of new markets, foreign and domestic, and the organizational development from the craft shop and factory to such concerns as U.S. Steel illustrate the same process of industrial mutation – if I may use the biological term – that incessantly revolutionizes the economic structure *from within*, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.’⁹⁸

While Schumpeter himself may not necessarily have espoused this view⁹⁹, it is not difficult to see how one might interpret his analysis as equating *innovation* – in the form of new goods, methods of production or forms of industrial organization – with what we might colloquially call *progress*. Indeed, Schumpeter’s utilization of biological terminology is evocative of a Darwinian survival of the fittest. As will soon become apparent, however, the welfare implications of *financial* innovation are not nearly so straightforward.¹⁰⁰ This indeterminacy points to the desirability of a more cautious, less value-laden, understanding of financial innovation as an ongoing process of experimentation whereby new institutions, instruments, techniques and

⁹⁶ See Joseph Schumpeter, *Capitalism, Socialism and Democracy* (Harper & Row, New York, 1975) [orig. pub. 1942].

⁹⁷ Ibid. at 83.

⁹⁸ Ibid. at 84.

⁹⁹ Indeed, I suspect Schumpeter would himself have espoused the adoption of a long-term view when determining the welfare implications of innovation; *ibid.* at 83.

¹⁰⁰ See also Robert Litan, “In Defence of Much, But Not All, Financial Innovation”, The Brookings Institution (February 17, 2010), available at www.brookings.edu; James Van Horne, “Of Financial Innovations and Excesses” (1985), 40:3 *J. of Fin.* 621, and Tufano (n 31) at 327-329.

markets are (or are perceived to be) created.¹⁰¹ Ultimately, framing our understanding of financial innovation as simply a process of (perceived) *change* – and not necessarily one of *improvement* – has far reaching implications in terms of the way we look at modern financial markets.

Any attempt to reframe our understanding, however, must necessarily begin with an examination of the prevailing framework. The standard economic account of what drives financial innovation is grounded in Proposition I of the M&M capital structure irrelevancy principle.¹⁰² Proposition I posits that the value of a firm is independent of its capital structure.¹⁰³ More specifically, Proposition I posits that the manner in which the cash flow, governance and other rights are allocated as between a firm’s capital suppliers will have no impact on the value of the firm as a whole. Crucially, this prediction rests on a number of strict assumptions about the absence of market imperfections. These imperfections include, *inter alia*, asymmetries of information and the resulting adverse selection and agency cost problems¹⁰⁴; incomplete markets¹⁰⁵; regulation and taxes¹⁰⁶; transaction costs¹⁰⁷; and other inefficiencies which constrain the ability of market participants to maximize their

¹⁰¹ See Tufano (n 31) at 309.

¹⁰² See Franco Modigliani and Merton Miller, “The Cost of Capital, Corporation Finance and the Theory of Investment” (1958), 48:3 Am. Econ. Rev. 261.

¹⁰³ Ibid. at 268.

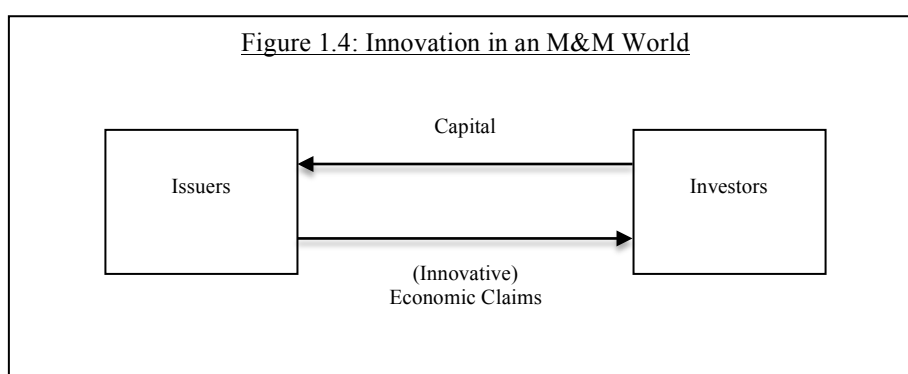
¹⁰⁴ See Stewart Myers and Nicolas Majluf, “Corporate Financing and Investment Decisions when Firms have Information that Investors do Not Have” (1984), 13:2 J. of Fin. Econ. 187.

¹⁰⁵ Darrell Duffie and Rohit Rahi, “Financial Market Innovation and Security Design: An Introduction” (1985), 65:1 J. of Econ. Theory 1; Van Horne (n 100), and Tufano (n 31) at 314.

¹⁰⁶ Miller (n 93); Kane (n 87); Van Horne (n 100) at 623-624; Mishkin (n 31) at 11, and Frame and White (2004) (n 11) at 9.

¹⁰⁷ Robert Merton, “On the Application of the Continuous Time Theory of Finance to Financial Intermediation and Insurance” (1989), 14 Geneva Papers on Risk and Insurance 225.

utility functions.¹⁰⁸ Following this view, where these imperfections exist, they generate demand for financial innovations which promise, *inter alia*, greater choice; lower costs; signaling benefits; enhanced liquidity, and/or more effective risk management.¹⁰⁹ Conversely, where the central assumptions of the M&M capital structure irrelevance principle hold true, Proposition I predicts that we should observe no demand whatsoever for innovation (at least in terms of the design of new financial instruments). Figure 1.4 depicts the relationship between issuers and investors in an M&M world.



Viewed from this perspective, for example, the extreme interest rate volatility of the 1970s and early 1980s spurred demand for innovations such as adjustable rate mortgages, variable-rate certificates of deposit, financial futures and interest rate swaps¹¹⁰; U.S. regulatory constraints on the remuneration arrangements, eligible investors and trading strategies of registered investment companies and advisers prompted the development of hedge funds, and the thirst for yield on fixed income

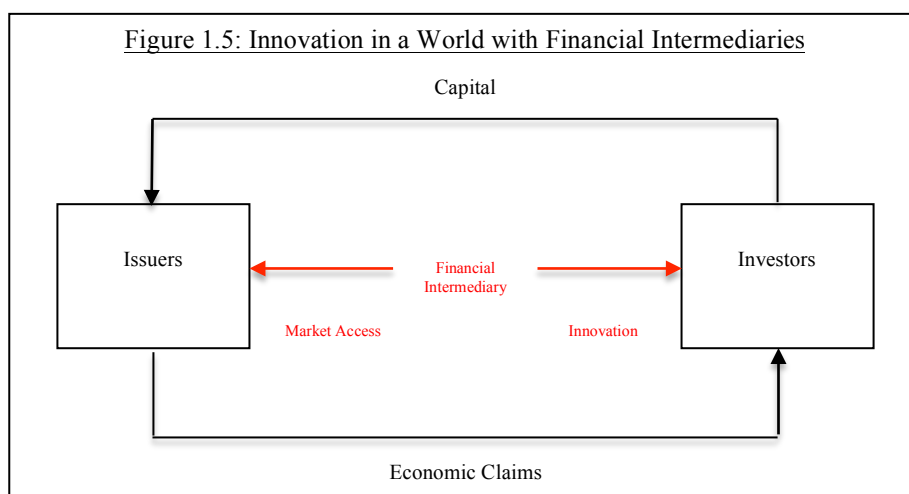
¹⁰⁸ Tufano (n 31) at 315. For a survey, see Milton Harris and Artur Raviv, “The Design of Securities” (1989), 24:2 J. of Fin. Econ. 55 and Franklin Allen and Douglas Gale, *Financial Innovation and Risk Sharing* (MIT Press, Cambridge, 1994) at 140-147.

¹⁰⁹ Tufano (n 31) at 313-314, citing Robert Merton, “Operation and Regulation in Financial Intermediation: A Functional Perspective” in Peter Englund, (ed.), *Operation and Regulation of Financial Markets* (Economic Council, Stockholm, 1993); Robert Merton, “A Functional Perspective of Financial Intermediation” (1995), 24:2 Financial Management 23, and Bank for International Settlements (BIS), *Recent Innovations in International Banking* (BIS, Basel, 1986).

¹¹⁰ Mishkin (n 31) at 2-5; Hu (n 18) at 1466, and Van Horne (n 100) at 622-623.

investments in the low interest rate environment of the 2000s stimulated demand for, *inter alia*, new forms of CDOs, synthetic CDOs and other structured investment vehicles domiciled in tax efficient jurisdictions such as Ireland and the Cayman Islands.¹¹¹

While this demand-side story is undoubtedly important, however, it paints a fundamentally incomplete picture. First, it is deeply rooted in the market fundamentalist paradigm in which the intersection of supply and demand are too frequently viewed as being dispositive of an innovation's private and social utility. Second, and more importantly, it fails to adequately account for the incentives of the institutions at the center of the market for financial innovation: it ignores the role of financial intermediaries.



¹¹¹ See Adair Turner, “The Financial Crisis and the Future of Financial Regulation”, speech at *The Economist’s* Inaugural City Lecture (January 21, 2009), available at www.fsa.gov.uk/pages/Library/Communication/Speeches/2009/0121_at.shtml, explaining that a reduction in medium and long-term real risk free rates ‘had driven among investors a ferocious search for yield – a desire among any investor who wishes to invest in bond-like instruments to gain as much as possible spread above the risk-free rate, to offset at least partially the declining risk-free rate’.

Henry Ford was apparently fond of saying that if he had asked people what they wanted, they would have said faster horses.¹¹² Put another way: supply-side incentives can be extremely influential in determining the course and speed of innovation. Curiously, however, the supply-side dynamics influencing financial innovation have been largely overlooked by both academics and policymakers. *So who are the primary suppliers of financial innovation and what are their incentives to innovate?* The suppliers are, by and large, financial intermediaries such as commercial and investment banks, securities dealers, investment funds, and insurance companies. At first glance, the incentives of these intermediaries might appear relatively straightforward: profit.¹¹³ In a competitive environment, however, one would expect these profits to rapidly erode as imitators enter the marketplace, attract market share and drive down margins.¹¹⁴ One would further expect the rate of this profit erosion – and thus the incentives of financial institutions to innovate – to be a function of the diffusion speed of the innovation.

We would thus expect the incentives of potential innovators to be relatively muted in the absence of some means of preventing imitators from freely appropriating

¹¹² I was reminded of this quotation by an article which appeared, somewhat ironically, in the Schumpeter column of *The Economist*; see “The Wiki Way”, *The Economist* (September 23, 2010), available at www.economist.com.

¹¹³ Mishkin (n 31) at 1.

¹¹⁴ Van Horne (n 100) at 622. What little empirical evidence exists on this front (at least with respect to *financial* innovation) is inconclusive and not altogether relevant to the present inquiry. In a widely cited empirical study of financial innovations from 1976 to 1984, Peter Tufano found that financial intermediaries did not charge higher prices in the brief ‘monopoly’ period before imitations appeared and, in the long-run, charged lower prices than rivals offering imitative products. Tufano did find, however, that innovating banks captured a larger share of underwriting business for the relevant products than did imitators; Peter Tufano, “Financial Innovation and First Mover Advantages” (1989), 25 *J. of Fin. Econ.* 213. In a more recent study, Kenneth Carrow found an inverse relationship between the number of imitators and the size of underwriting spreads; Kenneth Carrow, “Evidence of Early Mover Advantages in Underwriting Spreads” (1999), 15:1 *J. of Fin. Services Research* 37. Neither study, however, is particularly illuminating nor immediately relevant insofar as (1) their research focused exclusively on innovations within markets for publicly-traded securities, and (2) neither researcher looked beyond underwriting spreads to examine other potential benefits – the informational advantages associated with market-making or reputational effects, for example – derived from being (or being branded as) an innovator.

the innovation. This is the traditional economic justification – articulated by Schumpeter and others – for the extension of intellectual property rights to innovators.¹¹⁵ By granting innovators a temporary monopoly on the fruits of their invention, it is thought, these rights provide the economic incentives (i.e. rents) necessary to spur innovation. The problem, of course, is that intellectual property rights do not extend to the vast majority of *financial* innovations.¹¹⁶ JPMorgan cannot patent a CDO structure.¹¹⁷ Goldman Sachs cannot copyright the acronym ‘CDS’. It is perhaps unsurprising, therefore, that the diffusion rates of many financial innovations are exceptionally high.¹¹⁸ As a corollary, we might expect to observe relatively little innovation. Yet this is precisely the opposite of what we often see occurring within modern financial markets. This observation suggests that we need to develop a better understanding of why financial intermediaries innovate.

In reality, financial intermediaries possess at least three very different incentives to innovate. First, reflective of the conventional demand-side view,

¹¹⁵ See for example, Kenneth Arrow, “Economic Welfare and the Allocation of Resources for Invention” in National Bureau of Economic Research, *The Rate and Direction of Inventive Activity: Economic and Social Factors* (Princeton University Press, Princeton, 1962); Avinash Dixit and Joseph Stiglitz, “Monopolistic Competition and Optimum Product Diversity” (1977), 67 *Am. Econ. Rev.* 297, and Jean Tirole, *The Theory of Industrial Organization* (MIT Press, Cambridge, 1988).

¹¹⁶ Outside the limited scope of business method patents in the U.S.; see the Federal Circuit Court of Appeals decision in *State Street Bank v. Signature Financial*, 47 U.S.P.Q. 2nd 1596 (Fed. Cir. 1998) [“*State Street*”]. Even then, however, one would expect such patents to be of limited practical application in the context of financial innovation insofar as the application process contemplates public disclosure as a precondition to protection. More specifically, it is likely that financial intermediaries will in many instances find such disclosure unpalatable for strategic reasons. This intuition finds empirical support in the form of studies finding that the decision in *State Street* did not have an appreciable impact on the number of patent applications filed by financial firms; see Robert Hunt, “Business Method Patents and U.S. Financial Services”, Federal Reserve Bank of Philadelphia Working Paper No. 08-10 (May 2008). See also Steven Pokotilow and Ian DiBernardo, “Protection for Financial Indices, ETFs and Other Products” (2006), 263:63 *N.Y.L.J.*, available at www.nylj.com for a discussion of the limits on intellectual property rights in financial indices and ETFs in the U.S.

¹¹⁷ For an inside look at the development of CDOs by JPMorgan Chase & Co., see Gillian Tett, *Fool’s Gold: How the Bold Dream of a Small Tribe at J.P. Morgan Was Corrupted by Wall Street Greed and Unleashed a Catastrophe* (Free Press, New York, 2009).

¹¹⁸ See Hu (n 18) at 1484. Although, as we shall see, this diffusion is in many cases limited to a relatively small group of financial intermediaries.

financial intermediaries innovate in response to the emergence of genuine demand within the marketplace. Second, they innovate with a view to mitigating the impact of various regulatory requirements. This form of innovation is frequently referred to as ‘regulatory arbitrage’. A prime example of regulatory arbitrage, examined in greater detail in Chapter 2, is the use (and adaptation) of securitization techniques by banks to circumvent capital adequacy requirements.¹¹⁹ Third, financial intermediaries possess supply-side incentives to pursue strategies with the intention of recreating the monopolistic conditions – usually afforded by the protection of intellectual property rights – which allow for the ongoing extraction of quasi-rents. There are at least two such strategies and, together, they help reveal the multidimensional relationship between complexity and financial innovation.

The first strategy involves artificially accelerating the pace of innovation.¹²⁰ Financial intermediaries engage in this strategy for the purpose of achieving product differentiation¹²¹ – not only vis-à-vis the innovations of their competitors but, crucially, between previous generations of their *own* innovations. In this respect, this strategy is broadly analogous to the short-term ‘planned obsolescence’ through innovation observed within, *inter alia*, the fashion, consumer electronics, software, and academic textbook industries.¹²² Notably, this strategy does not necessarily rely

¹¹⁹ See Chapter 2 for a discussion of how securitization techniques have historically been employed as a means of engaging in this so-called ‘balance sheet arbitrage’.

¹²⁰ Hu (n 18) at 1479, and Henry Hu, “New Financial Products, the Modern Process of Financial Innovation, and the Puzzle of Shareholder Welfare” (1991), 69 *Texas L. Rev.* 1273 at 1275.

¹²¹ Tufano (n 31) at 309.

¹²² Very briefly, planned obsolescence is a strategy pursuant to which producers intentionally design products which are no longer functional and/or fashionable beyond a certain limited period of time. For a timely real world example of this strategy, readers might look to Apple’s relatively frequent releases of new versions of its iPhone and iPad products (and, concomitantly, the overwhelming demand for these products even amongst customers owning previous generations of them). See more generally Drew Fudenberg and Jean Tirole, “Upgrades, Trade-ins and Buybacks” (1998), 29 *Rand J. Econ.* 235; Michael Waldman, “Planned Obsolescence and the R&D Decision” (1996), 27 *Rand J. Econ.* 583, and Michael Waldman, “A New Perspective on Planned Obsolescence” (1993), 108 *Q. J.*

on the existence of any natural demand in the marketplace, nor on the innovation itself being ‘new’ in any material respect. Rather, it can theoretically be premised on little more than, *inter alia*, capitalizing on investor short-termism, other behavioral factors, or simply tapping the innate human desire for the ‘next new thing’.¹²³ The practical effect of this strategy is to reset the diffusion clock¹²⁴ – in essence creating more (albeit shorter) monopoly-like periods – thereby enabling intermediaries to extract greater quasi-rents from their innovations.¹²⁵ Importantly, this strategy also raises the prospect of what U.K. Financial Services Authority (FSA) Chairman Adair Turner has characterized as ‘socially useless’¹²⁶ *over*-innovation.

The second strategy employed by financial intermediaries in response to the appropriability problem is to embrace complexity as an integral component of their business models. More specifically, many financial intermediaries have harnessed technology (and especially financial theory) to develop and move an increasingly large proportion of their business activities into new and relatively opaque institutions, instruments and markets.¹²⁷ They have also lobbied fiercely against regulatory reforms which would seek to achieve, amongst other objectives, a leveling of the informational playing field.¹²⁸ Interestingly, this confluence of technology and

Econ. 273. See also Glenn Ellison and Drew Fudenberg, “The Neo-Luddite’s Lament: Excessive Upgrades in the Software Industry” (2000), 31 *Rand J. Econ.* 253 and Laurence Miller, Jr., “On Killing Off the Market for Used Textbooks and the Relationship Between Markets for New and Secondhand Goods” (1974), 82 *J. Pol. Econ.* 612.

¹²³ Van Horne (n 100) at 626. Or, in the case of academic textbooks, having a captive audience.

¹²⁴ *Who, after all, would want to imitate previous innovations now viewed as being obsolete?*

¹²⁵ Primarily in the form of higher underwriting spreads.

¹²⁶ See Phillip Inman, “Financial Services Authority Chairman Backs Tax on ‘Socially Useless’ Banks”, *The Guardian* (August 27, 2009), available at www.guardian.co.uk.

¹²⁷ This of course makes perfect sense given the expectation of higher profit margins within such markets.

¹²⁸ See Gary Rivlin, “The Billion Dollar Bank Heist”, *Newsweek* (July 11, 2011), available at www.newsweek.com; Edward Wyatt and Eric Lichtblau, “A Finance Overhaul Fight Draws a Swarm of Lobbyists”, *The New York Times* (April 19, 2010), available at www.nytimes.com, and Brady Dennis

opacity has not necessarily been utilized, as one might predict, to thwart imitators and thereby slow the diffusion rate of innovation.¹²⁹ Indeed, as we shall see, small groups of financial intermediaries have often collaborated in the development of new financial instruments and markets.¹³⁰ The resulting complexity has instead often been used by these intermediaries *as a group* to prevent the commoditization of many financial innovations, ultimately forestalling the redistribution of quasi-rents from innovators to consumers which one might otherwise expect to take place over time.¹³¹ Within more arcane and opaque markets, these quasi-rents flow not only from higher underwriting spreads but also the informational advantages derived from the role played by financial intermediaries as market makers.¹³² This complexity has also been utilized to (1) thwart effective external monitoring by both the marketplace and regulators and (2) capture the ‘too big (and interconnected) to fail’ subsidy.¹³³ It is in their quest to maximize and exploit their superior tolerance for complexity that financial intermediaries have thus driven us toward – and perhaps even beyond – the complexity frontier.

This, of course, begs an important question: *why would consumers of financial innovation – upon learning of the existence and potential use of these strategies – not take appropriate countermeasures? More specifically, why would rational and fully*

and Steven Mufson, “Bankers Lobby Against Financial Regulatory Overhaul”, *The Washington Post* (March 19, 2010), available at www.washingtonpost.com.

¹²⁹ One notable exception to this likely being a financial institution’s investment strategies, where opacity is employed specifically with a view to preventing imitation.

¹³⁰ See [Chapter 4](#) for a further exploration of how financial intermediaries and other private actors – and ISDA in particular – have collaborated in the development of OTC derivatives markets.

¹³¹ And, simultaneously, preventing a potentially costly innovation ‘arms race’ between competing financial intermediaries.

¹³² Including, *inter alia*, (1) pricing and counterparty information, and (2) lower search costs for underwriting opportunities.

¹³³ Mehran et. al. (n 49) at 5.

*informed consumers not (1) apply a ‘lemons’ discount; (2) insist on the utilization of costly contracting mechanisms designed to reveal information about the quality of the innovation, or (3) refuse to transact with financial intermediaries which engaged in these strategies?*¹³⁴ As a preliminary matter, one might observe that these consumers’ lower tolerance for complexity would impede this learning process.¹³⁵ However, while this would almost certainly be true on one level, the salient question simply becomes: *why would consumers (or competing financial intermediaries) with a higher tolerance for complexity not share the fruits of their knowledge with less sophisticated consumers? Why, in other words, would this information not ultimately find its way into the broader marketplace?*

There are a number of potential explanations for this apparent market failure. The ‘shrouding’ model developed by Xavier Gabaix and David Laisbon, for example, demonstrates how ‘shrouding’ – i.e. the process by which producers hide information from consumers respecting high priced add-ons – can flourish even in highly competitive markets.¹³⁶ Gabaix and Laisbon’s model proceeds on the basis of a distinction between ‘sophisticated’ and ‘myopic’ consumers.¹³⁷ Using examples drawn from the banking¹³⁸, hospitality¹³⁹ and office product industries¹⁴⁰, Gabaix and Laisbon then illustrate how producers utilize marketing strategies which obscure

¹³⁴ Ultimately dis-incentivizing their use. For a theoretical discussion of the so-called ‘lemons’ (i.e. adverse selection) problem, see George Akerlof, “The Market for Lemons” (1970), 84:3 Q. J. Econ. 488.

¹³⁵ As would artificially accelerating the pace of innovation.

¹³⁶ See Xavier Gabaix and David Laisbon, “Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets” (2006), 121:2 Quarterly J. of Econ. 505.

¹³⁷ And the existence of both in the marketplace; *ibid.* at 510.

¹³⁸ Where various ATM, minimum balance and other fees are often shrouded; *ibid.* at 506.

¹³⁹ Where, for example, hotels shroud add-ons such as parking, telecommunications and room service charges; *ibid.* at 507-508.

¹⁴⁰ Where, for example, printer manufacturers often advertise low prices for inkjet printers, but not the (far higher) cost of patented ink cartridges; *ibid.* at 506.

high-priced add-ons (often in the ‘fine print’) with the objective of exploiting myopic customers who, by definition, fail to recognize that they are at an informational disadvantage. Sophisticated customers – who can see through the shrouding – then exploit the marketing schemes designed to target myopic customers by, for example, opting out of the add-ons. The result is an equilibrium in which producers, competitors offering close substitutes (who risk de-biasing their own myopic customers), and sophisticated consumers (who receive an implicit subsidy from the marketing strategies targeting myopic consumers) have no incentive to ‘de-bias’ myopic customers by revealing the existence or true cost of the add-ons.¹⁴¹ Gabaix and Laisbon further observe that, over the long run, shrouding may be sustained by, *inter alia*, the entrance of new myopic customers; the development of new shrouding techniques or, importantly, new rounds of innovation.¹⁴²

Even where these strategies are transparent to the marketplace, however, there remains the fundamental issue of market access. For example, as we will examine in greater detail in Chapter 3, the dealer intermediated structure of OTC derivatives markets – combined with the economies of scale associated with market making¹⁴³ – have resulted in the concentration of trading activity within a small oligopoly of financial intermediaries. What is more, virtually all of these intermediaries are LCFIs. Market participants looking to utilize OTC derivatives have thus historically enjoyed a limited menu of potential counterparty options outside these powerful and opaque institutions. Intuitively, we would expect this to have diluted the impact of

¹⁴¹ Ibid.

¹⁴² Ibid. at 522-523.

¹⁴³ More specifically: (1) the informational benefits derived from access to a larger proportion of overall trading activity (i.e. deal flow) and (2) the hedging benefits derived from being able to trade with a larger number of counterparties, looking to take a larger (and more diverse) number of exposures.

any market discipline which might have otherwise been brought to bear on those intermediaries who engage in strategies designed to extract quasi-rents from their higher tolerance for complexity.

Ultimately, the salient point here is not that behavior factors, behavioral factors or oligopolistic competition fully explain why these strategies exist (and persist) in the marketplace. Rather, it is that there exists no shortage of potential explanations each deserving of further inquiry. Nor am I suggesting that this nascent supply-side theory of financial innovation fully encapsulates the incentives – or explains the behavior – of all financial intermediaries, in all markets, at all times. Demand-side factors are clearly important. What I am suggesting, however, is that by re-conceptualizing financial innovation as a process of change influenced by the incentives of innovators – who have the most to gain and possess a comparative informational advantage – we can enhance our understanding of the complex and rapidly evolving dynamics within modern financial markets. What is more, re-conceptualizing financial innovation in this light serves to illuminate the regulatory challenges stemming from the interaction of complexity and innovation. We will turn our attention to these challenges in a moment. First, however, it is important to briefly outline the relationship *between* complexity and financial innovation.

III. The Relationship between Complexity and Financial Innovation

As may already be apparent, complexity and financial innovation are closely intertwined and mutually re-enforcing dynamics. This symbiosis can be observed across at least four dimensions. First, financial intermediaries which enjoy a higher tolerance for complexity relative to other market participants can exploit this advantage – i.e. extract quasi-rents – by offering ‘innovative’ products and services

which their clients may not fully understand. This same informational advantage also gives financial intermediaries considerable leverage in the context of their relationships with shareholders, creditors, other stakeholders and, importantly, regulators. Second, and along a similar vein, complexity can be employed by financial intermediaries to impede the commoditization of financial innovations. Third, newer and more innovative financial instruments invariably demand the incursion of high (initial) information costs on the part of both market participants and regulators. What is more, these instruments often (1) trade within less developed and more opaque markets and (2) generate unanticipated and undetected interconnections within and between financial markets and institutions, thereby exacerbating complexity. Finally, insofar as financial innovation is employed as a reflexive response to changes in the prevailing regulatory environment, both this innovation and the regulation which spawned it can be viewed as contributing to the complexity of modern financial markets. Three case studies illustrating various dimensions of this relationship – securitization, collateral swaps, and synthetic ETFs – are explored in greater detail in [Chapter 3](#).

IV. Complexity and Financial Innovation: The Attendant Regulatory Challenges

One might reasonably ask at this stage: *why do we care about complexity and innovation within financial markets and not, say, other segments of the modern economy where these forces can also be observed? Why, in other words, should we think about Citigroup any differently than Walmart?* The answers to this question, while perhaps obvious, bear emphasizing. First, the information problems associated with purchasing a toaster, for example, are not on the same intellectual plane as those encountered in connection with the purchase of a complex credit derivative. Moreover, in many jurisdictions, the purchase of the toaster will be supported by

manufacturer and/or statutory warranties of merchantability and fitness for purpose. As we shall see, there is often no analogue within modern financial markets.¹⁴⁴ Second, while it is relatively straightforward for even the most novice chef to evaluate whether she has received value for her money, it is often very difficult for market participants to determine whether the return on their investments is attributable to luck, skill or opportunistic behavior on the part of the financial intermediaries with which they transact. In economic terms, many financial products and services are *credence* goods. Third, for all its organizational complexity, Walmart possesses clear incentives to minimize this complexity within, for example, its supply chain and back office systems. Citigroup, in contrast, may be able to extract significant benefits from *increasing* complexity within its business model and products. Finally, and perhaps most importantly, the systemic knock-on effects associated with the failure of Walmart (while no doubt dramatic) would almost certainly pale in comparison with the uncertainty, contagion and general economic dislocation which would result from the failure of Citigroup.

Complexity and financial innovation can thus be understood as generating a host of pressing regulatory challenges. Sophisticated new instruments derived from esoteric financial theory, structured in ways which obscure the attendant risks, and traded in opaque dealer-intermediated markets by equally opaque financial institutions raise clear investor protection issues. Paramount amongst these are the potential for both (1) uninformed (suboptimal) contracting, and (2) fraud, misconduct and other opportunistic behavior. The potential for suboptimal contracting in turn

¹⁴⁴ See Chapter 3 for a description of the non-interventionist (*caveat emptor*) approach to regulating OTC derivatives markets which prevailed in the U.S. and U.K. prior to the GFC.

raises the prospect of both overinvestment and excess leverage leading, ultimately, to the build-up and crystallization of systemic risk.

Simultaneously, opacity and the pace of innovation render it more difficult for regulators to effectively police financial markets and – in conjunction with interconnectedness and fragmentation – to locate and monitor potential systemic risks. Meanwhile, the vast array of intricate, evolving and often undetected interconnections within and between markets and institutions – themselves often the byproducts of financial innovation – foment systemic fragility and manifest the potential to become channels for the transmission of contagion during periods of market distress.¹⁴⁵ Reflexivity contributes still further to this fragility insofar as its self-reinforcing feedback effects drive the formation of asset bubbles.¹⁴⁶

Financial innovation itself represents yet another source of systemic vulnerability. Newer, less liquid and often highly concentrated markets frequently lack the legal, operational and/or risk management infrastructure necessary to withstand financial shocks. Compounding matters, the appropriability of financial innovation dilutes the incentives of market participants to invest in the development of such infrastructure.¹⁴⁷ In the end, financial regulators face the decidedly daunting prospect of mounting effective responses to these (and other) challenges as, all the while, the forces of regulatory arbitrage – often in the guise of financial innovation –

¹⁴⁵ Essentially, these interconnections exacerbate informational problems during periods of market distress as financial institutions seek to determine the sources and scope of their potential exposures. Where the informational costs are too great, the resulting uncertainty can lead to panic and the mass withdrawal of liquidity from the financial system; Caballero and Simsek (n 62); Gorton (n 34), and Schwarcz (2009) (n 1). What is more, these interconnections may result in the transmission of financial shocks faster than regulators are able to address them; Schwarcz (2009) (n 1) at 215, citing W. Brian Arthur, “Complexity and the Economy”, *Science* (April 2, 1999).

¹⁴⁶ Soros (n 88) at 23.

¹⁴⁷ Hu (n 18) at 1482. Indeed, such under-investment is part of a broader issue stemming from the fact that financial stability is, in effect, a public good; see [Chapter 6](#) for further discussion.

shift the ground beneath their feet. Each of these challenges is examined in greater detail in Chapter 2.

Lurking in the background is yet another significant regulatory challenge: welfare indeterminacy. Regulators cannot directly observe the preferences of their constituents, nor do they have any practical means of aggregating these preferences into a social welfare function.¹⁴⁸ Simultaneously, they possess imperfect knowledge of (exogenous) future events and the (endogenous) welfare consequences of their policy choices.¹⁴⁹ These blind spots undermine the ability of regulators to evaluate the net welfare effects of, *inter alia*, (1) existing financial instruments, markets and institutions; (2) financial innovation; (3) existing regulation, or (4) contemplated regulatory intervention. It is impossible to know with any real certainty, for example, whether the net social costs of taxpayer funded bailouts for the financial institutions at the epicenter of the GFC exceed those which would have resulted from the economic turmoil which these bailouts likely averted¹⁵⁰; whether the systemic benefits flowing from the implementation of the Basel III framework will outweigh

¹⁴⁸ Indeed, many critics of welfare economics have gone so far as to suggest that the concept of social welfare is both logically incoherent and inherently contested; see Timothy Besley, *Principled Agents? The Political Economy of Good Government* (Oxford University Press, Oxford, 2006) at 21. Perhaps most notably, the assumption that the aggregation of individual utilities or preferences into a social welfare function is in fact possible has been challenged by Kenneth Arrow; see Kenneth Arrow, “A Difficulty in the Concept of Social Welfare” (1950), 58:4 J. of Pol. Econ. 328. Arrow argued that the task of aggregating individual preferences is ‘plagued by the difficulties of interpersonal comparison.’; *ibid.* at 329. Under certain specified conditions, Arrow illustrated that a rational paradox could result from the aggregation of the preferences of as few as two individuals faced with as few as three potential states, thus precluding the construction of a social welfare function. For a discussion of the unrealistic nature of many of the assumptions underpinning Arrow’s analysis, see Dan Awrey “The Dynamics of OTC Derivatives Regulation: Bridging the Public-Private Divide” (2010), 11:2 Eur. Bus. Org. L. Rev. 155 at 165-167.

¹⁴⁹ Indeed, we do not even know with certainty which future events are exogenous and which are endogenous. Furthermore, even if we could determine the net welfare effects of a given policy choice at a particular moment in time, there is no guarantee that it would be representative of the net effects at any other moment.

¹⁵⁰ Although this has not stopped scholars from attempting to quantify these costs; see for example, Pietro Veronesi and Luigi Zingales, “Paulson’s Gift” (2009), available at www.ssrn.com.

any attendant costs in terms of lost economic growth¹⁵¹, or whether the benefits of OTC derivatives stemming from more complete markets, enhanced price discovery and improved market liquidity exceed the costs arising from inefficient contracting, opportunistic behavior and potential systemic risks. What is certain, however, is that this welfare indeterminacy represents a formidable challenge for those who would seek to design and implement more effective financial regulation.

The common theme running through this imposing inventory of regulatory challenges is the existence of pervasive, acute and often deeply entrenched asymmetries of information and expertise within modern financial markets. These twin asymmetries – exacerbated, if not always caused, by complexity and innovation – can be observed both within the marketplace itself and, importantly, between market participants and regulators. These asymmetries have combined to make the entire financial system increasingly reliant on a relatively small oligopoly of intermediaries which serve as the repositories and purveyors of this information and expertise. As made all too clear by the economic turmoil unleashed by the GFC, the nature and extent of this reliance has generated what can fairly be described as the mother of all agency cost problems. Lamentably, regulators (and their political masters) have thus far devoted surprisingly little energy to designing regulatory institutions – or adopting institutional philosophies – which attempt to address these

¹⁵¹ Although, once again, this has not stopped various observers from attempting to quantify these costs; *see* for example, Patrick Slovik and Boris Cournède, “Macroeconomic Impact of Basel III”, OECD Economics Department Working Paper No. 844 (February 2011), available at www.oecd-library.org; Douglas Elliott, “Basel III, the Banks, and the Economy”, The Brookings Institution (July 2010), available at www.brookings.edu; The Institute of International Finance, “Interim Cumulative Effect Report” (June 2010), available at www.iif.com, and Douglas Elliott, “Quantifying the Effects on Lending of Increased Capital Requirements”, The Brookings Institution (September 2009), available at www.brookings.edu. *See* also Anat Admati, Peter DeMarzo, Martin Hellwig and Paul Pfleiderer, “Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is not Expensive”, Stanford University Rock Center for Corporate Governance Working Paper No. 86 (May 13, 2011), available at www.ssrn.com.

asymmetries or ameliorate the attendant agency costs. In effect, they have failed to acknowledge or adequately respond to the regulatory challenges stemming from complexity and innovation within modern financial markets.

V. Looking Ahead

The objective of this first chapter has been to offer a preliminary theoretical account of the drivers of complexity and innovation within modern financial markets and the regulatory challenges stemming from the interaction of these powerful market dynamics. It has illustrated how technology, opacity, interconnectedness, fragmentation, regulation and reflexivity drive us toward (and in many cases beyond) the complexity frontier. It has also illustrated how re-conceptualizing financial innovation as a process of change – influenced by the incentives of innovators – can enhance our understanding of why modern financial markets exhibit so much complexity and innovation. Finally, it has described how complexity and innovation combine to generate asymmetries of information and expertise, thereby opening the door to suboptimal contracting, undermining effective external monitoring, and exacerbating the agency cost problems which pervade modern financial markets. The chapters which follow expand on these theoretical foundations by examining complexity and innovation through the lens of a single case study: the emergence, development and regulation of global OTC derivatives markets. Chapters 2 and 3 trace the development of OTC derivatives markets, examine their prospective private and social welfare implications and canvas historical attempts to regulate them in two strategically important jurisdictions: the U.S. and U.K. Chapters 4, 5 and 6 then explore, respectively, the optimal *source*, *form* and *scope* of regulation in respect of OTC derivatives markets and, by extension, the broader regulatory challenges stemming from complexity and financial innovation. Perhaps not surprisingly, this

exploration does not yield a clear or easily implementable set of policy prescriptions. The concluding chapter, therefore, focuses on drawing out the common themes and caveats flowing from this exploration of complexity, innovation and the dynamics of OTC derivatives regulation.

CHAPTER 2

OTC Derivatives Markets: A Case Study in Complexity and Financial Innovation

There exists no shortage of potential case studies illustrating the complexity of modern financial markets or the nature and pace of financial innovation.¹ *So why OTC derivatives markets?* This choice is ultimately motivated by four observations. First, as we shall see, OTC derivatives are one of the principal sources of complexity within modern financial markets. The development and dramatic growth of OTC derivatives markets over the past 30 years have been driven by advances in financial theory and information technology. These advances have in turn been harnessed by a relatively small group of financial intermediaries to create vast and opaque markets in which a broad range of economic interests are sliced, diced, reconstituted and sold. As these markets have grown, so too have the complex, intricate and constantly evolving interconnections within and between many financial markets and institutions. Until quite recently, these markets have been allowed to grow and evolve essentially unchecked by public regulation – notwithstanding the fact that the private and social welfare implications of OTC derivatives are often far from clear.

¹ Securitization techniques have thus far attracted the majority of (academic) attention in this regard; see Steven Schwarcz, “Regulating Complexity in Financial Markets” (2009), 87 Wash. U. L. Rev. 211; Gary Gorton, “The Panic of 2007”, prepared for the Federal Reserve Bank of Kansas City, Jackson Hole Conference (August 2008) at 20-34, available at www.ssrn.com, and John Martin, “A Primer on the Role of Securitization in the Credit Market Crisis of 2007” in Robert Kolb, (ed.), *Lessons from the Financial Crisis: Causes, Consequences and Our Economic Future* (John Wiley & Sons, New York, 2009). Other potentially fertile areas for further research include other elements of the shadow-banking system; retail investment products such as ETFs; high frequency trading activities, and the burgeoning market for bankruptcy claims in many jurisdictions.

Second, OTC derivatives markets are hotbeds of financial innovation.² The basic building blocks of OTC derivatives can be combined in an infinite number of ways and with reference to an infinite number of underlying assets. It is this virtually limitless flexibility which makes possible the almost overwhelming diversity and dazzling complexity observed within OTC derivatives markets today. From ‘plain vanilla’ currency, interest rate and equity-linked swaps, to more sophisticated credit derivatives and structured products, the economic substance – and thus the potential uses of OTC derivatives – are theoretically as boundless as the imaginations of the Wall Street and Canary Wharf ‘rocket scientists’ who create them. Equally spectacular has been the pace of innovation with OTC derivatives markets. Whereas an authoritative desk reference in 1985 (had one existed) might have identified a universe of perhaps a dozen or so relatively basic instruments, today there are hundreds of different species of OTC options, forwards, swaps, caps, floors, collars, structured products and structured financing vehicles.³ This derivatives universe, like our own, is constantly expanding.

Third, OTC derivatives played a prominent role in the thick of the GFC. Structured financing vehicles – and specifically MBS and the more complex CDOs into which they were repackaged – underpinned the originate-and-distribute lending

² Dan Awrey, “Complexity, Innovation and the Regulation of Modern Financial Markets” (2012), 1:2 Harv. Bus. L. Rev. [forthcoming], available at www.ssrn.com; Darrell Duffie, Ada Li and Theo Lubke, “Policy Perspectives on OTC Derivatives Market Infrastructure”, Federal Reserve Bank of New York Staff Report No. 424 (March 2010) at 10, available at www.ssrn.com; René Stulz, “Over-the-Counter Derivatives Markets Act of 2009”, Testimony to the House Financial Services Committee (October 7, 2009) at 5, and Darrell Duffie and Henry Hu, “Competing for a Share of Global Derivatives Markets: Trends and Policy Choices for the United States”, Stanford University Rock Center for Corporate Governance Working Paper No. 50 (June 3, 2008) at 3, available at www.ssrn.com.

³ For a more comprehensive overview of the taxonomy of OTC derivatives, see Satyajit Das, *The Swaps and Financial Derivatives Library: Products, Pricing, Applications and Risk Management*, 3ed. (John Wiley & Sons, New York, 2005) and Richard Flavell, *Swaps and Other Derivatives*, 2ed. (John Wiley & Sons, New York, 2009). Of course, by the time the reader consults these resources they will in all likelihood be out of date: such is the pace of financial innovation.

model at the heart of the U.S. sub-prime mortgage crisis and facilitated its spread throughout the global financial system.⁴ The sub-prime crisis unleashed a wave of broader uncertainty and, ultimately, illiquidity within ABS, CDO and related markets.⁵ This illiquidity then undermined the stability of many of the financial institutions which traded in these instruments (or utilized them as collateral in their wholesale funding operations), precipitating the flight of assets, haircuts and collateral calls which triggered the near collapse of Bear Stearns⁶, the bankruptcy of Lehman Bros.⁷, and the government bailout of AIG⁸ between March and September 2008.⁹ Indeed, the bailout of AIG was itself necessitated by the (putative) insurance firm's enormous one-way bet on CDS linked to MBS and related CDOs.¹⁰ Accordingly, while OTC derivatives were arguably not a proximate cause of the crisis, the GFC nevertheless provides us with a unique and illuminating window into their potential risks. More broadly, and as described in greater detail below, OTC derivatives

⁴ See Financial Crisis Inquiry Report at xxiii-xxv. See also Schwarcz (n 1) and Gorton (n 1).

⁵ Where, in many cases, these MBS and CDOs were posted by counterparties as collateral.

⁶ See Securities and Exchange Commission, Office of the Inspector General, "SEC's Oversight of Bear Stearns and Related Entities: Broker-Dealer Risk Assessment Programme" (September 25, 2008), available at www.sec.gov. See also "The \$2 Bailout", *The Economist* (March 19, 2008) and "What Went Wrong?", *The Economist* (March 19, 2008).

⁷ See *Lehman Bros. Holdings Inc. Chapter 11 Bankruptcy Proceedings Examiners Report*, prepared by Anton Valukas, Jenner & Block, available at <http://lehmanreport.jenner.com>.

⁸ For a detailed account of AIG's derivatives operations, how they contributed to the firm's downfall, and the subsequent bailouts, see William Sjostrom, Jr., "The AIG Bailout" (2009), 66 Wash. & Lee L. Rev. 943. For an alternative perspective on AIG's downfall, see Richard Squire, "Shareholder Opportunism in a World of Risky Debt" (2010), 123 Harv. L. Rev. 1151. In Squire's view, what brought AIG to the brink of bankruptcy was not just its derivatives operations (i.e. selling contingent claims in the form of CDS linked to sub-prime mortgages), but also its *purchases* of risky MBS; *ibid.* at 1184.

⁹ For a detailed account of these events, see Financial Crisis Inquiry Report, ch. 15-19; Gary Gorton and Andrew Metric, "Securitized Banking and the Run on Repo", National Bureau of Economic Research Working Paper No. w15223 (August 2009), available at www.ssrn.com, and Gorton (n 1). See also Viral Acharya, Menachem Brenner, Robert Engle, Anthony Lynch and Matthew Richardson, "Derivatives: The Ultimate Financial Innovation" in Viral Acharya and Matthew Richardson, (eds.), *Restoring Financial Stability: How to Repair a Failed System* (Wiley Finance, New York, 2009) at 241.

¹⁰ Squam Lake Working Group on Financial Regulation, "Credit Default Swaps, Clearinghouses, and Exchanges", Council on Foreign Relations Centre for Geoeconomic Studies Working Paper (July 2009) at 4 and Sjostrom (n 8).

markets pose a number of significant challenges for both private market participants and public regulators. The preponderance of these challenges can be traced back to complexity and innovation and, thus, to the acute asymmetries of information and expertise and agency cost problems which pervade modern financial markets.

Finally, the approaches adopted toward the regulation of OTC derivatives markets in jurisdictions such as the U.S. and U.K. prior to the GFC were heavily influenced by conventional financial theory. These approaches, and how they were influenced by the received wisdom of conventional financial theory, are explored in greater detail in [Chapter 3](#).

The remainder of this chapter proceeds as follows. [Part I](#) describes the basic mechanics of different species of derivatives; briefly traces their emergence and growth, and draws out a number of important distinctions between exchange-traded and OTC instruments and markets. It also examines the central role of financial intermediaries as market makers within OTC derivatives markets. [Part II](#) canvasses the potential uses of OTC derivatives, along with their prospective private and social benefits. [Part III](#) then examines their potential risks and the attendant private and social costs. [Part IV](#) concludes, distilling this examination of the risks associated with OTC derivatives to its essence and demonstrating how the vast majority of these risks can (and should) be understood as the by-products of complexity and financial innovation.

I. Derivatives: A Primer

At their most elemental level, derivatives are assets the value or expected performance of which is determined with reference to another asset or a specified rate, index or event (commonly referred to as the underlying asset or, simply, the

‘underlying’).¹¹ Common underlying include physical commodities such as agricultural products, base and precious metals and other natural resources; financial assets such as equity securities, debt instruments, currencies, interest rates and indices, and more exotic assets, indices and events such as emissions rights, the volatility of financial instruments or indices, and even Acts of God.¹² All derivatives are engineered from two basic financial building blocks: options and forwards.¹³ Whereas options represent a contingent *right* to acquire or dispose of an asset in the future at a pre-determined price, forwards represent an *obligation* to do so.¹⁴ Futures, viewed by some as a third basic building block, are simply forwards executed on an organized exchange.¹⁵

Basic derivatives have been woven into the fabric of commercial life for millennia – from ancient Greece, China and Mesopotamia; to medieval Europe; 17th century Japan and 19th century England and America.¹⁶ Derivatives inflated what is often held as the first speculative asset bubble on record: the Dutch ‘tulip mania’ of

¹¹ Andrew Chisholm, *Derivatives Demystified: A Step-by-Step Guide to Forwards, Futures, Swaps and Options* (John Wiley & Sons, Chichester, 2010) at 1 and Alastair Hudson, *The Law of Finance*, 3ed. (Sweet & Maxwell, London, 2010) at 1101 and 1103.

¹² John-Peter Castignino, *Derivatives: The Key Principles*, 3ed. (Oxford University Press, Oxford, 2009) at 1 and 99-114.

¹³ Ed Murray, “UK Financial Derivatives and Commodities Markets” in Michael Blair and George Walker, (eds.), *Financial Markets and Exchanges Law* (Oxford University Press, Oxford, 2007) at 265-300; Adam Waldman, “OTC Derivatives and Systemic Risk: Innovative Finance or Dance into the Abyss?” (1994), 43 Am. U. L. Rev. 1023 at 1027-1028, and Barnard Karol, “An Overview of Derivatives as Risk Management Tools” (1995), 1 Stan. J. of Law, Bus. & Fin. 195 at 195. While a number of observers view swaps as representing a forth basic building block; see Norman Feder, “Deconstructing Over-the-Counter Derivatives” (2002), Columbia Bus. L. Rev. 677 at 691, a swap is at its core simply a series of forwards.

¹⁴ Shelagh Heffernan, *Modern Banking* (John Wiley & Sons, Chichester, 2005) at 128-129; Chisholm (n 11) at 2-3, and Hudson (n 11) at 1101.

¹⁵ Heffernan (n 14) at 128 and Chisholm (n 11) at 2.

¹⁶ Satyajit Das, *Traders, Guns and Money: Knowns and Unknowns in the Dazzling World of Derivatives* (Prentice Hall Financial Times, London, 2006) at 23; Charles Pouncy, “Contemporary Financial Innovation: Orthodoxy and Alternatives” (1998), 51 SMU L. Rev. 505 at 520; Roberta Romano, “A Thumbnail Sketch of Derivatives Securities and Their Regulation” (1996), 55 Maryland L. Rev. 1 at 8; Chisholm (n 11) at 5, and Hudson (n 11) at 1104.

the 1630s.¹⁷ They also played a role in the South Sea Bubble of 1720.¹⁸ These early derivatives – primarily forwards and futures – typically contemplated the future delivery of physical commodities such as grain, textiles, livestock or precious metals.¹⁹ While a number of early derivatives markets such as the Chicago Board of Trade (CBOT), London Metal Exchange and Liverpool Cotton Exchange eventually achieved a relatively high degree of formal organisation and sophistication, the basic structure of early derivatives and the nature of their underlying remained essentially unchanged until well into the 20th century.

The origins of modern derivatives markets can be traced back to the 1970s. Their emergence is often attributed to important advances in financial theory²⁰ and computing power.²¹ Other catalysts include trade liberalization²²; the demise of the Bretton Woods fixed exchange rate system²³; prevailing monetary policies²⁴, and

¹⁷ Robert Shiller, *Irrational Exuberance*, 2ed. (Princeton University Press, Princeton, 2005) at 85 and Chisholm (n 11) at 5.

¹⁸ See Gary Shea, “Understanding Financial Derivatives in the South Sea Bubble: The Case of the South Sea Subscription Shares” (2007), 59 *Oxford Econ. Papers* (Supp. 1) i73.

¹⁹ Todd Petzel, “Derivatives: Market and Regulatory Dynamics” (1995), 21 *J. of Corp. L.* 95 at 96.

²⁰ And perhaps most significantly the development of the Black-Scholes option pricing model; see Fischer Black and Myron Scholes, “The Pricing of Options and Corporate Liabilities” (1973), 81 *J. of Pol. Econ.* 637; Hudson (n 11) at 1104, and Castignino (n 12) at 7.

²¹ Hudson (n 11) at 1104 and Castignino (n 12) at 7. While it is of course difficult to identify causal variables with certainty (to say nothing of the relationships between them), it seems likely that advances in financial theory and information technology were necessary – if not necessarily sufficient – for the development of modern derivatives markets, whereas the other factors can best be understood as catalysts of demand for these new instruments.

²² As the business activities of many firms became more and more internationalized during the 1960s and 1970s, these activities exposed firms to an increasing degree of foreign exchange risk, thus generating a demand for financial instruments capable of assisting firms to manage this risk.

²³ The abandonment of the Bretton Woods system by the U.S. in the early 1970s in favor of a floating exchange rate regime precipitated an increase in exchange rate volatility, thus further enhancing the demand for financial instruments capable of managing foreign exchange risk; Simon Firth, *Derivatives: Law and Practice* (Sweet & Maxwell, London, 2010) at 1.1 [loose-leaf service].

²⁴ More specifically, the decision by many central banks during the 1970s and 1980s to abandon money supply targets contributed (along with other factors) to an increase in interest rate volatility, thus generating a demand for financial instruments capable of managing interest rate risk.

bank deregulation.²⁵ Ultimately, modern derivatives are distinguishable from their predecessors in at least four, largely related, respects. First, the underlying of the vast majority of modern derivatives are financial assets: equity, debt, currencies, interest rates and other economic claims. Second, unlike early derivatives markets – which typically contemplated the identification of a physical location for the purposes of, *inter alia*, the inspection and delivery of underlying commodities – many modern derivatives markets are cash settled and, thus, effectively take place in a world without physical or jurisdictional boundaries. Third, these derivatives are priced – and their attendant risks managed – using complex mathematical models derived from financial theory.²⁶ These models provide market participants with a rational basis for breaking down various risks into their component parts and tailoring derivatives specifically designed to manage the resulting exposures.²⁷ Finally, unlike their parochial, largely agrarian forebears, modern derivatives have in a relatively short span of time emerged as a dominant force within global financial markets. As of December 31, 2011, the Bank for International Settlements (BIS) estimated the outstanding notional amount of all exchange-traded and OTC derivatives at \$USD706.1 *trillion*²⁸: up from a mere \$USD5.75 trillion in 1990.²⁹

Modern derivatives markets are dominated by a single, extremely versatile, class of instruments: swaps. A swap is a series of mutual forward obligations

²⁵ Karol (n 13) at 197-198.

²⁶ For an overview of the financial theory and mathematical models underlying the pricing of modern derivatives, *see* Flavell (n 3).

²⁷ Firth (n 23) at 1.2.

²⁸ BIS, “OTC Derivatives Market Activity in the Second Half of 2011” (May, 8, 2012), available at www.bis.org. *See* n 35 for a discussion of the methodological shortcomings of using the outstanding notional amount of OTC derivatives as a metric for either their size or systemic importance.

²⁹ BIS, “International Banking and Financial Market Developments” (August 1996) at 35, available at www.bis.org.

whereby two counterparties agree to periodically exchange (or ‘swap’) cash flows over a specified period of time.³⁰ The classic example of a swap is an interest rate swap pursuant to which one party – a borrower with fixed rate obligations, for example – agrees to make payments at a fixed interest rate to a counterparty who in turn agrees to pay the borrower a variable (or ‘floating’) rate.³¹ The fixed rate borrower receiving a floating rate thus stands to benefit from any subsequent increase in interest rates³², whereas its counterparty receiving the fixed rate under the swap will benefit from any decline.³³ The periodic payments due under a swap are calculated with reference to what is often referred to as a ‘notional amount’.^{34,35} The resulting obligations are then typically netted out against one another such that only one counterparty is obligated to remit payment in any given period.³⁶ Figure 2.1 depicts a stylized interest rate swap transaction.³⁷

³⁰ Jonathan Marsh, (ed.), *A Practitioner’s Guide to Derivatives* (City and Financial Publishing, London, 2010) at 13 and Hudson (n 11) at 1117. Theoretically, there is nothing preventing counterparties from swapping assets other than cash flows (i.e. the underlying). Derivatives which contemplate the delivery of the underlying are generally described as being ‘physically’ settled. The vast majority of swaps, however, contemplate cash settlement.

³¹ Typically determined with reference to an independently established rate such as the London Inter-Bank Offer Rate (or LIBOR).

³² Capturing the difference between the floating returns realized on the swap and its fixed rate payments to its creditors.

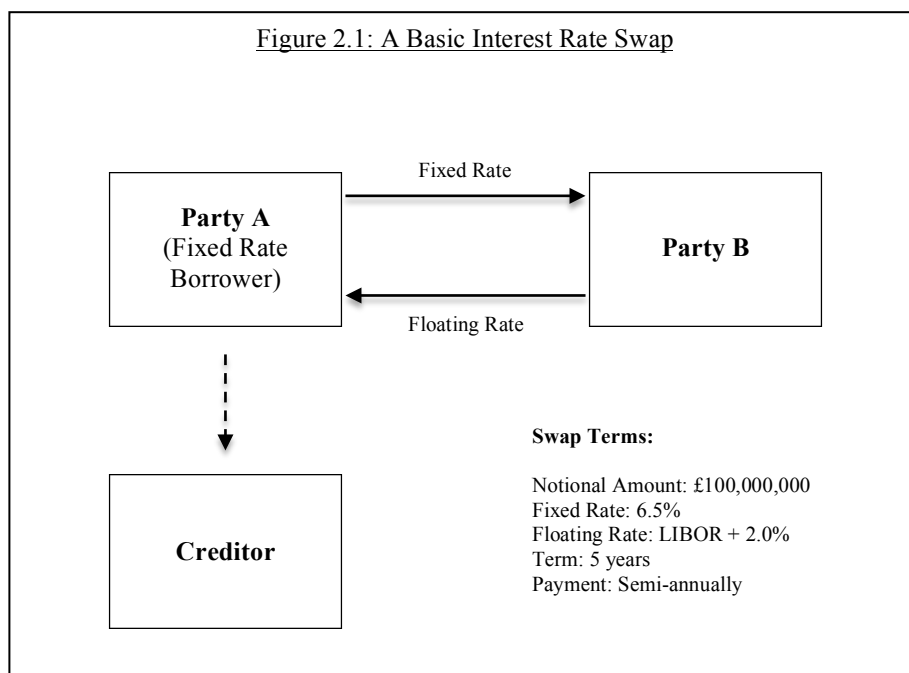
³³ Capturing the difference between the fixed returns realized on the swap and the reference rate of interest.

³⁴ Thus, in our stylized example, the forward obligations due in any period (before netting) would be calculated by separately multiplying the agreed upon fixed and floating rates by the notional amount.

³⁵ Note that the notional amount itself does not actually change hands. It is for this reason that the notional amount does not provide a particularly meaningful measure of the size or economic importance of OTC derivatives markets. A more representative measure is ‘gross market value’, which reflects the current exposures of counterparties under open contracts (and assuming that these contracts were all settled immediately). One obvious methodological shortcoming of measures of gross market value, however, is that the exposures are gross, not net. Nevertheless, gross market value provides a more meaningful measure of the size and economic importance of OTC derivatives markets than the outstanding notional amount. Where possible, therefore, gross market values are provided along with outstanding notional amounts.

³⁶ For a more detailed description of such ‘payment’ or ‘settlement’ netting provisions and how they developed and became more or less standardized within OTC derivatives markets, *see* Chapter 4.

³⁷ This depiction of an interest rate swap transaction is stylized in many respects. Perhaps most importantly, as described in greater detail below, the counterparties to a typical swap transaction will



The first widely reported swap transaction – a currency swap between IBM and the World Bank³⁸ – was entered into in 1981.³⁹ The emergence of markets for interest rate (c. 1981)⁴⁰, commodity (c. 1986)⁴¹ and equity-linked (c. 1989)⁴² swaps would follow over the course of the next decade. The forerunners of modern CDS⁴³,

not contract directly with one another but, rather, will enter into separate swaps with a single financial intermediary acting as market maker.

³⁸ See Flavell (n 3) at 5-6.

³⁹ There is some disagreement, however, as to the timing of (and counterparties to) the first swap. Castignino, for example, reports that Goldman Sachs and Continental Illinois National Bank and Trust Company entered into a currency swap in 1976; Castignino (n 12) at 71. Marshall and Kapner, meanwhile, suggest that the first swap was written in London in 1979; John Marshall and Kenneth Kapner, *Understanding Swaps* (John Wiley & Sons, New York, 1993). Regardless of who got there first, it is generally acknowledged that these first currency swaps evolved out of – and eventually replaced – the ‘parallel’ and ‘back-to-back’ loan markets; Flavell (n 3) at 1-3.

⁴⁰ Castignino (n 12) at 72.

⁴¹ Marshall and Kapner (n 39) at 6.

⁴² Ibid.

⁴³ A credit default swap (or CDS) is a contract whereby one party (often referred to as the ‘credit protection seller’), in exchange for periodic payments, agrees to ‘protect’ another party (the ‘credit protection buyer’) in the event of certain prescribed events of default being experienced in respect of the debts of one or more ‘reference entities’. Reference entities can include corporate and sovereign issuers, financial indices, baskets of debt securities and even baskets of other CDS. The economic effect of a CDS is to transfer some or all of the risk of default from the credit protection buyer (who may or may not be holding the underlying debt) to the credit protection seller. The vast majority of CDS are now cash-settled (although previous generations of CDS contemplated the delivery of the underlying debt instrument).

meanwhile, came to the market in the early 1990s.⁴⁴ Today, there exist relatively robust markets for each of these instruments, along with smaller (but by no means insignificant) markets for more exotic and esoteric instruments such as average rate, compound, yield curve, convexity effects and various cross-market and cross-currency swaps.⁴⁵ Table 2.1 sets out the outstanding notional amounts and gross market values of the most widely used types of swaps as of December 31, 2011, along with the comparable figures for OTC and exchange-traded options and futures.⁴⁶

Table 2.1: Outstanding Notional Amounts and Gross Market Values of Derivatives (by Instrument)		
(figures as of December 31, 2011; reported in billions of USD)		
Instrument	Notional Amount Outstanding	Gross Market Value
Total swaps (and forwards)	647,762	27,285
Interest rate	504,098	20,001
Currency and f/x	63,342	2,555
Equity-linked	5,982	679
Commodity	3,091	487
CDS	28,633	1,586
Other	42,609	1,977
Exchange-traded options and futures	58,332	n/a

Source: BIS (2012).

Remarkably, the GFC has done little to slow the pace of innovation within swaps markets. Indeed, both the crisis and the subsequent regulatory response have in many respects *spurred* a new wave of innovation.⁴⁷ A prime example is the recent emergence of the market for so-called collateral (or liquidity) swaps. A collateral swap is essentially a form of secured lending whereby one counterparty transfers

⁴⁴ Castignino (n 12) at 96. These first credit derivatives were debt securities with payments linked to specific events of default experienced by underlying reference entities; *ibid*.

⁴⁵ For further details respecting the structure and pricing of these and other more complex instruments, see Flavell (n 3), chs. 7 and 8.

⁴⁶ BIS (n 28).

⁴⁷ See Sarah Butcher, "Great Big Growth Area: Collateral Management?", Swiss Futures and Options Association (July 25, 2011), available at <http://news.sfoa.efinancialcareers.com> and Bank of England, *Financial Stability Report* (December 2010) at 38, available at www.bankofengland.co.uk.

relatively liquid assets to another in exchange for a pledge of less liquid collateral.⁴⁸ In a typical collateral swap, a bank holding a portfolio of ABS will transfer these assets to a pension fund or insurance company which, in exchange for a periodic fee, will deliver a portfolio of more liquid collateral such as high-grade government or corporate bonds.⁴⁹ The pension fund or insurer thereby receives a higher yield on its (ostensibly) safe investments, while the bank obtains access to a portfolio of liquid assets that can then be re-pledged to obtain funding from central banks and other sources which, in the wake of the GFC, have been unwilling to accept ABS as eligible collateral.⁵⁰ The development of collateral swaps is thus, in effect, a creative response to both the post-crisis funding constraints on banks and the need to satisfy new liquidity requirements soon to be imposed under Basel III.⁵¹

Paralleling the rise of swaps has been the emergence and precipitous growth of structured finance: ABS, CDOs and other securitization vehicles.⁵² As described in Chapter 1, securitization is a process whereby the cash flows associated with non-liquid assets are pooled together, restructured and sold as more liquid securities. Most

⁴⁸ In effect, collateral swaps are the economic equivalent of a long-dated repo arrangement; for a brief summary of the mechanics of a repo, *see Chapter 1*, n 39. For this reason, one might argue that – despite their name – collateral swaps should not be characterized as OTC derivatives but, rather, a unique form of secured lending.

⁴⁹ Jennifer Hughes, “Concern Mounts Over Rise of Collateral Swaps”, *The Financial Times* (June 30, 2011), available at www.ft.com; Izabella Kaminska, “The Privatization of Liquidity Ops”, *The Financial Times* (December 17, 2010), available at www.ft.com/alphaville; Izabella Kaminska “It’s Stock Lending Jim, But Not As You Know It”, *The Financial Times* (October 28, 2010), available at www.ft.com/alphaville, and Aaron Wollner, “Funding Needs Drive Banks to ‘Borrow’ Liquidity from Insurers and Pensions Funds”, *Life & Pension Risk* (October 28, 2010), available at www.risk.net.

⁵⁰ *Ibid.*

⁵¹ *Ibid.* In effect, the counterparties to collateral swaps are arbitraging differences in the capital adequacy regimes applicable to banks, on the one hand, and pension funds and insurance companies, on the other.

⁵² Although, unlike swaps markets, the primary markets for ABS and other securitizations have been far less active in the aftermath of the GFC; *see* Bank of England, “The State of the Financial Markets”, speech delivered by Paul Fisher (June 29, 2011) at 3-5, available at www.bankofengland.co.uk.

structured finance vehicles are, in effect, a form of credit derivative.⁵³ The first ABS was issued by the U.S. Government National Mortgage Association (Ginnie Mae) in 1970.⁵⁴ This nascent ABS market initially revolved around the issuance of residential MBS by U.S. government sponsored enterprises (GSEs) such as Ginnie Mae, the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac).⁵⁵ Between 1970 and 2011, annual issuances within this so-called ‘agency’ MBS market grew from approximately \$USD452 million to over \$USD1.6 trillion.⁵⁶ As of June 30, 2012, the outstanding amount of U.S. mortgage-related securities stood at approximately \$USD7 trillion.⁵⁷

Observing this success, private sector financial institutions – primarily larger commercial and investment banks – began structuring and distributing ‘private label’ ABS in the mid-1980s.⁵⁸ This timing roughly corresponded with the completion of the 1988 Basel Capital Accord (Basel I). These financial institutions employed the structures developed by the GSEs in connection with residential mortgages and quickly adapted them to securitize cash flows derived from a far broader range of underlying assets including, *inter alia*: commercial mortgages; home equity and

⁵³ In effect because the obligations of the issuers of these securities to make periodic payments to the holders are contingent upon the (non-)performance of the underlying assets (as measured by their ability to generate the expected cash flows). As with collateral swaps, some might object (not unjustifiably) to the characterization of structured financing vehicles as OTC derivatives. Ultimately, however, while there are important economic (and legal) distinctions between structured finance and other species of OTC derivatives (e.g. swaps), they do clearly fall within the generic definition of a derivative as a financial contract the value or expected performance of which is linked to another, underlying, asset.

⁵⁴ Heffernan (n 14) at 46.

⁵⁵ Prohibited by law from originating mortgages, the GSEs would acquire mortgages from private lenders, securitize them and then guarantee the income streams generated by the resulting MBS; *see* Ibid. at 47.

⁵⁶ Securities Industry and Financial Markets Association (SIFMA), *U.S. Mortgage-Related Securities Issuance* (August 2, 2012), available at www.sifma.org.

⁵⁷ SIFMA, *U.S. Mortgage-Related Securities Outstanding* (August 2, 2012), available at www.sifma.org.

⁵⁸ Ibid. and Heffernan (n 14) at 47.

student loans; automobile, aircraft and equipment leases; credit card receivables; corporate debt; swaps, and even other securitizations.⁵⁹ Between 1985 and 2011, the outstanding amount of non-mortgage-related ABS (including CDOs) in the U.S. and Europe grew over 2000% – from an estimated \$USD1.2 billion to over \$USD2.6 trillion.⁶⁰ Table 2.2 sets out the outstanding agency and private label ABS and CDOs in the U.S. and Europe as of December 31, 2011.

Table 2.2: Outstanding Agency and Private Label ABS/CDOs in the U.S. and Europe (by Underlying)		
(figures as of December 31, 2011; reported in billions of USD)		
Underlying Asset	U.S.	Europe
Residential and commercial mortgages	6,293.1	1,748.1
Agency	5,588.8	n/a
Private label	704.3	1,748.1
Home equity loans	516.1	n/a*
Student loans	234.2	n/a*
Credit card receivables	164.1	22.6
Automobile leases	118.3	50.4
Other (incl. CDOs)	763.2	756.7
Total	8,089.2	2577.8

Source: SIFMA (2012). *Indicates that SIFMA does not break down data into these categories.

The emergence and growth of both agency and private label securitization markets – to say nothing of the markets for CDOs and CDO-squared – is attributable to a complex bundle of supply-side, demand-side and other incentives. The agency ABS market, for example, grew at least in part out of a desire on the part of the U.S. federal government to expand home ownership, essentially as a means of ameliorating rising economic inequality.⁶¹ Investors, meanwhile, flocked to ABS, CDOs and other

⁵⁹ See SIFMA, *U.S. Asset-Backed Securities Outstanding* (as of August 1, 2012), available at www.sifma.org.

⁶⁰ Ibid.; SIFMA, *Europe Securitization Outstanding* (as of July 12, 2012), available at www.simfa.org, and SIFMA, *Global CDO Issuance* (as of July, 11, 2012), available at www.sifma.org.

⁶¹ See Raghuram Rajan, *Fault Lines: How Hidden Fractures Still Threaten the World Economy* (Princeton University Press, Princeton, 2010) at 21-45 and Financial Crisis Inquiry Report at 38-42.

securitizations in search of both higher yields⁶² and diversified exposure to, *inter alia*, the U.S. residential and commercial property sectors.⁶³ Ultimately, however, much of this growth is attributable to the supply-side incentives of the commercial and investment banks which structured and sold these securities. As a preliminary matter, financial institutions sponsoring and distributing securitized offerings earned sizable fees in connection with these transactions. What is more, securitization (theoretically) enabled originators to shift the market, liquidity, interest rate and other risks associated with the underlying assets off their balance sheets. Most importantly, however, securitization enabled banks to secure relief from capital adequacy requirements⁶⁴ – thus freeing up capital for reinvestment.⁶⁵ Viewed in this light, the supply-side incentives come front and centre: the more assets a bank could repackage and sell via securitization, the more capital it could deploy toward new investments, and the more assets it would have to fuel the securitization machine. Introduce CDOs and CDO-squared into this mix – and thus the ability to make new assets out of thin air – and it is little wonder that securitization markets witnessed such exponential growth in the decades leading up to the GFC.

⁶² Adair Turner, “The Financial Crisis and the Future of Financial Regulation”, speech at *The Economist’s* Inaugural City Lecture (January 21, 2009), available at www.fsa.gov.uk/pages/Library/Communication/Speeches/2009/0121_at.shtml.

⁶³ Financial Crisis Inquiry Report at 43.

⁶⁴ While a detailed examination of capital adequacy requirements is well beyond the scope of this thesis, these requirements – and specifically those articulated under Basel I, II and now III – prescribe, *inter alia*, that banks and certain other classes of financial institution maintain a specified ratio of capital to risk-weighted assets. Insofar as many securitization techniques attract a lower risk weighting than the underlying assets under these requirements, financial institutions will *ceteris paribus* be required to hold a lower amount of capital and, accordingly, will be incentivized to repackage and sell these assets via securitization. See David Jones, “Emerging Problems with the Basel Capital Accord: Regulatory Capital Arbitrage and Related Issues” (2000), 24 *J. of Banking & Fin.* 35 for a description of how financial institutions utilized structural subordination (i.e. tranching); remote origination (i.e. structured investment vehicles), and indirect credit enhancement (e.g. structured liquidity facilities) to lower their regulatory capital requirements without reducing the underlying economic risk.

⁶⁵ Viral Acharya, Phillipp Schnabel and Gustavo Suarez, “Securitization Without Risk Transfer” (August 8, 2011), available at www.ssrn.com; Financial Crisis Inquiry Commission, “Overview on Derivatives”, Preliminary Staff Report (June 29, 2010) at 6, and Alan Greenspan, “The Role of Capital in Optimal Banking Supervision and Regulation” (1998), Federal Reserve Bank of New York Policy Review 163 at 165-166.

Together, swaps and structured finance currently account for the lion's share of assets and activity within global derivatives markets.⁶⁶ By no means, however, are they the only stars in the derivatives universe. To take just one example, recent years have witnessed the emergence of a burgeoning market for so-called 'synthetic ETFs'. ETFs are exchange-traded investment funds designed to track (or 'replicate') the value of a portfolio of assets (e.g. the FTSE, S&P 500 or MSCI Emerging Markets Index).⁶⁷ ETFs are thus generally regarded as relatively low cost and liquid vehicles for investors seeking portfolio diversification.⁶⁸ Introduced in the early 1990s, plain vanilla ETFs physically replicate the reference portfolio by purchasing the underlying assets.⁶⁹ *Synthetic* ETFs, in contrast, are a more recent innovation designed to replicate the reference portfolio through the use of OTC derivatives.⁷⁰

While there exist a number of ways to structure a synthetic ETF, perhaps the most common technique involves the sponsor of the fund entering into a total return swap⁷¹ with a financial intermediary.⁷² There are two components – or 'legs' – of this

⁶⁶ At least as measured by (notional) amounts outstanding. Direct comparisons between different classes of instruments are, however, difficult owing to the divergent methodologies used to report trading activity and economic exposures. This is especially the case with respect to differences between exchange-traded and OTC derivatives.

⁶⁷ The investment firm BlackRock estimates that there are now in excess of 2,700 ETFs worldwide, replicating various portfolios of public equity and debt securities, across virtually every conceivable investment style, country and region; see "Too Much of a Good Thing", *The Economist* (June 25, 2011).

⁶⁸ IMF, *Global Financial Stability Report* (April 2011) at 68; Financial Stability Board (FSB), "Potential Financial Stability Issues Arising From Recent Trends in Exchange-Traded Funds (ETFs)" (April 12, 2011) at 1, available at www.financialstabilityboard.org; Bank of England, *Record of the Interim Financial Policy Committee Meeting of June 16, 2011* (June 24, 2011) at 8, and *ibid*.

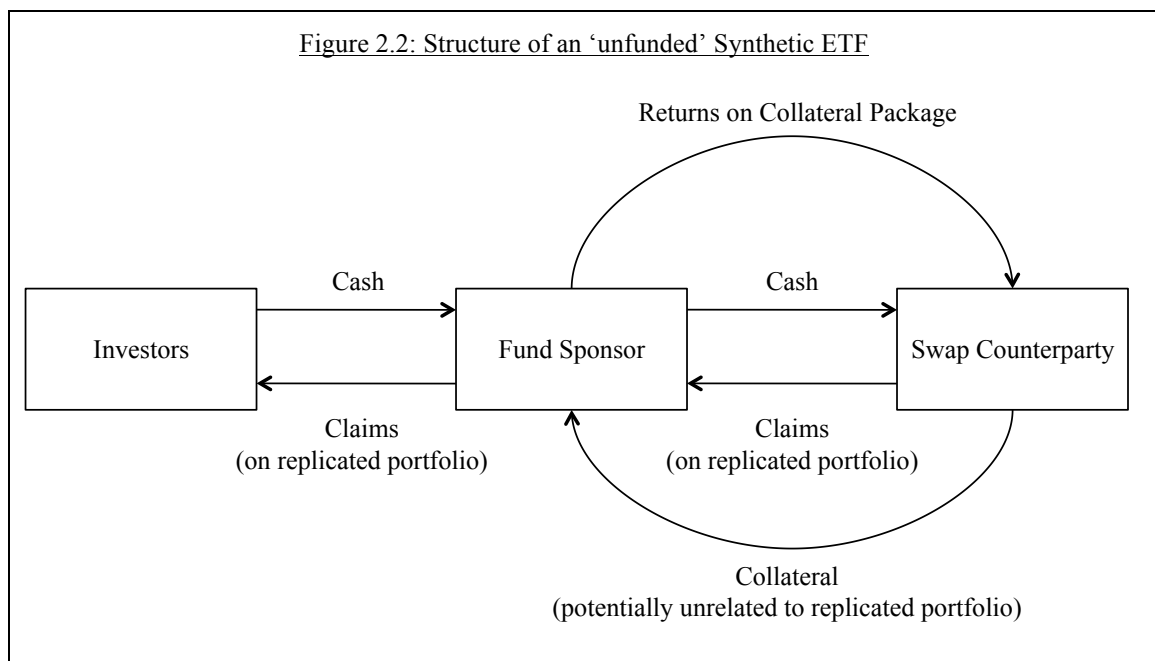
⁶⁹ BIS, "Market Structures and Systemic Risks of Exchange-Traded Funds", BIS Working Paper No. 343 (April 2011) at 4, available at www.bis.org.

⁷⁰ FSB (n 68) at 2 and *ibid*.

⁷¹ A prototypical total return swap (or TRS) involves swapping cash flows calculated with reference to a floating rate of interest for those derived from the total return (i.e. all capital gains and interest/dividend income) on a given asset or portfolio of assets; BIS (n 69) at 5.

⁷² This structure is commonly referred to as the 'unfunded' swap structure; *ibid*. This is in contrast to the 'funded' swap structure which, in a nutshell, involves the ETF sponsor buying a structured note secured by a collateral pledge from a financial intermediary. Notably, in the funded swap structure, the

swap. In the first leg, the ETF sponsor contracts with the financial intermediary to receive the total return on the reference portfolio in exchange for cash equal to the notional amount of the swap.⁷³ In return, the financial intermediary transfers a portfolio of collateral to the ETF sponsor. Importantly, the collateral assets are often unrelated to those which the synthetic ETF has been designed to replicate.⁷⁴ The second leg of the swap then involves the transfer of the total return on the collateral assets back to the financial intermediary.⁷⁵ Figure 2.2 depicts the structure of an ‘unfunded’ synthetic ETF.



financial intermediary posts eligible collateral into a ring-fenced custodial account. Accordingly, unlike the unfunded swap structure, the ETF sponsor is not the beneficial owner of the collateral assets; for further discussion; *ibid.* at 6.

⁷³ *Ibid.* This has the benefit of transferring the tracking risk in the reference portfolio to the swap counterparty.

⁷⁴ *Ibid.* and *The Economist* (n 67). For ETFs domiciled in the E.U., for example, the Undertakings for Collective Investments in Transferrable Securities (UCITS) Directive 88/220/EEC (as amended) only prescribes that the collateral assets be selected from among certain prescribed classes of equity or debt securities; see UCITS Directive, Arts. 22 and 23 and FSB (n 68) at 4 for further details.

⁷⁵ BIS (n 69) at 5.

Synthetic ETFs have proven especially popular in Europe and Asia.⁷⁶ The growing demand for these derivatives has been stoked by institutional investors in search of higher returns in less liquid fixed income and emerging markets where physical replication of a reference portfolio would likely prove prohibitively costly.⁷⁷ At least some of the impetus for the development of synthetic ETFs, however, stems from the desire on the part of the financial intermediaries acting as swap counterparties to remove less liquid collateral from their balance sheets – ultimately with a view to enhancing their liquidity profile, lowering securities warehousing costs and reducing regulatory capital charges.⁷⁸ In the extreme – and in particular where the financial intermediary is affiliated with the fund sponsor – synthetic ETFs can thus be utilized as a ‘dumping ground’⁷⁹ for lower quality assets.⁸⁰ This in turn serves to highlight the fact that these instruments expose investors to both (1) counterparty credit risk in connection with the swap itself and (2) market and liquidity risk in connection with the swap collateral.⁸¹ Accordingly, while synthetic ETFs are themselves exchange-traded (and thus highly regulated⁸²) instruments, their complexity and risk profile more closely resemble the OTC derivatives which reside at the core of this increasingly popular investment fund structure. Whether synthetic

⁷⁶ FSB (n 68) at 3. Synthetic ETFs are less popular in the U.S. owing to regulatory constraints imposed under the *Investment Company Act of 1940*, codified at 15 U.S.C. §80a (1940) as am. [the “ICA”] through P.L. 111-257; see IMF (n 68) at 68. In March 2010, the SEC announced that it was conducting a review of the use of derivatives by ETFs; see SEC, “SEC Staff Evaluating the Use of Derivatives by Funds”, Press Release 2010-45 (March 2010), available at www.sec.gov.

⁷⁷ *The Economist* (n 67) and BIS (n 69) at 1. These increased costs are attributable to, *inter alia*, the wider bid-ask spreads typically encountered within these markets; BIS (n 69) at 4.

⁷⁸ *Ibid.* at 1 and 8-10; FSB (n 68) at 2, and Bank of England (n 68) at 8. In effect, synthetic ETFs can thus be utilized to perform the same economic function (i.e. liquidity transformation) as collateral swaps.

⁷⁹ *The Economist* (n 67).

⁸⁰ IMF (n 68) at 71-72.

⁸¹ BIS (n 69) at 8-9 and *ibid.* What is more, these risks are likely to be exacerbated during periods of market turmoil.

⁸² As previously mentioned, these instruments are subject to the *ICA* in the U.S. and the UCITS Directive in the E.U., along with the rules of the exchange on which they trade.

ETFs will eventually grow to rival swaps and structured finance is open to debate. Less debatable, however, is that these and other similar financial instruments are illustrative of the innovation which has driven the emergence, development and on-going expansion of global derivatives markets.

Our primer has thus far proceeded without acknowledging the fundamental distinctions – especially in terms of market microstructure and regulation – between exchange-traded and OTC derivatives.⁸³ Exchange-traded derivatives, as their name suggests, are created by and traded on organized exchanges and alternative trading platforms such as the Chicago Mercantile Exchange (CME), Intercontinental Exchange (ICE), Eurex and NYSE Liffe.⁸⁴ These derivatives – primarily options and futures – are highly standardized instruments offering market participants a relatively limited menu of potential underlying and prescribing a narrow range of available settlement amounts, maturity dates and strike prices.⁸⁵ This standardization is a necessary (if not always sufficient) condition for the generation of liquid markets in these instruments. Simultaneously, standardization enables exchanges and other trading platforms to clear and settle trades through central counterparties (CCPs).⁸⁶ Importantly, derivatives exchanges and alternative trading platforms play a central role in governing the markets they create: promulgating, monitoring and enforcing rules respecting, *inter alia*, exchange membership; trading qualifications and

⁸³ Although, as we shall see, the line between these two market structures is becoming increasingly blurred in practice; *see* Financial Crisis Inquiry Report at 46 and Murray (n 13) at 273.

⁸⁴ Marsh (n 30) at 21.

⁸⁵ *Ibid.* and Feder (n 13) 731-732.

⁸⁶ Marsh (n 30) at 21-22; Firth (n 23) at 1-15 and 1-16; Castignino (n 12) at 13 and 15, and Feder (n 13) at 732-734. In very broad terms, CCPs interpose themselves as counterparties to what would otherwise be bilateral transactions, thereby assuming counterparty credit and settlement risk and centralizing, *inter alia*, clearing and settlement procedures, trading data and risk management. In practice, virtually all exchange-traded derivatives are cleared through CCPs; Duffie et. al. (n 2) at 1. The mechanics, prospective benefits and potential drawbacks of CCPs are discussed in greater detail in [Chapter 3](#).

practices; risk management, and the approval of new derivative instruments. Even more importantly, these private actors discharge this governance role under the oversight of public regulators.⁸⁷ The prospective benefits of exchange-traded derivatives (at least from the perspective of market participants⁸⁸) can therefore be thought to derive primarily from (1) the liquidity and price transparency associated with exchange-trading; (2) the mitigation of counterparty credit and settlement risks through the utilization of CCPs, and (3) the procedural and substantive protections afforded within a highly regulated market environment.⁸⁹

OTC derivatives, in contrast, are privately negotiated instruments entered into outside the environment of a regulated exchange.⁹⁰ Indeed, until quite recently, OTC derivatives markets effectively existed outside the perimeter of public regulation in

⁸⁷ In the U.S., for example, federal regulators possess the authority within their respective jurisdictions to require the registration of exchanges and alternative trading platforms and establish and enforce rules of conduct; impose financial standards and disclosure of market positions; monitor individual transactions and, where necessary, intervene in the marketplace to ensure fair and orderly trading. Within the E.U., meanwhile, derivatives exchanges typically constitute either authorized regulated markets or multilateral trading platforms under the Markets in Financial Instruments Directive, 2004/39/EC (as amended) [“MiFID”] and are thus subject to the provisions under Titles II or III thereof, as applicable, respecting, amongst other matters, the promulgation of regulations governing access to the exchange; fair and orderly trading; the efficient execution of orders; the approval of new instruments; compliance monitoring and reporting, and post-trade transparency. For a more detailed overview of the regulation of exchange-traded derivatives in the U.S., see Geoffrey Scott and Anna Gelpern, *International Finance: Transactions, Policy and Regulation*, 18th ed. (Foundation Press, New York, 2011), ch. 14; Edward Greene, Edward Rosen, Leslie Silverman, Daniel Braverman and Sebastian Sperber, *U.S. Regulation of International Securities and Derivatives Markets* (Aspen, New York, 2004), ch. 13 and Alan Rechtschaffen, *Capital Markets, Derivatives and the Law* (Oxford University Press, Oxford, 2009), ch. 11. For an equivalent overview of the U.K. regulatory landscape, see Blair and Walker (n 13).

⁸⁸ The prospective social benefits derived from transparency, liquidity and the utilization of CCPs are discussed in greater detail below.

⁸⁹ Peter Howells and Keith Bain, *The Economics of Money, Banking and Finance*, 4th ed. (Prentice Hall Financial Times, London, 2008) at 452-453; Dietmar Franzen, *Lecture Notes in Economics and Mathematical Systems: Design of Master Agreements for OTC Derivatives* (Springer, Munchen, 2001) at 16; “Over-the-Counter Derivatives Markets and Commodity Exchange Act”, Report of the President’s Working Group on Financial Markets (November 9, 1999) at 5; Marsh (n 30) at 21-22, and Firth (n 23) at 1-15-1-16.

⁹⁰ Marsh (n 30) at 23 and Firth (n 23) at 1-17.

every major financial centre.⁹¹ OTC derivatives stand in stark contrast with their exchange-traded cousins in at least two other important respects. First, OTC derivatives bestow market participants with virtually unlimited flexibility to tailor bespoke terms respecting, *inter alia*, underlying, price, collateral, settlement amounts, maturity dates and other more exotic features.⁹² It is this flexibility which enables market participants to structure OTC instruments to suit their specific risk management requirements. Second, historically, the vast majority of OTC derivatives have not been cleared or settled through CCPs.⁹³ Accordingly, and as explored in greater detail in Chapter 4, market participants have been forced to develop contractual mechanisms designed to mitigate, *inter alia*, counterparty credit and settlement risks. The primary drawbacks of OTC derivatives relative to their exchange-traded counterparts can thus be seen as stemming from the absence of (1) price transparency; (2) secondary market liquidity, and (3) central clearing and settlement mechanisms. Despite these drawbacks, OTC derivatives markets dwarf exchange-traded derivatives markets: as of December 31, 2011, the BIS reported the outstanding notional amount of all OTC derivatives at \$USD647.8 trillion (with a gross market value of \$USD27.3 trillion), as compared with \$USD58.3 trillion for exchange-traded derivatives.⁹⁴

There exists one last fundamental – if often overlooked – distinction between exchange-traded and OTC derivatives markets. This distinction resides in the very

⁹¹ See Chapter 3 for a detailed historical account of the non-interventionist approach toward the regulation of OTC derivatives markets adopted by both the U.S. and U.K. prior to the GFC.

⁹² Franzen (n 89) at 1 and Firth (n 23) at 17.

⁹³ Although, as described in greater detail in Chapter 4, some market segments were undeniably moving in this direction prior to the GFC.

⁹⁴ BIS (n 28). Although the total notional amount outstanding of all exchange-traded derivatives experienced a 25% spike between December 2008 and September 2010; BIS, *BIS Quarterly Review* (March 2011) at A126.

different roles played by financial intermediaries within each market structure. The role of financial intermediaries (often referred to as ‘dealers’) within exchange-traded markets is effectively limited to taking orders on behalf of clients and executing these orders on the relevant exchange.⁹⁵ OTC derivatives dealers, in contrast, perform an explicit market-making role: structuring derivatives instruments and marketing them to clients, often on the basis that they are willing to take either side of the transaction.⁹⁶ These dealers then typically look to eliminate the resulting exposures by seeking out and entering into offsetting transactions with other clients or, in many cases, other OTC derivatives dealers.⁹⁷ Dealers are thus central – indeed, *essential* – to the operation of OTC derivatives markets: representing not only the primary source of innovation, but also of market access, information and liquidity.⁹⁸ Stated bluntly, OTC derivatives dealers *are* OTC derivatives markets: it is meaningless to attempt to understand the market in isolation from the institutions which comprise and control it. This reality is reflected in the concentration of trading activity within these markets. As of June 2010, the fourteen largest OTC derivatives dealers (the so-called ‘G14’⁹⁹) were responsible for approximately 82% of the global notional amount outstanding.¹⁰⁰ As explored in greater detail in Part III, it is this opaque, dealer-intermediated market

⁹⁵ Deutsche Börse Group, *The Global Derivatives Market: An Introduction* (April 2008) at 17, available at www.eurexchange.com. Subject to applicable regulatory constraints, dealers can also engage in so-called ‘proprietary’ trading for their own account.

⁹⁶ Feder (n 13) at 717 and Waldman (n 13) at 1036-1037. In the case of many structured product and structured finance markets, meanwhile, dealers perform a role more closely resembling that of an underwriter in a more traditional securities offering. Ultimately, the dealer’s role will tend to hinge on how bespoke the product is to the needs of a particular client.

⁹⁷ Deutsche Börse Group (n 95) at 17. Although, once again, subject to applicable regulatory constraints, they may also trade for their own account.

⁹⁸ Duffie et. al. (n 95) at 10.

⁹⁹ The G14 are Bank of America, Barclays, BNP Paribas, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase, Morgan Stanley, Royal Bank of Scotland, Société Générale, UBS and Wells Fargo.

¹⁰⁰ ISDA, “Concentration of OTC Derivatives Among Major Dealers”, ISDA Research Note, Issue 4 (2010), available at www.isda.org. Broken down by instrument, the G14 held 82% of the total outstanding notional amount of interest rate derivatives, 90% of CDS, and 86% of equity derivatives; *ibid.*

structure which is the source of potentially significant private and social costs. Before examining these costs, however, it is important to first canvas the prospective private and social benefits of OTC derivatives.

II. The Private and Social Benefits of OTC Derivatives

So who uses OTC derivatives and why do they use them? Significant end-users of OTC derivatives include industrial firms, governments, banks, insurance companies, pension funds and other financial institutions.¹⁰¹ These end-users are often (and rather inelegantly) lumped into one of three categories – hedgers, speculators or arbitrageurs – on the basis of their imputed motivations for utilizing OTC derivatives.¹⁰² Broadly speaking, hedgers seek to reduce or eliminate risk; speculators seek to profit from exposure to risk, and arbitrageurs seek to exploit informational (i.e. pricing) anomalies in search of ‘risk free’ profits.¹⁰³ Ultimately, however, all three putative motivations reflect attitudes about risk and the desire to achieve a particular exposure to it, thus illuminating the fundamental reason why parties use OTC derivatives: risk management.¹⁰⁴ A borrower with floating rate debt can enter

¹⁰¹ Including, of course, OTC derivatives dealers themselves. A 2009 study of 6,888 non-financial firms (collectively representing 99% of global market capitalization) found that 60.5% of these firms use derivatives; *see* Söhnke Bartram, Gregory Brown and Jennifer Conrad, “The Effects of Derivatives on Firm Risk and Value” (January 12, 2009), available at www.ssrn.com. Similarly, a 2009 survey conducted by ISDA found that 94% of the world’s 500 largest corporations use derivatives; *see* ISDA, “2009 ISDA Derivatives Usage Survey”, ISDA Research Note No. 2 (2009), available at www.isda.org.

¹⁰² *See*, for example, E.U. Commission Staff Working Paper Accompanying the European Commission (EC) Communication “Ensuring Efficient, Safe and Sound Derivatives Markets”, Comm/2009/905 final at 6; Frank Partnoy, “Financial Derivatives and the Costs of Regulatory Arbitrage” (1996-1997), 22 J. Corp. L. 211 at 223-227; and Lynn Stout, “Betting the Bank: How Derivatives Trading under Conditions of Uncertainty Can Increase Risks and Erode Returns in Financial Markets” (1995), 21 J. Corp. L. 53; Hudson (n 11) at 1105-1108; Chisholm (n 11) at 3-4; Marsh (n 30) at 3-4, and Feder (n 13) at 717-721.

¹⁰³ *Ibid.*

¹⁰⁴ Jonathan Macey, “Derivative Instruments: Lessons for the Regulatory State” (1995), 21 J. of Corp. L. 69 at 72. As explained by Norman Feder: ‘Derivatives reallocate risk. What this means is that derivatives contracts isolate certain risks and move them from one party to another. By engineering a contract whose value reflects in some way the value or change in value of an underlying, parties can shift the risk inherent in exposure to that underlying. Via judicious selection of underlyings and

into a fixed rate swap to insulate itself from rising interest rates¹⁰⁵; a hedge fund can take a short position in a company by buying credit protection in the form of a single-name CDS¹⁰⁶; a trader can use OTC options to exploit short-term price discrepancies between the spot and futures markets for a particular asset.¹⁰⁷ OTC derivatives provide each of these end-users, and countless others, with the ability to more effectively achieve a desired risk profile.

The private benefits of OTC derivatives – that is, the benefits which accrue to their users – are thus largely derived from the role they play in helping to complete asset markets. An asset market is ‘complete’ where a party trading within it is capable of realizing every possible pattern of risk and return across time and in respect of all potential future states of the world.¹⁰⁸ In a world without derivatives¹⁰⁹ – where, by definition, asset markets would be *incomplete* – parties would have no alternative except to absorb the entire spectrum of risks associated with the ownership of a given asset.¹¹⁰ In this world, for example, shareholders would be forced to absorb market risk, lenders counterparty credit risk, and exporters foreign exchange

thoughtful arrangement of relevant obligations, parties to derivative arrangements *unbundle* specific risks and place each of these risks where they are most welcome.’; Feder (n 13) at 682.

¹⁰⁵ This example in particular illustrates the conceptual difficulties associated with characterizing hedging and speculation as mutually exclusive motivations for utilizing OTC derivatives. While the conventional view would likely be that this transaction constituted a hedge, the borrower is, on another view, simultaneously taking a ‘speculative’ position linked to the probability and impact of any subsequent decline in interest rates.

¹⁰⁶ Thereby speculating that the company will experience an event of default under its debt commitments.

¹⁰⁷ The primary thrust of the strategy being to couple a long position in the market exhibiting a lower price with a short position in the market exhibiting a higher price, effectively betting that the two prices will converge (i.e. that the discrepancy will be arbitrated away).

¹⁰⁸ Peter Huang, “A Normative Analysis of New Financially Engineered Derivatives” (2000), 73 So. Cal. L. Rev. 471 at 473 and 494. *See* more generally, Kenneth Arrow, “The Role of Securities in the Optimal Allocation of Risk Bearing” (1964), 31 Rev. Econ. Stud. 91.

¹⁰⁹ Where, for example, they were legally prohibited.

¹¹⁰ This is not to suggest that the existence of OTC derivatives actually renders asset markets complete – rather, they can be understood as incrementally moving markets *toward* completion. As explored in greater detail below, however, this distinction manifests potentially significant normative implications.

risk.¹¹¹ Against this backdrop, the private benefits of OTC derivatives come into sharp focus: their virtually unlimited flexibility enabling parties to ‘unbundle’ or ‘shred’ risks with a view to structuring tailor-made risk and return profiles which, in their absence, may have been impossible – or simply too costly – to engineer.¹¹² Simultaneously, OTC derivatives enable end-users to shift risks to the parties most willing to bear them.¹¹³

There are at least two other important reasons why parties use OTC derivatives.¹¹⁴ First, they are utilized to engage in so-called ‘regulatory arbitrage’: transactions or strategies designed to exploit gaps or differences within or between regulatory regimes, ultimately with the intention of either reducing costs or capturing profits.¹¹⁵ The myriad of ways in which OTC derivatives can be used to circumvent, *inter alia*, banking, securities, accounting, tax and other regulatory requirements have been well documented¹¹⁶ – perhaps the most prominent example being the use of securitization techniques by banks to secure relief from regulatory capital requirements.¹¹⁷ Second, parties use OTC and other derivatives to exploit their inherent (or ‘embedded’) leverage.¹¹⁸ This embedded leverage enables end-users to

¹¹¹ Stulz (n 2) at 2 and Duffie et. al. (n 2) at 9-10.

¹¹² Alan Greenspan, “Financial Derivatives”, remarks to the Futures Industry Association, Boca Raton, Florida (March 19, 1999); Henry Hu, “Misunderstood Derivatives: The Causes of Information Failure and the Promise of Regulatory Incrementalism” (1993), 102 Yale L. J. 1457 at 1465; Duffie et. al. (n 2) at 9-10, and Feder (n 13) at 682.

¹¹³ *Ibid.* and Waldman (n 13) at 1038.

¹¹⁴ Although both of these reasons are, ultimately, related to risk management.

¹¹⁵ Partnoy (n 102) at 211.

¹¹⁶ *See* *ibid.* at 227-235 for a general overview. *See* also Henry Hu and Bernard Black, “The New Vote Buying: Empty Voting and Hidden (Morphable) Ownership” (2006), 79:4 So. Cal. L. Rev. 811 and Stout (n 102) at 57.

¹¹⁷ Acharya, Schnabel and Suarez (n 65); Greenspan (n 65) at 165-166 and FCIC Staff Report (n 65) at 6.

¹¹⁸ The leverage embedded within derivatives becomes evident when comparing the following two investment options: (1) a \$100 equity investment in Company X financed with a loan repayable in one year and with semi-annual interest payments of 5%, and (2) an uncollateralized total return equity swap

take significant economic positions while committing a disproportionately small amount of upfront capital.¹¹⁹

In sum, then, the prospective benefits of OTC derivatives to users flow from their capacity to help these parties manage risk, skirt costly regulation and enhance leverage. In addition to these *private* benefits, several commentators have pointed to potential *social* benefits – positive externalities – stemming from the widespread use of OTC derivatives. These prospective social benefits, it is argued, derive from: (1) the completion of asset markets; (2) improved price discovery; (3) enhanced market liquidity, and (4) greater systemic resilience.

Asset Market Completion. It is frequently argued that, in addition to the private benefits described above, the completion of asset markets can be expected to generate potentially significant positive externalities. As Kenneth Arrow and Gerard Debreu observe, where markets are complete and perfectly competitive, the resulting general equilibrium of asset, commodity and risk allocation will be Pareto-efficient and thus, by definition, socially desirable.¹²⁰ Within such an environment, one would expect the allocatively efficient risk shifting facilitated by OTC derivatives to enable end-users to engage in activities which might have otherwise entailed an unacceptable degree (or species) of risk. Along the same vein, to the extent that end-users are able to achieve their optimal risk allocation, one would further expect the resulting reduction in firm-specific risk to translate into a corresponding decrease in the cost of

on Company X with a notional value of \$100, a duration of one year and semi-annual payments of 5% of the notional value. These transactions are identical from an economic perspective: the end-user achieves the same exposure to the equity of Company X under both options, realizes the same net cash flow (total return minus \$10), and obtains the same amount of leverage (10:1).

¹¹⁹ Partnoy (n 102) at 225-226 and Macy (n 104) at 82.

¹²⁰ See Kenneth Arrow and Gerard Debreu, “Existence of an Equilibrium for a Competitive Economy” (1954), 22 *Econometrica* 265.

capital. Finally, where this reduction in firm-specific risk was replicated across firms and industries, one might expect this to contribute toward greater systemic stability.

Improved Price Discovery. Distilled to its essence, price discovery is the process by which the price of an asset is determined through the interaction of buyers and sellers in the marketplace.¹²¹ An important element of this complex process is arbitrage, whereby parties seek to exploit perceived deviations – informational anomalies – between the prevailing market price of an asset and its intrinsic (or ‘fundamental’) value.¹²² By ferreting out and trading on information which might illuminate whether and to what extent such deviations exist, the conventional view is that these arbitrageurs move market prices toward equilibrium.¹²³ Pursuant to this view, to the extent that OTC derivatives facilitate the arbitrage of a broader range of assets (by unbundling risk) and ever smaller price deviations (by reducing transaction costs), they can be seen as improving the process of price discovery and, as a result, enhancing informational efficiency.¹²⁴

Enhanced Market Liquidity. OTC derivatives are also frequently held out as enhancing liquidity within underlying markets.¹²⁵ Acharya et. al., for example, argue

¹²¹ For a more detailed description of the dynamics of price discovery, see Robert Schwartz and Reto Francioni, *Equity Markets in Action: The Fundamentals of Liquidity, Market Structure and Trading* (John Wiley & Sons, New Jersey, 2004), especially ch. 1, 2, 5 and 6.

¹²² While the methodologies for calculating the fundamental value of an asset vary with the nature of the asset, the preponderance of these methodologies (including, importantly, CAPM) revolve around a determination of the present value of its expected future cash flows.

¹²³ For a discussion of the role (and potential limitations) of arbitrage in moving markets toward equilibrium, see Andrei Schleifer and Robert Vishny, “The Limits of Arbitrage” (1997), 52:1 J. of .Fin. 35. See also, Eugene Fama, “Efficient Capital Markets: A Review of Theory and Empirical Work” (1970), 25:2 J. of. Fin 383 and Ron Gilson and Reiner Kraakman, “The Mechanisms of Market Efficiency” (1984), 70 Va. L. Rev. 549. Here, however, it bears emphasizing that informational efficiency – i.e. how rapidly information is impacted into prices – does not necessarily lead to allocative efficiency.

¹²⁴ Stulz (n 2) at 2-3 and FCIC Staff Report (n 65) at 5.

¹²⁵ Acharya et. al. (n 9) at 234 and Duffie et. al. (n 2) at 1.

that the introduction of derivatives into an underlying market manifests two liquidity enhancing effects.¹²⁶ First, their introduction attracts additional market participants utilizing derivatives as a leveraged alternative to trading the underlying asset.¹²⁷ Second, derivatives provide market makers with a tool to hedge their exposures, thereby reducing transaction costs for market participants in the form of lower bid-ask spreads.¹²⁸ Acharya and his co-authors thus conclude: ‘[b]y and large, spot markets with derivatives have more liquidity and thus lower transaction costs than markets without derivatives.’¹²⁹

Greater Systemic Resilience. In the wake of the GFC, it seems almost counter-intuitive to suggest that OTC derivatives might actually help ameliorate systemic risks. However, to the extent that they successfully shift risks to the parties most willing and able to absorb them, there exists a *prima facie* argument – one which held sway prior to the GFC¹³⁰ – that markets utilizing OTC derivatives will prove more stable and resilient than those which do not. Furthermore, by facilitating the dispersion of risk amongst a greater and more diverse group of end-users and markets, the use of OTC derivatives can reduce the likelihood that any default or series of defaults will pose a serious threat to the stable and fluid operation of financial markets.¹³¹ Ultimately, of course, one of the factors which contributed to the

¹²⁶ Acharya et. al. (n 9) at 234.

¹²⁷ Ibid. While the authors do not explicitly state this, this argument presumably relies on the counterparties to these trades purchasing the underlying asset as a natural hedge.

¹²⁸ Ibid.

¹²⁹ Ibid.

¹³⁰ As described in greater detail in [Chapter 3](#).

¹³¹ Alan Greenspan, “Risk Transfer and Financial Stability”, remarks to the Federal Reserve Bank of Chicago’s 41st Annual Conference on Bank Structure (May 5, 2005), available at www.federalreserve.gov. It has been widely observed, for example, that the utilization of CDS by commercial banks to hedge billions of dollars in ultimately worthless debt issued by Enron, Worldcom and Global Crossing enabled these institutions to avoid massive losses which might have otherwise jeopardized their solvency; Frank Partnoy, *Infectious Greed: How Deceit and Risk Corrupted the*

perniciousness of the GFC was that – rather than *dispersing* risk – OTC derivatives (and ABS and CDOs in particular) often became conduits for *recycling* risk within the financial system: repackaging and selling the assets of sell-side commercial banks to buy-side investment banks and other institutional investors.¹³² Nevertheless, to the extent that OTC derivatives are able to fulfil their (as yet not fully realized) potential to diffuse risk within the financial system, their widespread use may be characterized – without too much irony – as a systemic shock absorber.

OTC derivatives thus hold the potential to generate significant private and social benefits. Simultaneously, however, the realization of these benefits cannot simply be assumed without further investigation. In reality, markets are almost invariably incomplete¹³³; efficient price discovery is impeded by market frictions and the pervasiveness of private information¹³⁴, and systemic risks can build up unseen in the very institutions and markets which were thought to be conduits for dispersing them. What is more, the utilization of OTC derivatives for both regulatory arbitrage and enhancing leverage is, in many circumstances, of questionable social utility. The normative implications stemming from the use of OTC derivatives are thus often far

Financial Markets (Times Books, New York, 2003) at 376. Similarly, a joint study prepared by the U.S. Federal Reserve System, FDIC and Office of the Comptroller of the Currency acknowledged that it was unlikely that underlying markets would have performed as well during the September 1992 European currency crisis without the existence of derivatives markets enabling end-users to manage their foreign exchange risk; FDIC, *Derivative Product Activities of Commercial Banks* (January 27, 1993) at 4.

¹³² Acharya et. al. (n 9) at 241.

¹³³ The normative implications stemming from the introduction of new OTC derivatives and market participants into incomplete markets are thus ambiguous as, amongst other things, their introduction inevitably yields price effects with indeterminate welfare implications; Huang (n 108) at 56.

¹³⁴ Furthermore, it is important to subtract from the social benefits of improved price discovery the private costs incurred by arbitrageurs in acquiring, filtering, manipulating and analyzing the relevant information. Where these costs are ultimately borne by less informed counterparties, this too must be incorporated in to the social welfare calculus; Lynn Stout, “Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives” (1999), 48 *Duke L. J.* 701 at 738. Indeed, once these private costs are taken into consideration, there is no guarantee that the arbitrage-related benefits associated with the use of OTC derivatives will necessarily translate into an increase in net social welfare; *ibid.*

from clear. This disconnect between theory and reality stems from the fact that the prospective benefits associated with the use of OTC derivatives are at least partially contingent on how well the assumptions underpinning conventional financial theory reflect real world market conditions. As we have already seen, these assumptions include the absence of, *inter alia*, information costs, agency costs and bounded rationality. Ultimately, it is in the failure of these assumptions to reflect reality that we find the genesis of the private and social costs of OTC derivatives. It is to these costs which we next turn.

III. The Private and Social Costs of OTC Derivatives

The private and social costs generated by OTC derivatives are in many respects the mirror images of their prospective benefits. OTC derivatives expose both dealers and end-users to a wide range of potential perils including, *inter alia*, market, counterparty credit, settlement, liquidity, basis and operational risks.¹³⁵ Yet to the extent these risks are internalized by rational and fully informed counterparties who freely contract to assume them, the resulting ‘costs’¹³⁶ are arguably of little interest from a social welfare (and thus public policy) perspective.¹³⁷ A far more important set of risks, however, are those stemming from market frictions – and market failures – which result in either uninformed (suboptimal) contracting or welfare reducing (negative) externalities. These risks flow from: (1) pervasive and entrenched asymmetries of information; (2) the prospect of both overinvestment and excess leverage, and (3) other systemic risks potentially lurking within OTC derivatives markets.

¹³⁵ Feder (n 13) at 721-731 and Waldman (n 13) at 1039-1049.

¹³⁶ Indeed, many of these costs – such as those stemming from the crystallization of market risk in connection with bilateral OTC derivatives for example – are necessarily realized as symmetrical benefits by other parties and thus, *ceteris paribus*, have no impact on *net* social welfare.

¹³⁷ Macey (n 104) at 85 and 89. Although these costs are still relevant to the extent that they represent constituent elements of net social welfare.

Asymmetries of information. The effective utilization of OTC derivatives demands that end-users invest in the acquisition of information respecting, *inter alia*, the technical aspects of the instruments themselves¹³⁸; the markets in which they trade¹³⁹, and their prospective counterparties.¹⁴⁰ Simultaneously, the effective regulation of OTC derivatives markets demands that regulators make similar investments with a view to identifying and monitoring their attendant risks. The information costs associated with both the use and regulation of OTC derivatives have been characterized by at least one prominent observer as, in a word, ‘extraordinary’.¹⁴¹ Given these costs – along with the uneven initial endowments of information and expertise within the marketplace (i.e. differing tolerances for complexity) – it should come as no surprise that asymmetries of information pervade OTC derivatives markets. These asymmetries derive from a number of sources, each presenting its own mix of potential private and social costs.

The first source of asymmetries of information within OTC derivatives markets is, somewhat paradoxically, the structure of markets themselves. Indeed, as already observed, the notion that OTC derivatives markets are even ‘markets’ – at least as a lay person might envision them – is somewhat illusionary. In reality, these markets consist of little more than a relatively small and close-knit network of dealers who perform both an intermediation and market-making function. As the linchpins of this market structure, these dealers have historically enjoyed an informational advantage vis-à-vis the remainder of the marketplace in terms of, *inter alia*, prevailing

¹³⁸ As well as the financial theory which underpins them.

¹³⁹ As well as the market(s) for the relevant underlying.

¹⁴⁰ Or, in the case of structured products and structured financing vehicles, the (1) quality of the underlying assets and (2) creditworthiness of both the underlying obligors and the financial intermediaries standing behind the instruments.

¹⁴¹ Partnoy (n 102) at 244.

market conditions (i.e. pricing and deal flow); the identity of end-users, and their positions.^{142, 143} This opaque market structure has also made it difficult for regulators to determine the location, nature and extent of potential risks.¹⁴⁴ The asymmetries of information embedded within this model of dealer intermediation thus generate at least two distinct agency cost problems. First, this structure deprives the marketplace of objective and transparent market-access and pricing mechanisms, paving the way for the extraction of quasi-rents by dealers from their end-user clients.¹⁴⁵ Second, it places regulators in the distinctly uncomfortable position of having to rely on the dealers they supervise to provide them with the information necessary to effectively supervise them.

Asymmetries of information are also endemic to the relationships between (1) a firm utilizing derivatives and (2) its securityholders, counterparties and other external stakeholders. More specifically, stakeholders frequently face impediments – in the form of high information costs and other institutional and structural barriers¹⁴⁶ – which undermine their ability (and incentives) to construct a truly complete picture of the financial position and risk profile of a firm. Arguably nowhere are these impediments likely to be more costly to overcome than in connection with the information needed to evaluate the potential impact of OTC derivatives – their

¹⁴² Although, insofar as an end-user utilizes multiple dealers, each dealer will possess an incomplete picture of the end-user's overall derivatives portfolio.

¹⁴³ As explored in greater detail in Chapters 3 and 4 – spurred by both private initiative and public legislative intervention – this state of affairs has been in flux in the wake of the GFC.

¹⁴⁴ Financial Crisis Inquiry Report at 51 and Acharya et. al. (n 9) at 235.

¹⁴⁵ For a discussion of some of the potential explanations for why such quasi-rent extraction may persist in the marketplace, see Chapter 1 at 44-47.

¹⁴⁶ In respect of private firms, these barriers stem first and foremost from the simple non-availability of information in the public domain. In respect of public firms, meanwhile, these barriers include, *inter alia*, the informational distortions and time lags embedded within periodic financial reporting requirements; for a more detailed discussion of some of these distortions, see Duffie and Hu (n 2) at 6, 33-34 and 38-42.

market, counterparty credit and liquidity risk for example – on a firm’s financial health. One would expect these costs to be a function of, amongst other variables, the size and complexity of a firm’s derivatives portfolio, funding arrangements, and overall balance sheet. By implication, one might further expect these impediments to prove all but insurmountable in the context of, for example, any attempt to disentangle the intricate derivatives positions of LCFIs.¹⁴⁷ These impediments render it more difficult for shareholders and creditors to understand and monitor a firm’s performance and, ultimately, determine its fundamental value.¹⁴⁸ They also make it more costly for a firm’s counterparties to evaluate, *inter alia*, counterparty credit risk. These information costs, and the asymmetries of information which they engender, generate two potential concerns. First, *ceteris paribus*, we would expect any higher monitoring costs associated with the use of OTC derivatives to exacerbate existing managerial agency cost problems.¹⁴⁹ Second, insofar as these impediments contribute to the mis-pricing of risk, they raise the prospect of socially suboptimal over- (and under-) investment.

The final source of asymmetries of information within OTC derivatives markets are the instruments themselves.¹⁵⁰ It is certainly the case that many OTC derivatives are (at least from an economic perspective) relatively straightforward to understand and use. It would take a modest upfront investment to familiarize oneself with, for example, the basic structure and potential uses of a single currency interest

¹⁴⁷ Hamid Mehran, Alan Morrison and Joel Shapiro, “Corporate Governance of Banks: What Have We Learned from the Financial Crisis?”, Federal Reserve Bank of New York Staff Report No. 502, available at www.ssm.com.

¹⁴⁸ *Ibid.*

¹⁴⁹ Especially with respect to financial firms (and LCFIs in particular).

¹⁵⁰ Acharya et. al. (n 9) at 236-241.

rate or foreign exchange swap.¹⁵¹ At the same time, however, the derivatives universe is populated by a diverse range of far more complex instruments.¹⁵² Managing a *portfolio* of derivatives instruments is, similarly, a complex undertaking. The effective utilization of these instruments presupposes that end-users possess a firm grasp of both the financial theory and mathematics which underpin them and the multivariate market dynamics which influence their value.¹⁵³ What is more, many of these instruments – complex CDOs¹⁵⁴ and synthetic ETFs¹⁵⁵ for example – are structured in ways which obscure from view the identity and quality of the underlying assets. It is thus not unreasonable to suggest that, in at least some contexts, end-users are likely to transact on the basis of imperfect information and employ cognitive frameworks which exhibit elements of bounded rationality.¹⁵⁶ It is similarly reasonable to suggest that the dealers who structure these instruments will, in many circumstances, possess an informational advantage over their end-user clients.¹⁵⁷

¹⁵¹ Indeed, it is likely the case that these plain vanilla instruments represent the vast majority of outstanding OTC derivatives; *see* BIS (n 28) (reporting that, as of December 31, 2011, approximately 88% of OTC derivatives were either single currency interest rate or foreign exchange swaps, options or forward rate agreements). I have characterized this as ‘likely’ the case because the BIS figures do not distinguish between plain vanilla and more complex instruments.

¹⁵² To take just one illustrative example, in June 2012 the U.K. FSA completed a review which found evidence of widespread mis-selling of complex interest rate hedging products to relatively unsophisticated small and medium sized enterprises; *see* FSA Update, “Interest Rate Hedging Products: Information About Our Work and Findings” (June 2012), available at www.fsa.gov.uk.

¹⁵³ *See* Flavell (n 3).

¹⁵⁴ Howell Jackson, “Loan Level Disclosure in Securitization Transactions: A Problem with Three Dimensions”, Harvard Public Law Working Paper No. 10-40 (July 27, 2010), available at ssrn.com; Gorton (n 1), and Acharya et. al. (n 9) at 241.

¹⁵⁵ *See* Bank of England (n 68) at 8.

¹⁵⁶ Indeed, the reasonableness of this suggestion has been confirmed by the systemic mis-pricing of risk which precipitated the GFC. For an illustration of how even the most (ostensibly) sophisticated end-users can fail to appreciate the shortcomings of their cognitive frameworks, *see* Joshua Coval, Jakub Jurek and Erik Stafford, “The Economics of Structured Finance” (2009), 23:1 *J. of Econ. Perspectives* 3. Coval and his coauthors illustrate how small miscalculations respecting the probability of default and default correlations across underlying assets ultimately generated significant pricing errors within CDO markets.

¹⁵⁷ Indeed, if this were not the case, one might question the value of financial intermediaries in this context.

Moreover, as illustrated by the Barings and Allied Irish Banks scandals¹⁵⁸, an analogous *intra-firm* asymmetry can also arise vis-à-vis derivatives traders and compliance/senior management personnel.¹⁵⁹

Milton Friedman observed that maximizing the private welfare of contracting parties necessitates that their actions are both *voluntary* and *informed*.¹⁶⁰ Where counterparties to OTC derivatives face high information costs, asymmetries of information and the resulting adverse selection and agency cost problems, there is, accordingly, legitimate reason to question whether these instruments maximize the private welfare of end-users. Specifically, where these frictions result in suboptimal transaction structuring many, if not most, of the private benefits of OTC derivatives may be lost.¹⁶¹ Pervasive and entrenched asymmetries of information also open the door to fraud, market manipulation, insider trading and the fleecing of less sophisticated end-users at the hands of dealers (or their own rogue traders).¹⁶² At the same time, these asymmetries make it more difficult for regulators to police OTC derivatives markets and to design public policy with the intention of ameliorating any negative externalities.

Overinvestment and Excess Leverage. As amply illustrated by the GFC, the widespread use of OTC derivatives to manage risk manifests the potential to stimulate socially suboptimal overinvestment in underlying asset (and related) markets. More

¹⁵⁸ See Nick Leeson, *Rogue Trader* (Little, Brown & Company, London, 1996) and Conor O’Cleary and Siobahn Creaton, *Panic at the Bank: How John Rusnak Lost AIB \$700 Million* (Gill & Macmillan, Dublin, 2002).

¹⁵⁹ Hu (n 112).

¹⁶⁰ Milton Friedman, *Capitalism and Freedom* (University of Chicago Press, Chicago, 1962) at 13.

¹⁶¹ John Eatwell, Murray Milgate and Peter Newman, (eds.), *The New Palgrave: Allocation, Information and Markets* (MacMillan Press, New York, 1989) at 36.

¹⁶² Indeed, there exists some preliminary empirical evidence to support the proposition that insider trading takes place within at least one segment of OTC derivatives markets; see Viral Acharya and Timothy Johnson, “Insider Trading in Credit Derivatives” (2007), 84:1 J. of Fin. Econ. 110.

specifically, in the build-up to the crisis, the use of CDS and structured financing vehicles by financial institutions to shift credit risk off their balance sheets – and thus free up capital for reinvestment – contributed (along with, *inter alia*, prevailing monetary policies, the ballooning U.S.-China trade imbalance and the growth of the shadow banking system) to lower interest rates, the compression of credit spreads and, ultimately, the systemic under-pricing of credit risk.¹⁶³ This systemic pricing error fed into the formation of an asset bubble which, when it burst, generated significant negative externalities as the effects of the inevitable price adjustment reverberated through the global economy. This chain of events punctuates the sobering reality that, to the extent their pricing does not reflect such externalities, the use of OTC derivatives holds the potential to generate potentially significant social costs.

A parallel concern is that OTC derivatives facilitate highly leveraged speculation.¹⁶⁴ As described above, the leverage embedded within OTC derivatives enables end-users to take significant speculative risks on the basis of a disproportionately small amount of initial capital.¹⁶⁵ By creating opportunities for end-users to engage in leveraged speculation, OTC derivatives can thus be understood as increasing the overall level of risk within society.¹⁶⁶ This, of course, is not necessarily a bad thing: leverage is, in and of itself, neither intrinsically positive nor negative from a social welfare perspective. Where, however, the leverage embedded

¹⁶³ See Rajan (n 61); Turner Review, and Financial Crisis Inquiry Report.

¹⁶⁴ Brian Booth, “Prudence or Paranoia: Considering Stricter Regulation of the International Over-the-Counter Derivatives Market” (1999), 5 *Duke J. of Comp. & Int’l L.* 499 at 513 and Macy (n 104) at 82.

¹⁶⁵ Partnoy (n 102) at 225-226. Indeed, OTC derivatives are often employed exclusively for the purposes of obtaining leverage, with many OTC derivatives being viewed as the economic equivalent of leveraged transactions in non-derivative markets; Macy (n 104) at 82.

¹⁶⁶ Partnoy (n 102) at 225-226.

within OTC derivatives contributes to the fragility of end-users¹⁶⁷ – and by extension the broader financial system¹⁶⁸ – its negative societal implications come front and centre.

Systemic Risks. Lastly, the widespread use of OTC derivatives raises a host of potential systemic risks. While there exists no universally accepted definition of systemic risk, the term can be understood as referring to risks that – rather than being internalized by the parties who generate them – spill over into the broader financial system and, ultimately, the real economies this system supports.¹⁶⁹ The realization of systemic risk is thus the quintessential negative externality. These risks can be divided between known systemic risks and what Satyajit Das, borrowing a phrase from former U.S. Secretary of Defence Donald Rumsfeld, has characterised as ‘unknown unknowns’.¹⁷⁰ Known systemic risks include the frequently cited possibility – stemming from the sheer size of OTC derivatives markets relative to the

¹⁶⁷ Leverage contributes to the fragility of end-users by rendering their balance sheets more sensitive to price movements: magnifying the impact of gains on the upside and losses on the downside. An example may help illustrate this point. Imagine an investor with \$100 of initial equity capital. In the first (unleveraged) scenario, she invests her capital in the shares of Company X. If the shares in Company X decrease by 50%, the investor is left with \$50 of equity. Imagine now an alternative (leveraged) scenario in which our investor borrows an additional \$100 and invests \$200 in the shares of Company X. In this scenario, a 50% decrease in the share price of Company X will entirely wipe out the investor’s equity (her remaining \$100 in assets being cancelled out by the \$100 of outstanding debt). This fragility will be exacerbated where, as is contemplated under many bilateral OTC derivatives, adverse price movements can be expected to prompt margin and/or collateral calls from counterparties.

¹⁶⁸ There are several channels through which the fragility of leveraged end-users could precipitate broader systemic instability. Perhaps the most likely channel is through the forced disposition of portfolio assets by leveraged counterparties facing margin or collateral calls in response to adverse price movements. Given the right circumstances, these forced dispositions could undermine market liquidity, exacerbate market volatility and, potentially, precipitate wider financial instability; Andrew Lo, *Hedge Funds: An Analytical Perspective* (Princeton University Press, Princeton, 2008) at 302.

¹⁶⁹ Andrew Lo offers a useful alternative working definition of systemic risk as ‘the risk of a broad-based meltdown in the financial system, often realized as a series of correlated defaults among financial institutions, typically banks, that occurs over a short period of time and typically caused by a single major event’; Andrew Lo, “Hedge Funds, Systemic Risk, and the Financial Crisis of 2007-2008”, Written Testimony prepared for the U.S. House of Representatives Committee on Oversight and Government Reform (November 13, 2008) at 3.

¹⁷⁰ See Das (n 16) at 3.

number of dealers and end-users, along with the intricacy of the positions held within these markets – that a relatively small critical mass of end-user defaults could generate a domino effect, wreaking havoc within OTC derivatives and related markets and, potentially, the broader financial system.¹⁷¹ The government-orchestrated bailouts of Long-Term Capital Management¹⁷² and, more recently, Bear Stearns, Lloyds and RBS were both arguably motivated by the desire to avoid the crystallization of this risk.

A second known systemic risk stems from the susceptibility of the markets for certain species of OTC derivatives – ABS and CDOs for example – to bouts of paralyzing illiquidity during periods of crisis or uncertainty in underlying markets.¹⁷³ As the GFC made all too clear, this systemic illiquidity can very rapidly undermine the solvency of both dealers and end-users, while at the same time inhibiting their ability to unwind their positions in order to shore up their balance sheets.¹⁷⁴ Finally, insofar as the other risks described above come to constitute systemic – as opposed to localized – threats, these too should be classified as known systemic risks. Indeed, as we have seen, information problems (and their attendant adverse selection and agency cost problems), overinvestment, and excess leverage each contributed to the formation and subsequent bursting of the asset bubble at the epicentre of the recent crisis. What we do not know, however, is when, where or how these risks will materialize in the future. *How will synthetic ETF markets respond to large scale*

¹⁷¹ Feder (n 13) at 729; Waldman (n 13) at 1053-1054, and Booth (n 164) at 515. At the same time, however, it needs to be acknowledged that the ‘size’ of the global market for OTC derivatives – at least as measured by aggregate notional amount outstanding – may be somewhat illusory.

¹⁷² See Roger Lowenstein, *When Genius Failed: The Rise and Fall of Long-Term Capital Management* (Random House, New York, 2000).

¹⁷³ Gorton (n 1). This susceptibility was rather presciently described in *The Economist* in 1992: ‘It is difficult to liquidate a derivative that cannot be valued and it is difficult to value a derivative that cannot be liquidated’; ‘Taming the Derivatives Beast’, *The Economist* (May 23, 1992).

¹⁷⁴ And/or meet margin/collateral calls.

withdrawals or an exogenous liquidity shock? Will collateral swaps sow the seeds of contagion between banking and insurance markets? How will the additional layers of complexity introduced by innovations such as synthetic ETFs and collateral swaps (especially if they keep growing in size and importance) change market dynamics during periods of systemic uncertainty? While we may not know the answers at this stage, we at least know enough to be asking many of the right questions.

On the other side of the ledger reside a potentially infinite number of unknown unknowns. The high information costs and asymmetries of information which pervade modern financial markets in general (and OTC derivatives markets in particular) make the true nature and extent of systemic risk difficult, if not impossible, to model in theory – let alone understand fully in the real world. Our understanding of systemic risk is likely to be further constrained by the fact that financial stability manifests the attributes of a public good. While research into the systemic effects of OTC derivatives would potentially yield welfare enhancing advancements, chronic under-investment in this research will thus likely persist given the non-rivalrous consumption and non-excludability of intellectual property within financial markets.¹⁷⁵ What is more, those with the most powerful incentives to undertake this research – i.e. private market participants – also possess very strong incentives to utilize their findings for proprietary, and not public, ends. As a result, we are left largely to speculate about the role OTC derivatives will play within the context of future systemic crises.

¹⁷⁵ Hu (n 112) at 1482.

IV. Conclusion

The myriad of risks arising in connection with the use of OTC derivatives can, ultimately, be understood as the by-products of complexity and financial innovation. Mastering the sophisticated quantitative methods used to price these instruments and manage their attendant risks demands that market participants incur substantial upfront (and on-going) investments in the development of highly specialized human capital. Many of these market participants also face high information costs stemming from the relative opacity of OTC derivatives markets; the financial institutions at the heart of them and, in many cases, the instruments themselves. The extent of these costs will vary with each market participant's tolerance for complexity as determined by, *inter alia*, any economies of scale they enjoy in the production and analysis of information; their technological and resources constraints, and their position within the dealer intermediated structure which characterizes these markets. The resulting asymmetries of information generate the prospect of both suboptimal contracting and acute agency cost problems vis-à-vis dealers and their end-user clients. Simultaneously, high information costs and asymmetries of information undermine the ability of financial regulators to effectively police OTC derivatives markets.

OTC derivatives markets are also a significant source of interconnectedness. Securitization connected residential mortgage markets with wholesale bank funding markets and, through these markets, influenced the flow of credit to the real economy. Swaps are one of the primary links in the counterparty daisy chain connecting global financial institutions. Collateral swaps, meanwhile, seem poised to strengthen the interconnections between banking, insurance and pension markets. These and other linkages foment potential systemic instability and create channels for the transmission of financial shocks. Furthermore, interconnectedness – combined with the

fragmentation of economic interests generated by instruments such as ABS and CDOs – represents yet another significant driver of high information costs. Ultimately, these costs make it more difficult for both market participants and regulators to identify and monitor the location, nature and extent of potential risks.

The informational challenges facing market participants and regulators are compounded by financial innovation and, more broadly, by the dynamism of modern financial markets. The flexibility of OTC derivatives renders them the perfect canvas for financial innovation: a canvas which is constantly being repainted. These innovative markets are more likely to manifest pronounced asymmetries of information between dealers and end-users generating, once again, the prospect of suboptimal contracting and agency cost problems. At the same time, newer, less liquid and more highly concentrated markets are often more fragile and, thus, more likely to represent the source of potential systemic risks. Finally, as illustrated by the emergence of both collateral swaps and synthetic ETFs, innovation can be a reflexive response to changes in the prevailing market and regulatory landscape.

In light of the risks stemming from complexity and innovation within OTC derivatives markets, *how do we move forward? How do we design regulatory regimes which ameliorate these risks without simultaneously neutering the potential private and social benefits of OTC derivatives? What role can (and should) public and private actors play within these regulatory regimes? How can these regimes be made more flexible, more responsive, and more durable in the face of the dynamism of modern financial markets? And how can we bridge the gap between increasingly interconnected global financial markets and the fractured and predominantly domestic regulatory regimes which govern them?* These are the questions which this

thesis ultimately seeks to explore. If the past is truly prologue, however, this exploration must begin by examining the approaches historically adopted toward the regulation of OTC derivatives markets. These approaches – and how they are changing in response to the GFC – are explored in Chapter 3.

CHAPTER 3

Regulating OTC Derivatives Markets: The Past (and Present) as Prologue

Chapter 2 surveyed the wide range of prospective benefits flowing from the use of OTC derivatives. It also canvassed the potential risks. This chapter examines the public regulatory regimes adopted in response to these risks in two strategically important jurisdictions: the U.S. and U.K. Together, these transatlantic rivals – and more specifically the trading hubs of New York and London – account for the vast majority of trading activity within global OTC derivatives markets. As of April 2010, for example, these jurisdictions accounted for roughly 71% of the global turnover in OTC interest rate derivatives and 55% of the global turnover in OTC foreign exchange derivatives.¹ New York and London are also home to the majority of global OTC derivatives dealers.²

In the decades leading up to the GFC, financial regulators in both the U.S. and U.K. adopted what can perhaps best be characterized as a non-interventionist approach toward the regulation of OTC derivatives markets. This approach was influenced – especially in the U.S. – by the prevailing free market ideology: an ideology which viewed the emergence and explosive growth of these markets as

¹ BIS, *Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity* (April 2010) at 5-6, available at www.bis.org. The BIS statistics show that the U.K. enjoys a distinct advantage over the U.S. in terms of both foreign exchange (37% v. 18%) and interest rate (47% v. 24%) derivatives. Other jurisdictions with a meaningful share of global turnover in these instruments include Japan (6% of OTC foreign exchange derivatives and 3% of OTC interest rate derivatives), Singapore (5% and 3%) and Switzerland (5% and 3%); *ibid.* While reliable comparable data for equity, credit and commodity-linked OTC derivatives is more difficult to come by, the available data suggests a similar (if not greater) degree of geographic concentration in these market segments; *see* Darrell Duffie and Henry Hu, “Competing for a Share of Global Derivatives Markets: Trends and Policy Choices for the United States”, Stanford University Rock Center for Corporate Governance Working Paper No. 50 (June 3, 2008) at 12-16, available at www.ssrn.com.

² Nine of the G14, for example, are based in either the U.S. or U.K. Of the remaining five, two are based in Switzerland, two in France and one in Germany. At the same time, of course, each of the members of the G14 have significant operations in the U.S., U.K., continental Europe and Asia.

unequivocally positive developments from the perspective of both private and social welfare. Markets, after all, supposedly knew best. This approach was also shaped by mounting competitive pressures within the increasingly global market for investment banking services.³ As we shall see, this non-interventionist approach discounted the potential private and social costs of OTC derivatives. What is more, it effectively disregarded the risks and regulatory challenges stemming from complexity and financial innovation.

This chapter proceeds as follows. Part I briefly traces the (often tumultuous) history of OTC derivatives regulation in the U.S. from the New Deal reforms of the 1930s to the enactment of the *Commodity Futures Modernization Act of 2000*.⁴ Part II traces the development of the corresponding regulatory regime in the U.K.⁵ Part III then brings this examination forward to the present day and the embryonic post-crisis regulatory regimes targeting OTC derivatives markets in both jurisdictions. Part IV concludes by posing a trillion dollar question: *what lessons, if any, have policymakers learned in the wake of the GFC?* This question sets the table for the subsequent exploration in Chapters 4, 5 and 6 of the optimal source, form and scope of regulation governing OTC derivatives markets.

I. The U.S. Regulatory Approach: 1933-2008

The origins of OTC derivatives regulation in the U.S. can be traced back to the enactment of the *Securities Act of 1933*⁶, *Exchange Act of 1934*⁷ and *Commodity*

³ And, in particular, transaction structuring, sales and trade execution services in connection with OTC derivatives.

⁴ Pub. Law No. 106-554, 114 Stat. 2763 (2000) [the “*CFMA*”]. Indeed, Part I takes us past the enactment of the *CFMA* and up to the brink of the GFC.

⁵ Although, as we shall see, the U.S. and U.K. followed very different paths en route to arriving at substantively similar approaches toward the regulation of OTC derivatives markets.

⁶ 48 Stat. 74, codified at 15 U.S.C. § 77a (1933) [the “*Securities Act*”].

Exchange Act.⁸ While modern OTC derivatives markets would not emerge for another four decades, the path dependency and resulting institutional schism created by these New Deal reforms would have a profound impact on subsequent regulatory developments. Indeed, the institutional pathologies engendered by these reforms continue to manifest important consequences in terms of the regulation of OTC derivatives markets.⁹

Enacted in the wake of the Great Crash of 1929, the dual objectives of the *Securities Act* are to (1) ensure that investors receive material information concerning securities being offered for sale to the public and (2) prohibit deceit, misrepresentations, and other fraud in the sale of securities to the public.¹⁰ The *Securities Act* governs the sale of securities in the primary market. It mandates, subject to certain exemptions, the disclosure of material information through the registration of securities with the Securities and Exchange Commission and the issuance to investors of a prospectus in connection with any distribution of securities. The SEC itself was established under the *Exchange Act* which, *inter alia*, governs the trading of securities in the secondary market.¹¹ Importantly, the requirements of both

⁷ 48 Stat. 881, codified at 15 U.S.C. § 78a (1934) [the “*Exchange Act*”].

⁸ 49 Stat. 1491, codified at 7 U.S.C. § 1-15 (1936) [the “*CEA*”]. The first derivatives-related regulation to be enacted in the U.S. was actually *The Future Trading Act of 1921*, 42 Stat. 187 (1921) [the “*FTA*”]. The *FTA* imposed a prohibitive tax on grain futures not traded on an authorized board of trade. The *FTA* gave the U.S. Secretary of Agriculture the authority to designate authorized boards of trade upon evidence that they would comply with statutory conditions respecting, *inter alia*, transaction recordkeeping; market manipulation, and the admission of members. The U.S. Supreme Court, however, found the enactment of the *FTA* to constitute an unconstitutional use of the taxation power to regulate exchanges; *Hill v. Wallace*, 259 U.S. 44 (1922). The *FTA* was subsequently reenacted under Congress’s inter-state commerce power as the *Grain Futures Act*, 42 Stat. 998, codified as 7 U.S.C. § 1 (1922), the constitutionality of which was ultimately upheld by the Supreme Court in *Board of Trade v. Olsen*, 262 U.S. 1 (1923).

⁹ See [Chapter 6](#) for a more in-depth examination of these consequences.

¹⁰ See www.sec.gov/about/laws.shtml#secact1933.

¹¹ The *Exchange Act* also confers upon the SEC authority over, *inter alia*, the registration and oversight of market participants (brokers, dealers, exchanges and self-regulatory organizations for example); financial reporting for public companies; tender offers, and insider trading.

the *Securities Act* and *Exchange Act* are only triggered – subject to certain prescribed exemptions – where the financial instrument in question falls under the definition of a ‘security’.¹²

Enacted in 1936, the *CEA* conferred upon the U.S. Secretary of Agriculture the authority to designate authorized boards of trade (or ‘contract markets’) and license brokers trading futures contracts in commodities such as grain, butter, cotton, rice, mill feeds, potatoes and eggs.¹³ The *CEA* imposed requirements on designated contract markets respecting, amongst other matters, transaction recordkeeping and the admission of members.¹⁴ It also introduced new penalties for fraud and market manipulation; set speculative position limits, and imposed conduct of business requirements on market participants.¹⁵ Administration of the *CEA* fell to a new agency – the Commodity Exchange Commission – created as a division of the Department of Agriculture. Importantly, while the regulatory regime created under the *CEA* was expressly designed to govern all contracts for the sale and future

¹² *Securities Act*, ss. 2(a)1 and 3. Immediately prior to the reforms discussed in Part III, s. 2(a)1 defined a security as ‘any note, stock, treasury stock, security future, bond, debenture, evidence of indebtedness, certificate of interest or participation in any profit-sharing agreement, collateral-trust certificate, pre-organization certificate or subscription, transferable share, investment contract, voting-trust certificate, certificate of deposit for a security, fractional undivided interest in oil, gas, or other mineral rights, any put, call, straddle, option, or privilege on any security, certificate of deposit, or group or index of securities (including any interest therein or based on the value thereof), or any put, call, straddle, option, or privilege entered into on a national securities exchange relating to foreign currency, or, in general, any interest or instrument commonly known as a “security”, or any certificate of interest or participation in, temporary or interim certificate for, receipt for, guarantee of, or warrant or right to subscribe to or purchase, any of the foregoing.’ None of these categories of security has historically been interpreted as capturing OTC derivatives; see *Reves v. Ernst & Young*, 494 U.S. 56 (1990).

¹³ The *CEA* thus expanded upon (and superceded) the *Grain Futures Act*. The *CEA* did little, however, to alter the process for contract market designation established under the *Grain Futures Act*; Roberta Romano “The Political Dynamics of Derivatives Securities Regulation” (1997), 14 *Yale J. on Reg.* 279. This paper is also available on Westlaw. Subsequent pinpoint citations refer to the Westlaw version of this article. See also Daniel Fischel, “Regulatory Conflict and Entry Regulation of New Futures Contracts” (1986), 59:2 *J. of Bus.* S85 (Supp.).

¹⁴ Romano (n 13) at 17.

¹⁵ Respecting, for example, the segregation of customer accounts; *ibid.*

delivery of specified commodities, Congress made no attempt to define what exactly constituted a ‘futures contract’.

Following the watershed reforms of the 1930s, the substantive regulation of U.S. derivatives markets – and, indeed, derivatives markets themselves – remained essentially unchanged until the early 1970s. This equilibrium was disrupted in 1972 when – in the wake of the collapse of the Bretton Woods fixed exchange rate regime – the Chicago Mercantile Exchange began trading futures contracts on foreign currencies.¹⁶ The CME was (and still is) a designated contract market under the *CEA*. That same year, the Chicago Board Options Exchange (CBOE), an offshoot of the Chicago Board of Trade, was created and registered with the SEC to list and trade options and futures on individual securities.¹⁷ On its first day of operation, a total of 911 contracts were executed on the CBOE in 16 underlying securities.¹⁸ The first seeds of the derivatives revolution had been planted.

Spurred in large part by these developments¹⁹, Congress enacted the *Commodity Futures Trading Commission Act of 1974*.²⁰ The primary thrust of the *CFTCA* was to create the CFTC as an independent agency – analogous to the SEC – for the purpose of regulating futures and commodity options markets. The *CFTCA* conferred upon the CFTC exclusive jurisdiction over the regulation of all transactions

¹⁶ Todd Petzel, “Derivatives: Market and Regulatory Dynamics” (1995), 21 J. Corp. L. 95 at 97.

¹⁷ *Ibid.* at 98.

¹⁸ See www.cboe.com/AboutCBOE/History.aspx

¹⁹ Ultimately, there were several motivations behind the legislation. First, the moves by the CME, CBOE and CBOT into new non-agricultural derivatives such as precious metals and currencies exposed both (1) the need to extend the scope of regulation to cover previously unregulated commodities, and (2) that these non-agricultural derivatives were beyond the traditional competency of the Department of Agriculture. Compounding matters, rapid food price inflation had resulted in a perception – fueled by vested interests – that better commodity markets regulation was required; Romano (n 13) at 24-25.

²⁰ Pub. Law No. 93-463, 88 Stat. 1389 (1974) [the “*CFTCA*”].

involving contracts for the sale of a commodity for future delivery (and all options thereon). This jurisdiction was subject to a savings clause designed to preserve the historical jurisdiction of the SEC.²¹ The *CFTCA* also expanded the scope of the *CEA* to include previously unregulated commodities, along with ‘all other goods and articles, and all services, rights, and interests in which contracts for future delivery are presently or in future dealt in.’²² In addition, the *CFTCA* required that designated contract markets demonstrate that trading in a proposed instrument would not be contrary to the public interest.²³

It is in response to the proposed expansion of the *CEA* that the influence of the intellectual framework underpinning conventional financial theory on U.S. derivatives regulation can first be observed. On its face, the CFTC’s exclusive jurisdiction clause granted the new agency wide-ranging purview over trading in both futures and options – not just on any designated contract market but, importantly, on “*any other board of trade, exchange or market*”.²⁴ Concerned that the CFTC’s jurisdiction might thus extend to wholesale (i.e. inter-bank) markets in foreign currencies, government securities and certain other financial instruments, the U.S. Treasury Department petitioned vigorously to curtail the scope of the clause, stating in a letter to the Chairman of the Senate Committee responsible for overseeing the CFTC:

‘The Department feels strongly that foreign currency futures trading, other than on organized exchanges, should not be regulated by [the CFTC]. Virtually all futures trading in foreign currencies in the United States is carried out through an informal network of banks and dealers. *This dealer market, which consists primarily of large banks, has proved highly efficient in serving the needs of international business in hedging risks that*

²¹ Now enshrined in the *CEA*, s. 2(a)1(A). Notwithstanding the introduction of this exclusivity clause, the *CFTCA* did not provide any further clarity respecting the definition of a ‘contract for sale of a commodity for future delivery’ (i.e. a futures contract) for the purposes of the *CEA*.

²² Now enshrined in the *CEA*, s. 1(a)(4).

²³ Adopted in 1975 under CFTC Guideline 1.

²⁴ *CEA*, s. 2(a)(1)(A) [emphasis added]. See also Romano (n 13) at 34.

*stem from foreign exchange rate movements. The participants in this market are sophisticated and informed institutions...*²⁵

Continuing:

*'... in this context, new regulatory limitations and restrictions could have an adverse impact on the usefulness and efficiency of foreign exchange markets...'*²⁶

Persuaded by this line of reasoning, Congress inserted what would come to be known as the 'Treasury Amendment' to the *CFTCA*.²⁷ The Treasury Amendment carved out from the CFTC's jurisdiction transactions in foreign currencies; security warrants; security rights; resales of installment loan contracts; repurchase options; government securities; mortgages, and mortgage purchase commitments, provided that such transactions did not involve the sale of any of these instruments for future delivery on a CFTC-designated contract market.²⁸ In effect, the Treasury Amendment ensured that markets in these instruments would remain under the oversight of federal banking regulators and, specifically, the Federal Reserve Board and Office of the Comptroller of the Currency.

The importance of the Treasury Amendment in terms of the development of U.S. derivatives markets and their regulation cannot be overstated. First, by carving out the fledgling inter-bank market for foreign currencies, government securities and other financial instruments from CFTC oversight, the Treasury Amendment created the regulatory space within which swaps, structured finance and other OTC derivatives markets would eventually emerge and blossom. Second, the central

²⁵ See Letter from Donald Ritger, Acting General Counsel of the Treasury Department to Sen. Herman Talmadge, Chairman of the Senate Committee on Agriculture and Forestry (July 30, 1974), reprinted in 1974 U.S. Code Cong. & Admin. News 5887 at 5887-5889 [emphasis added] [the "Treasury Letter"].

²⁶ *Ibid.* [emphasis added].

²⁷ Now enshrined in the *CEA*, s. 2(c)(1) and (2).

²⁸ *Ibid.*

assumption underpinning the Treasury Amendment – that “sophisticated and full informed”²⁹ market participants possessed both the capacity and incentives to effectively manage any and all attendant risks – would, in time, provide the principal justification for the non-interventionist approach adopted toward the regulation of OTC derivatives markets. Indeed, this assumption would continue to inform public policy for the better part of the next four decades. As we shall see, it would do so notwithstanding three important subsequent developments: (1) the exponential growth and proliferation of OTC derivatives markets; (2) the entrance of less sophisticated counterparties, and (3) a series of manifest failures on the part of ostensibly sophisticated counterparties to understand and/or effectively manage various risks.

The jurisdictional tensions between the SEC and CFTC only intensified after the enactment of the *CFTCA*. In September 1975, the CFTC granted a CBOT application to become a designated contract market in respect of futures on Government National Mortgage Association mortgage-backed pass-through certificates.³⁰ This provoked a letter from SEC Chairman Roderick Hills to the CFTC in which he asserted both that (1) GNMA certificates and contracts for their future delivery constituted ‘securities’ under the *Securities Act* and *Exchange Act* and (2) the *CFTCA* did not deprive the SEC of its jurisdiction over this class of instruments.³¹ In response to the letter, the CFTC issued a memorandum detailing the statutory foundation of the CFTC’s exclusive jurisdiction and refuting Chairman Hills’ assertions.³² The CFTC would subsequently approve applications from the CBOT

²⁹ See Treasury Letter.

³⁰ See www.cftc.gov/aboutthecftc/historyofthecftc/history_1970s.html.

³¹ David Gilberg, “Regulation of New Financial Instruments Under the Federal Securities and Commodities Laws” (1986), *Vand. L. Rev.* 1599 at 1637, citing SEC-CFTC jurisdictional correspondence compiled at 1975-1977 Transfer Binder, *Comm. Fut. L. Rep. (CCH)* ¶ 20,117.

³² *Ibid.*

and other commodity exchanges for futures contracts on 90-day U.S. Treasury bills and, later, longer term U.S. Treasury bonds.³³

Jurisdictional tensions would come to the fore once again in the context of the CFTC's 1978 reauthorization hearings.³⁴ The SEC, CBOE, General Accountability Office (GAO) and Office of Management and Budget (OMB) challenged the CFTC's jurisdiction over futures contracts and options on securities.³⁵ The SEC argued, *inter alia*, that (1) futures contracts and options on securities were functionally equivalent; (2) futures on securities influenced the market dynamics for the relevant underlying, and (3) the *CFTCA* had generated confusion around the extent to which investors purchasing securities could rely on the protections of federal securities laws.³⁶ On these grounds, the SEC argued that it was 'appropriate and necessary that the SEC's jurisdiction extend to futures contracts and options with respect to securities.'³⁷ Once again, however, the SEC's arguments failed to win over Congress: *The Futures Trading Act of 1978*³⁸ essentially reaffirmed the CFTC's exclusive jurisdiction over trading in futures markets – including futures contracts and options on securities.³⁹

As described in Chapter 2, the 1980s represented a period of revolutionary change and dramatic growth within OTC derivatives markets. Perhaps most

³³ CFTC Release No. 92-75 (November 26, 1975) and CFTC Release No. 323-77 (August 2, 1977).

³⁴ The *CFTCA* established the CFTC as a so-called 'sunset agency', requiring periodic reauthorization by Congress.

³⁵ Philip Johnson and Thomas Hazen, *Commodities Regulation*, 2ed. (Little, Brown, New York, 1989) at 26; Romano (n 13) at 34; Fischel (n 13) at S88, and Gilberg (n 31) at 1638.

³⁶ SEC Chairman Harold Williams, testimony before the House Subcommittee on Conservation and Credit, 9th Congress, 2d Sess. 181-219 (1978).

³⁷ *Ibid.* at 216.

³⁸ Pub. Law No. 95-405, 92 Stat. 865 (1978).

³⁹ The *Futures Trading Act of 1978* did, however, require the CFTC to maintain communications with the SEC, Treasury Department and Federal Reserve Board with respect to areas of overlapping concern and to take into consideration the views of these agencies when approving applications for trading in futures on government securities; *ibid.*

significantly, the 1980s would witness the emergence, growth and proliferation of the markets for interest rate, commodity and equity-linked swaps and private label ABS. As securities, private label ABS were technically regulated under both the *Securities Act* and *Exchange Act*. They were also subject to the requirements of the *Investment Company Act of 1940*.⁴⁰ In practice, however, these offerings were typically made under exemptions from the prospectus, registration and other requirements imposed by these statutes.⁴¹ Swaps markets, meanwhile, did not fall squarely within the jurisdictional purview of either the CFTC or SEC. At the same time – and notwithstanding the fact that the vast majority of swap transactions involved federally regulated banks – federal banking regulators did not perceive the need for targeted regulatory intervention into OTC derivatives markets beyond their incorporation into the capital adequacy requirements introduced under Basel I.⁴²

The 1980s also represented a period of increasing strain in the relationship between the CFTC, SEC and federal banking regulators. In February 1981, the SEC

⁴⁰ Pub. Law No. 76-768, codified at 15 U.S.C. § 80a (1940) [the “ICA”]. The *ICA* requires, *inter alia*, that registered investment companies disclose their structure, operations, financial condition and investment policies to investors both at the point of initial distribution and on a periodic basis thereafter.

⁴¹ More specifically, exemptions could be obtained under sections 3(a)(2) and 4(2) of the *Securities Act* and sections 3(c)(1) and 3(c)(7) of the *ICA*. Very briefly, Section 3(a)(2) provides an exemption for securities issued by federally regulated banks and savings and loan associations. Section 4(2) provides an exemption for transactions not involving a public offering of securities. Section 3(c)(1) provides an exemption where the beneficial holders of outstanding securities number less than 100 at any time. Section 3(c)(7), meanwhile, provides an exemption where the issuer does not make a public offering and the securities are owned by certain qualified purchasers (i.e. those meeting a prescribed income or asset test). The SEC would subsequently expand the available exemptions through the promulgation of Rule 144A under the *Securities Act* (adopted in 1990) and Rule 3a-7 under the *ICA* (adopted in 1992).

⁴² While a detailed examination of the Basel Framework (Basel I, II and III) is well beyond the scope of this thesis, Basel I (published in 1988) established an international standard requiring banks to maintain capital of at least 8% against credit exposures. Individual credit exposures were adjusted on a risk-weighted basis, ostensibly to reflect the creditworthiness of the relevant counterparty. The creditworthiness of a swap counterparty was calculated with reference to, *inter alia*, (1) the current mark-to-market or replacement value of the swap; (2) the notional amount; (3) the remaining duration, and (4) the type of swap. Interestingly, the maximum risk weighting for a swap was capped at 50% of the gross credit exposure. Even more interestingly, this cap was justified on the basis of what was perceived to be the generally high creditworthiness of the counterparties active within this market. For a more detailed discussion of the treatment of OTC derivatives under the Basel Framework, see Schuyler Henderson, *Henderson on Derivatives*, 2ed. (LexisNexis, London, 2010) at 12.37-12.59.

granted a CBOE application to trade options on GNMA certificates, taking the position that the *CEA* did not affect the SEC's exclusive jurisdiction over options on securities traded on national securities exchanges.⁴³ The CBOT challenged the SEC's approval of the application on the basis that GNMA certificates were commodities under the *CEA* and, accordingly, that options on GNMA certificates fell within the CFTC's exclusive jurisdiction. In a split decision, the U.S. Court of Appeals for the 7th Circuit ruled for the CBOT, finding that the SEC had violated the CFTC's exclusive jurisdiction by authorizing the CBOE to trade the options.⁴⁴ While the SEC appealed the decision, the appeal was subsequently vacated as moot following the adoption of the Shad-Johnson Accord.⁴⁵

In February 1982, the SEC and CFTC reached a temporary armistice in the form of the Shad-Johnson Accord.⁴⁶ Named after the two agencies' respective chairmen, the Shad-Johnson Accord was ostensibly designed to preserve – at least to the extent practicable – the traditional roles of the feuding federal agencies.⁴⁷ The Accord attempted to bifurcate jurisdiction over the regulation of derivatives markets. It stipulated that (1) the CFTC would possess jurisdiction over futures contracts and options thereon on designated contract markets, along with futures contracts on exempted securities (other than corporate and municipal securities) and broad-based indices of securities, and (2) the SEC would possess jurisdiction over options on

⁴³ SEC Release No. 34-17,577 (February 26, 1981).

⁴⁴ *Board of Trade v. SEC*, 677 F.2d 1137 (1982). Cudahy J. opined in dissent that the savings clause in the *CEA* was designed to preserve the SEC's jurisdiction over *all* security options – including options on GNMA certificates.

⁴⁵ *SEC v. Chicago Board of Trade*, 459 U.S. 1026 (1982).

⁴⁶ CFTC/SEC Joint Explanatory Statement in Comm. Fut. L. Rep. (CCH) 21, 332 [the "Shad-Johnson Accord"], codified in 7 U.S.C.A. § 2(a).

⁴⁷ Thomas Russo and Marlisa Vinciguerra, "Financial Innovation and Uncertain Regulation: Selected Issues Regarding New Product Development" (1990), *Tex. L. Rev.* 1431 at 1457, citing S. Rep. No. 384, 97th Congress, 2d Sess. 22 (1982).

individual equities, foreign currencies traded on national securities exchanges and non-exempt (i.e. non-U.S. government issued) bonds.⁴⁸ The Accord also mandated consultation between the SEC and CFTC with respect to the approval of stock index futures and options on futures.⁴⁹ The arrangements were subsequently codified in *The Futures Trading Act of 1982*⁵⁰ as part of the CFTC's second reauthorization. Notably, notwithstanding the strenuous objections of the CFTC⁵¹, the *FTA (1982)* went beyond the terms of the Shad-Johnson Accord to confer upon the SEC a veto power over CFTC approval of stock index futures and options on such futures which were not broadly-based or which were otherwise susceptible to manipulation.

The enactment of the *FTA (1982)* appears to have been followed by a (brief) period of relative inter-agency harmony. In 1984, for example, the CFTC and SEC issued a joint policy statement setting out the species of financial derivatives which the two regulators believed were suitable for trading.⁵² Ultimately, however, this harmony would prove ephemeral. The détente was initially threatened in 1987 when the CFTC launched an investigation into the commodity swap operations of Chase Manhattan Bank and announced a proposal to regulate hybrid and commodity swaps, suggesting that these instruments might constitute unauthorized (and therefore illegal) off-exchange futures contracts.⁵³ The threat of more burdensome exchange-style

⁴⁸ See Shad-Johnson Accord.

⁴⁹ Ibid.

⁵⁰ Pub. Law No. 97-444, 96 Stat. 2294 (1982) [the "*FTA (1982)*"].

⁵¹ See H.R. Rep. No. 565, Part II, 9th Cong., 2d Sess. 40-41 (June 15, 1982), reprinting a letter from CFTC Chairman Philip Johnson to Congressman Edward Madison.

⁵² CFTC and SEC, Designation Criteria for Futures Contracts and Options on Futures Contracts Involving Non-Diversified Stock Indexes of Domestic Issues, 49 Fed. Reg. 2884 (January 24, 1984).

⁵³ CFTC, Regulation of Hybrid and Related Instruments, 52 Fed. Reg. 47,022 (1987); Sheila Bair, "Regulatory Issues Presented by the Growth of OTC Derivatives: Why Off-Exchange is No Longer Off-Limits", in Robert Klein and Jess Lederman, (eds.), *The Handbook of Derivatives and Synthetics* (Irwin Professional Publishing, Chicago, 1994) at 700, and Romano (n 13) at 36.

regulation imposed by a regulator with little formal expertise in banking was understandably a source of anxiety for the U.S. banking industry⁵⁴ and, in the view of many observers, was a catalyst for the subsequent migration of commodity swaps markets to overseas financial centers such as London.⁵⁵

The simmering turf war between the SEC and CFTC would come to a rolling boil in 1988-89. In February 1988, SEC Chairman David Ruder testified before Congress that futures markets in stock indices had disrupted underlying markets in advance of the October 1987 stock market crash and would continue to do so in the future unless brought within the jurisdiction of the SEC.⁵⁶ That same year, the SEC approved an application for trading in index participation units (IPs), a hybrid security exhibiting characteristics of both securities and futures. The CME brought an action claiming that the SEC had infringed upon the CFTC's exclusive jurisdiction. As it had done with GNMA certificates, the 7th Circuit Court held that IPs were futures contracts falling within the exclusive jurisdiction of the CFTC and, accordingly, that they could only be traded on CFTC-designated contract markets.⁵⁷

The decision of the 7th Circuit Court marked a low point in the dispute between the SEC and CFTC for two reasons. First, it appears that the CME brought its action not with the intention of itself offering a competing instrument, but rather simply to prevent the trading of IPs on SEC-regulated exchanges.⁵⁸ Second, the row

⁵⁴ As no doubt was the fact these banks had not previously cultivated a relationship with the CFTC.

⁵⁵ Bair (n 53) at 700.

⁵⁶ SEC Chairman David Ruder, "Recommendations Regarding the October 1987 Stock Market Break", testimony before the Senate Banking Committee (February 3, 1998).

⁵⁷ *Chicago Mercantile Exchange v. SEC*, 883 F.2d 537 (1989).

⁵⁸ See SEC Chairman Richard Breeden, "The Futures Trading Practices Act of 1991", testimony before the Senate Committee on Agriculture, Nutrition and Forestry (February 7, 1991) and Russo and Vinciguerra (n 47) at 1437-1438.

over IPs exposed the Shad-Johnson Accord as fundamentally inoperable – requiring coordination and consensus which could not be obtained within the context of rapidly evolving derivatives markets.⁵⁹

Yet another significant event in the historical arc of U.S. derivatives regulation occurred later in 1989 when the CFTC issued a policy statement in which it purported to exempt swaps from its oversight.⁶⁰ The policy statement, issued in response to industry concerns that swaps might be deemed futures (and thus illegal off-exchange contracts)⁶¹, acknowledged that swaps possessed certain characteristics that distinguished them from futures contracts.⁶² The policy statement further explained that, while the CFTC also viewed swaps as possessing elements which mirrored futures and options contracts, the agency did not believe that it was the appropriate time to regulate these instruments.⁶³ Proceeding on this basis, the policy statement established a non-exclusive safe harbour for swaps transactions based on a number of identified distinctions between swaps and futures.⁶⁴ The statement did not, however, address whether swaps constituted futures contracts under the *CEA*. It thus left open the possibility that a court might subsequently hold that these instruments were indeed illegal off-exchange futures.⁶⁵ Compounding this uncertainty, swaps which did not

⁵⁹ Romano (n 13) at 35.

⁶⁰ CFTC, Policy Statement Concerning Swaps Transactions, 54 Fed. Reg. 30,694-30,695 (1989).

⁶¹ See GAO, “The Commodity Exchange Act – Legal and Regulatory Issues Remain”, GAO-GGD 97-50, Report to Congressional Committees (1997) at 2.

⁶² CFTC (n 60).

⁶³ Ibid.

⁶⁴ The policy statement identified five criteria relevant to determining whether the safe harbour applied: (1) the existence of individually tailored terms; (2) the absence of an exchange-style offset; (3) the absence of a clearing organization or margin system; (4) that the transaction was undertaken in conjunction with a line of business, and (5) that the transaction was not marketed to the public; *ibid*.

⁶⁵ Willa Gibson, “Are Swaps Agreements Securities or Futures? The Inadequacies of Applying the Traditional Regulatory Approach to OTC Derivatives Transactions” (1999), 24 J. Corp. L. 379 at 407-408. Indeed, this possibility became a reality when, subsequent to the issuance of the policy statement,

satisfy the requirements of the safe harbour continued to trade over-the-counter following the issuance of the policy statement.⁶⁶ As a result, the statement was less than entirely successful in generating greater clarity around the regulatory treatment of swaps.⁶⁷

The year 1989 would also mark the beginning of a protracted series of Congressional debates in connection with the CFTC's third reauthorization.⁶⁸ Swaps dealers lobbied tirelessly during the reauthorization process for regulations reflecting the CFTC's policy statement in an effort to avoid potentially burdensome regulation and reduce regulatory uncertainty.⁶⁹ SEC Chairman Richard Breeden and Treasury Secretary Nicholas Brady, meanwhile, sought greater legislative clarity respecting stock index futures – ultimately resulting in a stand-off with CFTC Chairwoman Wendy Gramm.⁷⁰ After nearly three years of debate, this process culminated in the enactment of *The Futures Trading Practices Act of 1992*⁷¹, reauthorizing the CFTC and conferring upon it the authority to exempt certain exchanged-traded and OTC instruments from its oversight. Congress then instructed the CFTC to exercise its new exemptive authority in respect of, *inter alia*, swaps and other hybrid instruments.⁷² In

a federal district court found that certain OTC energy contracts constituted futures contracts; *see Transnor (Burmuda) v. BP North America Petroleum*, 738 F. Supp. 1472 (S.D.N.Y. 1990).

⁶⁶ *See* Frank Partnoy, “The Shifting Contours of Global Derivatives Regulation” (2001), 22 U. Pa. J. Int'l Econ. L. 421 at 438-442 for a more detailed evaluation.

⁶⁷ *Ibid.*

⁶⁸ For a more detailed description of the legislative history of the CFTC's 1992 reauthorization, *see* Romano (n 13) at 36-45.

⁶⁹ Petzel (n 16) at 102.

⁷⁰ Romano (n 13) at 37.

⁷¹ 7 U.S.C. § 6(c) (1994) [the “*FTPA (1992)*”]. For more detailed analysis of the *FTPA (1992)*, *see* Henderson (n 42) at 12.24.

⁷² The CFTC granted the anticipated exemptions in 1993; *see* CFTC, Regulation of Hybrid Instruments, 17 C.F.R. § 34 (1994). For swaps to be exempt they had to be, *inter alia*, entered into between ‘appropriate persons’ including (1) financial institutions; (2) commercial entities with assets in excess of \$10 million or \$1 million if the swap was entered into in connection with its line of business,

exercising its exemptive authority, the CFTC (once again) did not define swaps as futures contracts or otherwise attempt to assert its authority. Indeed, the CFTC went so far as to acknowledge that in the event a court were to find that swaps fell within the CFTC's exclusive jurisdiction, the exemption would still operate so as to render the instruments legally enforceable even if they failed to meet all the requirements of the exemption.⁷³ While this acknowledgement provided market participants with a measure of additional comfort, there remained some lingering uncertainty insofar as there was theoretically nothing preventing the CFTC from subsequently revoking the exemptions and, thus, pulling the rug out from under the maturing swap and hybrid markets.⁷⁴

Any legal certainty provided by the *FTPA (1992)* was soon eliminated, however, when in December 1994 the SEC and CFTC entered into simultaneous, yet separate, settlement agreements with BT Securities Corporation (BT). The settlements stemmed from BT's misconduct in connection with two leveraged swap transactions entered into with its client, Gibson Greeting Cards.^{75, 76} That same month, the Federal Reserve Bank of New York entered into an agreement with Bankers Trust New York Corporation (BT's parent company) respecting its future conduct in connection with leveraged derivatives transactions.⁷⁷ The CFTC asserted jurisdiction, alleging that BT had (1) violated the anti-fraud provisions of the *CEA*

and (3) individuals with assets in excess of \$10 million. Notably, exempted instruments were not exempt from the market manipulation and anti-fraud provisions of the *CEA*.

⁷³ Ibid.

⁷⁴ Henderson (n 42) at 12.24.

⁷⁵ BT Sec. Corp., SEC Admin. Proc. File No. 3-8579 (December 22, 1994); SEC News Digest, Issue 94-243 (December 22, 1994), and BT Sec. Corp., CFTC No. 95-3 (December 22, 1994).

⁷⁶ For a detailed description of the mechanics of the Gibson Greetings transactions, see James Overdahl and Barry Schachter, "Derivatives Regulation and Financial Management: Lessons from Gibson Greetings" (1995), 24:1 J. of Financial Management 68.

⁷⁷ Docket No. 94-082-WA/RB-HC (December 5, 1994).

and (2) been acting as an unauthorized commodity trading advisor.⁷⁸ Conspicuous by its absence from the CFTC's claim, however, was any assertion that the swaps constituted futures contracts. The SEC also asserted jurisdiction on the basis that some of the impugned transactions included embedded options on securities. The SEC alleged that BT had failed to disclose information and provided incorrect valuations to Gibson Greetings, causing it to make material misstatements in its financial statements filed with the SEC.⁷⁹ Less than a year later, the CFTC entered into a settlement agreement with Metallgesellschaft (MG) following allegations that the German industrial conglomerate sold illegal off-exchange energy futures.⁸⁰

On one level, the BT and MG settlements can be viewed as laudable responses to questionable market conduct. On another level, however, these settlements served to highlight the jurisdictional tensions and resulting lack of coordination between the SEC, CFTC and federal banking regulators, thus only adding to the regulatory uncertainty surrounding U.S. derivatives markets.⁸¹

Hostilities between the SEC and CFTC would escalate once again in 1997. The first salvo was fired when the CFTC – then under the stewardship of Chairwoman Brooksley Born – attempted to assert jurisdiction over the OTC market in foreign currency options. The CFTC's incursion was ultimately rejected by the U.S. Supreme Court, which held that options on foreign currencies fell squarely within the scope of the Treasury Amendment.⁸² Then, in December 1997, the SEC announced a proposal which contemplated the limited regulation of broker-dealers

⁷⁸ CFTC (n 75) at 8.

⁷⁹ Overdahl and Schachter (n 76).

⁸⁰ MG Ref. & Mktg., Inc. et. al., CFTC No. 95-14 (July 27, 1995).

⁸¹ Overdahl and Schachter (n 76) at 75 and Petzel (n 16) at 103.

⁸² *Dunn v. CFTC*, 519 U.S. 465 (1997).

trading in certain OTC derivatives markets.⁸³ The proposal, referred to as ‘Broker-Dealer Lite’, was designed to attract OTC derivatives business – much of which had by this point fled to other jurisdictions – back to the U.S.⁸⁴ In a comment letter to the SEC, the CFTC voiced its objection to the proposal on the basis that it encroached upon the CFTC’s exclusive jurisdiction.⁸⁵ The final salvo of 1997 was fired by the SEC in December when it vetoed a CBOT application to trade futures and options on futures in two Dow Jones indices on the grounds that they were not sufficiently broad-based to meet the requirements enumerated under the *FTA (1982)*.⁸⁶

Undaunted, the CFTC continued to press its case. In May 1998, the CFTC issued a Concept Release announcing its plan to fundamentally re-examine its approach toward the regulation of OTC derivatives markets and, specifically, swaps.⁸⁷ The Concept Release was framed by the CFTC as part of a comprehensive reform effort designed to update its oversight of both exchange-traded and OTC derivatives markets.⁸⁸ To this end, it sought comment on a number of specific areas of potential reform including: eligible transactions; eligible market participants; clearing;

⁸³ SEC, OTC Derivatives Dealers, 62 Fed. Reg. 67,940 (1997). The proposal contemplated, *inter alia*, that broker-dealers selling certain OTC derivatives (including interest rate, currency, equity and commodity-linked swaps) would be permitted, under certain prescribed circumstances, to establish and register designated subsidiaries with the SEC for the purpose of engaging in such transactions. Designated subsidiaries registered with the SEC would, under the proposal, enjoy relaxed net capital and margin requirements.

⁸⁴ *Ibid.* at 67,941.

⁸⁵ Gibson (n 65) at 392, citing Nikki Tait, “US Futures Watchdog Says SEC Exceeding Authority”, *The Financial Times* (February 27, 1998). Notwithstanding the CFTC’s objections, Broker-Dealer Lite took effect on January 4, 1999; *see* SEC, OTC Derivatives Dealers, 63 Fed. Reg. 59,362, codified at 17 C.F.R. pts 200, 240 and 249 (1998).

⁸⁶ The veto was ultimately overturned by the 7th Circuit Court; *Board of Trade v. SEC*, 187 F.3d 713 (7th Cir. 1999).

⁸⁷ CFTC, Over-the-Counter Derivatives, 63 Fed. Reg. 26,114 (1998) [the “Concept Release”]; CFTC Press Release #4142-98, “CFTC Issues Concept Release Concerning Over-the-Counter Derivatives Market” (May 7, 1998) [the “CFTC Press Release”], and CFTC Seeks Public Comment as it Reexamines Oversight of OTC Market, 30 Sec. Reg. & L. Rep 721 (May 8, 1998).

⁸⁸ *Ibid.*

transaction execution facilities; registration; capital; internal controls; sales practices; recordkeeping, and reporting.⁸⁹

According to the CFTC, the Concept Release was motivated by substantial changes it had observed within OTC derivatives markets in the preceding years, including high profile derivatives-related scandals such as the Gibson Greetings, BT and MG affairs; the 1994 bankruptcy of Orange County, California⁹⁰ and the 1995 collapse of Barings plc⁹¹ as a result of unauthorized (and undetected) derivatives transactions conducted by trader Nick Leeson.⁹² Nevertheless, the issuance of the release was seen by many as contrary to the intent of Congress in enacting the *FTPA (1992)* which, while conferring upon the CFTC exemptive authority with a view to promoting financial innovation, competition and legal certainty, did not expressly grant the agency jurisdiction over OTC derivatives markets.⁹³

The Concept Release was roundly criticized by the U.S. financial services industry.⁹⁴ It also provoked a chorus of objections from other federal regulators including the Treasury Department, Federal Reserve Board and SEC.⁹⁵ It is in the content of these objections that the influence of the conventional demand-side view of

⁸⁹ Ibid.

⁹⁰ See Philippe Jorion, *Big Bets Gone Bad: Derivatives and Bankruptcy in Orange County* (Academic Press, San Diego, 1995).

⁹¹ See *Re Barings plc (No. 5)* [1999] 1 BCLC 433 and Nicholas Leeson, *How I Brought Down Barings Bank and Shook the Financial World* (Little, Brown and Company, London, 1996).

⁹² CFTC Press Release (n 87). The timing of the Concept Release – a matter of months after the announcement of Broker-Dealer Lite – suggests perhaps that the CFTC may have also been motivated by a desire not to cede jurisdiction to the SEC.

⁹³ Gibson (n 65) at 392.

⁹⁴ Lynn Stout, “Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives” (1999), 48 *Duke L. J.* 701 at 767-768 and Simon Johnson and James Kwak, *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (Pantheon, New York, 2010) at 135-137.

⁹⁵ Ibid.

financial innovation on the non-interventionist approach adopted by these agencies toward the regulation of OTC derivatives markets is perhaps most clearly reflected. Indeed, the ideological predisposition of at least one key player had become apparent some time prior to the issuance of the Concept Release. Speaking at the Federal Reserve Bank of Chicago in May 1997, Alan Greenspan stated:

‘The unbundling of financial products is now extensive throughout our financial system. Perhaps the most obvious example is the ever expanding array of financial derivatives available to help firms manage interest rate risk, other market risks, and increasingly, credit risks... Another far reaching innovation is the technology of securitization – a form of derivative – which has encouraged unbundling of the production processes for many credit services... These and other developments facilitating the unbundling of financial products have surely improved the efficiency of our financial markets.’⁹⁶

In remarks at the Federal Reserve Bank of Atlanta in February 1997, meanwhile, Chairman Greenspan had also expressed his views regarding the desirability of public regulatory intervention into OTC derivatives markets:

‘[T]he need for U.S. government regulation of derivatives instruments and markets should be carefully re-examined. The application of the Commodity Exchange Act to off-exchange transactions between institutions seems wholly unnecessary – private market regulation appears to be achieving public policy objectives quite effectively and efficiently.’⁹⁷

Greenspan would subsequently argue that the fact that OTC derivatives markets, in his view, functioned so efficiently in the absence of public regulatory intervention provided a compelling case for relaxing regulatory requirements in connection with exchange-traded derivatives.⁹⁸

⁹⁶ Alan Greenspan, “Technological Change and the Design of Bank Supervisory Policies”, remarks at the Conference on Bank Structure and Competition of the Federal Reserve Bank of Chicago (May 1, 1997), available at www.federalreserve.gov [Emphasis added].

⁹⁷ Alan Greenspan, “Government Regulation and Derivatives Contracts”, remarks to the Financial Markets Conference of the Federal Reserve Bank of Atlanta (February 21, 1997), available at www.federalreserve.gov [Emphasis added].

⁹⁸ Alan Greenspan, “Financial Derivatives”, remarks to the Futures Industry Association, Boca Raton, Florida (March 19, 1999), available at www.federalreserve.gov.

Standing with Greenspan in opposition to the Concept Release was Treasury Secretary Robert Rubin, then Deputy Treasury Secretary Larry Summers and SEC Chairman Arthur Levitt.⁹⁹ The principal thrust of their argument was that (1) private market participants possessed both the expertise and incentives to effectively manage the market, counterparty credit and other risks associated with OTC derivatives; (2) regulatory intervention would reduce market efficiency, and (3) reduced market efficiency would ultimately translate into a reduction in living standards.¹⁰⁰ As Greenspan would testify before Congress:

‘... professional counterparties to privately negotiated contracts also have demonstrated their ability to protect themselves from losses, from fraud, and counterparty insolvencies... Aside from the safety and soundness regulation of derivatives dealers under the banking and securities laws, regulation of derivatives transactions that are privately negotiated by professionals is unnecessary. Regulation that serves no useful purpose hinders the efficiency of markets to enlarge standards of living.’¹⁰¹

The intellectual shadow of the conventional demand-side view of financial innovation is not difficult to discern from these statements. Despite an apparent dearth of credible empirical support¹⁰², senior federal regulators clearly viewed financial innovations such as swaps and structured finance as unambiguously positive from the perspective of both *private* and – as Greenspan’s reference to “enlarged standards of living”¹⁰³ suggests – *social* welfare. This view was, in turn, grounded in the assumption that this innovation was the product of rational and fully informed

⁹⁹ See U.S. Treasury Department Press Release, “Joint Statement by Treasury Secretary Robert E. Rubin, Federal Reserve Board Chairman Alan Greenspan and Securities and Exchange Commissioner Arthur Levitt” (May 7, 1998); Lawrence Summers, testimony before the Senate Banking Committee (July 31, 1998); Sharona Coutts and Jake Bernstein, “Former Clinton Official Says Democrats, Obama Advisors Share Blame for Financial Meltdown” (October 9, 2008), available at www.propublica.org, and Johnson and Kwak (n 94) at 136.

¹⁰⁰ Ibid.

¹⁰¹ Alan Greenspan, “The Regulation of OTC Derivatives”, testimony before the House Committee on Banking and Financial Services, 105th Congress, 2nd Session (July 24, 1998).

¹⁰² And one would be hard pressed to describe the financial services industry’s (predictable) views in this regard as *credible* given the stakes.

¹⁰³ Greenspan (n 101).

market participants responding to the existence of market imperfections and, moreover, that these market participants internalized the full costs of their activities. It was a song straight out of the market fundamentalist hymnbook.¹⁰⁴

Succumbing to pressure from both regulators and industry groups, Congress introduced legislation to temporarily bar the CFTC from taking further regulatory action.^{105, 106} Then, as part of the sweeping financial sector reforms introduced under the 1999 *Gramm-Leach-Bliley Act*¹⁰⁷, Congress turned its attention to the SEC. The *GLBA* granted the SEC jurisdiction over swaps and other hybrid instruments.¹⁰⁸ Simultaneously, however, it expressly excluded both security-based¹⁰⁹ and non-security-based swaps¹¹⁰ from the definition of a security under the *Securities Act* and *Exchange Act* and prohibited the SEC from, *inter alia*, registering a security-based swap or promulgating, interpreting or enforcing rules with respect to any security-based swap.¹¹¹

The state of affairs established under the *GLBA* would be short-lived. Prompted by a report issued by The President's Working Group (PWG) on Financial

¹⁰⁴ Once again, it is irrelevant for the purposes of this discussion whether these regulators honestly held market fundamentalist views or whether they were simply responding to industry lobbying. In either case, the important point is that prevailing financial dogma was used to justify a non-interventionist regulatory stance.

¹⁰⁵ *Financial Markets Reassurance Act of 1998*, H.R. 4507, 105th Cong. (1998).

¹⁰⁶ In the end, the CFTC Concept Release thus only served to further compound the jurisdictional tensions and regulatory uncertainty surrounding OTC derivatives markets; see David Barboza and Jeff Gerth, "Who's in Charge? Agency Infighting and Regulatory Uncertainty", *New York Times* (December 15, 1998), available at www.nytimes.com.

¹⁰⁷ Pub. Law No. 106-102 §1, 107 Stat. 1338 (1999) [the "*GLBA*"]. The *GLBA* is most frequently associated with the dismantling of the *Glass-Steagall Act*, 48 Stat. 162 (1933).

¹⁰⁸ *GLBA*, s. 205.

¹⁰⁹ As defined in the *GLBA*, s. 206C.

¹¹⁰ As defined in the *GLBA*, s. 206B.

¹¹¹ See *Securities Act*, s. 2A(a) and (b).

Markets in November 1999¹¹² – the authors of which included Greenspan, Summers and Levitt¹¹³ – Congress enacted the *CFMA*. Motivated ostensibly by the concern that ‘a cloud of legal uncertainty’¹¹⁴ was undermining the U.S.’s leadership in financial services, the PWG Report recommended additional deregulation and exemptions for OTC derivatives markets with a view to, *inter alia*, (1) promoting innovation and reducing risk by enhancing legal certainty and (2) enhancing the competitive position of the U.S. within global OTC derivatives markets.¹¹⁵ The authors even had the temerity to assert that exempting OTC derivatives markets from federal regulation would enhance market transparency and reduce systemic risk.¹¹⁶ Ultimately, the *CFMA* attempted to clarify – although effectively redrew – the jurisdictional boundaries between the SEC and CFTC. Amongst other matters, the *CFMA* redefined hybrid agreements so as to re-confer upon the SEC jurisdiction over hybrids which involved a security (including security-based swaps) – a jurisdiction which had been taken away only the previous year under the *GLBA*. The *CFMA* also repealed those portions of the Shad-Johnson Accord governing the regulation of single-stock futures, placing such instruments under the joint jurisdiction of the CFTC and SEC. The primary thrust of the *CFMA*, however, was to exempt OTC derivatives markets from the regulatory oversight of the SEC, CFTC and state regulators.¹¹⁷

¹¹² “Over-the-Counter Derivatives Markets and Commodity Exchange Act”, Report of the President’s Working Group on Financial Markets (November 9, 1999) [the “PWG Report”].

¹¹³ The fourth author, William Rainer, had replaced Brooksley Born as Chairperson of the CFTC in June 1999.

¹¹⁴ PWG Report, Covering Letter at 1.

¹¹⁵ *Ibid.* at 1-2.

¹¹⁶ *Ibid.* at 1.

¹¹⁷ More specifically, it exempted swaps and hybrids between ‘eligible contract participants’ from the application of the *Securities Act*, *Exchange Act* and *CEA*. The *CFMA* defined a swap agreement as an agreement, contract or transaction between eligible contract participants, the material terms of which (other than price and quantity) are subject to individual negotiation. Excluded from the definition of a swap were, *inter alia*: puts; calls; straddles; options; notes, and bonds. Eligible contract participants, meanwhile, included, *inter alia*, financial institutions; insurance companies; registered investment

Thus, after 25 years of jurisdictional feuding, these regulators found themselves effectively prohibited from regulating OTC derivatives markets.

Not surprisingly, the enactment of the *CFMA* was followed by a period of relative stasis in terms of the regulation of OTC derivatives markets.¹¹⁸ Indeed, what little momentum regulators could muster was primarily directed at measures designed to further relax remaining regulatory constraints. In November 2001, for example, the Federal Reserve Board, OCC and OTS introduced new capital requirements for ABS and other securitizations which effectively devolved risk determinations to private credit rating agencies and, in some cases, financial institutions themselves.¹¹⁹ Then, in June 2004, the SEC introduced the Consolidated Supervised Entities (CSE) Program.¹²⁰ The CSE Program established a voluntary, alternative method for computing net capital requirements for certain broker-dealers registered under the *Exchange Act*. Effectively, the CSE Program permitted broker-dealers to use their own internal models to calculate net capital requirements for market and derivatives-related credit risk. In exchange, broker-dealers agreed to subject themselves, their parent holding companies and affiliates to consolidated supervision under the SEC. They also agreed to (1) comply with enhanced net capital; early warning;

companies, brokers and dealers; investment bank holding companies, and persons meeting prescribed asset or net worth tests. The exemptions under the *CFMA* operate differently in respect of the *CEA* and *Securities Act/Exchange Act*; see Henderson (n 42) at 12.30 for further details.

¹¹⁸ Although more significant regulatory activity could be observed during this period in connection with exchange-traded derivatives and publicly issued ABS; see for example, SEC Regulation AB, 17 C.F.R. §§ 229.1100-1123 (2005) and www.cftc.gov/About/HistoryoftheCFTC/history_2000s.html.

¹¹⁹ See Risk-Based Capital Guidelines; Capital Adequacy Guidelines; Capital Maintenance: Capital Recourse, Direct Credit Substitutes and Residual Interests in Asset Securitizations; Final Rules, 66 Fed. Reg. 59614 (2001); Arnold Kling, "Not What They Had in Mind: A History of Policies That Produced the Financial Crisis of 2008", Mercatus Center at George Washington University (September 2009), available at www.ssrn.com, and Johnson and Kwak (n 94) at 138-139.

¹²⁰ See Alternative Net Capital Requirements for Broker-Dealers That are Part of Consolidated Supervised Entities; Supervised Investment Bank Holding Companies; Final Rules, 69 Fed. Reg. 34,428 (June 21, 2004).

recordkeeping; reporting, and other requirements and (2) implement and document internal risk management systems.

As Simon Johnson and Charles Kwak observe, the CSE Program was designed to reduce the regulatory burden on major U.S. investment banks.¹²¹ Indeed, the program was introduced in response to a request made by Goldman Sachs, Morgan Stanley, Merrill Lynch, Lehman Bros. and Bear Stearns.¹²² The CSE Program also represented something of a coup de grâce for non-interventionism: having convinced Congress that regulation of OTC derivatives markets was unnecessary ‘aside from the safety and soundness regulation of derivatives dealers’¹²³, federal regulators had turned around and devolved the cornerstone of this regulation to these very financial institutions. Underpinning this decision, once again, was the assumption that private market participants, utilizing sophisticated quantitative tools and acting in their own self-interest, had effectively mastered risk.

Ultimately, this regulatory torpor stands in stark contrast with the precipitous growth and proliferation of OTC derivatives markets during this period.¹²⁴ Between December 2000 and June 2007, the aggregate notional amount of all outstanding OTC derivatives grew from approximately USD\$95.2 trillion to USD\$516 trillion – an increase of 542%.¹²⁵ In retrospect, this period would prove the calm before the storm.

¹²¹ Johnson and Kwak (n 94) at 140.

¹²² Ibid.

¹²³ Greenspan (n 101).

¹²⁴ This pattern of regulatory inaction during periods of market growth supports the hypothesis articulated by Erik Gerding in “The Next Epidemic: Bubbles and the Growth and Decay of Securities Regulation” (2006), 38:3 Conn. L. Rev. 393.

¹²⁵ BIS, *BIS Quarterly Review* (May 2001) and (November 2007), available at www.bis.org.

It is clear from this historical examination that OTC derivatives markets fell effectively – if not at all times *legally* – outside the perimeter of U.S. securities and futures regulation in the decades leading up to the GFC. Even if these markets had fallen under the jurisdiction of the SEC and/or CFTC, however, it bears emphasizing that neither of these regulators had assumed an explicit mandate to monitor or address potential systemic risks. Indeed, the regulator most directly responsible for ensuring financial stability prior to the GFC was the Federal Reserve Board – whose chairman from 1987 to 2006 was perhaps the most vocal proponent of the private and social benefits of OTC derivatives and, as a corollary, the most high profile opponent of regulatory intervention.

It is worthwhile observing at this juncture that a handful of observers have argued that, despite appearances, the Federal Reserve Board, OCC and other federal banking regulators actually played a more interventionist oversight role in respect of OTC derivatives markets in the decades leading up to the GFC.¹²⁶ Indeed, these claims are not wholly without merit. The *CFMA*, for example, was in part designed to facilitate the development of clearing and alternative execution platforms for swaps markets, ultimately with the objective of reducing systemic risk.¹²⁷ Along a similar vein, Banking Circular 277, issued by the OCC in October 1993 (and supplemented in 1999), articulated a framework for U.S. banks to evaluate the adequacy of their derivatives-related risk management practices.¹²⁸

¹²⁶ See for example, Henderson (n 42) at 12.34 and John Lynch, “Credit Derivatives: Industry Initiative Supplants Need for Direct Regulatory Intervention. A Model for the Future of U.S. Regulation?” (2007), 55 *Buff. L. Rev.* 1371.

¹²⁷ See PWG Report. Ultimately, however, it still relied on the expertise and incentives of private market participants to create the infrastructure needed to achieve this objective.

¹²⁸ See OCC Bulletin 94-31 (May 1994), superseded in 1999 by Risk Management of Financial Derivatives and Bank Trading Activities – Supplemental Guidance, OCC Bulletin 99-2 (January 1999), available at www.occ.treas.gov. Banking Circular 277 identified nine areas of risk in connection with

Observers also point to a series of interventions by the Federal Reserve Bank of New York as evidence of its proactive approach toward the regulation of OTC derivatives markets. These interventions include the New York Fed's 1994 settlement agreement with Bankers Trust New York Corporation in connection with leveraged derivatives transactions involving Gibson Greetings¹²⁹, along with its 2003 settlement agreements with Citigroup and JPMorgan Chase stemming from their Enron-related financing activities.¹³⁰ They also include the Fed's decision in August 2005 to convene a meeting of major OTC derivatives dealers with a view to facilitating the resolution of certain operational issues which had arisen in connection with a massive backlog of unconfirmed trades.¹³¹

Upon closer scrutiny, however, the argument that these sporadic initiatives amounted to anything resembling meaningful public oversight is unconvincing. Banking Circular 277 did little more than codify existing industry practices.¹³² The settlements with Bankers Trust, Citigroup and JP Morgan Chase, meanwhile, were concluded within politically charged environments in which, as we have seen, other federal regulators had also taken aggressive action. Similarly, the New York Fed's

derivatives: strategic; reputation; price; foreign exchange; liquidity; interest rate; credit; transaction, and compliance; see Henderson (n 42) at 12.34. Perhaps tellingly, systemic risk failed to make the list.

¹²⁹ See n 77.

¹³⁰ See SEC Press Release 2003-87, "SEC Settles Enforcement Proceedings against J.P. Morgan Chase and Citigroup" (July 28, 2003), available at www.sec.gov and Henderson (n 42) at 12.34. In response to the Enron debacle, the Federal Reserve Board, OCC, OTS, FDIC and SEC would subsequently issue the *Interagency Statement on Sound Practices Concerning Elevated Risk: Complex Structured Finance Activities* (May 9, 2006), available at www.sec.gov.

¹³¹ See in particular, Lynch (n 126). See also, Riva Atlas, "Fed Officials Summon Wall Street Firms to Discuss Derivatives" *The New York Times* (August 25, 2005) and Henry Sender, Michael MacKenzie and Ramez Mikdashi, "Fed, Banks Will Meet Over Derivatives", *The Wall Street Journal* (August 25, 2005), available at www.nytimes.com. For an assessment of the effectiveness of this initiative, see GAO, "Credit Derivatives: Confirmation Backlogs Increased Dealers' Operational Risks, but Were Successfully Addressed after Joint Regulatory Action" (June 2007). For an opposing view, see Siona Listokin, "Can the Derivatives Market Self-Regulate? Evidence from OTC Derivatives Confirmations" (November 4, 2009), available at www.ssrn.com.

¹³² Henderson (n 42) at 12.34.

2005 intervention came only after the U.K. Financial Services Authority¹³³; a Joint Forum under the auspices of the Basel Committee on Banking Supervision (BCBS)¹³⁴, and the private sector Counterparty Risk Management Policy Group II (CRMPG II)¹³⁵ had already called attention to the risks arising from unconfirmed trades. Indeed, the CRMPG II had actually proposed an industry-wide roundtable specifically to address the issue.¹³⁶ Most importantly, however, these limited interventions – which, other than the three enforcement actions, were effectively designed to nudge private actors into taking appropriate action – reflected a broader and more deeply entrenched approach to regulation which tacitly assumed that market participants were invariably best positioned to address the risks arising in connection with OTC derivatives.

Ultimately, of course, we must exercise caution when advancing the existence of a causal relationship between the intellectual frameworks underpinning conventional financial theory and the non-interventionist approach adopted by U.S. regulators toward the regulation of OTC derivatives markets. This is especially true given that the only ‘tangible’ evidence of this relationship consists of a relatively small number of (often cryptic) public statements made by senior government officials. While it is difficult to argue that Alan Greenspan was not the most influential financial regulator in the world during the pivotal period between 1987-2006, he was still just one man, working in a large, complex government agency

¹³³ See Letter from Gay Heuy Evans, FSA Director of Market Services, to CEOs (February 22, 2005), available at www.fsa.gov.uk and FSA Press Release 2005-22, “FSA Warns Firms on OTC Credit Derivatives Administration” (February 22, 2005), available at www.fsa.gov.uk.

¹³⁴ See Joint Forum, “Credit Risk Transfer”, Report of the Working Group on Risk Assessment and Capital (March 2005), available at www.bis.org.

¹³⁵ See CRMPG II, “Toward Greater Financial Stability: A Private Sector Perspective” (July 27, 2005), available at www.crmgroup.org.

¹³⁶ *Ibid.* at 75.

which itself was only one of many agencies with oversight of the U.S. financial services industry. Moreover, the preceding examination has canvassed only select episodes in the often turbulent history of OTC derivatives regulation in the U.S. These important caveats notwithstanding, however, it is difficult to deny the fact that the conventional demand-side view of financial innovation resonates within the statements of Greenspan and others. More importantly, this view was reflected in the regulatory regime – embodied by measures like the Treasury Amendment, *CFMA* and CSE Program – which these regulators played an integral role in designing. It would take a crisis of truly global proportions to shake, however gently, the foundations of this relationship between conventional financial theory and how U.S. regulators approached the regulation of OTC derivatives markets. As we shall see, the crisis would have a similar impact on the other side of the Atlantic.

II. The U.K. Regulatory Approach: 1986-2008

The U.K. has a long tradition of self-regulation. This tradition has been variously explained on the basis of the U.K.’s regulatory culture, broader political and cultural factors, and more grounded policy considerations such as the expertise, responsiveness and cost-effectiveness theoretically associated with regulation generated by private actors.¹³⁷ Perhaps nowhere has this tradition been more clearly observable – or had a more profound impact – than in connection with the regulation of U.K. financial markets.¹³⁸ Indeed, before the dramatic structural changes ushered

¹³⁷ Rob Baggot, “Regulatory Reform in Britain: The Changing Face of Self-Regulation” (1989), 67 *Public Administration* 435 at 442-443.

¹³⁸ Brian Cheffins, *Company Law: Theory, Structure and Operation* (Clarendon Press, Oxford, 1997) at 365-366; Laurence Gower, *Review of Investor Protection: A Discussion Document* (HMSO, London, 1982), and *ibid.* at 438.

in by the so-called ‘Big Bang’¹³⁹ and the enactment of the *Financial Services Act* 1986¹⁴⁰, the U.K. relied almost exclusively on private actors, informal measures, customary understandings¹⁴¹ and moral suasion on the part of the Bank of England¹⁴² as sources of financial regulation.

The *FSA 1986* imposed for the first time a statutory framework on the U.K.’s self-regulatory architecture.¹⁴³ At its core, the *FSA 1986* contemplated a two-tiered system of ‘co-regulation’.¹⁴⁴ This framework proceeded from the delegation of specified powers by what was then the Department of Trade and Industry (DTI)¹⁴⁵ to private sector ‘designated agencies’ (the first tier). The most important of the designated agencies under the *FSA 1986* was, for the present purposes, the Securities and Investments Board (SIB).¹⁴⁶ The SIB was responsible for setting the overarching

¹³⁹ Big Bang (never *the* Big Bang) refers to the October 27, 1986 restructuring of the London Stock Exchange (LSE). Formerly a private and autonomous association, Big Bang brought the LSE within the scope of the *FSA 1986*, abolished minimum commissions and eliminated the longstanding distinction between brokers and jobbers. Big Bang also saw the removal of restrictions on the organization and ownership of LSE member firms, thus facilitating for the first time the acquisition of significant interests in members by other financial intermediaries; see Heidi Mandanis Schooner and Michael Taylor, “United Kingdom and United States Responses to the Regulatory Challenges of Modern Financial Markets” (2003), 38 *Tex Int’l L. J.* 317 at 330.

¹⁴⁰ c. 60 [the “*FSA 1986*”].

¹⁴¹ Schooner and Taylor (n 139) at 320.

¹⁴² Mamiko Yokoi-Arai, “The Regulatory Efficiency of a Single Regulator in Financial Services: Analysis of the UK and Japan” (2006), 22 *B.F.L.R.* 23 at 35.

¹⁴³ For a detailed description of this framework (including its application to OTC derivatives), see Simon James, *The Law of Derivatives* (LLP Reference Publishing, London, 1999), ch. 6.

¹⁴⁴ Cheffins (n 138) at 367, employing the term as coined by Ian Ayres and John Braithwaite in *Responsive Regulation: Transcending the Deregulation Debate* (Oxford University Press, Oxford, 1992) at 102.

¹⁴⁵ Now the Department for Business, Innovation and Skills. Oversight of the SIB under the *FSA 1986* was transferred from DTI to H.M. Treasury in 1992; see Transfer of Functions (Financial Services) Order 1992, SI 1992/1315.

¹⁴⁶ *FSA 1986*, s. 114; *Financial Services Act 1986* (Delegation) Order, SI 1987/942 and *Financial Services Act 1986* (Delegation) (No. 2) Order, SI 1988/738. The SIB was a private company limited by guarantee incorporated pursuant to the *Companies Act 1985*, c. 6. Nevertheless, the SIB exhibited several characteristics of a quasi-governmental agency. For example, the chairperson of the SIB was selected jointly by H.M. Treasury and the Bank of England; *FSA 1986*, Sch. 7, s. 1(1). In addition, the agency accounted for the exercise of its powers through regular review meetings with H.M. Treasury. At the same time, however, the *FSA 1986* explicitly affirmed that the SIB was not subject to the

regulatory framework and agenda through the issuance of Statements of Principle and Core Rules of broad application across all financial markets.¹⁴⁷ Under the authorization and oversight of the SIB, day-to-day responsibility for promulgating, monitoring and enforcing the vast majority of regulation then fell to a small group of self-regulatory organizations (SROs), recognized investment exchanges and professional bodies (the second tier). The SROs, which were funded and partially managed by their member firms, included the Securities and Futures Authority (SFA); Investment Management Regulatory Organization (IMRO); Financial Intermediaries, Managers and Brokers Regulatory Association (FIMBRA), and Life Assurance and Unit Trust Regulatory Organization (LAUTRO).¹⁴⁸

Pursuant to the *FSA 1986*, persons or firms dealing in; arranging dealings in; managing or advising on investments in the U.K. were deemed to be engaged in the ‘investment business’.¹⁴⁹ These persons or firms were then required, subject to certain prescribed exemptions, to be authorized and registered either through membership in one or more SROs, as applicable, or by the SIB directly.¹⁵⁰ The *FSA 1986* cast a wide net around the definition of an ‘investment’, identifying an exhaustive list of instruments which included shares, debentures, government securities and, importantly for the present purposes, options, futures, contracts for

financial or organizational constraints which apply to government departments; *FSA 1986*, Sch. 9, s. 1(1). For a more detailed description of the SIB, see Cheffins (n 138) at 366-367.

¹⁴⁷ The Statements of Principle articulated standards for any type of investment business done by any person. The Core Rules covered conduct of business, financial resources, treatment of client funds and unsolicited calls. SROs could derogate from the Core Rules in certain circumstances with SIB permission. SRO rules, meanwhile, would further explain, extend or qualify the Core Rules as appropriate for the particular investments supervised by the relevant SRO; Companies and Securities Advisory Committee, *Law of Derivatives: An International Comparison* (January 1995) at 60.

¹⁴⁸ In 1994, the five original SROs under the oversight of the SIB would be consolidated into three: the SFA, IMRO and Personal Investment Authority (PIA).

¹⁴⁹ *FSA 1986*, Sched. 1, s. 1(2), Part II.

¹⁵⁰ *FSA 1986*, ss. 3, 4, 7 and 25.

differences and rights and interests in investments.¹⁵¹ Persons or firms whose business activities were captured within this net were subject to regulation by the SIB and/or the relevant SROs governing, amongst other matters, conduct of business; capital adequacy; financial and transaction reporting; segregation of client accounts, and custody of client assets.¹⁵²

The most important SRO in terms of the regulation of derivatives was the SFA. The SFA was responsible for regulating registrant persons and firms (1) dealing in, arranging dealings in, and advising on all types of investments, including futures, options and contracts for differences; (2) managing assets some or all of which were derivatives instruments¹⁵³, and (3) managing or operating authorized unit trusts or recognized collective investment schemes which were dedicated to derivatives.¹⁵⁴ Other SROs played ancillary roles in regulating derivatives. The IMRO¹⁵⁵, for example, regulated derivatives transactions which were ancillary or incidental to a registrant firm's investment management or advisory business;¹⁵⁶ FIMRA regulated options on securities and equity indices traded on or under the rules of a recognized or designated investment exchange and used only for hedging¹⁵⁷, and LAUTRO regulated the marketing of authorized unit trust schemes which invested in futures and

¹⁵¹ *FSA 1986*, Sched. 1.

¹⁵² Company and Securities Advisory Committee (n 147) at 60.

¹⁵³ Unless the investments managed were primarily securities; *ibid.*

¹⁵⁴ *Ibid.* at 59.

¹⁵⁵ The IMRO was eventually merged into the SFA; *ibid.*

¹⁵⁶ *Ibid.*

¹⁵⁷ *Ibid.*

options.¹⁵⁸ The Bank of England, meanwhile, retained its historical oversight role in connection with U.K. banks.¹⁵⁹

In addition to complying with general SIB Core Conduct of Business (COB) Rules and SFA Rules¹⁶⁰, registrant firms were required to comply with a number of requirements specifically targeting their derivatives activities. The primary thrust of these requirements was to ensure the suitability of derivatives instruments for investment by certain types of customers. As a starting point, both the SIB Core COB Rules and SFA Rules distinguished between ‘customers’ and ‘non-customers’.¹⁶¹ Customers were then further divided between ‘private customers’ (primarily individuals and small business investors) and ‘non-private customers’ (effectively reserved for sophisticated market counterparties).¹⁶² These classifications were highly significant in that they determined the nature and extent of a registrant firm’s obligations toward a given customer (or non-customer). The most extensive obligations were owed to private customers, the least to non-customers.¹⁶³

Derivatives-specific regulations governing the relationship between registrant firms and their private customers included a prohibition against effecting, arranging or recommending OTC derivatives to a private customer unless the registrant firm reasonably believed that the purpose of the transaction was to hedge against currency

¹⁵⁸ Ibid.

¹⁵⁹ In respect of derivatives, the Bank of England published a series of non-binding principles – a Code of Conduct, a grey paper entitled “The Regulation of the Wholesale Cash and OTC Derivatives Markets” and the Gilt Repo Code of Best Practice – governing transactions in the wholesale market; see John-Peter Castignino, *Derivatives: The Key Principles*, 3ed. (Oxford University Press, Oxford, 2009) at 5.83 and Henderson (n 42) at 12.17.

¹⁶⁰ And, with respect to exchange-traded derivatives and publicly offered securitizations, the relevant U.K. listing requirements.

¹⁶¹ SFA Rule 9-1.

¹⁶² Ibid.

¹⁶³ Companies and Securities Advisory Committee (n 147) at 64 and 88-89.

risk.¹⁶⁴ Registrant firms were also required to (1) provide private customers with a Derivative Risk Warning Notice before trading in derivatives¹⁶⁵; (2) warn private customers of the potential difficulties associated with establishing a proper market price for, and disposing of, ‘non-readily realizable investments’ such as OTC derivatives¹⁶⁶; (3) disclose any position knowingly held by the registrant firm, or any associate, in the same (or a related) investment¹⁶⁷, and (4) where the investment services involved derivatives, put in place a two-way customer agreement.¹⁶⁸ The SFA also provided guidance that a customer should not be treated as an ‘expert’ (i.e. a non-private customer) in options and futures unless the customer was experienced in derivatives of the relevant kind – not just in other investments or types of derivatives.¹⁶⁹ Lastly, in respect of collective investment schemes, SFA Rules contemplated marketing and investment restrictions for options and futures funds, along with special registration requirements for individuals engaged in their marketing.¹⁷⁰ These rules were collectively designed to protect less sophisticated customers from the perils of trading in derivatives. Simultaneously, however, these rules adopted a non-interventionist (effectively, a *caveat emptor*) approach toward the regulation of derivatives transactions between market counterparties.¹⁷¹

¹⁶⁴ SFA Rule 5-44; IMRO Ch II Rule 3.13, and SIB Core COB Rule 27.

¹⁶⁵ Guidance note to SFA Rule 5-30. The Notice described various types of derivatives and sought to explain their risks. The Notice contained mandatory information respecting commissions, suspensions of trading, clearinghouse protections and insolvency. Where relevant, the Notice also contained information respecting OTC transactions; foreign markets; contingent liability transactions, and collateral; Companies and Securities Advisory Committee (n 147) at 72-75.

¹⁶⁶ SFA Rule 5-30(5).

¹⁶⁷ *Ibid.*

¹⁶⁸ SFA Rule 5-23. A two-way customer agreement was required to include information, where applicable, respecting (1) whether derivatives transactions may be undertaken, and (2) the basis upon which the customer would incur any contingent liability.

¹⁶⁹ SFA Guidance (February 1994).

¹⁷⁰ Financial Services (Regulated Schemes) Regulations 1991 and SFA Rules 5.07(2), 5.21, 5.23, 5.25(3), and 5.63(1).

¹⁷¹ That is, non-customers.

The two-tiered framework established under the *FSA 1986* formalized – without significantly altering¹⁷² – an historically fragmented self-regulatory regime which had, over time, resulted in the development of markedly different institutional arrangements and legal regimes governing banking, securities and insurance markets.¹⁷³ Registrant firms were consequently often regulated by multiple SROs, generating a degree of confusion and legal uncertainty and generating significant inefficiencies.¹⁷⁴ Indeed, almost from the outset, the framework was criticized as being unwieldy and unduly bureaucratic.¹⁷⁵ Compounding matters, the SIB was widely perceived as weak: its only leverage being its decidedly nuclear power to derecognize an SRO.¹⁷⁶ This perception was reinforced by a series of high profile financial scandals, culminating in the 1995 collapse of Barings plc. The Barings case in particular exposed the importance of effective coordination between banking and securities regulators within a fragmented regulatory system.¹⁷⁷ These scandals also served to raise questions respecting the effectiveness of the SROs’ efforts to prevent misconduct amongst their own members.¹⁷⁸ Ultimately, these perceived weaknesses – along with pressure from both the City (which apparently saw greater formalization

¹⁷² One notable, and highly relevant, exception being the exemption of derivatives contracts from the application of the *Gaming Act* 1845, 8 & 9 Vict., c. 109; *FSA* 1986, s. 86. This exemption is now enshrined in s. 412 of the *FSMA*.

¹⁷³ Eilis Ferran, “Examining the U.K.’s Experience in Adopting the Single Financial Regulator Model” (2003), 28 *Brook. J. Int’l L.* 257 at 260.

¹⁷⁴ *Ibid.* at 265.

¹⁷⁵ *Ibid.* at 260.

¹⁷⁶ Schooner and Taylor (n 139) at 334. *See* discussion in Ayres and Braithwaite (n 144), ch. 2 respecting the likely ineffectiveness of such ‘nuclear’ powers when they represent the only weapon in a regulator’s enforcement arsenal.

¹⁷⁷ Ferran (n 173) at 263, citing *Report of the Board of Banking Supervision Inquiry in the Circumstances of the Collapse of Barings* (Bank of England, 1995).

¹⁷⁸ *See* Jerry Markham, “Super Regulator: A Comparative Analysis of Securities and Derivatives Regulation in the United States, the United Kingdom and Japan” (2003), 28 *Brooklyn J. Int’l Law* 319 at 376-377 and Ferran (n 173) at 267.

as a necessary response to increasing international competition¹⁷⁹) and Parliament (which anticipated pressure from the E.U. as a result of its entry into the field of financial regulation¹⁸⁰) – swung the tide in favor of greater formalization and less fragmentation. By the spring of 1997, the table was thus set for a sea change in the regulation of U.K. financial markets.

The optimal structure of financial regulation – and in particular the appropriate policy response to the rapid evolution of financial markets and increasing international competition within the financial services industry¹⁸¹ – was very much a live issue in the 1997 U.K. general election.¹⁸² Within days of its electoral victory, the incoming Labour government announced its intention to move the U.K. toward a single, integrated financial regulator.¹⁸³ The government justified the move toward integrated regulation on the grounds that (1) the existing system had failed to deliver sufficiently high standards of investor protection and supervision; (2) the two tier structure established under the *FSA 1986* was inefficient and confusing and lacked both accountability and a clear allocation of responsibilities, and (3) there existed a manifest need for a regulatory structure which would reflect the integrated nature of modern financial markets.¹⁸⁴

The U.K. government wasted little time in moving forward. In October 1997, the SIB was re-branded the Financial Services Authority. Over the course of the next

¹⁷⁹ Baggot (n 137) at 448.

¹⁸⁰ See Eilis Ferran, *Building an EU Securities Market* (Cambridge University Press, Cambridge, 2004), ch. 1-2 for a more fulsome history of the E.U.'s incremental entry into the field of financial regulation.

¹⁸¹ “Reforming the City”, *The Economist* (February 15, 1997).

¹⁸² Schooner and Taylor (n 139) at 331.

¹⁸³ Ferran (n 173) at 260.

¹⁸⁴ *Ibid.* at 271. See [Chapter 6](#) for a more in-depth discussion of these structural issues.

several months, most of the existing designated agencies and SROs would be merged into the FSA on a largely informal and *ad hoc* basis.¹⁸⁵ In July 1998, the government published *The Financial Services and Markets Bill* in draft form.¹⁸⁶ After what has been described as a ‘tortuous’¹⁸⁷ legislative process, the *Financial Services and Markets Act*¹⁸⁸ received Royal Assent in June 2000. The *FSMA* established the FSA as the single regulator for investment and related financial services in the U.K., thus formally absorbing within it the jurisdiction and functions of the SIB, other designated agencies and SROs.¹⁸⁹ It also reallocated responsibility for the regulation and supervision of U.K. banks from the Bank of England to the FSA. The *FSMA* identified the objectives of the FSA as to maintain market confidence; promote public awareness; protect consumers, and reduce financial crime.¹⁹⁰ The new regulator was responsible for prudential, conduct of business, and market regulation across, *inter alia*, the securities, insurance and banking industries. It was also designated as the U.K. Listing Authority.

The *FSMA* is frequently described as ‘framework’¹⁹¹ legislation in the sense that it is structured around the articulation of high level objectives and, simultaneously, confers upon the FSA a wide latitude to design and implement a regulatory regime capable of achieving these objectives. Accordingly, much of the

¹⁸⁵ *Ibid.* at 273, citing Howard Davies, “Law and Regulation” (2001), 3:1 *J. of Int’l Fin. Markets* 169.

¹⁸⁶ FSA, Press Release, “Publication of the Draft Bill” (July 30, 1998).

¹⁸⁷ See “Crackdown in the City: Slapped Wrists or Heads on Spikes? Grant Ringshaw Reveals the Plans of the World’s Most Powerful Financial Regulator”, *Sunday Telegraph* (November 25, 2001), available at www.telegraph.co.uk.

¹⁸⁸ c. 8 [the “*FSMA*”]. The *FSMA* came into full force and effect in December 2001.

¹⁸⁹ Alistair Hudson, *The Law on Financial Derivatives*, 4ed., (Sweet & Maxwell, London, 2006) at 637.

¹⁹⁰ *FSMA*, s. 2(2).

¹⁹¹ Schooner and Taylor (n 139) at 330 and Howard Davies, “Integrated Financial Regulation: Lessons from the UK’s Financial Services Authority”, Speech to the Centre for Financial Studies, Frankfurt (December 5, 2001) at 1.

substantive regulation governing U.K. financial markets is located not within the *FSMA* itself, but within secondary legislation, instruments and other guidance issued by H.M. Treasury and the FSA.

Following the same broad approach as the *FSA 1986*, the *FSMA* mandates that any person engaged in a ‘regulated activity’ must be authorized by the FSA.¹⁹² This general prohibition against unauthorized activities is then subject to a number of enumerated exemptions.¹⁹³ Regulated activities under the *FSMA* include: (1) dealing in investments; (2) arranging deals in investments; (3) deposit taking, safekeeping and administration of assets; (4) managing investments; (5) investment advice; (6) establishing collective investment schemes, and (7) using computer-based systems for giving investment instructions.¹⁹⁴ The term investment is once again defined broadly so as to include, *inter alia*, securities; instruments creating or acknowledging indebtedness; instruments giving entitlement to investments; options; futures; contracts for differences, and rights in investments.¹⁹⁵

Also like the *FSA 1986*, the *FSMA* prescribes regulation of both general and more targeted application to OTC derivatives.¹⁹⁶ Regulation of general application (but nevertheless applicable to OTC derivatives) includes, for example, the liability imposed upon market participants in connection with making misleading

¹⁹² *FSMA*, s. 19.

¹⁹³ See Jonathan Marsh (ed.), *A Practitioner’s Guide to Derivatives* (City and Financial Publishing, London, 2010), ch. 2 and Castignino (n 159), ch. 5 for further details respecting the exemptions from the general prohibition.

¹⁹⁴ *FSMA*, s. 22 and Sched. 2, paras. 2-9.

¹⁹⁵ *FSMA*, Sched. 2, paras. 10-24. The definitions of options, futures and contracts for differences were extended in November 2007 in connection with the U.K.’s adoption of MiFID; *Financial Services and Markets Act 2000 (Regulated Activities) (Amendment No. 3) Order*, SI 2006/3384. See Marsh (n 193) at 31-42 for further details.

¹⁹⁶ Or, as Alistair Hudson has characterized them, ‘macroscopic’ and ‘microscopic’ forms of regulation; Hudson (n 189) at 637.

statements¹⁹⁷; creating a false or misleading impression as to the market¹⁹⁸; insider trading¹⁹⁹, and market abuse.²⁰⁰ Similarly, securitized derivatives offered to the public and admitted to the Official List are subject to the relevant prospectus requirements, along with other continuing obligations under U.K. Listing Rules.²⁰¹ OTC derivatives are also incorporated into the U.K.'s capital adequacy regime governing banks and other financial institutions.²⁰²

Registrant firms are also subject to the requirements set out in the FSA Conduct of Business Sourcebook (COBS).²⁰³ COBS rules flow from the categorization of clients as retail clients, professional clients or eligible (i.e. market) counterparties in accordance with, effectively, their ostensible level of financial expertise and sophistication.²⁰⁴ COBS rules require registrant firms to provide clients with a risk warning statement describing both the general and specific risks associated with certain designated investments (such as OTC derivatives) including, *inter alia*, those relating to leverage, volatility and contingent liabilities.²⁰⁵ In addition, COBS rules require registrant firms to put in place two-way customer agreements in

¹⁹⁷ *FSMA*, s. 397.

¹⁹⁸ *FSMA*, s. 397(3).

¹⁹⁹ *FSMA*, s. 402.

²⁰⁰ *FSMA*, s. 118.

²⁰¹ See Hudson (n 189) at 650-656.

²⁰² More specifically, the U.K. has adopted the E.U. Capital Requirements Directives (2006/48/EC and 2006/49/EC) [collectively, the "CRD"]. The CRD has been incorporated into both (1) the General Prudential Sourcebook and (2) the Prudential Sourcebook for Banks, Building Societies and Investment Firms.

²⁰³ See Marsh (n 193) at 51-54 for an overview of these requirements.

²⁰⁴ See COBS 3. *Per se* eligible counterparties include, *inter alia*, investment firms; credit institutions; insurance companies; collective investment schemes authorized under the UCITS Directive; pension funds; governments, and central banks; COBS 3.6.2. In addition, a firm may treat a client as an eligible counterparty if, *inter alia*, the client is a body corporate (including a limited liability partnership) which, together with its parent companies or subsidiaries, has called up share capital of at least £10 million; COBS 3.6.4.

²⁰⁵ COBS 14.3.2.

connection with transactions in such designated investments.²⁰⁶ Like their counterparts under the *FSA 1986*, these requirements are motivated by the desire to protect less sophisticated clients.²⁰⁷ Importantly, however, transactions between eligible counterparties – an extremely broad class of market participants²⁰⁸ – are expressly exempted from these requirements²⁰⁹, thus maintaining the non-interventionist approach adopted under the *FSA 1986*.

In sharp contrast with the fractured and dysfunctional pre-crisis regulatory regime in the U.S., the scope of the *FSMA*²¹⁰ was from the outset framed broadly enough so as to clearly capture OTC derivatives markets within the perimeter of regulation. Nevertheless, and while regulation in the two jurisdictions developed along markedly different paths, the *laissez faire* approach adopted by the FSA under the *FSMA* was functionally equivalent to the non-interventionist regime enshrined in the *CFMA*. Perhaps most importantly, regulation in both jurisdictions reflected the belief that sophisticated market counterparties were invariably best positioned to identify, monitor and address potential risks. Public regulatory intervention, by implication, was thus deemed as largely unnecessary.

More difficult to ascertain is *why* the U.K. adopted a non-interventionist approach toward the regulation of OTC derivatives markets. Unlike the U.S. – where senior policymakers were relatively candid about their ideological positions – there are few public statements from which we can gauge the influence of financial theory. One alternative explanation is that this approach simply reflected the U.K.’s broader

²⁰⁶ Hudson (n 189) at 667.

²⁰⁷ *Ibid.*

²⁰⁸ See COBS 3.6.2 and 3.6.4.

²⁰⁹ COBS 1, Annex 1.

²¹⁰ And, indeed, the *FSA 1986*.

inclination toward self-regulation. Another is that it was driven by perceptions about the lagging international competitiveness of U.K. financial markets: thus making regulatory competition an indirect channel for the transmission of non-interventionist policy.²¹¹ We will return to this issue in Chapter 6. Whatever the motivation, the GFC would prompt the U.K. – like the U.S. – to reexamine its historical stance.

III. The Post-Crisis Regulatory Approach: A Brave New World

The frenzied and destructive events of March-September 2008 spurred policymakers on both sides of the Atlantic to fundamentally reevaluate their approaches toward the regulation of OTC derivatives markets.²¹² This ‘rethink’ was motivated by two principal observations. First, in the thick of the crisis, the size, technological sophistication, opacity, interconnectedness and fragmentation of OTC derivatives markets – in short, their *complexity* – meant that nobody knew with any certainty where or how big the counterparty credit (and thus systemic) risks were. Second, despite the bold assertions of Greenspan, Rubin and Summers, bilateral risk management – i.e. privately negotiated collateral and netting arrangements – had not effectively mitigated counterparty credit or systemic risk. Manmohan Singh, for example, has estimated that as of 2008 bilateral swap markets were under-

²¹¹ See n 181, 182, 183 and 184. The principal counter-argument being that the U.K.’s non-interventionist approach to transactions involving sophisticated market counterparties actually pre-dates the emergence of many OTC derivatives markets. This, of course, would never stop vested interests within the financial services industry from arguing that interventionist regulation represented a drag on competitiveness.

²¹² This shift began (modestly enough) in March 2008 – in the immediate aftermath of the Bear Stearns bailout – when the CFTC and SEC entered into a mutual cooperation agreement with a view to enhancing coordination and facilitating the review of new derivatives instruments; see CFTC Press Release 5468-08, “CFTC, SEC Sign Agreement to Enhance Coordination, Facilitate Review of New Derivatives Products” (March 11, 2008), available at www.cftc.gov. Then, in November, the CFTC, SEC and Federal Reserve Board entered into a memorandum of understanding to establish a framework for consultation and information sharing on regulatory issues related to central counterparties for CDS contracts; see www.cftc.gov/About/HistoryoftheCFTC/history_2000s.html. Shortly thereafter, the CFTC announced that the CME had certified a proposal to clear CDS through the CME’s clearing facilities; see CFTC Press Release 5592-08, “CFTC Announces that CME Has Certified a Proposal to Clear Credit Default Swaps” (December 23, 2008), available at www.cftc.gov.

collateralized by as much as \$2 trillion.²¹³ Perhaps most importantly, prevailing market practice dictated that *intra-dealer* exposures – along with those of large counterparties such as AIG – were often entirely uncollateralized.²¹⁴

On March 4, 2009, the European Commission announced its commitment to implement reforms designed to increase transparency and reduce systemic risk within OTC derivatives markets.²¹⁵ This commitment would eventually be met in the form of the E.U. *Regulation on OTC Derivatives, Central Counterparties and Trade Repositories* (or EMIR²¹⁶) adopted on September 15, 2010.²¹⁷ The U.S. Treasury Department, meanwhile, was also eager to signal its enthusiasm for a new approach: unveiling the draft *Over-the-Counter Derivatives Markets Act* in August 2009.²¹⁸ These reforms would eventually be enacted in July 2010 as part of the *Dodd-Frank Wall Street Reform and Consumer Protection Act*.²¹⁹

²¹³ As measured by derivatives payables; see Manmohan Singh, “Collateral, Netting and Systemic Risk within OTC Derivatives Markets”, IMF Working Paper 10/99 (2010), available at www.ssrn.com. See also Manmohan Singh and James Aitken, “Counterparty Risk, Impact on Collateral Flows and Role for Central Counterparties”, IMF Working Paper 09/173 (2009) and Miguel Segoviano Basurto and Manmohan Singh, “Counterparty Risk in the Over-The-Counter Derivatives Market”, IMF Working Paper 08/258 (2008), both available at www.ssrn.com.

²¹⁴ Singh (n 212) at 6.

²¹⁵ See European Commission, “Driving European Recovery”, COM(2009) 114 (March 4, 2009) at 7, available at www.eur-lex.europa.eu. See also European Commission, “Ensuring Efficient, Safe and Sound Derivatives Markets: Future Policy Actions”, COMM(2009) 563 (October 20, 2009); European Commission, “Ensuring Efficient, Safe and Sound Derivatives Markets”, COMM(2009) 332 (July 3, 2009), and European Commission Staff Working Paper Accompanying COMM(2009) 332 (July 3, 2009) SEC(2009) 905, all available at <http://ec.europa.eu>.

²¹⁶ Which, somewhat confusingly, stands for the European Market Infrastructure Regulation.

²¹⁷ SEC(2010) 1058 and 1059 (September 15, 2010) [“EMIR”]. While EMIR technically came into force on August 16, 2012, as of writing the relevant authorities were still in the process of drafting the technical rules necessary for implementation.

²¹⁸ See U.S. Department of the Treasury Press Release TG-261, “Administration’s Regulatory Reform Agenda Reaches New Milestone: Final Piece of Legislative Language Delivered to Capitol Hill” (August 11, 2009), including the proposed text of the *Over-the-Counter Derivatives Markets Act of 2009*.

²¹⁹ Pub. L. No. 111-203, 124 Stat. 1376, 1675–82, 1762–84 (2010). While Title VII of the *Dodd-Frank Act* (governing OTC derivatives) technically came into force on July 16, 2011, the effective date of the vast majority of the contemplated reforms has been delayed pending the completion of the requisite rulemaking process. Each of these reforms will take effect 60 days following the publication of the

The Obama Administration has characterized the objectives of the new U.S. regime as to: (1) guard against the build-up of systemic risk; (2) promote transparency and efficiency; (3) thwart market manipulation, fraud, insider trading and other abuse, and (4) prevent inappropriate marketing to unsophisticated counterparties.²²⁰ Title VII of the *Dodd-Frank Act* employs four primary mechanisms in pursuit of these objectives.²²¹ First, it confers upon the CFTC and SEC the authority to mandate that financial instruments falling within the definition of either a ‘swap’ or ‘security-based swap’,²²² be centrally cleared through CFTC-regulated derivatives clearing organizations or SEC-regulated securities clearing agencies (collectively, CCPs).²²³ In very broad terms, CCPs interpose themselves between the counterparties to bilateral OTC transactions, effectively assuming the obligations of each party to the

relevant final rule; *Dodd-Frank Act*, s. 754. Subsequent references to the *Dodd-Frank Act* shall, unless otherwise indicated, be understood as referring specifically to Title VII thereof.

²²⁰ Treasury Department (n 217).

²²¹ Not including (1) the ‘push out’ of (most) derivatives activities conducted by federally insured banks to separate non-bank affiliates; see *Dodd-Frank Act*, s. 716 or (2) the so-called ‘Voleker Rule’ limiting the proprietary trading activities of bank holding companies; *ibid.*, s. 619.

²²² Taken together, the definitions of swap and security-based swap encompass the vast majority of bilateral OTC derivatives instruments; see *ibid.*, ss. 721 and 761. That said, the dividing line between swaps and security-based swaps is not altogether clear under the *Dodd-Frank Act*, especially with respect to swaps based on a portfolio of assets, such as those which often form the subject matter of structured finance vehicles.

²²³ *Dodd-Frank Act*, ss. 723 and 763. Unless otherwise indicated, all subsequent references to ‘swap’ shall, for the purposes of this description of the operative provisions of Title VII of the *Dodd-Frank Act*, be construed so as to include a ‘security-based swap’. The process for determining whether a particular group, category, type or class of swap be will subject to the central clearing and exchange-trading requirements can be initiated by either a CCP or the relevant regulator; *ibid.*, s. 723(a)(3). CCPs are required to submit to the CFTC or SEC, as applicable, ‘any group, category, type, or class of [security-based] swap’ it intends to accept for clearing and provide notice of this submission to its members; *ibid.* In reviewing a submission, the CFTC or SEC will determine whether the submission is consistent with the core principles of the relevant CCP; *ibid.* The relevant regulator is also required to take into account the following factors: (1) ‘the existence of significant outstanding notional exposures, trading liquidity, and adequate pricing data’; (2) ‘the availability of a rule framework, capacity, operational expertise and resources, and credit support infrastructure to clear the contract on terms that are consistent with the material terms and trading conventions on which the contract is then traded’; (3) ‘the effect on the mitigation of systemic risk, taking into account the size of the market for such contract and the resources of the CCP available to clear the contract’; (4) ‘the effect on competition, including appropriate fees and charges applied to clearing’, and (5) ‘the existence of reasonable legal certainty in the event of the insolvency of the relevant CCP or one or more of its clearing members with regard to the treatment of customer and swap counterparty positions, funds, and property.’; *ibid.*

other.²²⁴ The principal advantage of central clearing and settlement through CCPs is the potential mitigation of both counterparty credit and systemic risk via the (1) multilateral netting of exposures²²⁵; (2) collateralization of residual net exposures²²⁶; (3) enforcement of robust risk management standards²²⁷, and (4) mutualization of losses resulting from the failure of a clearing member.²²⁸ Simultaneously, of course, CCPs concentrate counterparty credit – and thus systemic – risk.

The *Dodd-Frank Act* contemplates an exemption from the clearing requirement if one of the counterparties (1) is not a financial entity; (2) is using the instrument to hedge or mitigate commercial risk, and (3) provides prescribed information to the relevant regulator respecting how it meets its financial obligations to counterparties in connection with bilaterally cleared swaps.²²⁹ For the purposes of this commercial end-user exemption, a financial entity includes a swap dealer²³⁰,

²²⁴ Darrell Duffie, Ada Li and Theo Lubke, “Policy Perspectives on OTC Derivatives Market Infrastructure”, Federal Reserve Bank of New York Staff Report No. 424 (March 2010) at 5, available at www.ssrn.com. As Duffie and his co-authors explain, CCPs in effect ‘act as the seller to the original buyer, and as the buyer to the original seller.’; *ibid.* See also BIS and the Technical Committee of the International Organization of Securities Commissions (IOSCO), “Guidance on the Application of the 2004 CPSS-IOSCO Recommendations for Central Counterparties to OTC Derivatives CCPs”, Consultative Report (May 2010) at 1, available at www.bis.org.

²²⁵ Multilateral netting involves eliminating offsetting or redundant positions via, *inter alia*, the utilization of portfolio compression or so-called ‘tear up’ procedures.

²²⁶ Effectively creating a first loss position which serves as a capital buffer in the event of counterparty default.

²²⁷ By prescribing rules respecting, for example, capital; initial and variation margin; collateral; position portability; segregation of client assets, and stress testing; *see* [Chapter 5](#) for further discussion.

²²⁸ *See* IMF, “Global Financial Stability Report: Meeting New Challenges to Stability and Building a Safer System” (April 2010) at 97, available at www.imf.org and BIS, “New Developments in Clearing and Settlement Arrangements for OTC Derivatives”, Committee on Payment and Settlement Systems Publication No. 77 (March 2007), available at www.bis.org.

²²⁹ *Dodd-Frank Act*, s. 723(a)(3). The non-financial or hedging counterparty retains the option to require that the instrument be centrally cleared; *ibid.*

²³⁰ Section 721(a) of the *Dodd-Frank Act* and s. 3(a)(71) of the *Exchange Act* define a swap dealer as: ‘any person who—(i) holds itself out as a dealer in [security-based] swaps; (ii) makes a market in [security-based] swaps; (iii) regularly enters into [security-based] swaps . . . ; or (iv) engages in any activity causing the person to be commonly known in the trade as a dealer or market maker in [security-based] swaps’. This definition does not include a person who enters into swaps for their own account (or in a fiduciary capacity), but does not do so as part of a regular business; *ibid.*

major swap participant²³¹, and certain other identified classes of financial institution.²³² In order to incentivize greater utilization of centrally-cleared derivatives, it is likely that the new regime will ultimately impose higher capital and margin requirements on both swap dealers and major swap participants in connection with bilaterally cleared swaps.²³³

Second, the *Dodd-Frank Act* gives the SEC and CFTC the authority to require that any swap subject to the clearing requirement also trade on a regulated board of trade, exchange, or alternative swap execution facility.²³⁴ This execution requirement will not apply, however, where (1) no board of trade, exchange or swap execution facility makes the swap available to trade or (2) one of the counterparties to the swap falls within the commercial end-user exemption to the clearing requirement.²³⁵ Where swaps are subject to this execution requirement, the expectation is that this will enhance price discovery, promote greater market transparency and curb opportunities for market abuse.

²³¹ Sections 721(a) and 761(a) of the *Dodd-Frank Act* define a major swap participant as: ‘any person who is not a [security-based] swap dealer and—(i) maintains a substantial [net] position in swaps for any of the major swap categories as determined by the [relevant regulator], excluding (I) positions held for hedging or mitigating commercial risk. . . (ii) whose outstanding swaps create substantial counterparty exposure that could have serious adverse effects on the financial stability of the United States banking system or financial markets.’ The definition also includes a financial institution falling under the definition of financial entity as set out in the *Dodd-Frank Act* that is (1) highly leveraged; (2) not subject to capital requirements, and (3) maintains a substantial net position in outstanding swaps for any of the major swap categories as determined by the relevant regulator; *ibid.* The definition of a ‘substantial position’ is left to be defined by the relevant regulators; *ibid.*

²³² See *Dodd-Frank Act*, s. 723(a)(3).

²³³ See Treasury Department (n 217). Ultimately, however, the *Dodd-Frank Act* only mandates that the CFTC, SEC, and federal banking regulators, as applicable, set *minimum* capital and margin requirements; *Dodd-Frank Act*, ss. 731 and 764. See CFTC, Proposed Rules Respecting Margin Requirements for Uncleared Swaps for Swap Dealers and Major Swap Participants, 76 Fed. Reg. 23,732-23,749 (April 28, 2011) and CFTC, Notice of Proposed Rulemaking Respecting Capital Requirements of Swap Dealers and Major Swap Participants, 76 Fed. Reg. 27,802-27,841 (May 12, 2011), both available at www.cftc.gov.

²³⁴ *Dodd-Frank Act*, ss. 723 and 763. Section 721(a) defines a swap execution facility as ‘a trading system or platform in which multiple participants have the ability to execute or trade swaps by accepting bids and offers made by multiple participants in the facility or system’.

²³⁵ *Ibid.*

Third, the *Dodd-Frank Act* requires all swap dealers²³⁶; major swap participants²³⁷; CCPs²³⁸; swap execution facilities²³⁹, and swap data repositories (SDRs)²⁴⁰ to register with the SEC, CFTC, and/or federal banking regulators. Once registered, swap dealers and major swap participants are subject to, *inter alia*, capital; margin; reporting; recordkeeping, and business conduct requirements.²⁴¹ CCPs registered with the CFTC, swap execution facilities and SDRs, meanwhile, are required to (1) comply with a set of ‘core principles’ and other requirements and (2) design, implement, monitor, and enforce technical regulation in furtherance of these principles.²⁴² While the *Dodd-Frank Act* does not articulate a similar set of core principles for CCPs registered with the SEC, it does mandate that the two agencies adopt consistent and comparable rules governing these registrants.²⁴³

Finally, the *Dodd-Frank Act* imposes extensive recordkeeping and reporting requirements on these new registrants. Swap counterparties are required to report all centrally and bilaterally cleared swaps to an SDR.²⁴⁴ SDRs, CCPs and swap

²³⁶ *Ibid.*, ss. 731 and 764.

²³⁷ *Ibid.*

²³⁸ *Ibid.*, s. 725.

²³⁹ *Ibid.*, ss. 733 and 763.

²⁴⁰ *Ibid.*, ss. 728 and 763. An SDR is a centralized registry that maintains a database of transaction records. SDRs may also manage trade life-cycle events and downstream trade processing services; BIS and IOSCO (n 224) at 1.

²⁴¹ *Ibid.*, ss. 731 and 764. The capital and margin requirements will only apply in respect of bilaterally cleared swaps. The corresponding requirements for centrally cleared swaps will be set by the relevant CCP; *ibid.* Section 737 also contemplates that the CFTC may set position limits (excluding *bona fide* hedges) for swaps that perform or affect a significant price discovery function with respect to registered entities; *see also*, CFTC, Final Rules Respecting Position Limits for Futures and Swaps, 76 Fed. Reg. 71,626-71,706 (November 18, 2011), available at www.cftc.gov.

²⁴² *Ibid.*, ss. 725, 728, 733 and 763.

²⁴³ *Ibid.*, s. 712(a)(7).

²⁴⁴ *Ibid.*, ss. 727, 729 and 766. These provisions set out rules respecting *which* counterparty is required to report the swap. In the circumstance where no SDR will accept the swap, it must be reported directly to the relevant regulator; *ibid.*, ss. 729 and 766. Notably, this reporting obligation also applies to swaps entered into prior to the enactment of the *Dodd-Frank Act*; *ibid.*

execution facilities are then obligated to provide granular counterparty and transaction information to the relevant regulators.²⁴⁵ These regulators are, in turn, required to publically disseminate anonymized transaction and pricing data on a ‘real time’ basis.²⁴⁶ This public reporting requirement is explicitly designed to enhance price discovery.²⁴⁷ More broadly, these requirements are designed to leverage the centralization of transaction data within SDRs, CCPs, swap execution facilities and other institutions with a view to generating greater market transparency and, as a consequence, enabling regulators to more effectively monitor the location, nature and extent of potential systemic risks.²⁴⁸

Reflective of the pre-crisis regulatory schism, the *Dodd-Frank Act* carves up jurisdiction over bilateral OTC derivatives on the basis of a distinction between (1) contracts for the sale of a commodity for future delivery and swaps (subject to CFTC jurisdiction) and (2) security-based swaps (subject to SEC jurisdiction).²⁴⁹ Simultaneously, however, it mandates consistency and comparability between SEC and CFTC rules and regulations governing functionally or economically similar products and registrants.²⁵⁰ To this end, the SEC and CFTC have been handed joint responsibility for fleshing out the innumerable technical details of the new regime.²⁵¹ The two agencies are thus currently engaged in the monumental task of issuing

²⁴⁵ Ibid., ss. 725, 728 and 733.

²⁴⁶ Ibid., s. 727. For the purpose of these requirements, reporting on a ‘real time’ basis refers to reporting within a timeframe which is ‘technologically practicable’; *ibid.*

²⁴⁷ Ibid.

²⁴⁸ See IMF (n 228) at 105–106.

²⁴⁹ *Dodd-Frank Act*, ss. 712, 722 and 761–763.

²⁵⁰ Ibid., s. 712(a).

²⁵¹ Ibid., s. 712(d)(1). Including the definitions of swap; security-based swap; swap dealer; security-based swap dealer; major swap participant; major security-based swap participant, and eligible contract participant; *ibid.* The Obama Administration has requested and received a joint plan for harmonizing the regulation of OTC derivatives markets; see CFTC and SEC, Joint Report of the SEC and the CFTC on Harmonization of Regulation (October 16, 2009), available at www.sec.gov.

proposed and final rules respecting, *inter alia*, the process by which regulators determine whether a swap will be subject to the clearing requirement²⁵²; risk management and business conduct standards for CCPs, SDRs, swap dealers and major swap participants²⁵³; margin and capital requirements for swap dealers and major swap participants²⁵⁴, and ownership limitations and governance requirements for CCPs, designated contract markets, exchanges, and swap execution facilities.²⁵⁵ Many of these (proposed) rules will be examined in greater detail in Chapters 4, 5 and 6.

The *Dodd-Frank Act* also seeks to enhance the regulation of ABS and other securitizations – including, importantly, those offered under exemptions from the

²⁵² See CFTC, Final Rule Respecting the Process for Review of Swaps for Mandatory Clearing, 76 Fed. Reg. 44,464-44,475 (July 26, 2011), available at www.cftc.gov and SEC Release No. 34-67286, Final Rules Respecting the Process for Submissions for Review of Security-Based Swaps for Mandatory Clearing and Notice Filing Requirements and Notice Filing Requirements for Clearing Agencies; Technical Amendments to Rule 19b-4 and Form 19b-4 Applicable to All Self-Regulatory Organizations (June 28, 2012), available at www.sec.gov.

²⁵³ See for example, CFTC, Final Rule Respecting Derivatives Clearing Organization General Provisions and Core Principles, 76 Fed. Reg. 69,334-69,480 (November 8, 2011); CFTC, Notice of Proposed Rulemaking Respecting Information Management Requirements for Derivatives Clearing Organizations, 75 Fed. Reg. 78,185-78,197 (December 15, 2010); CFTC, Final Rules Respecting Business Conduct Standards for Swap Dealers and Major Swap Participants With Counterparties, 77 Fed. Reg. 9734-9835 (February 17, 2012); CFTC, Final Rules Respecting Swap Data Repositories: Registration Standards, Duties and Core Principles 76 Fed. Reg. 54,538-54,597 (September 11, 2011), and CFTC, Notice of Proposed Rulemaking Respecting Core Principles and Other Requirements for Swap Execution Facilities, 76 Fed. Reg. 1214-1259 (January 7, 2011), all available at www.cftc.gov. See also, SEC Release 34-63347, Proposed Rule Respecting Security-Based Swap Data Repository Registration, Duties and Core Principles, 75 Fed. Reg. 77,306-77,377 (November 19, 2010); SEC Release 34-63845, Proposed Rule and Interpretation Respecting Registration and Regulation of Security-Based Swap Execution Facilities, 76 Fed. Reg. 10,948-11,070 (February 2, 2011), and SEC Release 34-64766, Proposed Rules Respecting Business Conduct Standards for Security-Based Swap Dealers and Major Security-Based Swap Participants, 76 Fed. Reg. 42,396-42,459 (June 29, 2011), each available at www.sec.gov.

²⁵⁴ See CFTC (n 252).

²⁵⁵ See CFTC, Notice of Proposed Rulemaking Respecting Governance Requirements for Derivatives Clearing Organizations, Designated Contract Markets, and Swap Execution Facilities; Additional Requirements Regarding the Mitigation of Conflicts of Interest, 76 Fed. Reg. 722-737 (January 6, 2011), available at www.cftc.gov; see also SEC Release 34-64017, Proposed Rule Respecting Clearing Agency Standards for Operation and Governance, 76 Fed. Reg. 14,472-14,539 (March 3, 2011) and SEC Release 34-64018, Ownership Limitations and Governance Requirements for Security-Based Swap Clearing Agencies, Security-Based Swap Execution Facilities, and National Securities Exchanges with Respect to Security-Based Swaps under Regulation MC, 76 Fed. Reg. 12,645-12,648 (March 3, 2011), both available at www.sec.gov.

prospectus and registration requirements under the *Securities Act*.²⁵⁶ First, it requires issuers of ABS and other securitizations to disclose information respecting the quality of the assets backing each tranche or class of security.²⁵⁷ Where necessary for investors to perform independent due diligence, issuers must also disclose more detailed asset or loan-level data.²⁵⁸ Second, it requires ‘securitizers’²⁵⁹ to disclose fulfilled and unfulfilled repurchase requests across all trusts aggregated by the securitizer.²⁶⁰ Third, it compels credit rating agencies to include information in their rating reports respecting the representations, warranties and enforcement mechanisms available to investors in connection with a securitization and, importantly, how these provisions differ from other offerings of similar securities.²⁶¹ Finally, it imposes risk retention requirements on securitizers: mandating that, in certain prescribed circumstances²⁶², they maintain at least 5% of the credit risk in connection with any assets they sell into a securitization.²⁶³ As with the new regime governing swaps, the

²⁵⁶ Section 943 of the *Dodd-Frank Act* introduced s. 3(a)(77) of the *Exchange Act*, which defines an ‘asset-backed security’ as a fixed income or other security collateralized by any type of self-liquidating financial asset that allows the holder of the security to receive payments which depend primarily on the cash flows from that asset. Notably, the definition expressly includes both CDOs and CDO-squared.

²⁵⁷ *Ibid.*, s. 942(b). The *Dodd-Frank Act* then requires the SEC to adopt regulations prescribing the specific format and content of these disclosures; *ibid.*

²⁵⁸ *Ibid.*

²⁵⁹ The *Dodd-Frank Act* defines a securitizer as (1) an issuer of an ABS or other securitization or (2) a person who organizes and initiates an ABS transaction by selling or transferring assets, either directly or indirectly, to the issuer; *ibid.*, s. 941(b).

²⁶⁰ *Ibid.*, s. 943(2). The *Dodd-Frank Act* characterizes the objective of this provision as to make it easier for investors to identify asset originators with clear underwriting deficiencies; *ibid.* This obligation only applies, however, where the transaction documentation contains a covenant to repurchase an asset. See SEC Rule 15Ga-1 and SEC Release 33-9175, Final Rules Respecting Disclosure for Asset-Backed Securities Required By Section 943 of the Wall Street Reform and Consumer Protection Act, 76 Fed. Reg. 4489-4515 (January 26, 2011; as corrected August 25, 2011), available at www.sec.gov.

²⁶¹ *Dodd-Frank Act*, s. 943(1) and SEC Rule 15Ga-1.

²⁶² Specifically, the risk retention requirements may be reduced where the underwriting standards employed by the originator indicate that those assets manifest less credit risk. In addition, these requirements do not apply in respect of ABS collateralized exclusively by certain ‘qualified residential mortgages’; *ibid.*, s. 941(b).

²⁶³ *Ibid.* These risk retention requirements must also be viewed in conjunction with Basel III which, when effective, will impose more conservative capital requirements in respect of some securitization

securitization provisions of the *Dodd-Frank Act* contemplate substantial post-enactment rulemaking.²⁶⁴

The scope and substantive requirements of the new European regime are broadly consistent with Title VII of the *Dodd-Frank Act*.²⁶⁵ EMIR applies to any entity established in the E.U. which enters into an OTC derivatives contract.²⁶⁶ It is thus directly applicable to U.K. financial markets. EMIR mandates that all ‘eligible’²⁶⁷ OTC derivatives between ‘financial counterparties’²⁶⁸ be cleared and settled through a CCP.²⁶⁹ This mandatory clearing requirement also applies to non-financial counterparties whose derivatives positions – excluding those objectively linked to their commercial activities – exceed a prescribed threshold.^{270, 271} Both

exposures. For an overview of these requirements, see Standard & Poors, “Tougher Capital Requirements Under Basel III Could Raise the Costs of Securitization” (November 17, 2010), available at www2.standardandpoors.com.

²⁶⁴ The OCC, Federal Reserve Board, FDIC and SEC are responsible for promulgating regulation in respect of the risk retention requirements. The SEC, meanwhile, is responsible for adopting regulation in respect of the disclosure requirements.

²⁶⁵ Although, as will be explored in greater detail below, there is considerable scope for substantive divergence.

²⁶⁶ Along with non-E.U. counterparties contracting with entities established in the E.U.

²⁶⁷ Much like the new U.S. regime, EMIR establishes a process for determining whether an instrument is eligible for central clearing. This process can unfold in one of two ways. The first way is a ‘bottom-up’ process, pursuant to which a CCP applies to the ESMA for a determination; Art 4(1). The second ‘top-down’ process involves ESMA, in conjunction with the ESRB, determining that a contract should be subject to the mandatory clearing requirement; Art. 4(5). See Chapter 5 for a more in-depth examination of this process.

²⁶⁸ A financial counterparty is defined as including a bank; investment bank; insurance company; UCITS fund; pension fund, or alternative investment fund manager; *ibid.*, Art. 2(6).

²⁶⁹ *Ibid.*, Art . 3.

²⁷⁰ There are actually two thresholds: an information threshold and a clearing threshold. Non-financial counterparties exceeding the information threshold are required to report the details of any OTC derivatives instrument to a trade repository; *ibid.*, Arts. 6(1) and 7(1). Non-financial counterparties exceeding the clearing threshold are subject to the mandatory clearing requirement; *ibid.*, Art. 7(2). Instruments that are objectively ascertained to be linked to a non-financial counterparty’s commercial activities will not be taken into account in determining whether the counterparty has exceeded the clearing threshold; *ibid.*, Art. 3(4). ESMA and the ESRB have been handed primary responsibility for articulating the substance of both thresholds no later than June 30, 2012; *ibid.*, Art. 7(3).

²⁷¹ It is not clear on the face of this provision how transactions between a financial and non-financial counterparty not exceeding either the information or clearing tests would be treated. If EMIR is to be consistent with Title VII of the *Dodd-Frank Act*, however, such transactions should be exempt.

financial and non-financial counterparties entering into OTC derivatives *not* subject to the mandatory clearing requirement, meanwhile, are required to hold ‘appropriate and proportionate’²⁷² capital and ensure that they have put in place appropriate procedures and arrangements to ‘measure, monitor and mitigate operational and credit risk’.²⁷³

EMIR also establishes a uniform authorization requirement for CCPs.²⁷⁴ While these CCPs will continue to be registered and supervised at the national level, EMIR empowers ESMA to develop technical standards and to ensure the uniform and objective application of these standards across the E.U.²⁷⁵ To this end, it imposes organizational and conduct of business requirements on CCPs respecting, *inter alia*, initial capital²⁷⁶; governance²⁷⁷; ownership²⁷⁸; access²⁷⁹; transparency²⁸⁰; outsourcing²⁸¹; asset segregation²⁸²; position portability²⁸³, and interoperability.²⁸⁴ It

²⁷² EMIR, Art. 8(1). The European Commission is empowered under the Regulation to adopt technical regulation specifying the amount of capital necessary to comply with Art. 8(1); *ibid.*, Art. 8(2).

²⁷³ *Ibid.*

²⁷⁴ *Ibid.*, Art. 10. CCPs, derivatives exchanges and alternative execution facilities are already subject to E.U. regulation under MiFID. The E.U. has launched a consultation which is seeking to, *inter alia*, determine how MiFID should be updated to reflect emerging trends in this area; *see* E.U. Press Release IP/10/1677, “Financial Services: Improving European Rules for a More Robust Framework for All Financial Actors and Instruments” (December 8, 2010), available at <http://europa.eu>.

²⁷⁵ *See* Explanatory Memorandum accompanying EMIR at 9.

²⁷⁶ All CCPs are required to have permanent, available and separate capital of at least EUR 5 million; *ibid.*, Art. 12(1).

²⁷⁷ *Ibid.*, Arts. 24, 25, 26 and 31. These governance requirements contemplate, amongst many other matters: (1) clear separation between the reporting lines for risk management and other operations; (2) remuneration policies designed to support sound risk management; (3) frequent and independent audits, and (4) the establishment of an independent risk committee to advise the board of directors on any arrangements that may impact the risk management of the CCP. *See* [Chapter 4](#) for further details.

²⁷⁸ *Ibid.*, Art. 28.

²⁷⁹ *Ibid.*, Art. 35. Most importantly, CCPs must establish non-discriminatory, transparent and objective criteria for ensuring fair and open access to the CCP.

²⁸⁰ *Ibid.*, Art. 36. Notably, in certain prescribed circumstances, these requirements empower national regulatory authorities to refuse authorization and/or ‘take other appropriate measures’ in response to issues surrounding the identity, influence or holdings of a CCP’s owners.

²⁸¹ *Ibid.*, Art. 33.

²⁸² *Ibid.*, Art. 37.

²⁸³ *Ibid.*

also imposes prudential requirements respecting, *inter alia*, margin and collateral arrangements²⁸⁵; permitted investments²⁸⁶; default waterfalls²⁸⁷, funds and other procedures²⁸⁸, and risk modeling, stress testing and back testing.²⁸⁹ Many of these requirements will be examined in greater detail in Chapters 4, 5 and 6.

Lastly, EMIR requires all ‘trade repositories’²⁹⁰ (TRs) to register with ESMA.²⁹¹ It then subjects this new class of registrants to organizational and operational requirements respecting, *inter alia*, governance²⁹²; access²⁹³; information safeguarding²⁹⁴; transparency²⁹⁵, and data availability.²⁹⁶ Financial counterparties, along with non-financial counterparties whose derivatives positions exceed a prescribed information threshold, are required to report all OTC derivatives transactions to a registered TR.²⁹⁷ TRs are in turn required to make this information

²⁸⁴ Ibid., Arts. 48, 49 and 50.

²⁸⁵ Ibid., Arts. 39 and 43. *See Chapter 5* for further details.

²⁸⁶ Ibid., Art. 44. These requirements are designed to ensure that a CCP will only invest in highly liquid assets to which it enjoys prompt and non-discriminatory access.

²⁸⁷ Very briefly, a default waterfall establishes the order in which various sources (i.e. a defaulting party’s margin; its contribution to any guarantee fund; contributions from surviving clearing members, and/or the CCPs own capital) will be called upon to cover the costs incurred by a CCP stemming from the default of a clearing member.

²⁸⁸ Ibid., Arts. 40, 42 and 45. These requirements prescribe, *inter alia*, (1) that a CCP shall maintain a fund to cover losses arising from the default of a clearing member; (2) the order in which the financial resources of a CCP shall be deployed in the event of default, and (3) that a CCP shall have in place procedures to be followed in various default scenarios.

²⁸⁹ Ibid., Art. 46. Specifically, a CCP must regularly review its models and parameters and subject its models to rigorous and frequent stress tests to evaluate their resilience in extreme but plausible market conditions. It must also perform back-tests to evaluate the reliability of the methodology adopted. The results of these tests must be reported to the relevant national authority.

²⁹⁰ Ibid., Art. 1(2). Trade repositories are the E.U. equivalent of SDRs under the *Dodd-Frank Act*.

²⁹¹ Ibid., Art. 51.

²⁹² Ibid., Art. 64(1)-(4).

²⁹³ Ibid., Art. 64(5).

²⁹⁴ Ibid., Art. 66.

²⁹⁵ Ibid., Art. 67.

²⁹⁶ Ibid.

²⁹⁷ Ibid., Arts. 6 and 7(1).

available to both ESMA and the relevant national authorities and to publicly disclose aggregate derivatives positions broken down by class.²⁹⁸

IV. The \$700 Trillion Dollar Question

The *Dodd-Frank Act* and EMIR together represent a wholesale shift in terms of the regulation of OTC derivatives markets. *But how far do these reforms go in responding to the risks and regulatory challenges stemming from complexity and financial innovation?* On one level, these reforms can be viewed as holding out real promise. In particular, the aggregation of trading data within CCPs and SDRs/TRs, combined with robust regulatory reporting and post-trade disclosure requirements, will undoubtedly enhance market transparency – leveling the informational playing field for both market participants and financial regulators. The utilization of CCPs also holds the potential to simplify the intricate latticework of interconnections between financial institutions.²⁹⁹ Broadly speaking, this new infrastructure should promote more informed contracting; help ameliorate agency cost problems, and enable regulators to more effectively police OTC derivatives markets.

On at least three other levels, however, the picture is far less rosy. First, both the *Dodd-Frank Act* and EMIR devolve significant frontline responsibility for systemic risk regulation to a small and (in some respects) unproven group of private actors: CCPs. While both regimes contemplate the imposition of governance requirements with the objective of mitigating the resulting agency cost problems, very serious questions remain about how effective these requirements are likely to be

²⁹⁸ Ibid., Art. 67.

²⁹⁹ Prasanna Gai, Andrew Haldane and Sujit Kapadia, “Complexity, Concentration and Contagion” (2011), 58:5 J. of Monetary Econ. [forthcoming] at 22-23, available at www.bankofengland.co.uk. Simultaneously, however, the prospect of interoperability and the fact that counterparties often utilize multiple CCPs arguably cut against this simplicity – as do the exemptions from the central clearing requirement contemplated by the *Dodd-Frank Act* and EMIR.

– especially in terms of ensuring that CCPs fully internalize the potentially enormous social costs which would be unleashed in the event of their failure (or bailout).³⁰⁰ These questions are animated by two principal observations. First, ownership and control of CCPs is at present largely concentrated in the hands of OTC derivatives dealers.³⁰¹ Second, public regulators charged with the task of supervising CCPs are likely to find themselves at a distinct disadvantage vis-à-vis their supervisees in terms of how to effectively manage the complex mix of counterparty credit, market, liquidity and other risks to which these unique institutions will invariably be exposed. Put simply, it is not clear whether these regulators possess the tolerance for complexity needed to effectively monitor these systemically important institutions. Chapter 4 begins our exploration of how to bridge the public-private divide created by these acute informational and incentive problems.

The *Dodd-Frank Act* and EMIR also appear to underestimate – if not disregard – the regulatory challenges flowing from the nature and pace of financial innovation. Indeed, these nascent regimes may actually *incentivize* socially suboptimal over-innovation. More specifically, it is likely the case that many newer, less liquid and more bespoke instruments will be deemed unsuitable for central clearing.³⁰² This in turn raises the prospect of superfluous innovation motivated by the desire to capture arbitrage gains manifest in the differences between the regulatory regimes governing centrally and bilaterally cleared instruments.³⁰³

³⁰⁰ Or, indeed, the failure of a systemically important clearing member.

³⁰¹ For a current list of clearing members and the board of directors of LCH.Clearnet, for example, see www.lchclearnet.com/membership/ and www.lchclearnet.com/about_us/corporate_governance/board_of_directors.asp.

³⁰² Essentially because the ‘markets’ for these instruments will be too small and illiquid to enable CCPs to (cost) effectively hedge their exposures.

³⁰³ This will ultimately hinge, of course, on the extent to which the expected gains (especially in terms of underwriting spreads and informational advantages) exceed the anticipated costs (stemming from,

Ultimately, how regulators discourage such innovation is part and parcel of a broader question about how to design regulation capable of responding to the dynamism and reflexivity of modern financial markets. In both regards, the *Dodd-Frank Act* and EMIR generate more questions than answers. Chapter 5 examines these questions in greater detail.

Finally, despite initial appearances, there remains considerable scope for substantive divergence between the new U.S. and E.U. regimes governing OTC derivatives markets. Compounding matters, not all jurisdictions have been equally enthusiastic about the prospect of comprehensive regulatory reform.³⁰⁴ These realities raise uncomfortable questions respecting (1) the global interconnectedness of financial markets and institutions; (2) the omnipresent threat, and potentially corrosive effects, of regulatory arbitrage, and (3) whether national (and even supranational) regulatory regimes can effectively respond to what are, ultimately, global problems. Chapter 6 tackles these questions and, in the process, illuminates the imperative of a globally coordinated response to the risks posed by OTC derivatives.

inter alia, the higher margin and capital requirements imposed on bilaterally cleared instruments). See Chapter 5 for a more in-depth discussion.

³⁰⁴ See FSB, “OTC Derivatives Market Reforms: Progress Report on Implementation” (October 11, 2011), available at www.financialstabilityboard.org, noting that several members had not taken concrete steps to design or implement the contemplated reforms.

CHAPTER 4

The Optimal *Source* of Financial Regulation

The objective of this chapter is to examine the strengths and weaknesses of a range of potential modes of economic organization – and, more specifically, the *sources* of regulation upon which they (often implicitly) rely – in light of the challenges posed by the complexity of modern financial markets and the nature and pace of financial innovation. As we shall see, the two questions at the heart of this inquiry mirror those underpinning our broader exploration of complexity and financial innovation. First, *who is best positioned – especially in terms of their endowments of information and technical expertise – to identify, monitor and effectively respond to the myriad of risks posed within modern financial markets?*¹ Or, couched in the terms of our broader exploration: *who has the highest tolerance for complexity?* Second, *what incentives are various actors likely to possess to utilize this information and expertise toward the realization of socially desirable ends?* Predictably, the answers to these questions – which are themselves contestable – do not unequivocally point to the desirability of any particular source of financial regulation. What they arguably do serve to highlight, however, are the prospective benefits of hybrid modes of ordering which seek to combine the relative strengths of markets, private market participants and public regulators.

This chapter proceeds as follows. Part I briefly outlines the circumstances in which conventional financial theory predicts that markets will generate socially

¹ Friedrich Hayek, *Individualism and Economic Order* (first published 1948; University of Chicago Press, Chicago, 1980). As Hayek explains: ‘the problem of what is the best way of utilizing knowledge initially dispersed among all the people is at least one of the main problems of economic policy – or of designing an efficient economic system.’ Continuing: ‘Which of these systems [central planning or market competition] is likely to be more efficient depends mainly on the question under which of them we can expect that fuller use will be made of the existing knowledge.’; *ibid.* at 78-79.

desirable outcomes. More importantly, however, it canvasses potential market failures – many of which we have already encountered in Chapter 2. Part II then explores the potential strengths and weaknesses of systems of private ordering in the context of complex, innovative and rapidly evolving global financial markets. This exploration is grounded in an examination of the important role played by ISDA and other private actors in fostering the development of OTC derivatives markets. Part III consists of a parallel exploration of systems of public ordering. Part IV brings these two threads together and proposes what will ultimately represent the first steps in a tentative way forward for the regulation of OTC derivatives markets. This synthesis is premised on abandoning the largely artificial distinction between public and private ordering; aligning the incentives of both public and private actors with broader social welfare, and facilitating the transfer of information and expertise between market participants and the public regulators which oversee them. Part V concludes.

I. Markets as a Source of Financial Regulation

It is in some respects counter-intuitive to think of markets themselves as a source of financial regulation.² Indeed, mainstream legal thought has long reflected the view that regulation emanates exclusively from the power of the state to generate and enforce ‘the law’.³ More recently, however, a body of pluralist legal scholarship has

² At least from a legal perspective. As reflected in the Coasian paradigm, economic scholars have long recognized the potential for ‘non-legal’ constraints to direct and discipline human decision-making through the imposition (or removal) of costs.

³ See for example, H.L.A. Hart, *The Concept of Law* (Clarendon Press, Oxford, 1961) at 89-96 and Hans Kelsen, *Introduction to the Problems of Legal Theory: A Translation of the First Edition of the Reine Rechtslehre or Pure Theory of Law*, translated by Bonnie Litschewski Paulson and Stanley Paulson (Clarendon Press, Oxford, 1997). This legal-centric view tends to conceptualize regulation as boiling down to a state-articulated obligation, backed by a state-sanctioned threat. As Julia Black explains: ‘The core understanding many have of “regulation” is some form of “command and control” regulation: regulation by the state through the use of legal rules backed by (often criminal) sanctions.’; Julia Black, “Critical Reflections on Regulation”, The London School of Economics and Political Science Centre for Analysis of Risk and Regulation Discussion Paper No. 4 (January 2002) at 2, available at <http://www2.lse.ac.uk/researchAndExpertise/units/CARR/publications/discussionPapers.aspx>.

emerged which adopts a more expansive conception of regulation as encompassing all forms of social control or influence.⁴ Pursuant to this more, expansive (or ‘decentred’⁵) conception, potential sources of regulation include not only public actors, but also institutions such as markets; social norms and customs, and private contractual mechanisms. It also includes what Lawrence Lessig has characterized as ‘architecture’⁶ or, more simply, ‘the world as we find it’.⁷ Ultimately, this more expansive conception of regulation flows from the acknowledgement that instrumental public policy objectives are embedded within the design of (and normative discourses surrounding) these ‘non-legal’ institutions.⁸

So how do markets regulate economic activity? Framed in this light, the answer becomes somewhat more obvious: the price mechanism.⁹ It is the price mechanism, after all, which captures and conveys valuable information to market participants respecting the prevailing supply and demand dynamics for a given asset (and available substitutes). This information in turn influences how these market participants allocate scarce resources and – through their collective decisions – the direction of the broader economy. This is the essence of Friedrich Hayek’s ‘spontaneous ordering’. As we saw in [Chapter 2](#), where markets are complete and perfectly competitive, the frictionless operation of the price mechanism can be

⁴ For a brief (yet exceedingly helpful) survey of the various conceptions of regulation, see Robert Baldwin and Martin Cave, *Understanding Regulation: Theory, Strategy and Practice* (Oxford University Press, Oxford, 1999) at 1-2.

⁵ Black (n 3) at 2.

⁶ Lawrence Lessig, “Social Norms, Social Meaning, and the Economic Analysis of Law” (1998), 27 J. Legal. Stud. 661 at 662-663. Credit for advancing this more expansive conception of regulation is often attributed to the groundbreaking work of Robert Ellickson examining the ‘non-legal’ dispute resolution mechanisms employed by ranchers and farmers in Shasta County, California; see Robert Ellickson, *Order Without Law: How Neighbors Settle Disputes* (Harvard University Press, Cambridge, 1991). Ellickson’s work, along with the work of his contemporaries, is canvassed briefly in [Part II](#).

⁷ Ibid.

⁸ Hugh Collins, *Regulating Contracts* (Oxford University Press, Oxford, 1999) at 56-62.

⁹ Hayek (n 1) at 85-86.

expected to yield a Pareto-efficient equilibrium.¹⁰ Viewed from this perspective, commencing our inquiry into the optimal source of financial regulation with an examination of markets thus makes perfect sense, as this socially desirable outcome would effectively obviate any need for coordinated regulatory intervention on the part of either private or public actors.¹¹

The key insight, of course, is that complete and perfectly competitive markets are the creatures of textbooks. The real world, in contrast, is replete with examples of (often spectacular) market failures: from monopolies and cartels; to overinvestment and public goods, to negative externalities. Moreover, many of these market failures can be observed within OTC derivatives markets. As described in Chapter 2, these market failures include, *inter alia*, pervasive and entrenched asymmetries of information between dealers and their end-user clients; the dual prospects of overinvestment and excess leverage, and a myriad of potential systemic risks. It is only prudent, therefore, to examine other prospective sources of financial regulation.

II. Private Ordering as a Source of Financial Regulation

The existence of pervasive and acute market failures will not necessarily provide sufficient justification for public regulatory intervention. This observation follows from the acknowledgement that, in certain circumstances, private market participants may be able to generate more socially desirable modes of regulation.¹² Indeed, there

¹⁰ See Kenneth Arrow and Gerard Debreu, “Existence of an Equilibrium for a Competitive Economy” (1954), 22 *Econometrica* 265. Notably, the Arrow-Debreu general equilibrium model also assumes that each market participant is capable of perfectly forecasting all future prices; see John Geanakoplos, “Arrow-Debreu Model of General Equilibrium” in Steven Durlauf and Lawrence Blume, (eds.), *The New Palgrave Dictionary of Economics*, 2ed. (Palgrave Macmillan, New York, 2008), available at www.dictionaryofeconomics.com.

¹¹ Although, technically speaking, general equilibrium theory contemplates that multiple Pareto-efficient equilibriums may exist in some circumstances; Geanakoplos (n 10).

¹² See Ronald Coase, “The Lighthouse in Economics” (1974), 17 *J. of Law & Econ.* 357. See also Robert Sugden, “Spontaneous Order” (1989), 3:4 *J. of Econ. Perspectives* 85.

exists a significant body of scholarship dedicated to exploring the circumstances in which systems of private ordering may prove desirable.¹³ The bulk of this scholarship centres around small, close-knit groups – ranchers¹⁴, diamond merchants¹⁵ and cotton producers/mills¹⁶, for example – engaged in long-term, iterative relationships. It then examines how these groups have harnessed the incentives of their members to generate and adhere to systems of private ordering – ranging from unwritten norms and customs to highly formalized codes and contractual mechanisms – for the purposes of, *inter alia*, protecting and enforcing property rights; facilitating contractual formation; reducing transaction costs, and/or overcoming coordination, free rider and trust problems.¹⁷

The strengths of these systems of private ordering are, in many respects, those of free markets. More specifically, proponents assert that within a competitive environment systems of private ordering will result in product differentiation – with the supply of available regulation reflecting the range of demand. Pursuant to this view, those systems of private ordering which survive will be those which best satisfy

¹³ Or, at the very least, superior to systems of public ordering.

¹⁴ See Ellickson (n 6).

¹⁵ See Lisa Bernstein, “Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry” (1992), 21 J. Legal Stud. 115.

¹⁶ See Lisa Bernstein, “Private Commercial Law in the Cotton Industry: Creating Cooperation through Rules, Norms and Institutions”, John. M. Olin Law & Economics Working Paper No. 133 (2001).

¹⁷ See Bruce Benson, “The Spontaneous Evolution of Commercial Law” (1989), 55 Southern Econ. J. 644; Avner Greif, “Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders” (1989), 49:4 J. of Econ. History 857; Avner Greif, Paul Milgrom and Barry Weingast, “Co-ordination, Commitment and Enforcement: The Case of the Merchant Guild” (1994), 102 J. of Pol. Econ. 745; Paul Milgrom, Douglas North and Barry Weingast, “The Role of Institutions in the Revival of Trade: The Medieval Law Merchant, Private Judges and the Champagne Fairs” (1990), 2 Econ. & Pol. 1; Paul Mahoney, “The Exchange As Regulator” (1997), 83 Virginia L. Rev. 1543; Jonathan Macey and Maureen O’Hara, “Regulating Exchanges and Alternative Trading Systems: A Law and Economics Perspective” (1999), 28 J. Legal Stud. 17; David Snyder, “Private Lawmaking” (2003), 64 Ohio St. L. J. 371; Alan Schwartz and Robert Scott, “The Political Economy of Private Legislatures” (1995), 143 U. Penn. L. Rev. 595; Marcel Kahan and Michael Klausner, “Standardization and Innovation in Corporate Contracting (or ‘The Economics of Boilerplate’)", 83 Virginia L. Rev. 713; Ellickson (n 6); Bernstein (n 15), and Bernstein (n 16).

the demands of (prospective) members. This, in turn, can be expected to generate more efficient modes of regulation.¹⁸ Along the same vein, the market-based nature of private ordering is thought by many to render such systems more innovative, flexible and responsive to changing information and circumstances.¹⁹ These potential strengths derive from the powerful economic incentives private actors possess to invest in the acquisition of information and expertise.²⁰ Where systems of private ordering can leverage these incentives²¹, the regulation thereby generated may be viewed as potentially more reflective of the complexity of modern financial markets and, accordingly, possessing a measure of ‘practical authority’.²² Finally, systems of private ordering are, by their very nature, capable of generating regulatory regimes which transcend jurisdictional boundaries.²³ Each of these prospective strengths is amply illustrated by the role played by private actors in fostering the development of OTC derivatives markets.

It would be difficult to chronicle the emergence, growth and institutional development of OTC derivatives markets without acknowledging the crucial role played by private actors such as ISDA. Established in 1985, ISDA is the *de facto*

¹⁸ Gillian Hadfield and Eric Talley, “On Public versus Private Provision of Corporate Law” (2006), 22:4 J. of Law, Econ. & Org. 414; Snyder (n 17) at 437, and Mahoney (n 17).

¹⁹ Cally Jordan and Pamela Hughes, “Which Way for Market Institutions: The Fundamental Question of Self-Regulation” (2007), 4 Berkeley Bus. L. J. 205; Baldwin and Cave (n 4) at 65; Snyder (n 17) at 422-424, and Benson (n 17) at 650. For a counter-argument grounded in the view that the problem of information lag also afflicts systems of private ordering, see Eric Posner, “Law, Economics and Inefficient Norms” (1996), 14. U. Penn. L. Rev. 1697.

²⁰ Ultimately, of course, with a view to profiting from this investment.

²¹ Barak Richman, “Firms, Courts, and Reputation Mechanisms: Towards a Positive Theory of Private Ordering” (2004), 104 Columbia L. Rev. 2328 at 2341.

²² Snyder (n 21) at 419-420.

²³ See Joanne Braithwaite, “Standard Form Contracts as Transnational Law: Evidence from the Derivatives Markets” (2012), 75:4 Modern L. Rev. [forthcoming]; “Steven Schwarcz, “Private Ordering” (2002), 97 Northwestern U. L. Rev. 319 at 325; Julia Black and David Rouch, “The Development of the Global Markets As Rule-makers: Engagement and Legitimacy” (2008), 2 Law and Fin. Markets Rev. 218 at 218 and 224, and Jordan and Hughes (n 19) at 220.

trade association of the global OTC derivatives industry, representing approximately 800 member dealers; institutional investors; governments, and other major end-users.²⁴ ISDA's mandate includes encouraging the prudent and efficient development of OTC derivatives markets through the promotion of, *inter alia*, practices conducive to the efficient conduct of business; sound risk management practices, and high standards of commercial conduct.²⁵ Ultimately, ISDA's contribution to the development of OTC derivatives markets can be observed across at least three dimensions.

First, ISDA has spearheaded a number of initiatives aimed at addressing industry-wide legal, operational and policy issues. For example, ISDA has produced a Model Netting Act and supplemental guidance for legislators with a view to assisting them in enacting legislation designed to ensure the enforceability of close-out netting and related financial collateral arrangements upon the occurrence of a termination event or event of default (e.g. the commencement of insolvency proceedings in respect of a counterparty).²⁶ As of July 26, 2011, netting legislation based on this guidance has been adopted in at least 40 jurisdictions.²⁷ ISDA has also been one of the catalysts behind the adoption of Financial Products Mark-up Language (FpML) as the standard for electronic dealing and processing of OTC

²⁴ See "About ISDA", available at: www2.isda.org/about-ISDA/.

²⁵ Ibid.

²⁶ See "2006 ISDA Model Netting Act – Version 2" and "Memorandum on the Implementation of the Model Netting Act", both available at www2.isda.org/functional-areas/legal-and-documentation/opinions/. In effect, both the Model Netting Act and related guidance are directed at ensuring special treatment for OTC derivatives under applicable bankruptcy laws (e.g. carving them out from the application of any automatic stay upon bankruptcy).

²⁷ Including the U.S., U.K., E.U., Germany, France, Spain, Italy, Switzerland, Russia, Japan and Canada; see "Netting Legislation – Status", available at www2.isda.org/functional-areas/legal-and-documentation/opinions/. ISDA has also commissioned legal opinions in many jurisdictions with the intention of providing market participants with enhanced transactional certainty; Sean Flanagan, "The Rise of a Trade Association: Group Interactions Within the International Swaps and Derivatives Association" (2001), 6 Harvard Negotiation L. Rev. 211 at 233 and "Opinions", available at www2.isda.org/functional-areas/legal-and-documentation/opinions/.

derivatives transactions.²⁸ More broadly, ISDA has played an active role in influencing public policy and financial law reform – including, importantly, the design and implementation of both the *Dodd-Frank Act* and EMIR.²⁹ In taking the lead on these (and other) initiatives, ISDA has leveraged the considerable technical expertise of its members and successfully overcome coordination and incentive (i.e. public good) problems. In so doing, it has helped reduce counterparty credit, settlement and legal risks: thereby stimulating the growth of OTC derivatives markets.

Second, and perhaps most prominently, ISDA has been the driving force behind the development of standardized legal documentation for use in connection with OTC derivatives transactions. Prior to the intervention of ISDA³⁰, the majority of transactions were likely documented in *ad hoc* agreements.³¹ The absence of standardized legal documentation – indeed, of a standardized *language* – represented a significant barrier to the growth of OTC derivatives markets.³² Stepping into this breach, ISDA commenced publication of its Code of Standard Wording, Assumptions and Provisions for Swaps in 1985.³³ The ISDA Swaps Code was, in effect, a glossary of standard terms reflecting then existing practice within the U.S. interest rate swap market.³⁴

²⁸ Andrew Parry, “ISDA/FpML for Financial Institutions” (2007), 22 J. of Int’l Banking L. and Reg. 495.

²⁹ See for example, “ISDA Focus: Implementing Dodd-Frank”, available at www2.isda.org/dodd-frank/. See more broadly, www2.isda.org/functional-areas/public-policy/.

³⁰ Along with organizations such as the British Bankers Association.

³¹ Norman Feder, “Deconstructing Over-the-Counter Derivatives” (2002), Columbia Bus. L. Rev. 677 at 736.

³² *Ibid.*

³³ See www.isda.org/publications/isdamasteragrmt.aspx [the “Swaps Code”].

³⁴ Feder (n 31) at 737.

What has arguably become ISDA's defining moment, however, came in 1987 with its publication of the first standardized 'master' agreements for USD and multi-currency interest rate swaps and currency swaps. The value of a master agreement resides primarily in its capacity to incorporate multiple future transactions between two counterparties under the umbrella of a single legal relationship, contemplating only the preparation of a brief trade confirmation in respect of individual transactions. A master agreement thus reduces the transaction costs which would otherwise be incurred in connection with the negotiation and preparation of transaction documentation in respect of individual transactions. Over time, the scope of these ISDA master agreements has been expanded to facilitate a broad range of transactions, including OTC equity, commodity and credit derivatives.³⁵

ISDA has developed standardized ancillary documentation – definitions, schedules, credit support agreements and trade confirmations – for use in connection with ISDA master agreements.³⁶ It has also developed a series of protocols which facilitate the *ex post* amendment of existing master agreements with a view to, *inter alia*, standardizing market practice and/or rectifying perceived deficiencies.³⁷ On April 8, 2009, for example, ISDA launched the so-called 'Big Bang' Protocol with the objective of standardizing (or 'hardwiring') certain dispute resolution and transaction settlement mechanisms employed in connection with many credit derivatives.³⁸

³⁵ More recently, ISDA has also produced the ISDA/IIFM Tahawwut Master Agreement for use in connection with Islamic derivatives; *see* www2.isda.org/publications/isdamasteragmnt.aspx.

³⁶ *See* for example www2.isda.org/functional-areas/legal-and-documentation/recent-documents.

³⁷ *See* www2.isda.org/functional-areas/legal-and-documentation/protocols/.

³⁸ Amongst other matters, the Big Bang Protocol established (1) credit derivatives Determination Committees and incorporated the resolutions of these committees into the ISDA definitions used in connection with the relevant documentation; (2) a new 'auction settlement' mechanism to determine settlement prices following the occurrence of a credit event, and (3) credit event and succession event backstop dates; *see* www.isda.org/bigbangprot/bbprot_faq.html. The Big Bang Protocol was followed in July 2009 by the 'Small Bang' Protocol, which extended the application of the former to certain restructuring credit events; *see* www.isda.org/smallbang/. For a very good summary of the key

All ISDA master agreements, ancillary documentation and protocols are reviewed periodically and amended as necessary by ISDA technical committees to reflect legal and market developments, as well as new financing techniques and other technological advancements.³⁹ These technical committees are staffed by representatives drawn from ISDA's membership, with assistance from external technical (e.g. legal) advisors. Reflecting this expertise, ISDA documentation is widely regarded as the gold standard within many OTC derivatives markets – in particular bilateral swap markets.⁴⁰ ISDA's on-going efforts to generate and update standardized legal documentation have lowered transaction costs for market participants – thereby facilitating more efficient contracting (at least in the narrow sense of making it less costly⁴¹) and, thus, further stimulating the growth of OTC derivatives markets.

Finally, in the wake of the GFC, ISDA has established a new mechanism designed to facilitate the private adjudication of certain technical issues arising in connection with ISDA credit derivatives (e.g. CDS) documentation.⁴² This mechanism enables counterparties⁴³ to eligible transactions to request that a Determinations Committee (or DC) be constituted for the purpose of making a

elements of both the Big Bang and Small Bang Protocols, *see* European Commission, “Ensuring Efficient, Safe and Sound Derivatives Markets”, Commission Staff Working Paper accompanying the Commission Communication (July 3, 2009) [the “EC Working Paper”], s. 3.1.4.1.

³⁹ Flanagan (n 27) at 229.

⁴⁰ *Ibid.* at 228. Notably, the influence of ISDA was considerably more muted within many of the structured finance markets residing at the epicenter of the GFC.

⁴¹ Including the likely reduction in costs attributable to positive network externalities.

⁴² In addition to CDS, this mechanism applies to certain credit-linked notes and synthetic CDOs, for example; *see* Allen & Overy, “ISDA Auction Hardwiring” (March 19, 2009), available at www.allenoverly.com.

⁴³ Including, where applicable, a CCP.

determination in connection with a range of potential issues.⁴⁴ These issues include, *inter alia*: (1) whether a ‘credit’ or ‘succession’ event as defined in the relevant documentation has occurred; (2) whether to hold an auction to determine a settlement price for a transaction following the occurrence of a credit event, and (3) the identity of the obligations to be valued in connection with any such auction.⁴⁵ Where a specified majority of voting members are in agreement on an issue⁴⁶, a DC’s determination will be binding in respect of all transactions of the relevant type (with the exception of those where the counterparties have mutually agreed to disapply the DC’s decision⁴⁷).⁴⁸

DCs are comprised of 15 voting members: eight global derivatives dealers; two regional dealers, and five non-dealers.⁴⁹ Dealer members are selected on the basis of their trading volume in OTC credit derivatives.⁵⁰ Non-dealer members, meanwhile, are selected at random from a pool of financial institutions meeting prescribed asset and derivatives exposure thresholds.⁵¹ ISDA acts as a non-voting secretary on each DC with a view to coordinating the process ‘in a transparent and

⁴⁴ See Credit Derivatives Determinations Committees Rules (July 11, 2011), s. 2.1(a), available at www.isda.org/credit/ [the “DC Rules”].

⁴⁵ DC Rules, Art. 3. See also Allen & Overy (n 42).

⁴⁶ Either a simple majority or an 80% supermajority, depending on the issue. Where the 80% threshold is not reached (and in certain other circumstances), the DC Rules contemplate a further review process; see DC Rules, s. 4.6.

⁴⁷ Typically by electing not to incorporate into the transaction documentation (1) the 2009 ISDA Credit Derivative Determinations Committees and Auction Settlement Supplement to the 2003 ISDA Credit Derivatives Definitions or (2) the Big/Small Bang Protocols; see Allen & Overy (n 42).

⁴⁸ Notably, a DC is conferred with considerable scope to refuse to make a determination in respect of any issue referred to it; DC Rules, s. 2.2(a).

⁴⁹ DC Rules, s. 1.6. The five ‘regions’ for the purposes of these DC composition rules are the Americas; Europe, the Middle East and Africa; Japan; Australia and New Zealand, and Asia (ex Japan). These rules also contemplate the involvement of non-voting consultative dealer and non-dealer members; see Allen & Overy (n 42).

⁵⁰ *Ibid.*

⁵¹ *Ibid.*

operationally efficient manner.⁵² DC Rules contemplate the determination of most issues within a matter of a days, although a significant number of determinations – those involving General Motors, Fortis, Bradford & Bingley, Northwest Airlines and Mitsubishi UFJ, for example – have taken several weeks and even months.⁵³ Like other ISDA initiatives, the DC mechanism is designed to leverage the accumulated technical expertise of its members. It is also designed to respond to market developments on a more or less ‘real time’ basis. In the process, and despite some potentially well founded criticisms⁵⁴, the DC mechanism has brought additional standardization and predictability to what was often a chaotic process for settling many credit derivatives transactions upon the occurrence of a credit or succession event.⁵⁵

While ISDA was certainly one of the first private actors to emerge with a view to supporting the development of OTC derivatives markets – and arguably remains the most highly visible and influential – it has hardly been alone in its efforts. As described in Chapter 3, *ad hoc* groups of market participants such as the G14 have converged on a number of occasions with the objective of addressing perceived deficiencies in operational processes and risk management.⁵⁶ Moreover, as various

⁵² See www.isda.org/credit/.

⁵³ Ibid. As of September 30, 2011, the longest period elapsed between a submitted request and a determination in respect of a single event – almost 17 months – involved the question of whether CIT Group Inc. had experienced a bankruptcy credit event; see Issue No. 2009110201, available at www.isda.org/credit/.

⁵⁴ See for example, Christopher Whittall, “ISDA Determinations Committee under scrutiny”, *International Financing Review* (August 5, 2011), available at www.ifre.com. These criticisms relate primarily to the transparency of the DC process, along with the perception that (at least initially) DCs will not have developed robust guidelines for determining, for example, whether a credit or succession event has occurred.

⁵⁵ As perhaps best exemplified by the frenetic settlement processes observed in connection with Delphi’s bankruptcy and the General Motors (GM) credit rating downgrade, both in 2005.

⁵⁶ See Chapter 3 at 122-123. Indeed, market participants (including ISDA) eventually intervened to impose a more orderly settlement process in connection with both the Delphi bankruptcy and GM downgrade; *ibid.*

market segments have matured, a number of private actors have emerged to provide vital infrastructure such as trade execution; confirmation; clearing and settlement, and data repository services. Table 4.1 lists some of the most significant infrastructure providers by type of service and market segment.

Table 4.1: Significant OTC Derivatives Infrastructure Providers (by Service and Market Segment)			
	Trade Execution	Trade Confirmation	Clearing/Settlement
Interest Rate	ICAP Tullett Prebon TradeWeb BBG	Market Wire Trade Express	LCH.Clearnet/ SwapClear
Foreign Exchange	EBS TFS-ICAP Reuters FXAII	Swift CLS	CLS
Credit	Creditex ICAP MAX	DTCC Deriv/SERV Markit Wire T-Zero	ICE
Commodity	EBS LME Select Trayport Bloomberg	ICE Swift e-confirm	ICE Clear Europe CME Clearport
Equity	ICAP TFS Tullett Prebon	Markit Wire	BClear

Source: EC (2009).

Like ISDA, these private infrastructure providers have made a significant contribution to the efficiency of OTC derivatives markets and, in the process, have arguably helped reduce operational, counterparty credit, and settlement risks.⁵⁷ Indeed, they have even been acknowledged as having made an important contribution to the stability of many OTC derivatives markets during the darkest days of the GFC. LCH.Clearnet/SwapClear, for example, was praised by the European Commission

⁵⁷ For a more thorough description of the nature and scope of the services provided by these private actors, see EC Working Paper (n 38) at 19-40.

and others for successfully unwinding the USD\$9 trillion⁵⁸ in open interest rate swap positions held by Lehman Bros. at the time of its bankruptcy.⁵⁹ Today, these private actors collectively make up the institutional backbone of many OTC derivatives markets. In this respect, they can be seen as having filled a significant portion of the void left by the historical absence of public regulatory intervention. The important role these institutions play – and how they fit within the new regulatory regimes under both the *Dodd-Frank Act* and EMIR – will be examined in greater detail in [Chapter 5](#).

Ultimately, the success of ISDA and other private actors in fostering the institutional development of OTC derivatives markets raises an important question: *to what extent can and should the expertise and incentives of these actors be employed in pursuit of the most socially desirable mode of regulating OTC derivatives markets?* Before addressing this question, however, we must first ask ourselves: *what are the potential drawbacks?* As examined below, these drawbacks stem from (1) agency cost problems; (2) weak enforcement; (3) potential bureaucratic failure, and (4) a perceived legitimacy deficit.

Agency Cost Problems. While illuminating, the scholarship examining the potential optimality of systems of private ordering must be approached with caution for several reasons. Most importantly, while private ordering may in certain circumstances maximize the private welfare of group members, this objective must be distinguished from that of maximizing broader social welfare. Indeed, the welfare of group members can be expected to diverge from broader social welfare under a variety of conditions, ultimately resulting in market failure and the generation of

⁵⁸ As measured by total notional amount outstanding.

⁵⁹ EC Working Paper (n 38), ss. 2.4.2.1 and 4.2.

socially suboptimal outcomes.⁶⁰ Where these conditions persist, some form of public ordering may be necessary in order to move us toward a more socially desirable equilibrium.

At the root of these agency cost problems are the often intense conflicts of interest vis-à-vis group members (as agents) and non-members (as principals) which pervade systems of private ordering. As a trade association ISDA's primary constituency is its membership of OTC derivatives dealers and other major market participants – not society writ large.⁶¹ Along the same vein, while CCPs may serve to increase market transparency and ameliorate potential systemic risks, they are also subject to the (potentially countervailing) pressures of providing competitive services to their customers and, ultimately, generating a return for their investors.⁶² Moreover, even where a broader societal mandate has been bestowed on these private actors – as CCPs have been under the *Dodd-Frank Act* and EMIR – both regulatory capture and public choice theory predict that powerful vested interests within the financial services industry will exert their influence with a view to ensuring that these actors

⁶⁰ Robert Cooter and Thomas Ulen, *Law and Economics*, 3ed. (Addison Wesley Longman, Reading, 2000) at 41-43; Stephen Pirrong, "The Efficient Scope of Private Transactions-Cost Reducing Institutions: The Successes and Failures of Commodity Exchanges" (1995), 24 J. Legal Stud. 229; Daniel Fischel and Sanford Grossman, "Customer Protection in Futures and Securities Markets" (1984), 4 J. of Futures Markets 273 at 280 and 284-285; Baldwin and Cave (n 4) at 9-16; Ellickson (n 6) at 283-284; Posner (n 19) at 1698; Kahan and Klausner (n 17) at 730; Macey and O'Hara (n 17) at 26-27, and Schwarcz (n 23) at 330-331. What is more, while private ordering may in certain circumstances *enhance* the welfare of group members (i.e. generate a Pareto *improvement*), this outcome must be distinguished from the welfare *maximizing* (i.e. Pareto-*efficient*) outcome; see Posner (n 19). In addition, while private ordering may evolve to become more efficient over time, factors such as imperfect information, bounded rationality, transaction costs and path dependence may steer groups off the welfare-maximizing course; see Jody Kraus, "Legal Design and the Evolution of Commercial Norms" (1997), 26 J. Legal. Stud. 377 and Randal Picker, "Simple Games in a Complex World: A Generative Approach to the Adoption of Norms" (1997), 64 U. Chicago L. Rev. 1225. The findings of both Kraus and Picker also underscore the importance of adopting a dynamic perspective respecting the generation, evolution and replacement of regulation.

⁶¹ As a matter of fact, ISDA's original name was the 'International Swaps *Dealers* Association'.

⁶² See Sean Griffith, "Incentive Problems in Derivatives Trading: Towards a New Corporate Governance Structure for Clearinghouses" (June 1, 2010) [working paper on file with author]. The agency cost problems embedded with the CCP business model are examined in greater detail in [Chapter 5](#).

generate, monitor and enforce regulation in ways which advance their narrow self-interest.⁶³ Indeed, given the dealer-dominated genesis of organizations such as ISDA and various infrastructure providers, these private actors are vulnerable to the criticism that they were, in effect, born into captivity.⁶⁴

We are thus presented with something of a conundrum. There is little doubt that private actors possess the information and technical expertise needed to design and implement effective financial regulation.⁶⁵ What is more, they possess the incentives to generate, monitor, enforce and, ultimately, comply with socially desirable regulation where to do so manifests expected private benefits in excess of the attendant private costs. The rub, however, is that these incentives are likely to evaporate where the full social costs of market failure are incorporated into this calculus.⁶⁶ Compounding matters, regulatory competition within systems of private ordering will invariably generate opportunities for welfare-reducing regulatory arbitrage.⁶⁷ Viewed from this vantage point, it is hardly surprising that the private actors which collectively comprise the institutional backbone of OTC derivatives markets failed to allocate sufficient resources toward, *inter alia*, ameliorating asymmetries of information or understanding and mitigating potential systemic risks during the heady days leading up to the GFC.

⁶³ Jonathan Macey, “Public and Private Ordering and the Production of Legitimate and Illegitimate Legal Rules” (1997), 82 Cornell L. Rev. 1123 at 1124; Robert McCormick and Robert Tollison, *Politicians, Legislation and the Economy: An Inquiry into the Interest-Group Theory of Government* (Martin Nijhoff Publishing, London, 1981), and Robert Tollison, “Public Choice and Legislation” (1988), 74 Virginia L. Rev. 339; Posner (n 19) at 1718; Snyder (n 17) at 435-436, and Mahoney (n 17) at 1463.

⁶⁴ Snyder (n 17) at 436.

⁶⁵ Even if they still face the problem of welfare indeterminacy.

⁶⁶ Ian Ayres and John Braithwaite, *Responsive Regulation: Transcending the Deregulation Debate* (Oxford University Press, Oxford, 1992) at 106.

⁶⁷ A phenomenon of particular concern where the widespread use of OTC derivatives generates negative externalities.

Weak enforcement. Second, systems of private ordering are frequently criticized for their inability to effectively enforce the regulation they generate. This problem will be particularly acute where there exists meaningful competition within the regulatory space (or where membership is otherwise voluntary). In such an environment, one would expect private actors to be sensitive to a potential flight of members in response to overly burdensome regulation or enforcement. In order to avoid a potential exodus, systems of private ordering thus typically restrict their arsenal to reputational and other ‘soft’ enforcement mechanisms. Accordingly, while the work of Ellickson and others⁶⁸ suggests that private ordering may be effectively employed to enforce compliance within small, close-knit communities engaged in iterative relationships, private enforcement is often viewed as less effective outside the confines of these homogeneous, geographically proximate groups. Indeed, even where private ordering is effective in terms of enforcement *as between members*, the far thornier issue in terms of social welfare is the enforcement of rights *by non-members as against members*. Here, once again, we come up against the inherent agency cost problems which pervade systems of private ordering. These problems render it unlikely that these systems will spontaneously generate the socially optimal approach toward – or level of – enforcement.

Private Bureaucratic failure. The need to generate, monitor and enforce compliance with regulation invariably demands the establishment of bureaucratic mechanisms.⁶⁹ As a preliminary matter, insofar as they contemplate that the costs associated with the creation and maintenance of these mechanisms will be borne by group members, systems of private ordering arguably manifest a significant (if

⁶⁸ Ellickson (n 6); Greif et. al. (n 17); Milgrom et. al. (n 17); Bernstein (n 15); Bernstein (n 16); Mahoney (n 17); Macey and O’Hara (n 17), and Snyder (n 17).

⁶⁹ In the context of ISDA, for example, DCs and various technical committees.

admittedly gross) potential cost savings relative to taxpayer-funded public bureaucracies.⁷⁰ Moreover, given the powerful economic incentives possessed by private actors, one might expect private bureaucracies to exhibit more innovative, flexible and responsive organizational structures, internal policies and practices.⁷¹

At the same time, however, the incentives of private actors to maximize profits (or, conversely, squeeze costs) can be expected to come into conflict with the fulfilment of regulatory objectives. One would expect this to be particularly true where – as in the case of systemic risk regulation – the private costs of addressing market failures far exceed the potential private benefits.⁷² Furthermore, virtually all bureaucracies – whether public or private – generate significant indirect costs in the form of so-called ‘bureaucratic failures’. As Oliver Williamson observes, these bureaucratic failures stem from, *inter alia*, the propensity of bureaucracies to (1) attempt to manage complexity; (2) forgive internal errors; (3) engage in logrolling, and (4) treat organizational procedures as ends in and of themselves.⁷³ These failures can lead to the adoption of organizational structures, internal policies or practices – or, indeed, regulation itself – which are poorly aligned with organizational mandates and/or regulatory objectives. They can also restrict institutional flexibility and responsiveness and stifle regulatory innovation. Accordingly, while the costs associated with the creation and maintenance of bureaucratic mechanisms are by no means unique to systems of private ordering, they are nevertheless of particular

⁷⁰ Baldwin and Cave (n 4) at 128. This is not, of course, an attribute which is in any way unique to private actors insofar as the activities of many public actors are also funded, either in whole or in part, via taxes, levies or other fees collected directly from regulated actors.

⁷¹ Hadfield and Talley (n 18).

⁷² See Chapter 5 for a more detailed exploration of this issue in the context of the governance of CCPs.

⁷³ Oliver Williamson, *The Economic Institutions of Capitalism* (The Free Press, New York, 1985) at 148.

significance insofar as they potentially undermine some of these systems' unique prospective strengths.

The Legitimacy Deficit. Finally, in the view of some observers, the agency cost problems endemic to systems of private ordering are compounded by a perceived (if, ultimately, relative) absence of legitimacy.⁷⁴ These observers view this 'legitimacy deficit' as being particularly problematic where regulation generated by private actors (e.g. ISDA, CCPs) touches upon issues which are thought to reside squarely within the public domain (e.g. market integrity, systemic risk regulation). In effect, the concern is that this legitimacy deficit opens the door to capture by vested interests and, consequently, the failure of regulation to reflect social, as opposed to private, welfare. While this deficit can be minimized – and thus some measure of legitimacy attained – through the implementation of due process, monitoring, reporting, and enforcement mechanisms,⁷⁵ enhancing the legitimacy of systems of private ordering comes with potentially significant costs. Ultimately, these costs include not only the direct costs associated with the creation and maintenance of legitimacy-enhancing institutions, but also (and perhaps more importantly) the indirect costs stemming from any corresponding loss of innovativeness, flexibility and/or responsiveness.

As described above, systems of private ordering are capable of leveraging the power of the market to accumulate information and expertise and generate innovative, flexible and responsive regulation. Simultaneously, however, these systems are plagued by acute agency cost and other problems which undermine the extent to

⁷⁴ Gillian Hadfield, "Privatizing Commercial Law" (2001), 24:1 Regulation 40; Snyder (n 17) 62 at 434, and Black and Rouch (n 23) at 223.

⁷⁵ Steven Bernstein and Benjamin Cashore, "Can Non-State Global Governance Be Legitimate?" (2007), 1 Regulation and Governance 347; Hadfield (n 74) at 44, and Schwarcz (n 23) at 337-338.

which they can be counted upon to generate, monitor and enforce socially desirable regulation. Our exploration thus naturally turns to the question: *can systems of public ordering do any better?*

III. Public Ordering as a Source of Financial Regulation

The strengths of public ordering derive from the unparalleled coercive powers of the state. These powers confer upon public actors the authority to generate, monitor and enforce regulation as they deem necessary in order to achieve regulatory objectives.⁷⁶ Importantly, they also generally confer upon public actors the authority to decide what those objectives are. Where this authority is exercised through democratic institutions, public actors are often viewed as highly legitimate. What is more, public actors typically benefit from the existence of a developed legislative infrastructure⁷⁷ through which the process of introducing, adopting, amending and revoking regulation must be channelled.⁷⁸ Finally, as evidenced by their very existence, public actors have successfully overcome the coordination and collective action problems which often represent a formidable obstacle to the *emergence* of fully-fledged systems of private ordering.⁷⁹ Broadly speaking, public actors can thus be thought to possess clear authority – and potential legitimacy – as sources of regulation.

All of this is not to suggest, of course, that systems of public ordering can be expected to generate, monitor and enforce socially desirable regulation. Indeed, public actors frequently find themselves mired in the realities of domestic and

⁷⁶ Within applicable constitutional and other constraints of course.

⁷⁷ Such as committee, hearing and other procedural requirements, for example.

⁷⁸ Although – as evidenced by the frequent legislative gridlock experienced in the U.S. and E.U. – this infrastructure can also be a source of weakness.

⁷⁹ Posner (n 19) 63. Which is not to say that these problems do not still have an impact on the *effectiveness* of various systems of public ordering.

international politics and driven (or, perhaps more accurately, paralyzed) by entrenched ideological positions. This ineffectiveness is ultimately attributable to a wide range of factors, including: (1) agency cost problems; (2) asymmetries of information and expertise vis-à-vis private actors; (3) a lack of responsiveness, and (4) inherent jurisdictional constraints. As we saw in Chapter 1, this ineffectiveness is compounded by the welfare indeterminacy so frequently encountered in connection with the regulation of modern financial markets.

Agency Cost Problems. As with systems of private ordering, the weaknesses of public ordering flow first and foremost from deeply embedded agency cost problems. These costs flow from the fact that public actors serve the interests of a wide range of constituents including, *inter alia*, politicians; legislatures; government agencies; industries; firms; special interest groups and, of course, voters. Once again, both public choice and regulatory capture theory predict that these constituents will attempt to exert influence over public actors to generate, monitor and enforce regulation in pursuit of their narrow self-interest.⁸⁰ Indeed, perhaps nowhere do these theoretical predictions possess more real world traction than in connection with the regulation of the financial services industry.⁸¹ Along a similar vein, public actors frequently possess their own private incentives relating to, for example, re-election; empire building; inter-agency rivalry, and/or the avoidance of public scandal.⁸² Finally, many of the bureaucratic failures encountered in connection with private

⁸⁰ Macey (n 63) at 1124; McCormick and Tollison (n 63), and Tollison (n 63).

⁸¹ See Brooke Masters and Tom Braithwaite, "Tighter rules on capital: Bankers versus Basel", *The Financial Times* (October 2, 2011), available at www.ft.com; Gary Rivlin, "The Billion Dollar Bank Heist", *Newsweek* (July 11, 2011), available at www.newsweek.com; Edward Wyatt and Eric Lichtblau, "A Finance Overhaul Fight Draws a Swarm of Lobbyists", *The New York Times* (April 19, 2010), available at www.nytimes.com, and Brady Dennis and Steven Mufson, "Bankers Lobby Against Financial Regulatory Overhaul", *The Washington Post* (March 19, 2010), available at www.washingtonpost.com.

⁸² Adam Pritchard, "Self-Regulation and Securities Markets" (2003), 26:1 Regulation 32 at 33-34.

ordering are, arguably, even more likely to plague systems of public ordering. As a result, it is important to maintain a healthy degree of scepticism respecting the benevolence of public actors, in tacit acknowledgement of the fact that the incentives they possess may not be perfectly aligned with regulatory objectives – let alone the pursuit of socially desirable outcomes.⁸³

Asymmetries of Information and Expertise. Just as we cannot assume the benevolence of public actors, we must not assume their omniscience.⁸⁴ As described in Chapter 2, the informational demands associated with the use of many OTC derivatives are truly extraordinary. As public actors around the world are discovering, the same can equally be said of their regulation. Furthermore, it would hardly be contentious to suggest that, in many instances, public actors will find themselves at a comparative disadvantage vis-à-vis private actors in terms of (1) available human and financial capital; (2) the economic incentives to utilize these endowments and, accordingly, (3) accumulated market information and technical expertise.⁸⁵ Put differently, public actors will often face higher information costs and, as a corollary, have a lower tolerance for complexity.⁸⁶ These asymmetries are likely to prove most acute in several key areas, including the utilization (and limitations) of quantitative risk management tools; prevailing market dynamics, and the private costs of various forms of regulatory intervention. One would expect these asymmetries to be magnified within highly complex and innovative markets such as those for OTC

⁸³ Timothy Besley, *Principled Agents? The Political Economy of Good Government* (Oxford University Press, Oxford, 2006) at 36-43 and Per-Olov Johansson, *An Introduction to Modern Welfare Economics* (Cambridge University Press, Cambridge, 1991) at 82-83.

⁸⁴ Johansson (n 83) at 28 and 59.

⁸⁵ Black (n 3) at 3; Baldwin and Cave (n 4) at 126, and Mahoney (n 17) at 1462.

⁸⁶ Leaving bounded rationality aside for the moment.

derivatives.⁸⁷ Where they persist, these information problems make it difficult for public actors to identify the location, nature or extent of potential risks; conduct meaningful cost-benefit analyses and, ultimately, design and implement effective policy responses.⁸⁸

A Lack of Responsiveness. Public actors are frequently perceived as struggling to mount timely regulatory responses. This inertia is the product of, *inter alia*, information problems; bureaucratic failure; ideological gridlock, and/or the procedural checks and balances of the legislative process itself.⁸⁹ Indeed, each of these factors has likely contributed to the delays experienced in connection with the regulatory response to the GFC. The *Dodd-Frank Act* was enacted almost two years after Lehman's demise – EMIR even later. Moreover, the voluminous and highly complex technical regulation each of these reforms envision will take years to hammer out.⁹⁰ Perhaps most importantly, however – and as amply illustrated by the recent emergence of collateral swaps, for example⁹¹ – more nimble private actors are often able to circumvent these rules long before they are fully implemented. This relative lack of responsiveness is, in many respects, the Achilles' heel of public

⁸⁷ Robert Cooter, "Structural Adjudication and the New Law Merchant: A Model of Decentralized Law" (1994), 14 *Int'l Rev. of L. and Econ.* 215 at 216.

⁸⁸ Ray Rees and John Vickers, "RPIX Price Cap Regulation", in Matthew Bishop, John Kay and Colin Mayer (eds.), *The Regulatory Challenge* (Oxford University Press, Oxford, 1995) 358 at 362.

⁸⁹ An additional factor – the imperative of obtaining cross-border consensus – is examined in greater depth in [Chapter 6](#).

⁹⁰ See [Chapter 3](#) for further details respecting the substantive content of these regulations (at least as they apply to OTC derivatives). Indeed, so complex (and thus resource intensive) is the process of designing much of this technical regulation that U.S. regulators have delayed its implementation; see Silla Brush, "CFTC Approves Six-Month Delay of Dodd-Frank Swaps Regulations", *Bloomberg Businessweek* (July 14, 2011), available at www.businessweek.com and Tom Braithwaite, "US Derivatives Reforms to be Delayed Till End 2011", *The Financial Times* (June 14, 2011), available at www.ft.com.

⁹¹ See [Chapter 2](#).

actors: especially within the context of complex and dynamic modern financial markets.

Jurisdictional Constraints. Finally, domestic public actors – along with supranational actors such as the E.U. – face inherent jurisdictional constraints. Most importantly, there are limits on the ability of public actors to extend the application of domestic law to activities which take place beyond their borders. While these constraints may be relatively unproblematic within many areas of domestic policy, the gradual and on-going liberalization of international capital flows over the course of the past half century has had a profound impact on the ability of domestic regulators to effectively regulate financial markets and institutions. Perhaps most importantly, the resulting mobility of capital has served to lower the transaction costs of (welfare-reducing) regulatory arbitrage. Simultaneously, the growing interconnectedness made possible by this liberalization has heightened the risk of negative spillovers from one jurisdiction to another. Ultimately, these problems reside at the root of important questions respecting the optimal scope of financial regulation, examined in greater detail in [Chapter 6](#).

For all of their strengths, systems of public ordering are thus hamstrung by a number of potentially significant weaknesses. We are left, therefore, with three clearly suboptimal sources of financial regulation. On one level, experience supports this view: financial crises past and present have demonstrated that there is no silver bullet. On another level, however, and despite the structure of the exploration thus far, it must be remembered that markets, private market participants and public regulators are not mutually exclusive sources of financial regulation. Indeed, by abandoning the largely artificial distinction between public and private ordering, it

becomes possible to tailor more bespoke modes of regulation which seek to combine their respective strengths. Part IV examines one such hybrid – enforced self-regulation – in greater detail.

IV. The Optimal Source of Financial Regulation: In Search of a Synthesis

As we saw in Chapter 3, the GFC has served to illuminate the potential private and social costs stemming from the use of OTC derivatives. It has also demonstrated that private actors, left to their own devices, cannot necessarily be counted upon to successfully identify⁹² – let alone implement measures which effectively mitigate – these costs.^{93, 94} It should come as no surprise, therefore, that recent years have seen a torrent of proposals for regulatory reform aimed at, *inter alia*, reducing asymmetries of information; curbing opportunistic behaviour, and ameliorating potential systemic risks.⁹⁵ Many of these proposals (and, ultimately, both the *Dodd-Frank Act* and

⁹² Here, for example, we might look to the apparent (if contested) failure of pre-crisis CDS spreads to accurately reflect the default risks associated with various financial assets (e.g. CDOs, financial institutions); see the Turner Review at 46 and, for a competing view, Oliver Hart and Luigi Zingales, “A New Capital Regulation for Large Financial Institutions” (2010), Fondazione Eni Enrico Mattei Research Paper No. 124.2009 at 27, available at www.ssrn.com. Along the same vein, the failure of many financial institutions to request that financial counterparties post collateral in connection with many OTC derivatives transactions suggests that risk managers misjudged the attendant risks; see Manmohan Singh, “Collateral, Netting and Systemic Risk within OTC Derivatives Markets”, IMF Working Paper 10/99 (2010), available at www.ssrn.com. See also Manmohan Singh and James Aitken, “Counterparty Risk, Impact on Collateral Flows and Role for Central Counterparties”, IMF Working Paper 09/173 (2009) and Miguel Segoviano Basurto and Manmohan Singh, “Counterparty Risk in the Over-The-Counter Derivatives Market”, IMF Working Paper 08/258 (2008), both available at www.ssrn.com.

⁹³ As Frank Partnoy presciently argued in 2000: ‘derivatives self-regulation is likely to be inefficient, because financial industry participants will find it more profitable to avoid regulatory costs, ignore market failure, maximize fee income, and, to the extent they support any regulation, support those designed to extract economic rent or other benefits.’; Frank Partnoy, “Financial Derivatives and the Costs of Regulatory Arbitrage” (1996-1997), 22 J. of Corp. L. 211 at 247.

⁹⁴ To clarify, this is not necessarily to suggest any animus on the part of private actors. Indeed, as Ayres and Braithwaite observe, private actors typically possess bundles of contradictory commitments to values of economic rationality, law-abidingness and business responsibility which manifest themselves at different moments and in different contexts; Ayres and Braithwaite (n 66) at 19. The essential point, rather, is that private actors may also lack the information and incentives to minimize these costs.

⁹⁵ See for example, U.S. Department of the Treasury Press Release TG-261, “Administration’s Regulatory Reform Agenda Reaches New Milestone: Final Piece of Legislative Language Delivered to Capitol Hill” and accompanying draft of the *Over-the-Counter Derivatives Markets Act of 2009*

EMIR⁹⁶) reflect the views of scholars and policymakers who, well in advance of the crisis, called for public regulators to adopt a more interventionist approach toward the regulation of OTC derivatives markets.⁹⁷ Largely absent from these calls for reform, however, has been any systematic evaluation of (1) the limitations of public ordering within the context of modern financial markets or (2) how to leverage the information and expertise of private actors with a view to achieving public regulatory objectives.

So how do we move forward? As a starting point, we can abandon the notion that markets, market participants and public actors are somehow incompatible, even antithetical, sources of regulation.⁹⁸ Second, we can look to combine these sources in ways which draw upon their respective strengths – to make them, in a word, *complements*. As Ian Ayres and John Braithwaite explain:

‘Good policy analysis is not about choosing between the free market and government regulation. Nor is it simply about prescribing what the law should proscribe. If we accept that sound policy analysis is about understanding how private regulation – by industry associations, by firms, by peers, and by individual consciences – and how it is interdependent with state regulation, then interesting possibilities open up to steer the mix of private and public regulation.’⁹⁹

(August 11, 2009); Turner Review; Markus Brunnermeier, Andrew Crockett, Charles Goodhart, Avinash Persaud and Hyun Shin, *The Fundamental Principles of Financial Regulation*, 11 Geneva Reports on the World Economy (2009); The High-Level Group on Financial Supervision in the E.U., *Report of the High-Level Group on Financial Supervision in the EU* (February 2009); IMF, *Lessons of the Financial Crisis for Future Regulation of Financial Institutions and Markets and for Liquidity Management* (February 2009), and EC Working Paper (n 38).

⁹⁶ At least on the surface. As examined in greater detail below and in [Chapter 5](#), both the *Dodd-Frank Act* and EMIR may ultimately be viewed as having effectively devolved significant regulatory responsibility to private actors (namely, CCPs and their investment bank owners).

⁹⁷ See for example, Lynn Stout, “How Deregulating Derivatives Led to Disaster, and Why Regulating Them Can Prevent Another” (July 6, 2009), available at www.finreg21.com; Peter Huang, “A Normative Analysis of New Financially Engineered Derivatives” (2000), 73 So. Cal. L. Rev. 471; Christine Cuccia, “Information Asymmetry and OTC Transactions: Understanding the Need to Regulate Derivatives” (1997), 22 Delaware J. of Corp. L. 197, and Partnoy (n 93). Former CFTC Chairwoman Brooksley Born is also arguably deserving of a place on this list (in effect for even *asking* whether public regulatory intervention might be warranted); see [Chapter 3](#) at 113-117.

⁹⁸ Black (n 2) at 6.

⁹⁹ Ayres and Braithwaite (n 66) at 3.

The remainder of this chapter examines the merits and potential drawbacks of one such hybrid: enforced self-regulation. Ultimately, the objective of this examination is not to put forward enforced self-regulation as ‘the’ way to regulate OTC derivatives markets. Indeed, the notion that there exists a single, universally desirable mode of regulation runs contrary to many of the broader themes – complexity, change, welfare indeterminacy – underpinning this thesis.¹⁰⁰ Moreover, as explored in greater detail in Chapters 5 and 6, enforced self-regulation is, at best, just one piece of a much larger puzzle. Rather, what follows is simply an attempt to illustrate how what are often perceived to be competing sources of regulation can be combined in pursuit of more socially desirable outcomes.

Enforced (or ‘coerced’¹⁰¹) self-regulation starts from the proposition that many systems of private ordering require some degree of public governance and oversight.¹⁰² This oversight is imposed with the objective of ensuring that the incentives of market participants within these systems are sufficiently aligned with the pursuit of public regulatory objectives. Put differently, enforced self-regulation is designed to constrain the agency cost problems endemic to systems of private ordering.¹⁰³ Enforced self-regulation often proceeds from the articulation of broad

¹⁰⁰ As Ayres and Braithwaite acknowledge: ‘The appropriateness of a particular strategy is contingent on the legal, constitutional, and cultural context and the history of its invocation.’; *ibid* at 101.

¹⁰¹ See John Armour and David Skeel, “Who Writes the Rules for Hostile Takeovers, and Why? – The Peculiar Divergence of U.S. and U.K. Takeover Regulation” (2007), 95 *Georgetown L. J.* 1727 at 1764.

¹⁰² Baldwin and Cave (n 4) at 39. Although, as Ayres and Braithwaite observe, the concept of enforced self-regulation was originally developed in response to, *inter alia*, the delay; red tape; costs, and stifling of innovation associated with regulation generated by public actors; Ayres and Braithwaite (n 66) at 106.

¹⁰³ At the same time, enforced self-regulation seeks to harness the technical expertise, flexibility and responsiveness of private actors; Baldwin and Cave (n 4) at 40.

regulatory objectives under a public legislative framework.¹⁰⁴ Residing beneath this framework is then the technical regulation necessary to ensure the fulfilment of these objectives. Importantly, different elements of this technical regulation can be generated, monitored and enforced by either private *or* public actors – depending on, *inter alia*, the perceived need for (2) technical expertise, flexibility or responsiveness, on the one hand, or (2) legitimacy, coordination or robust enforcement, on the other.¹⁰⁵ As explored below (and in greater detail in [Chapter 5](#)), this technical regulation is ideally the product of a dialogic process between public and private actors.

Enforced self-regulation seeks to align the incentives of private actors with public regulatory objectives – i.e. constrain agency costs – in three principal ways. First, having played an integral *ex ante* role in the process of generating technical regulation, proponents of enforced self-regulation argue that it can engender a higher level of commitment from private actors in terms of *ex post* compliance.¹⁰⁶ Second, and more importantly, proponents assert that the omnipresent threat of more burdensome public regulation in response to private regulatory failures – along with potential reputational sanctions – can incentivize private actors to design technical regulation which is more reflective of public regulatory objectives. The same threat, it is thought, can then incentivize private actors to allocate sufficient resources toward ensuring adequate monitoring and enforcement.¹⁰⁷ Along a similar vein, the prospect

¹⁰⁴ In this respect, the *FSA 1986* can be viewed as a poorly designed (and ultimately ill-fated) attempt to impose enforced self-regulation on U.K. financial markets; *see* [Chapter 3](#). Ultimately, however, there is no single legislative or institutional framework which defines enforced self-regulation.

¹⁰⁵ Although, ultimately, enforced self-regulation contemplates that all regulation can, technically speaking, be enforced by public actors; Ayres and Braithwaite (n 66), ch. 4.

¹⁰⁶ Baldwin and Cave (n 4) at 40; Ayres and Braithwaite (n 66) at 113, and Armour and Skeel (n 101).

¹⁰⁷ Armour and Skeel (n 101) at 1759, 1761 and 1763-1764.

of more onerous public regulatory intervention and/or reputational sanctions could conceivably incentivize private actors not only to comply with regulation themselves, but also to monitor and report suspected cases of non-compliance by other market participants.¹⁰⁸

This aspect of the relationship between public and private actors within systems of enforced self-regulation shares a number of parallels with the dynamics of vertical regulatory competition within federal systems.¹⁰⁹ Specifically, the threat of federal (public) regulatory intervention is seen as placing competitive pressure on states (private actors) to design more effective regulation¹¹⁰ – essentially making public and private actors intellectual competitors in the policy domain.¹¹¹ Moreover, where public actors elect not to intervene, this restraint can be understood as performing a ratification function in respect of privately generated regulation.¹¹² The interplay between public and private actors within systems of coerced self-regulation can thus be viewed as giving rise to an opportunity not only to sharpen the substantive content of regulation (through regulatory competition), but also to enhance its legitimacy (through public oversight and *de facto* ratification).¹¹³

¹⁰⁸ Conceivably, this prospect could be enhanced by imposing criminal penalties on individuals who fail to report suspected violations; Ayres and Braithwaite (n 66) at 106. At the same time, however, the complexity of modern financial markets – and, more specifically, the opacity of many of the financial institutions, markets and instruments which comprise them – would arguably render such detection decidedly difficult.

¹⁰⁹ See Mark Roe, “Delaware’s Competition” (2004), 117 Harv. L. Rev. 588.

¹¹⁰ Ibid.

¹¹¹ See Daniel Esty and Damien Geradin, “Regulatory Co-Opetition”, in Daniel Esty and Damien Geradin, (eds.), *Regulatory Competition and Economic Integration: Comparative Perspectives* (Oxford University Press, Oxford, 2000).

¹¹² Roe (n 109) at 635-636.

¹¹³ This position is consistent with the view that legitimacy, especially within the context of inter-systemic governance, need not necessarily flow directly from democratic sources; see Robert Schapiro, “Federalism As Intersystemic Governance: Legitimacy in a Post-Westphalian World” (2008), 57 Emory L. J. 115 at 123.

The third way in which enforced self-regulation seeks to constrain agency cost problems is by facilitating the transfer of information and expertise to public actors.¹¹⁴ The objective of this transfer is, in effect, to make public actors more effective monitors of the complex and rapidly evolving activities undertaken by private actors – to enhance, in other words, their tolerance for complexity. At the core of this strategy is ideally a dialogic relationship through which, it is thought, public actors will over time acquire a more sophisticated understanding of the technical aspects of various regulated activities, along with the real world costs and benefits of regulatory intervention. Simultaneously, private actors sharing their information and expertise will come to better appreciate the regulatory objectives motivating public actors. In theory, then, enforced self-regulation manifests the potential to ameliorate asymmetries of information and expertise vis-à-vis public and private actors; reduce agency costs, and contribute to more nuanced rulemaking and more effective monitoring and enforcement.¹¹⁵ The devil, of course, is in the details of this dialogic relationship. These details – the *form* of regulation – are explored in Chapter 5.

Encouragingly, the *Dodd-Frank Act* and EMIR can both be viewed as broadly compatible with the core elements of enforced self-regulation.¹¹⁶ First, both sets of reforms expressly articulate the objectives motivating public regulatory intervention into OTC derivatives markets: namely, promoting market transparency and efficiency; thwarting opportunistic behaviour, and ameliorating potential systemic

¹¹⁴ Interestingly, this objective does not feature prominently within the early literature examining the merits and potential drawbacks of enforced self-regulation. It stands to reason, however, that the ability of public actors to perform their *de facto* ratification function and effectively monitor private actors (and thus constrain agency costs) is inextricably tied to the information and expertise they possess.

¹¹⁵ Baldwin and Cave (n 4) at 40.

¹¹⁶ To clarify, this is not to suggest that either of these regimes represents a conscious attempt to implement a system of enforced self-regulation in respect of OTC derivatives markets.

risks.¹¹⁷ Second, both require the registration of CCPs¹¹⁸, SDRs/TRs¹¹⁹ and swap execution facilities¹²⁰ – thus bringing the private regulatory infrastructure of OTC derivatives markets under direct public oversight.¹²¹ Importantly, both regimes then devolve significant responsibility for generating, monitoring and enforcing technical regulation to these (new) registrants. The *Dodd-Frank Act*, for example, requires CCPs registered with the CFTC – along with all SDRs and swap execution facilities – to comply with a set of core principles covering areas such as governance, risk management, recordkeeping and reporting.¹²² These registrants are then required to design, implement, monitor and enforce technical regulation in furtherance of these principles.¹²³ EMIR reflects a broadly consistent approach.¹²⁴ CCPs and swap execution facilities can also be viewed as possessing a *de facto* veto in connection with the application of the clearing and execution requirements under both regimes.¹²⁵ Finally, both the *Dodd-Frank Act* and EMIR impose extensive recordkeeping and regulatory reporting obligations.¹²⁶ These requirements can be viewed as the modest, yet potentially fruitful, foundations of a more dialogic relationship between registrants and the public regulators which oversee them.

¹¹⁷ In the case of the *Dodd-Frank Act*, these objectives have been identified by the U.S. Treasury Department; see Treasury Department (n 95). In the case of EMIR, these objectives are set out in the regulation itself; see for example, recitals 4-6.

¹¹⁸ *Dodd-Frank Act*, s. 725 and EMIR, Art. 10.

¹¹⁹ *Dodd-Frank Act*, ss. 728 and 763 and EMIR, Art. 51.

¹²⁰ *Dodd-Frank Act*, ss. 733 and 763.

¹²¹ Although, as acknowledged in [Chapter 3](#), CCPs and swap execution facilities already fell within the perimeter of E.U. regulation under MiFID.

¹²² See *Dodd-Frank Act*, ss. 725, 728, 733 and 763. Notably, while the *Dodd-Frank Act* does not articulate a similar set of core principles for CCPs registered with the SEC, it does mandate that the two agencies adopt consistent and comparable rules governing these registrants; s. 712(a)(7).

¹²³ *Dodd-Frank Act*, ss. 725, 728, 733 and 763.

¹²⁴ See for example, Arts. 24-27, 29, 31, 32, 34-41, 43-46, 48, 49 and 64-67.

¹²⁵ Insofar as it is difficult to envision the circumstance in which a regulator would unilaterally impose one or both of these requirements where no CCP/swap execution facility was willing to admit a particular instrument for clearing/execution. See [Chapter 5](#) for a more in-depth discussion.

¹²⁶ *Dodd-Frank Act*, ss. 725, 728, 733 and 763 and EMIR, Arts. 10, 27, 29 and 67.

The *Dodd-Frank Act* and EMIR provide regulators with a strong lever with which to realign the incentives of CCPs, SDRs/TRs, swap execution facilities and other market participants with broader social welfare.¹²⁷ Moreover, insofar as the nascent interactions between registrants and regulators are cultivated with a view to building more dialogic relationships, these regimes may ultimately facilitate the transfer of information and expertise – helping regulators to better understand both the complex technical aspects of, for example, central clearing and settlement for OTC derivatives, along with the real world costs and benefits of regulatory intervention. Indeed, this transfer of information and expertise is essential if public actors are to become more effective monitors of the complex and rapidly evolving dynamics within OTC derivatives markets. It is also necessary if public and private actors are to generate the type of nuanced and responsive regulation needed to effectively respond to the complexity of modern financial markets and the nature and pace of financial innovation.

For all its theoretical strengths, however, enforced self-regulation is not without a number of potentially significant practical weaknesses. First, the success of enforced self-regulation in terms of recalibrating the incentives of private actors is contingent on the existence of a *credible* commitment from public actors to intervene in response to private regulatory failures. Put bluntly, if public regulators fail to acquire the information and expertise needed to assert themselves as effective monitors (or if either they or their political masters lack the will to act), enforced self-regulation risks becoming little more than a perfunctory validation mechanism for systems of private ordering. Second, to the extent that enforced self-regulation relies

¹²⁷ Via the tacit threat of more burdensome public regulation or, in the case of individual registrants, the prospect of targeted sanctions (e.g. fines; enhanced surveillance; business restrictions or, ultimately, de-licensing).

on reputational enforcement mechanisms, there is reason to question its potential efficacy.¹²⁸ Finally, there remains a nagging jurisdictional question: *how do we constrain private actors who perceive enforced self-regulation as being too burdensome from engaging in (welfare reducing) regulatory arbitrage?* Ultimately, of course, no mode of regulation will be without its shortcomings. What is important is the rigorous – and, crucially, *on-going* – examination of these shortcomings (along with their prospective strengths) with a view to identifying the most socially desirable mode of regulation.

V. Conclusion

On one level, it is perhaps difficult to draw meaningful conclusions from this examination of the most desirable source of financial regulation. *Where, after all, do we turn when all the available policy alternatives manifest potentially significant theoretical and practical drawbacks?* On another level, however, the implications are clear. First, the informational problems stemming from the complexity of modern financial markets generate acute agency cost problems.¹²⁹ These problems – exacerbated by the related prospect of potentially enormous negative externalities generated by private risk-taking¹³⁰ – undermine the desirability of both markets and systems of private ordering as sources of financial regulation. Second, public

¹²⁸ Especially where the conduct in question is seen to harm ‘third parties’ (i.e. those not directly connected to the firm); see John Armour, Colin Mayer and Andrea Polo, “Regulatory Sanctions and Reputational Damage in Financial Markets”, European Corporate Governance Institute Finance Paper No. 300/2010 (April 22, 2011), available at www.ssrn.com. More broadly, one might expect the potential impact of reputational enforcement mechanisms to be undermined by: (1) the constant movement of key personnel between market participants within the financial services industry; (2) the fact that end-users often do not wish to report opportunistic behavior by dealers for competitive, reputational or legal reasons; and (3) the prospect that the entire OTC derivatives industry would be painted with the same brush as a result of high-profile failures.

¹²⁹ Vis-à-vis (1) market participants; (2) market participants and public regulators, and (3) market participants and society.

¹³⁰ Related in the sense that information problems – as typically reflected in the mis-pricing of risk – are the root cause of many of these externalities.

regulators are plagued by informational problems: rendering them potentially ineffective monitors of the complex and innovative activities of private market participants. Ultimately, subsidizing the flow of information and expertise from market participants to public regulators is crucial to addressing both of these challenges. This chapter has explored how the competing sources of regulation can be combined in pursuit of this objective. Chapter 5 explores how the *form* of regulation can play an important and complementary role toward achieving the same end.

CHAPTER 5

The Optimal *Form* of Financial Regulation

Chapter 4 examined the optimal source of financial regulation. It asked: *who should regulate modern financial markets?* This chapter turns its attention to what is in many respects a related question: *how should they be regulated?* Ultimately, this question is not about the optimal substantive content of regulation. Indeed, given the overwhelming complexity and dynamism of modern financial markets, any attempt to articulate the optimal content of legal (or extra-legal) norms is bound to be exposed as incomplete and, within a relatively short span of time, obsolete. What we can do, however, is examine how the *form* of regulation – that is, the manner in which these norms are articulated and the processes by which they are generated, updated, monitored and enforced – can ameliorate (or exacerbate) the acute asymmetries of information and expertise and agency cost problems generated by complexity and financial innovation.

This chapter proceeds as follows. Part I frames the nature of the attendant problems, using two examples – risk management and product eligibility requirements applicable to CCPs under the *Dodd-Frank Act* and EMIR – to illustrate the impact of complexity and financial innovation on the optimal form of regulation. Part II then explores the shortcomings of prescriptive, rules-based regulatory regimes in light of these problems. Part III introduces ‘process-oriented’ regulation – and specifically so-called ‘more principles-based’ regulation (or MPBR) – as an alternative form of regulation and identifies the key ingredients to its successful implementation. Part IV then explores how MPBR’s combination of *principles* and *process* can be utilized to enhance regulators’ tolerance for complexity and deter

supply-side financial innovation. Along this vein, Part V briefly explores how MPBR could be employed to improve upon the existing risk management and product eligibility requirements under the *Dodd-Frank Act* and EMIR. Part VI then examines the major obstacles to its successful implementation. Part VII concludes.

I. The Nature of the Problems

Complexity and financial innovation generate three species of problems for the well-intentioned regulator. First, the complexity of modern financial markets make the design, implementation, monitoring and enforcement of socially desirable regulation extremely costly – especially for public regulators facing the acute asymmetries of information and expertise examined in Chapter 4.¹ Second, the dynamism of modern financial markets – in part a function of financial innovation – necessitates that regulation be continually updated if it is to have any hope of achieving desired regulatory objectives. Finally, the supply-side theory of financial innovation predicts that market participants will invariably attempt to arbitrage the impact of regulation, thus undermining its potential efficacy. This part presents two examples, drawn from the regulation of CCPs under the *Dodd-Frank Act* and EMIR, with a view to further illuminating the nature and importance of these problems. Parts II, III and IV then explore what these problems tell us about the most desirable form of financial regulation.

Risk Management Requirements. As we saw in Chapter 3, both the *Dodd-Frank Act* and EMIR mandate that OTC derivatives meeting certain prescribed criteria be centrally cleared and settled through CCPs.² To manage the resulting concentration of market, counterparty credit, systemic and other risks, both regimes

¹ And the coordination problems examined in Chapter 6.

² See Chapter 3 at 138-140.

then impose risk management requirements on these institutions. Table 5.1 identifies the major technical areas targeted by these requirements.

Table 5.1: Major Risk Management Areas Targeted By the <i>Dodd-Frank Act</i> and EMIR		
Area Targeted	<i>Dodd-Frank</i> ³	EMIR
CCP capital (i.e. minimum quantum, etc.)	s. 725	Art. 12
Clearing member eligibility (e.g. financial resources, operational capacity, expertise, etc.)	s. 725 ⁴	Art. 35
Product eligibility (e.g. liquidity, susceptibility to manipulation, systemic risks)	ss. 723, 725 and 763 ⁵	Art. 4
Initial and variation margin (e.g. timing and methodology for calculating payments)	s. 725 ⁶	Art. 39
Collateral (i.e. quality and valuation methodology)	CFTC Rules ⁷	Art. 43
Guarantee fund (e.g. structure and methodology for calculating contributions)	s. 725	Art. 40
Stress-testing and back-testing of financial models	s. 725 ⁸	Arts. 41, 46
Participation by non-defaulting members in the event of clearing member default (e.g. position portability)	s. 725 ⁹	Art. 37
Structure of the capital waterfall in the event of clearing member default	-	Arts. 42
Interoperability between CCPs	-	Arts. 48, 49
Emergency liquidity support	s. 725	Arts. 38, 41

³ As described in Chapter 3, ss. 723 and 725 of the *Dodd-Frank Act* only apply to CFTC-regulated derivatives clearing organizations. Simultaneously, however, the *Dodd-Frank Act* contemplates that the SEC will adopt consistent and comparable rules governing the CCPs under its oversight.

⁴ See also CFTC, Final Rule Respecting Derivatives Clearing Organization General Provisions and Core Principles, 76 Fed. Reg. 69,334-69,480 (November 8, 2011) [the “CFTC DCO General Provisions and Core Principles”], available at www.cftc.gov.

⁵ See also CFTC, Final Rules Respecting Process for Review of Swaps for Mandatory Clearing, 76 Fed. Reg. 44,464-44,475 (July 26, 2011), available at www.cftc.gov and CFTC DCO General Provisions and Core Principles. See also SEC, Final Rules Respecting the Process for Submissions for Review of Security-Based Swaps for Mandatory Clearing and Notice Filing Requirements and Notice Filing Requirements for Clearing Agencies; Technical Amendments to Rule 19b-4 and Form 19b-4 Applicable to All Self-Regulatory Organizations (June 28, 2012), available at www.sec.gov.

⁶ See also CFTC DCO General Provisions and Core Principles.

⁷ Ibid.

⁸ Ibid.

⁹ See also CFTC, Notice of Proposed Rulemaking Respecting Requirements for Processing, Clearing and Transfer of Customer Positions, 76 Fed. Reg. 13,101-13,111 (March 10, 2011), available at www.cftc.gov.

The methodology for calculating initial and variation margin provides a relatively straightforward, yet representative, example of the problems generated by the myriad of complex technical issues associated with the central clearing of OTC derivatives. CCPs seek to minimize their residual net exposures (i.e. after multilateral netting) by requiring counterparties to post collateral¹⁰ at the outset of an OTC derivatives contract ('initial margin'). Thereafter, CCPs periodically adjust the amount of posted collateral required to keep the contract open in order to reflect market fluctuations ('variation margin').¹¹ The purpose of initial and variation margin is to reduce the exposure of CCPs to counterparty and market risk and, thereby, ameliorate the systemic risks arising from their potential failure. The relevant Core Principle under the *Dodd-Frank Act* states as follows:

'(D) RISK MANAGEMENT.

* * *

(iii) Losses from Defaults.- Each derivatives clearing organization, through margin requirements and other risk control mechanisms, shall limit the exposure of the derivatives clearing organization to potential losses from defaults by members and participants of the derivatives clearing organization to ensure that- (I) the operations of the derivatives clearing organization would not be disrupted; and (II) non-defaulting members or participants would not be exposed to losses that non-defaulting members or participants cannot anticipate or control.

(iv) Margin Requirements.- The margin required from each member and participant of a derivatives clearing organization shall be sufficient to cover potential exposures in normal market conditions.

(v) Each model and parameter used in setting margin requirements shall be (I) risk-based; and (II) reviewed on a regular basis.¹²

The corresponding article of EMIR, meanwhile, stipulates:

'1. A CCP shall impose, call and collect margins to limit its credit exposures from its clearing members... Such margins shall be sufficient to cover potential exposures that the CCP estimates will occur until the liquidation of the relevant positions. They

¹⁰ Typically either cash or highly liquid securities.

¹¹ Typically each day.

¹² *Dodd-Frank Act*, s. 725.

shall be sufficient to cover losses that result from at least 99 per cent of the exposures movements over an appropriate time horizon and they shall ensure that a CCP fully collateralizes its exposures with clearing members...

2. A CCP shall adopt models and parameters in setting its margin requirements that capture the risk characteristics of the products cleared and take into account the interval between margin collections, market liquidity and the possibility of changes over the duration of the transaction...¹³

The relative simplicity of these provisions, however, masks the true complexity of their substantive requirements. Calculating initial and variation margin requires sophisticated financial models incorporating, amongst other variables, historic price and market volatility, along with any idiosyncratic characteristics of the relevant instrument (e.g. the non-linear price characteristics and ‘jump-to-default’ risk¹⁴ associated with a single-name CDS).¹⁵ Calculating margin requirements also requires CCPs to continually monitor counterparty positions with a view to determining their scale, concentration and risk profile. These calculations become even more complicated where CCPs engage in ‘portfolio margining’ across all of a counterparty’s open positions.¹⁶ The financial models used by CCPs require rigorous and ongoing back-testing and stress-testing in order to evaluate their robustness during periods of market distress. What is more, these models must be recalibrated to reflect developments such as evolving relationships between financial markets and, importantly, the introduction of new financial instruments. All of these processes

¹³ EMIR, Art. 39.

¹⁴ To say that a CDS exhibits non-linear price characteristics is essentially to say that any change in the underlying market conditions or asset prices may be disproportional to the resulting impact on the value of the swap. Jump-to-default risk, meanwhile, is the risk that the reference credit will go from non-default to default so rapidly that the market will not have an opportunity to incorporate the increased default risk associated with its movement towards default into the CDS’s current credit spread.

¹⁵ See “Guidance on the Application of the 2004 CPSS-IOSCO Recommendations for Central Counterparties to OTC Derivatives CCPs”, Consultative Report of the Committee on Payment and Settlement Systems, Technical Committee of IOSCO (May 2010) at 14, available at www.bis.org. See also CFTC DCO General Provisions and Core Principles.

¹⁶ Where, as a result, the correlations between various financial instruments and markets become particularly important.

demand subjective judgments by personnel with technical expertise and experience in, amongst other areas, stochastic modeling.¹⁷ Ultimately, it would be extremely costly to identify all the variables relevant to ensuring that these processes reflect desired regulatory objectives; to then distill these variables into a clear and comprehensive set of regulations and, thereafter, to monitor compliance. Moreover, many public regulators are quite simply out of their depth when it comes to these and other technical issues.¹⁸

All of this raises the question of whether it would be more desirable to devolve this technical regulation to private actors (i.e. the CCPs themselves). Indeed, this is precisely what the *Dodd-Frank Act* and EMIR do: bestowing on CCPs a wide latitude to design, implement and monitor compliance with the technical rules and procedures which give substance to the new regimes' risk management requirements.¹⁹ Simultaneously, however, this strategy exacerbates the latent incentive problems. CCPs are (ostensibly at least²⁰) for-profit enterprises. As a result, we would expect them to face intense competitive pressures to generate private regulation – clearing member eligibility, margin, collateral and guarantee fund contribution requirements, for example – which reflect their clients' (i.e. dealers' and end-users') narrow self-interest. Where these interests prevail, the regulation thereby

¹⁷ And, ideally, an appreciation for the limits of stochastic models (which are premised on, *inter alia*, the independence of variables) within increasingly interconnected global financial markets.

¹⁸ This is not to suggest, of course, that all regulators were created equal in this regard: the CFTC for example has developed some potentially transferable expertise with respect to central clearing and settlement of exchange-traded derivatives. Also, the CPSS-IOSCO joint working group has exhibited a firm grasp of the complexity of many of these technical issues, if not necessarily how they should be resolved; *see* CPSS-IOSCO (n 15).

¹⁹ Notable exceptions include EMIR's provisions respecting the minimum capital requirements and the structure of a CCP's capital waterfall; EMIR, Arts. 12 and 42.

²⁰ As discussed in greater detail below, the fact that CCPs are owned by their primarily clients (i.e. dealers) suggests that we might not see these institutions generating significant profits.

generated may ultimately serve to undermine the public policy objectives animating the new U.S. and E.U. regimes.

Returning to our margin example, we would expect the opportunity costs of posting collateral to drive dealers and other counterparties to clear trades through the CCPs which impose the least onerous initial and variation margin requirements (or, similarly, which accept the lowest quality collateral).²¹ Indeed, so great are the perceived opportunity costs that large commercial counterparties have expended considerable financial and political capital lobbying lawmakers in both the U.S.²² and Europe²³ for exemptions from these requirements on the basis that they make it too costly for businesses to use OTC derivatives to manage risk.²⁴ In the U.S., these efforts have yielded exemptions from the central clearing and exchange trading requirements for commercial end-users using swaps to hedge or mitigate commercial risk.²⁵ These efforts also induced Senators Chris Dodd and Blanche Lincoln²⁶ to send a letter to Representatives Barney Frank and Colin Peterson²⁷ confirming that the margin and capital requirements imposed on swap dealers and major swap participants in connection with bilaterally cleared instruments would not apply to

²¹ Testimony of René Stulz to the U.S. House of Representatives Committee on Financial Services (October 7, 2009) and IMF, “Making Over-the-Counter Derivatives Safer: The Role of Central Counterparties” (April 2010) at 26, available at www.imf.org. Or, indeed, route trades through the bilateral market.

²² See for example, the efforts of the Coalition for Derivatives End-Users as described in “Exemptions Sought to OTC Derivatives Rules”, *The Financial Times* (May 12, 2010), available at www.ft.com. See also “Democrats Deny Buffett on a Key Provision”, *The Wall Street Journal* (April 27, 2010), available at www.wsj.com.

²³ See for example, Association of Corporate Treasurers, “Comments in Response to the European Commission Consultation Document: Possible Initiatives to Enhance the Resilience of OTC Derivatives Markets” (August 2009), available at www.treasurers.org.

²⁴ Most often interest rate and foreign exchange risk.

²⁵ See the *Dodd-Frank Act*, s. 723.

²⁶ Respectively, the Chairman of the Senate Committee on Banking, Housing, and Urban Affairs and Chairwoman of the Senate Committee on Agriculture, Nutrition and Forestry.

²⁷ Respectively, the Chairman of the House Committee on Financial Services and House Committee on Agriculture.

commercial end-users.²⁸ While potentially warranted, these carve-outs clearly cut against the grain of the regime’s systemic protection mandate.²⁹

In fairness, the authors of the *Dodd-Frank Act* and EMIR were not blind to these latent incentive problems. Indeed, both regimes impose governance mechanisms – conflict of interest rules, board independence requirements and risk management committees, for example – designed to mitigate the resulting agency costs.³⁰ Proposed regulations under the *Dodd-Frank Act* also contemplate restrictions (i.e. voting caps) on the control clearing members and other financial institutions will be permitted to exercise over CCPs.³¹ Ultimately, however, these mechanisms are deficient in at least four important respects. First, the proposed voting caps would serve to attenuate the relationship between ownership and control in such a way that the private parties with arguably the greatest single economic stake in the long-term success of a CCP – clearing member owners – would have a disproportionately small say in terms of how the institution was structured and run.³² Second, the conflict of

²⁸ See “Dodd, Lincoln Try to Quell Derivatives Fury”, *The Wall Street Journal*, Washington Wire Blog (July 1, 2010), available at www.wsj.com.

²⁹ See Manmohan Singh, “Making OTC Derivatives Safe – A Fresh Look”, IMF Working Paper WP/11/66 (March 2011) at 4, available at www.imf.org.

³⁰ See the *Dodd-Frank Act*, ss. 725 and 763. See CFTC, Notice of Proposed Rulemaking Respecting Governance Requirements for Derivatives Clearing Organizations, Designated Contract Markets, and Swap Execution Facilities; Additional Requirements Regarding the Mitigation of Conflicts of Interest, 76 Fed. Reg. 722-737 (January 6, 2011) and CFTC, Proposed Rules Respecting Requirements for Derivatives Clearing Organizations, Designated Contract Markets, and Swap Execution Facilities Regarding Mitigation of Conflicts of Interest, Fed. Reg. 75 63,732-63,753 (October 18, 2010), both available at www.cftc.gov [collectively, the “Proposed CFTC DCO Conflict Rules”]. See also SEC Release 34-64018, Ownership Limitations and Governance Requirements for Security-Based Swap Clearing Agencies, Security-Based Swap Execution Facilities, and National Securities Exchanges with Respect to Security-Based Swaps under Regulation MC, 76 Fed. Reg. 12,645-12,648 (March 3, 2011), available at www.sec.gov [the “Proposed SEC SCA Conflict Rules”].

³¹ See Proposed CFTC DCO Conflict Rules (which propose individual and aggregate voting caps on the interests of clearing members and individual voting caps on certain ‘enumerated entities’ including bank holding companies, swaps dealers, major swap participants and associated persons) and Proposed SEC SCA Conflict Rules (which propose individual and aggregate voting caps on the interests of clearing members only).

³² See Sean Griffith, “Incentive Problems in Derivatives Trading: Towards a New Governance Structure for Clearinghouses” (June 1, 2010) [working paper on file with author] at 34. As Griffith

interest rules are designed principally to constrain conflicts vis-à-vis a CCP and (potential) clearing members, on the one hand, and their end-user clients, on the other.³³ As a result, they effectively disregard both the potential community of interest between CCPs, dealers and end-users (as reflected in our margin example and the fact that dealers are the principal owners of CCPs) and, more fundamentally, the far larger agency cost problems vis-à-vis this community of market participants and broader society. Third, mechanisms premised on the independence of board or committee members are likely to prove impotent insofar as one would expect ‘independence’ and expertise to be, in many cases, negatively correlated.³⁴ Finally, and along a similar vein, none of these mechanisms seek to address the asymmetries of information and expertise which, as we have already seen, undermine effective external monitoring. Put kindly, there is thus considerable scope for improvement in terms of how the *Dodd-Frank Act* and EMIR seek to address these information and incentive problems.

Product Eligibility Requirements. The second example highlights the regulatory challenges posed by supply-side financial innovation. As described in Chapter 3, the *Dodd-Frank Act* and EMIR both mandate that only *eligible* (i.e. sufficiently ‘standardized’³⁵) swap transactions be cleared and settled through CCPs.³⁶ Both regimes then enumerate the criteria upon which an instrument’s eligibility will

observes, the effects of this attenuation in terms of the mitigation of systemic risk are, at best, ambiguous; *ibid.*

³³ *Ibid.* Perhaps most conspicuously, Art. 31 of EMIR only requires that CCPs maintain effective arrangements to identify and manage potential conflicts of interest ‘between itself... and its clearing members or their clients or between them’.

³⁴ Especially where expertise is measured in terms of the accumulation of firm-specific human capital.

³⁵ Although, for want of a sufficiently precise definition, the term ‘standardized’ does not appear in the text of either the *Dodd-Frank Act* or EMIR.

³⁶ See Chapter 3 at 138-140.

be evaluated. These criteria include, *inter alia*: (1) the instrument's liquidity; (2) the availability of pricing information; (3) the capacity, operational expertise and resources of the relevant CCP, and (4) any anticipated reduction in systemic risk.³⁷ These criteria are designed to filter out illiquid or hard to price instruments which might prove more difficult to effectively hedge and, thus, more likely to contribute to the build-up of systemic risk within CCPs.

Under the *Dodd-Frank Act*, a CCP must submit to the CFTC or SEC (as applicable) each swap it intends to accept for clearing.³⁸ Simultaneously, the CFTC and SEC are required to engage in an ongoing review of the marketplace with the objective of identifying instruments which should be subject to the central clearing requirement.³⁹ EMIR, likewise, contemplates both a 'bottom-up' and 'top-down' approach toward eligibility determinations.⁴⁰ In making these determinations, regulators must strike a balance between moving too many instruments on to CCPs versus too few – as both could conceivably generate systemic risks.⁴¹ As we saw in Chapter 3, both regimes seek to minimize the residual systemic risks associated with ineligible (i.e. bilaterally cleared) instruments through the imposition of, *inter alia*, higher margin and capital requirements.

Crucially, the regulatory dichotomy between centrally and bilaterally cleared swaps generates two distinct payoff structures for market participants. This, in turn, raises the prospect of reflexive regulatory arbitrage. More specifically, it invites

³⁷ See the *Dodd-Frank Act*, ss. 723 and 763 and EMIR, Art. 4(3).

³⁸ *Ibid.*

³⁹ *Ibid.*

⁴⁰ See Chapter 3 at 145.

⁴¹ Griffith (n 32) at 23.

financial innovation – or, perhaps more accurately, ‘faux customization’⁴² – motivated by the desire to avoid the marginal costs associated with central clearing. Indeed, there are any number of reasons why dealers or other counterparties might find it more advantageous to utilize bilateral instruments (even after accounting for higher margin and capital requirements). Post-crisis constraints on the supply of high quality collateral, for example, have increased the opportunity costs of central clearing relative to the (often under-collateralized⁴³) bilateral market.⁴⁴ Along a similar vein, moving standardized instruments on to CCPs will require dealers to unbundle netted positions involving both standardized and non-standardized instruments.⁴⁵ Ultimately, these collateral and netting benefits may be very substantial.

The prospect of supply-side innovation is rendered even more acute by virtue of the fact that dealers enjoy effective control over the CCPs which, in the vast majority of cases, will make the initial eligibility determinations.⁴⁶ As Sean Griffith observes: ‘major dealers have an incentive to exert governance control to keep clearing eligible products off of clearinghouses so that they can continue to trade in the higher margin bilateral market.’⁴⁷ Importantly in this regard, neither the *Dodd-Frank Act* nor EMIR mandate regulatory review of a CCP’s decision that an

⁴² Ibid.

⁴³ It is at present unclear whether the contemplated margin requirements would eliminate this arbitrage opportunity.

⁴⁴ Manmohan Singh and James Aitken, “Deleveraging post Lehman – Evidence from Reduced Rehypothecation”, IMF Working Paper 09/42 (2009), available at www.imf.org; Singh (n 29) at 3-4, and Tracy Alloway, “Financial System Creaks as Loan Lubricant Dries Up”, *The Financial Times* (November 28, 2011), available at www.ft.com.

⁴⁵ Singh (n 44) at 4 and 8.

⁴⁶ Even where voting constraints or other governance mechanisms are imposed, dealers will nevertheless be able to exert considerable indirect control through their ability to re-route order flow; see Griffith (n 32) at 24-25.

⁴⁷ Ibid. at 23.

instrument is *ineligible* for central clearing. Moreover, one might expect regulators to be reluctant to overturn a CCP's decision owing to the aforementioned concern that forcing instruments on to CCPs could exacerbate systemic risk.⁴⁸ Indeed, this reluctance might be reinforced by asymmetries of information and expertise vis-à-vis regulators and CCPs. Once again, therefore, there appears to be ample room for improvement in terms of how the *Dodd-Frank Act* and EMIR address these information and incentive problems.

We are thus confronted with a familiar dilemma. The complexity of modern financial markets undermines the ability of public regulators to generate, monitor and enforce socially desirable regulation. Simultaneously, however, market participants – which are likely to enjoy a higher tolerance for this complexity – often lack powerful incentives to utilize their endowments of information and expertise toward achieving regulatory objectives. The remainder of this chapter explores how the form of public regulation can potentially help address (or magnify) both of these important problems.

II. The Shortcomings of Prescriptive, Rules-based Approaches to Regulation

Arguably the most common form of financial regulation are prescriptive rules enshrined in primary and secondary legislation. Prescriptive rules feature prominently in the FSA's Integrated Prudential Sourcebook; the rules and regulations promulgated by agencies such as the SEC and CFTC, and in the *Dodd-Frank Act* and EMIR. The archetypal rule prescribes both the empirical substance of the triggering activity or state of the world (e.g. exceeding a 65 mph speed limit) and the response thereby elicited from public actors (e.g. the imposition of a \$200 fine), leaving only

⁴⁸ Ibid.

factual issues to be determined by the prosecutor, judge or regulatory authority.⁴⁹ Scholars have also sought to distinguish between rules and other mechanisms for articulating the content of legal norms (e.g. broader ‘principles’) on the basis of, *inter alia*, their locus on a continuum from generality to specificity⁵⁰; their temporal orientation⁵¹; the degree of discretion which they confer on regulated actors⁵², and the position they occupy within the hierarchy of norms.⁵³

The generic normative arguments in favour of prescriptive rules will be instinctively familiar to every student of the law.⁵⁴ Very briefly, the benefits of rules are thought to derive first and foremost from their precision.⁵⁵ By drawing a sharp line between prohibited and permissible conduct, precision promotes greater predictability: thus lowering the transaction costs of decision-making for regulated actors, encouraging future planning and, ultimately, the more efficient allocation of resources.⁵⁶ At the same time, by constraining the discretion of decision-makers, the

⁴⁹ See Pierre Schlag, “Rules and Standards” (1985), 33 UCLA L. Rev. 359 at 381; Duncan Kennedy, “Form and Substance in Private Law Adjudication” (1976), 89 Harvard L. Rev. 1685 at 1687-1688; Louis Kaplow, “Rules and Standards: An Economic Analysis” (1992), 42 Duke L. J. 557 at 566-567, and Frederick Schauer, “The Tyranny of Choice and the Rulification of Standards” (2005), 14 J. Contemporary Legal Issues 803 at 803-804.

⁵⁰ See for example, Lawrence Cunningham, “A Prescription to Retire the Rhetoric of Principles-based Systems in Corporate Law, Securities Regulation and Accounting” (2007), 60:5 Vand. L. Rev. 1411 at 1422.

⁵¹ See for example, Cass Sunstein, “The Problems with Rules” (1995) 83:4 Cal. L. Rev. 953 at 961 and Kaplow (n 49) at 566-577.

⁵² See for example, Mark Nelson, “Behavioral Evidence on the Effects of Principles- and Rules-Based Standards” (2003), 17 Accounting Rev. 91 and Cunningham (n 50).

⁵³ See for example, Sunstein (n 51) at 966.

⁵⁴ Indeed, these arguments have become so generic as to induce Pierre Schlag to characterize them as ‘drearily predictable, almost routine.’; Schlag (n 49) at 380.

⁵⁵ Schlag (n 49) at 384. Indicia of precision, as the term is employed here, include, but are not limited to: (1) the *specificity* of both a norm’s trigger and its response; (2) its *transparency* (i.e. the use of language with well defined and universally accepted meanings within the relevant community), and (3) its *accessibility* (i.e. the easy application of the rule to concrete situations); Colin Diver, “The Optimal Precision of Legal Rules” (1983), 93 Yale L. J. 65 at 67.

⁵⁶ Sunstein (n 51) at 969 and 975.

relative precision of rules is also seen as promoting greater formal equality⁵⁷ and (theoretically at least) minimizing the prospect of bias, arbitrariness, abuses of power and rent seeking behaviour.⁵⁸

Simultaneously, however, rules possess some very significant drawbacks. The drafters of rules are invariably afflicted by imperfect information and bounded rationality, both of which threaten to undermine their ability to draft rules which encompass all future contingencies and to foresee the unintended consequences of their drafting choices.⁵⁹ More fundamentally, the future is itself inherently contingent.⁶⁰ The utilization of rules thus manifests the risk that they will be rendered anachronistic by subsequent developments.⁶¹ Rules are also by their very nature either *over*-inclusive (capturing behaviors or states of the world which should be excluded) or *under*-inclusive (failing to capture behaviors or states of the world which should be included).⁶² To the extent of this over- and/or under-inclusiveness, rules generate incentives which may be poorly aligned with regulatory objectives.⁶³ More specifically, this engrained emphasis on form over substance can incentivize those subject to rules to engage in (1) activities up to the boundary of permissible conduct⁶⁴

⁵⁷ Ibid. at 973-974.

⁵⁸ Carol Rose, “Crystals and Mud in Property Law” (1988), 40 *Stanford L. Rev.* 577 at 591; Schlag (n 49) 386, and Sunstein (n 51) at 974-975.

⁵⁹ Sunstein (n 51) at 957 and 993.

⁶⁰ As Karl Popper observed: ‘Quite apart from the fact that we do not *know* the future, the future is *objectively* not fixed. The future is *open: objectively open.*’; Karl Popper, *A World of Propensities* (Thoemmes Antiquarian Books, Bristol, 1990) at 18 [Emphasis in original].

⁶¹ Sunstein (n 51) at 993. As discussed in greater detail below, this assertion rests in large measure on assumptions respecting the high transaction costs of amending an anachronistic rule.

⁶² Kennedy (n 49) at 1689. Thus, for example, the archetypal rule with a pre-determined response will not distinguish between flagrant and technical violations; Schlag (n 49) at 386.

⁶³ Russell Korobkin, “Behavioral Analysis and Legal Form: Rules vs. Standards Revisited” (2000), 79 *Oregon L. Rev.* 23 at 36; Isaac Ehrlich and Richard Posner, “An Economic Analysis of Legal Rulemaking” (1974), 3 *J. Legal Stud.* 257 at 268, and Sunstein (n 51) at 992-993 and 995. See also Diver (n 55).

⁶⁴ Schlag (n 49) at 384-385.

and (2) welfare reducing creative compliance and regulatory arbitrage. As Lawrence Cunningham explains: ‘Rules can be blueprints for evading their underlying purposes. Bright lines and exceptions to exceptions facilitate strategic evasion, allowing artful dodging of a rule’s spirit by literal compliance with its technical letter.’⁶⁵ Finally, as Cass Sunstein has argued, rather than minimizing the potential for bias, abuses of power and rent seeking behavior, rules may simply serve to drive these phenomena underground.⁶⁶

Intuitively, the desirability of prescriptive rules will be a function of the complexity of the activities they attempt to regulate. In the absence of information costs and bounded rationality⁶⁷, regulators would be able to design infinitely precise rules contemplating the entire universe of potential future states of the world and ensuring absolute congruence with regulatory objectives. They would also be able to costlessly monitor compliance. At the same time, regulated actors would possess a complete understanding of how these rules applied to their precise circumstances (thereby encouraging future planning and the efficient allocation of resources) and be wholly dis-incentivized from engaging in creative compliance or regulatory arbitrage (thereby eliminating potential social costs). Conversely, however, where regulated activities are complex – as with risk management requirements for CCPs for example – we would expect this to be reflected in markedly higher costs associated with generating, monitoring compliance with and enforcing prescriptive rules. Ultimately, these costs may exceed any prospective benefits.

⁶⁵ Cunningham (n 50) at 1423.

⁶⁶ Sunstein (n 51) at 994.

⁶⁷ And ignoring for the moment that the future is itself inherently contingent; *see* (n 60).

The costs of utilizing prescriptive rules are compounded by the dynamism of modern financial markets. Conventional wisdom holds that the generation of prescriptive rules will typically involve high *ex ante* transaction costs attributable to the time and effort expended by regulators in order to articulate the empirical substance of triggers and match each trigger with the appropriate regulatory response.⁶⁸ Thereafter, the expectation is that these upfront costs will translate into lower *ex post* transaction costs for both regulators (applying rules) and regulated actors (evaluating the potential application of rules to their current or contemplated future activities). Crucially however, this wisdom begins to break down under more dynamic conditions, as regulators must continually revisit and update rules in response to changing circumstances and regulated actors must synthesize these updated rules with a view to determining their business impact.

Finally, prescriptive rules provide fertile ground for regulatory arbitrage – including supply-side financial innovation. The utilization of structured finance techniques to arbitrage the rigid risk weightings under the Basel II capital adequacy standards is perhaps the most infamous example.⁶⁹ But even ostensibly more nuanced rules such as those delimiting the regulatory treatment of centrally and bilaterally cleared swaps under the *Dodd-Frank Act* and EMIR manifest this potential. Moreover, the prospect of regulatory arbitrage feeds back into the costs stemming from the dynamism of modern financial markets, as regulators must reflexively update regulation with the objective of closing the loopholes which prescriptive rules inevitably generate.

⁶⁸ Kaplow (n 49) at 557; Korobkin (n 63) at 32, and Ehrlich and Posner (n 63) at 267.

⁶⁹ See David Jones, “Emerging Problems with the Basel Capital Accord: Regulatory Capital Arbitrage and Related Issues” (2000), 24 *J. of Banking & Fin.* 35 and Alan Greenspan, “The Role of Capital in Optimal Banking Supervision and Regulation” (1998), Federal Reserve Bank of New York Policy Review 163.

Collectively, these costs render forms of regulation which rely exclusively (or even primarily) on prescriptive rules a suboptimal response to the challenges posed by complexity and financial innovation. The salient question thus becomes: *are there other forms of regulation which hold out more promise?* Part III examines one possibility.

III. An Introduction to More Principles-based Regulation

The emergence of more principles-based regulation (or MPBR) represents one of the most significant developments in global financial regulation in the early (and heady) years of the 21st century. The meteoric rise of MPBR in the decade or so prior to the GFC is well documented.⁷⁰ Over this period, comprehensive principles-based regimes were pursued by the U.K. FSA and Australian Securities and Investment Commission (ASIC).⁷¹ Other jurisdictions, meanwhile, showed signs of moving in a similar direction.⁷² As the GFC has unfolded, however, this nascent form of regulation has become a lightning rod for criticism stemming from its perceived role in institutionalizing a laissez faire approach toward the regulation of private risk-taking.⁷³ Much of this criticism is the product of MPBR's association with the U.K.

⁷⁰ See for example, Cristie Ford, "Principles-based Securities Regulation in the Wake of the Global Financial Crisis" (2010), 55 McGill L. J. 257; Kern Alexander, "Principles v. Rules in Financial Regulation: Re-assessing the Balance in the Credit Crisis" (2009), 10 Eur. Bus. Org. Rev. 169; Cristie Ford, "New Governance, Compliance, and Principles-Based Securities Regulation" (2008), 45 Am. Bus. L. J. 1; Julia Black, "Forms and Paradoxes of Principles-based Regulation" (2008), 3:4 Capital Markets L. J. 425, and Julia Black, Martyn Hopper and Christa Band, "Making a Success of Principles-based Regulation" (2007), L. and Fin. Markets Rev. 191.

⁷¹ See FSA Press Release FSA/PN109/2006, "FSA Publishes Radical Proposals for Move to Principles-based Regulation" (October 31, 2006) and FSA, "Principles-based Regulation: Focusing on Outcomes that Matter" (April 2007), both available at www.fsa.gov.uk.

⁷² Perhaps most notably Canada; see Ford (2008) (n 70); Expert Panel on Securities Regulation, "Creating an Advantage in Global Capital Markets: Final Report and Recommendations" (January 2009); Bill 38, *Securities Act*, 5th Sess., 37th Parl., British Columbia (assented to May 13, 2004), s. 203, and *Securities Rules*, British Columbia Securities Commission (proposed June 21, 2004).

⁷³ See for example, Brooke Masters, "Financial Watchdog Poised to Intervene Earlier", *The Financial Times* (March 13, 2010) and Brooke Masters and Patrick Jenkins, "Spurred into Action", *The Financial Times* (March 23, 2009), both available at www.ft.com.

FSA (long a ‘thought leader’⁷⁴ in the field); its so-called ‘light touch’ approach to regulation⁷⁵, and its perceived culpability for failing either to predict the gathering storm or fix a leaking roof whilst the sun still shined. It has not helped that MPBR has also been widely misunderstood.⁷⁶ Consequently, it may be useful to begin by asking: *what exactly is MPBR?*

MPBR is frequently described as encompassing a move away from detailed, prescriptive rules toward more high-level ‘principles’⁷⁷ as mechanisms for articulating the substantive content of legal norms.⁷⁸ The ‘more’ in MPBR in part reflects this shift: the baseline comparator being what many perceive as the historically predominant rules-based approach toward financial regulation. Viewed from this perspective, however, the distinction between MPBR and purely prescriptive, rules-based approaches effectively boils down to one of statutory construction and interpretation, with the resulting normative debate revolving primarily around the relative desirability of rules versus principles in the enforcement context.⁷⁹ This

⁷⁴ See FSA (n 71); Black et. al. (n 70); Expert Panel (n 72); Ford (2010) (n 70), and Ford (2008) (n 70).

⁷⁵ A term which the FSA has taken great pains to emphasize it never used to describe its regulatory philosophy. At the same time, however, the FSA was by no means bashful when it came to touting the benefits of this philosophy prior to the crisis; see “The UK FSA: Nobody Does it Better?”, speech by Margaret Cole, FSA Director of Enforcement, at Fordham Law School (October 17, 2006), available at www.fsa.gov.uk.

⁷⁶ The nature and extent of this misunderstanding is illustrated by a piece of anecdotal evidence offered by Cristie Ford. Ford notes that 87.5% of the 75 written submissions from stakeholders to Canada’s Expert Panel on Securities Regulation (see Expert Panel (n 72)) were in favor of MPBR. However, as Ford observes: ‘a substantial number seemed to assume that principles-based and rules-based regulation were at opposite extremes, and that a move to a more principles-based system meant substantially eliminating rules, no matter how efficient or necessary they might be.’; Ford (n 70).

⁷⁷ In contrast with prescriptive rules, the archetypal principle leaves both the trigger and response to be determined by the decision-maker on the basis of an underlying evaluative framework. This framework may itself be specified *ex ante* to varying degrees or left entirely to the *ex post* discretion of the decision-maker. The degree to which this framework is transparent to those other than the decision-maker may also vary widely in practice.

⁷⁸ Black et. al. (n 70) at 191 and FSA (n 71) at 6.

⁷⁹ In particular with respect to the possibility of so-called ‘regulation by enforcement’. See for example, James Park, “The Competing Paradigms of Securities Regulation” (2007), 57 Duke L. J. 625 and Harvey Pitt and Karen Shapiro, “Securities Regulation by Enforcement: A Look Ahead at the Next Decade” (1990), 7 Yale J. on Reg. 149.

perspective is, on one level, correct. A move toward MPBR would necessarily entail a shift in terms of statutory construction toward the articulation of broader principles.⁸⁰ This shift would, in turn, have repercussions in terms of both statutory interpretation and enforcement. Viewed solely from this narrow formalist perspective, however, MPBR simply forms part of – and risks ultimately being subsumed within – the traditional ‘rules versus principles’ debate.⁸¹

Ultimately, while the broader rules versus principles debate has undeniably influenced its development, MPBR deserves to be evaluated on its own terms for at least two reasons. First, rather than contemplating the wholesale abandonment of rules, MPBR envisions that rules and principles can play complementary reinforcing roles within a regulatory regime (which, in turn, is the second rationale for characterizing MPBR as simply ‘more’ principles-based).⁸² In fact, MPBR reflects a tacit acknowledgement that the effectiveness of a regulatory regime in delivering desired regulatory outcomes is contingent not just on statutory construction or, indeed, the content of regulation – but also, and crucially, on *institutional philosophy*.⁸³ Second, and more importantly, the potential benefits of MPBR flow not just from *principles*, but from the institutionalization of *processes* which seek to enhance both (1) dialogue between regulators and regulated actors and (2) ongoing engagement by regulated actors with regulatory objectives. MPBR can thus be seen

⁸⁰ Black (n 70) at 435. Or, at the very least, the introduction of a principles-based overlay on top of an existing body of prescriptive rules.

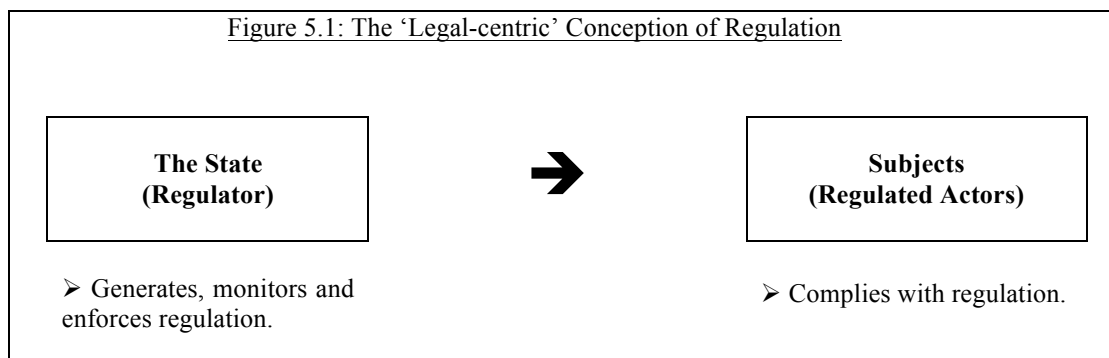
⁸¹ For a sense of the contours of this (now stale) debate, see Schlag (n 49); Kennedy (n 49); Kaplow (n 49); Diver (n 55); Sunstein (n 51), and Rose (n 58).

⁸² FSA (n 71); Black et. al. (n 70), and Ford (n 70). This vision has been explained by Julia Black: ‘There are strong arguments for saying that a tiered approach to rule design should be adopted – principles need an under-pinning of detailed rules in some areas – and detailed rules in turn need the support and coverage of principles to thwart strategies, which seek to exploit gaps and inconsistencies in those detailed provisions.’; Black (n 70) at 429-430, citing Michael Moran, *The British Regulatory State* (Oxford University Press, Oxford, 2003) at 33.

⁸³ See William Bratton, “Enron, Sarbanes-Oxley and Accounting: Rules versus Principles versus Rents” (2003), 48 Vill. L. Rev. 1023.

as falling under the umbrella of a diverse collection of regulatory strategies often described as ‘process-oriented’ regulation.⁸⁴

In Chapter 4 we encountered a legal-centric view of regulation which defined it as emanating exclusively from the power of the state to generate and enforce ‘the law’.⁸⁵ As depicted in Figure 5.1, this top-down, command-and-control paradigm envisions a world in which communication between regulators and regulated actors is effectively a one way street.

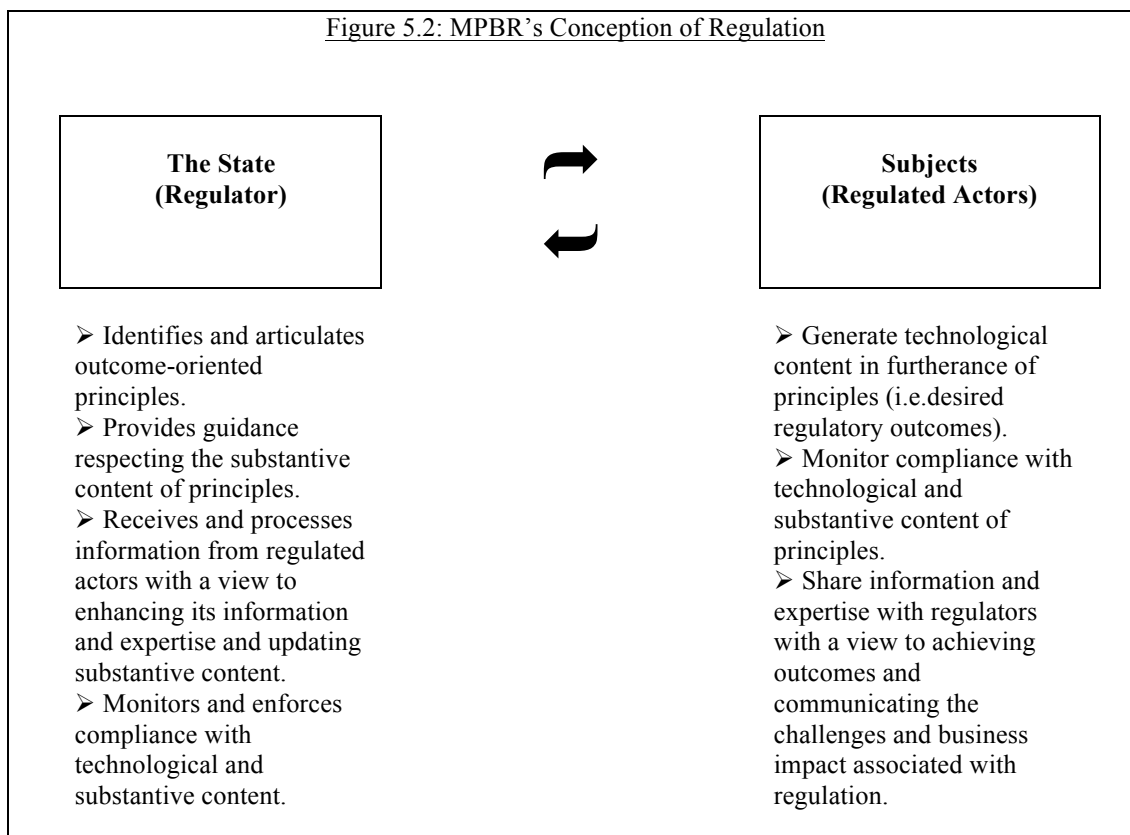


Standing in stark contrast with this legal-centric paradigm, MPBR envisions an iterative, dialogic relationship between regulators and regulated actors. Indeed, MPBR contemplates that regulated actors (and other stakeholders) will be invited to play a potentially important role within the processes of generating, updating and monitoring compliance with regulation. MPBR is thus a reflection of the more expansive (or de-centered) understanding of regulation – also encountered in Chapter 4 – in connection with our examination of enforced self-regulation. This dialogic relationship also shares a number of similarities with so-called ‘new governance’

⁸⁴ Other members of this family include systems-based regulation; enforced self-regulation; management-based regulation, and meta-regulation; *see* Sharon Gilad, “It Runs in the Family: Meta-regulation and Its Siblings” (2012), 4 *Regulation & Governance* 485.

⁸⁵ *See* Chapter 4 at 152.

regulatory strategies.⁸⁶ The basic dynamics of this relationship are depicted in Figure 5.2.



It is this dialogic relationship which constitutes the core idea animating MPBR. Principles themselves, while a key ingredient, are perhaps best understood as uniquely flexible, responsive and durable conduits through which this relationship generates and, importantly, *updates* the substantive content of regulation. The term ‘MPBR’ is

⁸⁶ See Robert Weber, “New Governance, Financial Regulation, and Challenges to Legitimacy: The Example of the Internal Models Approach to Capital Adequacy Regulation” (2010), 62:3 Admin. L. Rev. 783; Ford (n 70), and Black et. al. (n 70) at 193. The term ‘new governance’ has grown to encompass a wide range of approaches to administrative governance emphasizing polycentric and collaborative regulatory structures which span the public-private divide and envision an important role for private actors in shaping public policy and regulation. Perhaps most significantly, new governance mechanisms – much like MPBR and, indeed, enforced self-regulation – seek to harness the expertise of private actors in furtherance of public regulatory objectives. In this respect, MPBR, enforced self-regulation and new governance can each be understood as pragmatic responses to the increasingly complexity within many fields of human activity. Other parallels between MPBR and new governance include: (1) a dynamic, flexible, and dialogic lawmaking process; (2) the use of flexible forms of legal norms, and (3) the retention of a strong public role in terms of the generation and, especially, enforcement of regulation.

thus a somewhat misleading label: a more accurate (and certainly less tainted) one perhaps being ‘dialogic’ or, again, ‘process-oriented’ regulation. Such branding issues aside, however, the pivotal question thus becomes: *what are the essential ingredients of this dialogic relationship? What, in other words, does MPBR need to succeed?*

The first ingredient is the articulation by public regulators of legal norms which identify the regulatory outcomes (or desired behaviors) they are designed to achieve (or incentivize), and not merely the technical rules with which regulated actors are expected to comply.^{87, 88} The rationale for utilizing outcome-oriented principles rather than prescriptive rules as the bedrock of a regulatory regime flows from an acknowledgement that private (regulated) actors – owing to their superior information and expertise – are often better positioned than public regulators to design and update the technological content of the policies, systems and controls needed to achieve desired regulatory outcomes.⁸⁹ MPBR can thus be seen as endowing regulated actors with the flexibility to design bespoke technological regulation, whilst simultaneously constraining the exercise of this discretion through the identification of real world benchmarks against which the effectiveness of this regulation will be evaluated. Ultimately, as Cristie Ford suggests: ‘Some version of outcome oriented regulation is a necessary correlative to principles-based regulation,

⁸⁷ As explained by Clive Briault (then the FSA’s Managing Director of Retail Markets), the FSA’s principles-based approach involves ‘a shift of emphasis... away from looking at the processes carried out by firms, toward the outcomes we seek to achieve for consumers, firms and markets.’; Clive Briault, “Making a Real Difference to Consumers Through More Principles-Based Regulation”, FSA, Treating Customers Fairly Conference (December 7, 2006), quoted in Black et. al. (n 70) at 192.

⁸⁸ A number of observers, and in some ways the FSA itself, understandably view MPBR and outcome-oriented regulation as representing distinct (albeit related) approaches to regulation; *see* for example, Black et. al. (n 70) at 191. However, the symbiotic relationship between these approaches also provides ample justification for the view, advanced by scholars such as Cristie Ford, that MPBR represents a single and coherent *philosophy* of regulation; *see* Ford (n 70).

⁸⁹ Black et. al. (n 70) at 192.

in that it is a responsible way to force accountability into a system that leaves the articulation of the content of those principles to on-the-ground actors.’⁹⁰

It is important at this stage to distinguish between the *substantive* and *technological* content of regulation within the context of a more principles-based regime.⁹¹ The substantive content of regulation is collectively made up of the animating principle itself (e.g. ‘a firm must conduct its business with integrity’); the statutory construction of any legal norms giving effect to this principle (e.g. anti-fraud provisions); the interpretive framework underpinning this statutory construction (e.g. the common law definition of fraud), and, importantly, the desired regulatory outcomes (e.g. the promotion of confidence in financial institutions and markets). The technological content of regulation, in contrast, consists of the policies, systems and controls implemented by regulated actors with a view to achieving desired regulatory outcomes. While responsibility for articulating the substantive content of regulation resides with public regulators⁹², MPBR contemplates that the technological content of regulation will in many cases be generated by regulated actors and/or other stakeholders (e.g. ISDA).

The second ingredient relates to the approaches adopted by both regulators and regulated actors toward their respective roles in achieving desired regulatory outcomes.⁹³ There are several intertwined facets to this ingredient. First, MPBR necessitates that regulators provide clear and robust guidance respecting the

⁹⁰ Ford (n 70) at 60.

⁹¹ Or, simply, ‘substantive’ and ‘technological’ regulation.

⁹² Although, as we shall see, regulated actors and other stakeholders may be invited to play a role in generating substantive regulation.

⁹³ FSA (n 71) at 2 and 6.

substantive content of principles.⁹⁴ Second, to the extent that MPBR contemplates that the technological content of principles will be generated by regulated actors, it demands that regulators loosen their grip on the reigns of regulation and, in so doing, devolve responsibility to – and leverage the accumulated expertise of – regulated actors in vital areas such as risk management.⁹⁵ This in turn demands that regulators carve out a good faith sphere within which regulated actors are free to design and implement technological regulation with a view to achieving desired regulatory outcomes.⁹⁶ Of particular importance in this regard is a philosophy of transparency, predictability and restraint in the deployment of enforcement resources.⁹⁷ In the absence of such a sphere, some regulated actors can be expected to behave as if they were subject to prescriptive rules⁹⁸ – thereby negating many of the prospective benefits of MPBR described in Part IV. At the same time, however, as examined in greater detail below, public regulators must carefully balance this philosophy against the countervailing imperative of pursuing a policy of intensive supervision and vigorous enforcement.

The outcome-oriented focus of MPBR concomitantly requires that regulated actors adopt a proactive approach toward their role and responsibilities within the regulatory regime. Specifically, MPBR envisions that regulated actors will actively and meaningfully engage with principles at the highest level with a view to generating technological regulation capable of achieving desired regulatory outcomes. This in

⁹⁴ Black (n 70) at 439. Mechanisms for disseminating such guidance include, but are not limited to, official administrative guidance; speeches; ‘no action’ or ‘Dear CEO’ letters; compliance audits; comments on industry standards, or specific enforcement actions; *see* Ford (n 70).

⁹⁵ Ford (n 70) at 27.

⁹⁶ Black et. al. (n 70) at 200.

⁹⁷ *Ibid.* at 197 and Ford (n 70) at 34.

⁹⁸ Steven Schwarcz, “The ‘Principles’ Paradox” (2009), 10 *Eur. Bus. Org. L. Rev.* 175 and Black (n 70) at 449.

turn contemplates both a hands on role for boards of directors and senior management in terms of their oversight and stewardship of regulatory compliance matters⁹⁹ and, simultaneously, a strategic business role for firm compliance, risk management and audit personnel.¹⁰⁰ Importantly, it also contemplates a change in the mindset of (many) regulated actors. As explained by the FSA in the context of its migration toward a more principles-based regime:

‘Firms must change their own behavior and grasp the opportunities this presents for increased innovation and more flexible operations, while at the same time fully appreciating their regulatory responsibilities and ensuring that they deliver against them. This will mean a shift in focus from managing a legally driven process of compliance with detailed rules to managing the delivery of defined outcomes in a more flexible regulatory environment.’¹⁰¹

Adding further:

‘Effective compliance will evolve away from a primary focus on the designing, implementing and monitoring processes that embed detailed regulatory rules in business operations. Instead, it will increasingly require the exercise of judgment.’¹⁰²

The success of MPBR is thus dependent on obtaining a significant degree of philosophical buy-in from regulated actors in terms of their attitude and approach toward their role in achieving desired regulatory outcomes.

The third ingredient is an honest and sophisticated dialogue between regulators and regulated actors. This dialogic relationship is premised on the dual expectation that (1) regulators will be transparent about their expectations and the regulatory outcomes they hope to achieve, and (2) regulated actors will be willing to share their superior information and expertise with a view to achieving these

⁹⁹ FSA (n 71) at 2 and Black et. al. (n 70) at 193.

¹⁰⁰ Black et. al. (n 70) at 200.

¹⁰¹ FSA (n 71) at 17 [Emphasis added].

¹⁰² Ibid. and Black (n 70) at 439.

outcomes and more forthcoming about the challenges they face in aligning their business activities with public regulatory objectives.¹⁰³ The objective of this relationship is, ultimately, to foster ‘shared understandings’¹⁰⁴ between regulators and regulated actors regarding their respective roles and responsibilities within the regulatory regime; the substantive content of regulation, and the real world outcomes regulators hope (and can reasonably expect) to achieve.¹⁰⁵ The cultivation of these shared understandings in turn requires the creation of what the FSA has characterized as a new regulatory architecture¹⁰⁶: ‘interpretive communities’.¹⁰⁷ These interpretive communities – made up of regulators, regulated actors and third-party stakeholders such as industry trade associations, investor advocacy groups and the broader policy community¹⁰⁸ – represent the driving force behind MPBR: generating, updating and disseminating substantive and technological regulation on a dynamic basis in response to market and regulatory developments.

The final ingredient is a credible commitment on the part of regulators to pursue a policy of intensive supervision and targeted and proportional (yet vigorous) enforcement. Supervision and enforcement take on special importance within a more principles-based regime for three related reasons. First, intensive supervision – that is to say supervision characterized both by a high frequency of interactions and high

¹⁰³ FSA (n 71) at 8 and 17. *See also* Black (n 70) at 439 and Ford (n 70).

¹⁰⁴ As Black et. al. explain: ‘Whether a rule is clear or certain depends on shared understandings. Just looking at a rule does not tell us whether it is certain... Whether or not a rule is ‘certain’ depends not so much on whether it is detailed or general, but whether all those applying the rule (regulator, regulated firm, court/tribunal) agree on what the rule means.’; Black et. al. (n 70) at 194.

¹⁰⁵ *Ibid.* at 203-204.

¹⁰⁶ FSA (n 71) at 8.

¹⁰⁷ Schwarcz (n 90) at 184.

¹⁰⁸ Ayres and Braithwaite have used the term ‘tripartism’ to describe this sort of participation by third-parties within the regulatory process; Ian Ayres and John Braithwaite in *Responsive Regulation: Transcending the Deregulation Debate* (Oxford University Press, Oxford, 1992), ch. 3.

levels of expertise and independence on the part of supervisors – facilitates greater information flow between regulators and regulated actors and provides a built-in feedback mechanism for communicating regulatory expectations in a non-public, non-adversarial fashion.¹⁰⁹ In this respect, intensive supervision can be thought to represent the front line of the dialogic relationship between regulators and regulated actors.¹¹⁰

Second, insofar as MPBR contemplates that regulated actors will generate and monitor compliance with technological regulation, intensive supervision and the credible threat of swift and decisive enforcement are necessary in order to constrain the inherent agency cost problems arising from this delegation of responsibility and discretion.¹¹¹ Specifically, the threat of (costly) regulatory intervention must be wielded by regulators with a view to incentivizing regulated actors to (1) engage meaningfully with principles; (2) actively participate in interpretive communities; (3) share their information and expertise, and (4) design, implement, update and monitor compliance with technological regulation in furtherance of public regulatory objectives.¹¹² At the same time, however, MPBR necessitates that regulators strike a delicate balance between the use of supervision and enforcement to compel compliance and the desire to foster a more honest dialogue and stimulate regulatory innovation.¹¹³ At the fulcrum of this balance is a strategy of targeted and proportional

¹⁰⁹ Ford (n 70) at 35.

¹¹⁰ Intensive supervision will be particularly vital during the transition toward a more principles-based regime. *See* Black (n 70) at 443 for an examination of the importance of intensive supervision within the context of the FSA’s role-out of its ‘Treating Customers Fairly’ (TCF) Initiative.

¹¹¹ Ayres and Braithwaite (n 108), ch. 2.

¹¹² Notably, utilizing the threat of costly regulatory intervention to influence the content of regulation generated by private actors is a strategy which MPBR shares with enforced self-regulation; *see* [Chapter 4](#).

¹¹³ Expert Panel (n 72) at 20.

enforcement sensitive to whether any given transgression represents a case of well-intentioned misjudgment or a more deliberate (or willfully blind) attempt to exploit the inherent discretion conferred upon regulated actors under MPBR.¹¹⁴ Whereas the former may be addressed within the dialogic relationship itself without resort to formal enforcement proceedings, the latter demands swift and decisive action on the part of regulators.¹¹⁵

This, in turn, dovetails with the final reason why intensive supervision and vigorous enforcement are of vital importance within a more principles-based regime: the need to identify, punish and potentially remove from the marketplace altogether (via de-licensing) those ‘bad apples’ whose willful misconduct would otherwise threaten to erode the mutual trust upon which MPBR is founded. Accordingly, while often overlooked by regulators and many commentators prior to the GFC, intensive supervision and targeted and proportional enforcement are clearly essential to the success of MPBR.

What becomes apparent from the foregoing examination is that the essential ingredients of MPBR, where they all come together, form something of a symbiotic relationship. Perhaps equally apparent, however, is that the failure to add any single ingredient can be expected to undermine the successful implementation – or precipitate the systemic unraveling – of a regulatory regime premised upon MPBR. The pre-crisis experience of the FSA is particularly illustrative in this regard.

¹¹⁴ This strategy is consistent with the ‘tit-for-tat’ enforcement model envisioned by Ayres and Braithwaite; *see* Ayres and Braithwaite (n 108), ch. 2.

¹¹⁵ Ford (n 70) at 48. To this end, MPBR also requires that a robust array of remedial mechanisms (including de-licensing) be available in respect of the violation of principles themselves; *Ibid.* In this respect, the enforcement pyramid envisioned by Ayres and Braithwaite – at the apex of which resides a ‘benign big gun’ (i.e. de-licensing) – is, once again, consistent with this strategy; Ayres and Braithwaite (n 108), ch. 2.

Specifically, the FSA's failure to (1) foster interpretive communities; (2) engage as a meaningful participant within these communities, and (3) pursue a policy of intensive supervision and vigorous enforcement ultimately undercut its attempts to implement MPBR. Indeed, regulators seeking to successfully implement MPBR must address a host of significant challenges. These challenges are discussed in Part VI. First, however, we turn our attention to the prospective benefits.

IV. The Benefits of MPBR: Principles and Process

The prospective benefits of MPBR flow from four primary sources: (1) the attenuation of asymmetries of information and expertise between regulators and regulated actors; (2) the amelioration of agency cost problems stemming from the divergence of the private incentives of regulated actors with public regulatory objectives; (3) the responsiveness of MPBR to new market and regulatory developments, and (4) the flexibility and attendant durability of MPBR as a form of regulation. As we shall see, each of these prospective benefits – derived from the combination of *principles* and *process* – is particularly desirable in light of the regulatory challenges posed by complexity and financial innovation.

As described in Chapter 4, public regulators face chronic and potentially severe asymmetries of information and expertise vis-à-vis regulated actors. MPBR holds out the potential to attenuate these asymmetries in two ways. First, as described above, MPBR invites – or, perhaps more accurately, *compels*¹¹⁶ – regulated actors to share their information and expertise with regulators. Interpretive communities can, similarly, be viewed as conduits for the transfer of this information and expertise. Second, intensive supervision places regulators closer to the heart of the action:

¹¹⁶ Via the threat of more costly (prescriptive) regulatory intervention in response to the perceived failure of regulated actors to live up to their responsibilities within a more principles-based regime.

granting them sustained access to the complex inner workings of the markets and institutions which they oversee.¹¹⁷ MPBR thus manifests clear informational benefits for regulators. By enhancing their tolerance for complexity, it renders them more effective supervisors and, perhaps as importantly, more capable of playing an active leadership role within interpretive communities.¹¹⁸ MPBR also holds out potential benefits for compliance-oriented regulated actors: helping them to overcome the adverse selection problem which might otherwise persuade regulators to approach all regulated actors and activities with (potentially unwarranted) suspicion.

The GFC serves as a powerful reminder of the pervasiveness of agency cost problems within modern financial markets. Indeed, these problems are likely to be magnified where regulated actors are asked – as MPBR does¹¹⁹ – to play an explicit role in achieving public regulatory objectives. These problems are also likely to prove more acute within more complex and innovative financial markets.¹²⁰ MPBR seeks to better align the incentives of private risk-takers with public regulatory objectives via several mechanisms.¹²¹ First, having been *ex ante* participants in the

¹¹⁷ There is, admittedly, something of an intractable ‘chicken and egg’ problem here insofar as one of the elements of intensive supervision is highly expert supervisors.

¹¹⁸ This, in turn, would help ameliorate the agency cost problems described below.

¹¹⁹ As, indeed, do enforced self-regulation, the *Dodd-Frank Act* and EMIR (see [Part V](#)).

¹²⁰ There are two reasons for this. First, one would expect the asymmetries of information and expertise between regulators and regulated actors to be most acute within such markets, thereby undermining the ability of the former to effectively monitor the activities of the latter. Second, within more innovative markets, private actors are likely to be rapidly deploying resources (with a view to extracting quasi-rents from the new innovation) at precisely the same time that regulators are encouraging caution and restraint (with a view to identifying the attendant regulatory challenges and crafting the appropriate policy response). The regulatory fallout over the use of collateral swaps is illustrative of this tension; see Lisa Pollack, “The FSA Takes Preemptive Action on Liquidity Swaps”, *The Financial Times* (October 17, 2011) and Paul Davies, “Banks and Insurers Defend Liquidity Swaps”, *The Financial Times* (October 16, 2011), both available at www.ft.com.

¹²¹ The advantages of MPBR in terms of ameliorating agency cost problems are particularly evident when compared with more prescriptive, rules-based approaches to regulation. As described above, prescriptive rules are by their very nature either over-inclusive or under-inclusive and, thus, promote or deter the behavior of regulated actors in ways which are incongruent with their underlying objectives. Accordingly, as Ford observes: ‘prescriptive requirements emphasize the wrong things. That is, they

generation of technological regulation and within interpretive communities, MPBR (like enforced self-regulation) implicitly seeks to engender a higher level of commitment from regulated actors in terms of *ex post* compliance. Second, the articulation of outcome-oriented principles acts as a constraint on the discretion which MPBR confers upon regulated actors, effectively minimizing the opportunities for welfare reducing creative compliance and regulatory arbitrage.¹²² Finally, MPBR leverages the credible threat of swift and decisive enforcement action (including de-licensing) in order to recalibrate the incentives of those private actors who might otherwise seek to abuse this discretion.

A third source of prospective benefits flows from MPBR's inherent capacity to respond to new market and regulatory developments. This responsiveness stems from MPBR's ability to leverage the information, expertise and incentives of private actors to generate – and, crucially, *update* – the technological content of regulation on a dynamic basis. As Cristie Ford observes, the benefits of this responsiveness are perhaps best understood in juxtaposition to more prescriptive, rules-based regulatory approaches:

‘The advantage of regulatory principles, as opposed to detailed rules, is not that they will remain forever vague, but rather that their content can be filled in more dynamically and insightfully by those with the greatest understanding of the relevant situations... The difference is that *their content is intended to remain flexible and up to date – that rather than ossifying, the principles' content will continue to evolve, discarding older formulations as newer, more comprehensive or effective ones emerge.*¹²³

encourage firms to focus on detailed compliance rather than to exercise sound judgment with a view to the best interests of their clients and the markets.’; Ford (n 70) at 19.

¹²² Black et. al. (n 70) at 195 and Black (n 70) at 438.

¹²³ Ford (n 70) at 36 [Emphasis added].

The responsiveness of MPBR is thus of particular utility (especially relative to more prescriptive, rules-based approaches)¹²⁴ within the context of modern financial markets, where change is among the only constants.¹²⁵ Importantly, this responsiveness – and in particular the ability of MPBR to evolve to reflect new market and regulatory developments without modification to its substantive core – further minimizes the potential opportunities for creative compliance and regulatory arbitrage. Indeed, when combined with its outcome-oriented focus, the responsiveness of MPBR arguably renders it more or less impervious to evasion.

Finally, the inherent flexibility of MPBR – a product of the articulation of outcome-oriented principles – enhances its durability as a source of regulation.¹²⁶ The generation of prescriptive rules represents a crystallized – and therefore relatively static – response to the prevailing conditions within a market, regulatory and political environment at a particular moment in time. Thereafter incapable of reflecting changing conditions or new learning, rules ossify quickly and, thus, require relatively frequent amendment in order to respond to the rapid pace of change which characterizes modern financial markets.¹²⁷ In sharp contrast, the flexibility of MPBR enables it to evolve organically in response to market developments and new regulatory challenges, often without the need for formal regulatory intervention.¹²⁸ Accordingly, as observed by Lawrence Cunningham: ‘in rapidly-changing

¹²⁴ Black et. al. (n 70) at 193.

¹²⁵ Weber (n 86) at 48. Here we find an obvious and important parallel between MPBR and new governance. As explained by Weber: ‘New governance tools aim to respond to the continual changes of regulated society and knowledge itself, so “all solutions to problems should be seen as provisional”’; Ibid. at 43, citing David Trubek and Louise Trubek, “New Governance and Legal Regulation: Complementarity, Rivalry or Transformation” (2007), 13 Colum. J. Eur. L. 539 at 542.

¹²⁶ Black (n 70).

¹²⁷ Ford (n 70).

¹²⁸ Ibid. at 45.

environments, such as securities markets, rules can become obsolete faster than principles do.’¹²⁹

Ultimately, the prospective benefits of MPBR are perhaps most intuitively understood in terms of the transaction and agency cost implications of the long-term, iterative ‘relational contract’¹³⁰ formed between regulators and regulated actors.¹³¹ Viewed from this perspective, the benefits of MPBR in terms of enhancing regulators’ tolerance for complexity; aligning the incentives of private actors with public regulatory objectives, and responding to uncertain future contingencies can each be understood as constraining opportunism on the part of regulated actors.¹³² At the same time, the responsiveness, flexibility and durability of MPBR can be seen as combining to reduce the transaction costs stemming from the inevitable adaptation of this relational contract in response to changing customs, understandings and new market and regulatory developments.¹³³ Notably, this account of the transaction and agency cost implications of MPBR as a relational contract diverges markedly from the two-dimensional transaction cost analyses rooted in the traditional rules versus

¹²⁹ Cunningham (n 50) at 1423, citing Frank Partnoy, “A Revisionist View of Enron and the Sudden Death of “May”” (2003), 48 *Vill. L. Rev.* 1245 at 1265.

¹³⁰ See Oliver Williamson, “Transaction-Cost Economics: The Governance of Contractual Relations” (1979), 22:2 *J. of Law & Econ.* 233 at 238, citing Ian Macneil, “The Many Futures of Contract” (1974), 47 *So. Cal. L. Rev.* 691. The relational contract in this model would be the entire body of substantive and technological content generated by regulators and regulated actors within the context of their long-term, iterative relationship.

¹³¹ The reason for this intuitiveness is perhaps that the relationship is essentially a contract between a licensor (the regulator) and licensee (the regulated actor) wherein the regulator, in exchange for certain undertakings (e.g. compliance with regulation), grants the regulated actor a license to engage in business activities within the parameters of their registration.

¹³² Although, as described in greater detail below, regulated actors are not the only parties in respect of which agency cost concerns arise within the context of a more principles-based regime.

¹³³ Enhancing regulators’ tolerance for complexity may also reduce regulatory transaction costs to the extent that, after accounting for acquisition costs, regulators are able to more cost-effectively identify, analyze and respond to new market developments.

principles debate.¹³⁴ Part V explores how we might bring the benefits of MPBR to bear on the emerging regulatory regimes governing OTC derivatives markets under the *Dodd-Frank Act* and EMIR.

V. Carving Out a Role for MPBR under the *Dodd-Frank Act* and EMIR

It is worthwhile acknowledging from the outset that neither the *Dodd-Frank Act* nor EMIR explicitly seek to carve out a role for MPBR. Indeed, policymakers on both sides of the Atlantic have expressed very little appetite for moving toward a more principles-based regime in the aftermath of the GFC.¹³⁵ This is likely due in no small measure to the perceived failure of the FSA's decade-long experiment with MPBR. Accordingly, without further inquiry, one might reasonably question the desirability of utilizing MPBR within the context of OTC derivatives regulation.

The riposte to this (not unfounded) skepticism is twofold. First, as described above, the FSA was unable to successfully implement a regime which included all four of the essential ingredients of MPBR. We will simply never know how history might have unfolded had the FSA realized this objective. Second, and more importantly, the complexity of OTC derivatives markets – combined with the nature and pace of innovation with them – generate acute asymmetries of information and expertise vis-à-vis regulators and regulated actors. These asymmetries exacerbate the profound agency cost problems which pervade these markets. What is more, financial innovation has and will continue to render many prescriptive rules effectively

¹³⁴ Which, parenthetically, shares a number of similarities with the so-called 'classical' contract model; see Williamson (n 130) at 236-237.

¹³⁵ Other than, in the view of some observers, the CFTC; see Walter Lukken, "It's A Matter of Principles", address at the University of Houston's Global Energy Management Institute (January 25, 2007) and Ford (2008) (n 70) at 2. However, while the foundation of the CFTC's approach toward the regulation of commodities exchanges and designated contract markets is rooted in a set of 'core principles', it is highly debatable whether this approach evidences any of the other essential ingredients of MPBR.

obsolete before the legislative pen hits the page – let alone before the ink dries.¹³⁶

MPBR holds the as yet unrealized potential to help address these challenges.

Simultaneously, the structure of both the *Dodd-Frank Act* and EMIR provide a distinct window of opportunity to develop a more principles-based approach toward the regulation of OTC derivatives markets. As a starting point, both regimes envision the devolution of significant responsibility for designing and monitoring compliance with technological regulation to regulated actors. Moreover, both frequently utilize what might be characterized as principles to articulate the real world outcomes these regulated actors are expected to achieve.¹³⁷ Crucially, however, neither regime establishes robust mechanisms to address the inherent information and incentive problems arising from this delegation of responsibility and discretion.

It is in response to these problems that carving out a role for MPBR could pay dividends. The dialogic relationships, interpretive communities and mutual trust generated by MPBR could be leveraged to tap the accumulated information and expertise of CCPs, dealers and other counterparties in vital areas such as risk management. This transfer of information and expertise could then be brought to bear on more intensive supervision of CCPs and other market participants. At the same time, more expert regulators possessed of more timely, accurate and complete market and firm-specific information would serve to make the threat of swift and decisive enforcement more credible. As described above, more intensive supervision and the credible threat of enforcement would ultimately serve to better align the incentives of

¹³⁶ See [Chapter 4](#) for a discussion of the delays experienced in connection with the implementation of the *Dodd-Frank Act* and EMIR, for example. Similarly, one might look to how collateral swaps and synthetic ETFs have been utilized to circumvent the liquidity requirements imposed under Basel III well before these new rules are finalized and enshrined in domestic law.

¹³⁷ Albeit with the expectation in many cases that these principles will be augmented by more detailed, prescriptive rules.

private actors with the policy objectives underlying the *Dodd-Frank Act* and EMIR, thus providing some measure of protection against, for example, the hollowing out of their systemic protection mandates due to the intense competitive pressures on CCPs.

The amelioration of agency cost problems stemming from more intensive supervision and the credible threat of enforcement could be further augmented by a principle – a targeted anti-arbitrage rule (or TAAR) – prohibiting swap dealers and other market participants from engaging in faux customization. The primary thrust of a TAAR would be to mandate that market participants obtain regulatory approval as a pre-condition to entering into any ‘new’ or ‘innovative’ species of bilateral swap.¹³⁸ In order to obtain this approval, the market participant(s) submitting the application would need to demonstrate that the innovation responded to a legitimate economic need and not simply the desire to avoid central clearing requirements. To minimize the duplication of effort and expense, the relevant regulatory authority could then issue ‘blanket’ orders authorizing all other market participants within their jurisdiction to trade in the new instrument.

A well designed TAAR would offer two potential benefits. First, it would alter the anticipated payoffs from regulatory arbitrage: in effect deterring financial innovation not motivated by a legitimate economic rationale.¹³⁹ Second, it would provide an incentive for risk adverse market participants to bring new bilateral instruments to the attention of regulators with a view to obtaining ‘pre-clearance’ for

¹³⁸ What precisely constituted a ‘new’ or ‘innovative’ swap would of course need to be fleshed out. Here, however, the definition of innovation introduced in [Chapter 1](#) – focusing as it does on *change* as opposed to *improvement* – would arguably provide a very useful starting point.

¹³⁹ The question of how to distinguish between faux customization and economically ‘legitimate’ innovation would of course be of central importance in terms of the operation of a TAAR. The key for the present purposes, however, is that the burden of proof in this regard would be on the market participant(s) making the application. Moreover, MPBR holds the potential to lend much needed precision to what might otherwise be a potentially fuzzy distinction.

their prospective use. A TAAR would thus manifest potentially significant informational benefits – bringing new innovations within the perimeter of regulation more rapidly than would otherwise be the case – while simultaneously reducing the deleterious systemic effects of supply-side innovation.¹⁴⁰

Greater information and expertise would also enable regulators to play a more meaningful leadership role within interpretive communities. Indeed, the new regulatory architecture envisioned by MPBR may prove particularly well suited to the task of fleshing out the innumerable (and often highly sophisticated) technical issues under the *Dodd-Frank Act* and EMIR – including those identified in Table 5.1 – which have been relegated to the post-adoption rulemaking process.¹⁴¹ This architecture could be used to (1) develop, evaluate and share CCP risk management practices or (2) draw out the distinctions between faux customization and economically meaningful innovation within the context of a TAAR. Interpretive communities could also help channel industry expertise with a view to building out the relatively anemic criteria regulators are required to use when determining whether an instrument should be subject to central clearing. More broadly, interpretive communities comprised of regulators, market participants and other stakeholders could provide a solid foundation for dialogue about how to address the ‘trillion unintended consequences’¹⁴² which many observers believe may ultimately flow from the *Dodd-Frank Act* and EMIR.

¹⁴⁰ For a critical analysis of the prospective costs and benefits of a General Anti-Avoidance Rule (or GAAR) in the tax context, see the Aaronson Report, “A Study to Consider Whether a General Anti-avoidance Rule Should be Introduced into the U.K. Tax System” (November 11, 2011), available at http://www.hm-treasury.gov.uk/tax_avoidance_gaar.htm.

¹⁴¹ The law firm Davis Polk & Wardwell, for example, has estimated that the *Dodd-Frank Act* contemplates the creation of 243 new formal rules; see “The Uncertainty Principle”, *The Wall Street Journal* (July 15, 2010), available at www.wsj.com.

¹⁴² See “A Trillion Unintended Consequences”, *The Wall Street Journal* (July 7, 2010), available at www.wsj.com.

Yet another prospective benefit of carving out a role for MPBR stems from its inherent capacity to facilitate functional harmonization. As described in Chapter 3, the *Dodd-Frank Act* mandates consistency and comparability between SEC and CFTC rules governing, *inter alia*, CCPs.¹⁴³ This requirement exists notwithstanding stark differences between the statutory frameworks (and institutional cultures) of the two, often feuding, agencies. Perhaps most significantly, whereas the SEC’s statutory framework under the *Securities Act* and *Exchange Act* is predominantly rules-based, the CFTC’s approach toward the regulation of CCPs, commodity exchanges and alternative trading platforms is (as we have already seen) grounded in a set of broad principles. MPBR holds the potential to bridge this formal divide by focusing instead on the articulation and subsequent realization of desired regulatory *outcomes*. For the same reason, MPBR can also facilitate functional harmonization between the U.S., E.U. and other emerging regulatory regimes governing OTC derivatives markets. Indeed, enhanced international coordination amongst financial regulators with a view to monitoring systemic risks and ensuring functional harmonization is a strategic necessity given (1) the globalized nature of OTC derivatives markets; (2) mounting competitive pressures to establish cross-border linkages among and between CCPs and trading platforms¹⁴⁴, and (3) the existence of markedly different systems governing, amongst other areas, bankruptcy, property¹⁴⁵ and contract¹⁴⁶ law across

¹⁴³ See Chapter 3 at 142.

¹⁴⁴ See discussion in IMF (n 21) at 20-21 and 23.

¹⁴⁵ For example, legal rules impacting both the possibility and feasibility of segregating counterparty and clearing member assets (i.e. the cash and securities posted as collateral) within a CCP vary from jurisdiction to jurisdiction; see “Report to the Supervisors of the Major OTC Derivatives Dealers on Proposals of Centralized CDS Clearing Solutions for the Segregation and Portability of Customer CDS Positions and Related Margin”, letter delivered to the New York Federal Reserve by an *ad hoc* group of market participants (June 30, 2009), available at www.isda.org.

¹⁴⁶ The contractual concept of novation is the most common method by which CMs assign their rights and obligations under derivatives contracts to CCPs. However, this concept is not a universal feature of contract law and, thus, the legal method by which CCPs interpose themselves into a transaction may vary across jurisdictions.

jurisdictions.¹⁴⁷ Most importantly, however, functional harmonization at both the domestic and international level is essential in order to minimize the corrosive systemic effects of regulatory arbitrage. Chapter 6 examines the imperative of enhanced regulatory coordination in greater detail.

All of this is not to suggest that the prospective benefits of MPBR would be revealed and accrue predominantly at these early, formative stages of global OTC derivatives regulation. It is all but certain that innovation will continue to shape modern financial markets. New financial instruments, institutions and markets will be created; new methods for measuring and managing various risks will be developed; relationships between financial markets will continue to evolve. Many of these developments will raise novel and complex issues. As these developments unfold, the hallmarks of MPBR – greater expertise, enhanced dialogic relationships and interpretive communities – would enable regulators to mount more timely, nuanced and effective responses to their attendant regulatory challenges. Simultaneously, the flexibility and responsiveness of MPBR, buttressed by the durability of its outcome-oriented substantive core, would serve to deter socially undesirable forms of innovation motivated by, perhaps most glaringly, regulatory arbitrage. The flexibility, responsiveness and durability of MPBR can thus be viewed as very much geared toward generating benefits over the long term.

¹⁴⁷ See EC Staff Working Paper accompanying Commission Communication “Ensuring Efficient, Safe and Sound Derivatives Markets” (March 7, 2009); Committee of European Securities Regulators (CESR), “Recommendations for Securities Settlement Systems and Recommendations for Central Counterparties in the European Union”, CESR/09-446 (May 2009) at 92 and 150-152; CPSS-IOSCO (n 15) at 9 and 26, and IMF (n 21).

VI. Challenges to Successful Implementation

The prospective benefits described above combine to make a persuasive case for carving out a role for MPBR within the context of OTC derivatives regulation. *But what about the potential costs?* The transition to MPBR would likely entail a short-term cost spike for regulated actors such as CCPs and clearing members stemming from the overhaul of technological content – i.e. organizational policies, systems and controls – to reflect desired regulatory outcomes. Over the longer-term, however, one might expect these regulated actors to realize an ‘innovation dividend’ flowing from, *inter alia*, the implementation of bespoke regulatory compliance systems (and the resulting rationalization of costs), along with the extraction of positive network externalities from their interactions with other regulated actors within interpretive communities. Indeed, the realization of such dividends may well be vital in terms of garnering a sufficient level of philosophical buy-in from regulated actors.

For regulators, on the other hand, MPBR would almost certainly entail a more permanent cost increase relative to more prescriptive, rules-based regulatory regimes. This increase would stem from the need for sustained investment in the infrastructure of MPBR: the additional supervisory and relationship management personnel; on-going education programs, and enhanced call center capabilities necessary to build and sustain truly dialogic relationships with regulated actors.¹⁴⁸ Importantly, remuneration levels would also need to (re)calibrated to reflect the enhanced expertise – and participation constraints – of supervisory personnel.¹⁴⁹ While costly¹⁵⁰, such

¹⁴⁸ The FSA, for example, earmarked £50 million to cover non-recurring expenses relating to, *inter alia*, reorganization costs; training and development, and improved knowledge management in connection with its pre-crisis transition to a more principles-based regime; FSA (n 71) at 18.

¹⁴⁹ For a recent proposal respecting incentive-based compensation for bank supervisors, see Fredrick Tung and Todd Henderson, “Pay for Regulator Performance”, University of Chicago Law and Economics Olin Working Paper No. 574 (August 24, 2011), available at www.ssrn.com.

investments may ultimately provide a useful signal to regulated actors that regulators are committed to MPBR, thus potentially helping to overcome the trust paradox described in greater detail below.

Regulators seeking to harness the prospective benefits of MPBR must also address a host of potential challenges. The most frequently cited of these challenges, perhaps not surprisingly, emanate from the perceived absence of precision associated with principles and the resulting uncertainty and unpredictability in terms of their application.¹⁵¹ Articulated somewhat differently, the inherent flexibility of MPBR gives rise to the possibility that regulators and regulated actors may fail to arrive at shared understandings respecting the scope and/or substantive content of principles.¹⁵² Understandably, regulated actors do not wish to operate within an environment of regulatory uncertainty – especially where there exist significant costs in connection with the risk of, in effect, ‘getting it wrong’.¹⁵³ Within such an environment, one might predict that some regulated actors would adopt more conservative interpretations of principles as a way of mitigating this risk, thus generating an unintended ‘chilling effect’. Julia Black has characterized this as the ‘compliance paradox’¹⁵⁴ of MPBR. Insofar as it incentivizes regulated actors to err on the side of caution in this way, the absence of sufficient certainty and predictability thus runs counter to the prevailing current of MPBR – stifling regulatory innovation rather than

¹⁵⁰ Especially in the short-term. Over the longer term, however, these costs would of course need to be adjusted to reflect any related reduction in social costs.

¹⁵¹ Black et. al. (n 70) at 196.

¹⁵² This possibility is arguably rendered more likely by virtue of the proliferation of guidance (and, indeed, *sources* of guidance) within the interpretive communities envisioned by MPBR; *ibid.* at 197 and Nelson (n 52) at 9.

¹⁵³ Black et. al. (n 70) at 196.

¹⁵⁴ Black (n 70) at 449.

promoting it.¹⁵⁵ Ultimately, however, this critique ignores the extent to which the more honest and sophisticated dialogue and greater mutual trust between regulators and regulated actors which MPBR seeks to engender may actually serve to *enhance* the certainty and predictability surrounding the use of outcome-oriented principles.

The potential absence of sufficient certainty and predictability also raises the prospect of so-called ‘regulatory creep’. The concept of regulatory creep proceeds from the premise that regulation – like matter in a gaseous state – will inevitably expand into any empty space that it encounters. Viewed in this light, the flexibility of MPBR introduces the prospect that it may be used by regulators to expand the reach of the regulatory hand into the business activities of regulated actors in a discretionary or arbitrary fashion.¹⁵⁶ A similar risk arises in connection with the guidance generated within interpretive communities, where a concern exists that industry-developed ‘recommended’, ‘good’ or ‘best’ practices will be invoked by regulators as an ‘opaque proxy’¹⁵⁷ for prescriptive rules. Indeed, the potential for regulatory creep is particularly acute within the context of politically charged environments such as the one which has followed in the wake of the GFC.

The challenges posed by the potential uncertainty and unpredictability of principles should not be discounted.¹⁵⁸ Ultimately, however, the two most significant challenges stem not from the nature of principles, but rather from the nature of the dialogic relationship which MPBR envisions between regulators and regulated actors.

¹⁵⁵ Carlos Conceicao and Rosalind Gray, “U.K. Principles – Problems of Uncertainty” (2007), 26 *Int’l Fin. L. Rev.* 42.

¹⁵⁶ Cunningham (n 50) at 1433.

¹⁵⁷ Mark Wagstaff, “Principles-based Regulation: Stability, Risk and Trust”, presented to the 2nd Annual Cambridge Conference on Regulation (September 12, 2007) at 18.

¹⁵⁸ Although, as previously discussed, the enhanced dialogic relationship and interpretive communities contemplated by MPBR are specifically designed to address these challenges.

The first of these challenges is how to build the mutual trust necessary to promote meaningful engagement by regulated actors and to build and maintain truly dialogic relationships. As the FSA has acknowledged, fostering this trust is the ‘acid test’¹⁵⁹ of MPBR. However, while the new regulatory architecture of MPBR holds the potential to generate greater mutual trust, a fairly high threshold level of trust would instinctively seem necessary at the outset of the relationship in order to get MPBR off the ground. Black has characterized this as the ‘trust paradox’ of MPBR.¹⁶⁰

The challenge of establishing and maintaining trust between regulators and regulated actors stands tall in the wake of the GFC. Nevertheless, the regulation of CCPs under the *Dodd-Frank Act* and EMIR arguably provides a unique window of opportunity to overcome this trust paradox. First, the fact that CCPs are a relatively new species of regulated actor might allow all parties concerned to enter the relationship with a clean slate.¹⁶¹ Indeed, the fact that CCPs were considered by many observers to have performed reasonably well during the crisis would no doubt prove helpful in this regard.¹⁶² Second, both the CFTC and U.K. regulators have already acquired potentially transferrable experience forging relationships with market participants on the basis of a regulatory framework founded on broad principles.¹⁶³ Finally, carving out a role within the relatively limited context of the regulation of CCPs would enable regulators to employ incrementalism as a means of

¹⁵⁹ FSA (n 71) at 18.

¹⁶⁰ Black (n 70) at 456.

¹⁶¹ This is more true in the U.S. than the E.U. (where CCPs have for some time been regulated under MiFID).

¹⁶² See for example, EC Working Paper (n 147), s. 2.4.2.1 and IMF (n 21) at 2.

¹⁶³ Regulators such as the SEC and European supervisors would have to play catch-up in this regard. Indeed, the implementation of MPBR in the European context would be further complicated by the fact that while policy formulation is increasingly taking place at the level of ESMA and other pan-European institutions, implementation and supervision still predominantly take place at the level of each member state.

establishing a credible commitment to MPBR.¹⁶⁴ The objective in this respect would be to create a virtuous circle wherein establishing a credible commitment would enhance mutual trust, thereby generating the benefits described above and, ultimately, facilitating an expansion of the potential role for MPBR. Simultaneously, incrementalism interposes a natural circuit breaker: where the prospective benefits of MPBR fail to materialize (or its challenges are deemed too great) it would serve to contain both the sunk and transition costs of, in effect, unwinding the experiment.

The second significant challenge posed by the nature of the dialogic relationship envisioned by MPBR is the prospect of regulatory capture. As described above, MPBR contemplates close contact and collaboration between regulators and regulated actors within the context of both their supervisory relationships and as participants within interpretive communities. The frequency and intensity of these interactions¹⁶⁵ places regulated actors in an advantageous strategic position relative to other stakeholders to influence – over the long-term and in potentially very subtle and sophisticated ways – the attitudes of regulators and, accordingly, the substantive content of regulation.¹⁶⁶ Indeed, as we observed in Chapter 3, perhaps nowhere is this more true than in the context of OTC derivatives regulation. The potential for such ‘soft’ capture is exacerbated by the chronic asymmetries of information and expertise which, as we have seen, are endemic to modern financial markets. Minimizing the opportunities for capture, and with it the systematic watering down of substantive

¹⁶⁴ For a more fulsome description of the rationale underlying this strategy, see Avinash Dixit and Barry Nalebuff, *The Art of Strategy: A Game Theorist’s Guide to Success in Business and Life* (W. W. Norton & Company, New York, 2008) at 204-205.

¹⁶⁵ Along with the likely disparity between the informational and other endowments of regulators and regulated actors.

¹⁶⁶ See Simon Johnson and James Kwak, *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (Pantheon, New York, 2010). See also Weber (n 86).

regulation in response to the concerns of powerful vested interests, is thus of vital importance to the success of MPBR.

Minimizing the potential for regulatory capture would need to be approached from several angles. First, regulators would require the legal authority, remedial powers, and financial and human resources necessary to undertake intensive supervision and maintain a strong (background) enforcement presence.¹⁶⁷ In terms of the regulation of CCPs, this would necessitate providing regulators with, *inter alia*: (1) a wide range of enforcement tools available in connection with the violation of principles; (2) broad ‘emergency’ powers enabling regulatory intervention during periods of market turmoil, and (3) the financial wherewithal to develop, attract, retain and properly incentivize expert supervisory personnel. Second, the governance structure of CCPs would need to be structured so as to establish clear lines of communication with, and accountability to, the relevant regulator(s). Accompanying these structures would ideally be mechanisms designed to render transparent the decision-making processes of CCPs in terms of the generation of technological regulation – in particular with respect to their risk management practices and product eligibility determinations.¹⁶⁸ Third, regulators would have to make a concerted effort to identify and attract appropriate third party stakeholders into interpretive

¹⁶⁷ In this regard, the CFTC has recently acknowledged that it lacks sufficient authority (1) to ensure that the CCPs it regulates are operating within the principles and other regulations promulgated under its enabling legislation; (2) to respond to changing market conditions or new international standards; (3) to protect the public, and (4) over disruptive trading practices; *see* SEC and CFTC, “A Joint Report of the SEC and the CFTC on Harmonization of Regulation” (October 16, 2009) at 11-13, available at www.cftc.gov. At the same time, the CFTC has faced a series of proposed cuts to its Congressional funding; *see* for example, Phil Mattingly and Silla Brush, “U.S. House Passes Bill to Cut Funding for Derivatives Regulator”, Bloomberg (June 16, 2011), available at www.bloomberg.com.

¹⁶⁸ By, for example, requiring CCPs to publicly disclose their quantitative methodologies (including their underlying assumptions) for calculating initial and variation margin requirements, along with the reasons *why* they believe these methodologies are aligned with public regulatory objectives.

communities.¹⁶⁹ To the extent that the interests of these stakeholders were sufficiently diverse, their views could serve to filter out potential distortions embedded in the perspectives advanced by more vested interests. Finally, and along the same vein, regulators would need to leverage their new found expertise in order to develop their own ‘political economy filters’.¹⁷⁰

It is a testament to the enormity of the foregoing challenges that even the pre-crisis standard-bearer of MPBR – the FSA – failed to successfully implement it. Specifically, the FSA failed to acquire the expertise necessary to assert itself as an active participant within interpretive communities and, thus, as an effective counterweight to the (market fundamentalist) views of regulator actors.¹⁷¹ This, in turn, may have influenced its decision to adopt a non-interventionist approach toward the regulation of OTC derivatives markets. As FSA Chairman Adair Turner has suggested, it also appears to have undermined the intensity and focus of its supervision and the vigor with which it pursued enforcement action.¹⁷² Viewed from this perspective, it is not that the recipe itself was flawed so much as that the FSA simply failed to follow it. Ultimately, the potential benefits of MPBR – combined with the manifest shortcomings of prescriptive, rules-based approaches toward financial regulation within the context of complex and innovative modern financial markets – suggests that it is far too early to write it off. Indeed, time may well be a

¹⁶⁹ With respect to the regulation of CCPs, such stakeholders might include policy analysts and scholars in the fields of economics, finance and law. In other areas, investor advocacy groups might also play a meaningful role.

¹⁷⁰ The effectiveness of this filter could be enhanced by (1) enforcing a rotation policy for regulatory personnel working on particular technical issues or supervising particular CCPs, and (2) limiting the ability of supervisory personnel, subsequent to their departure from the regulator, to accept employment (or other benefits) from regulated actors which they had previously supervised.

¹⁷¹ Ford (n 70).

¹⁷² See the Turner Review at 86-88.

critical success factor: time to build mutual trust and accrete substantive and technological content.

IV. Conclusion

This chapter has illustrated how the *form* of regulation – like its *source* – can play an important role in addressing the challenges posed by complexity and financial innovation. It is difficult to deny that prescriptive, rules-based approaches toward financial regulation have struggled to effectively respond to the complexity and dynamism of modern financial markets. MPBR, in contrast, holds out the as yet realized potential to more effectively address the information and incentive problems generated by these forces and, in the process, generate more nuanced, flexible, responsive and durable regulation. Simultaneously, of course, the successful implementation of MPBR is ultimately contingent on our ability to successfully address both the prospect of regulatory capture and the enduring trust paradox. If these challenges can be bested, however, carving out a role for MPBR in the context of OTC derivatives regulation may very well yield more socially desirable outcomes.

CHAPTER 6

The Optimal *Scope* of Financial Regulation

The past three decades have been characterized by seismic changes in the structure of the global financial system. Perhaps most importantly, the financial markets and institutions at the heart of this system have become exponentially larger, increasingly globalized, more interconnected, more opaque and thus (by definition) more complex.¹ Nowhere are these trends more clearly reflected than in the emergence, growth and proliferation of OTC derivatives markets. In the years leading up to the GFC, these changes in the financial system spurred a number of jurisdictions – including, most prominently, the U.K.² – to anoint a single public regulator to oversee the entire domestic financial services industry (so-called ‘integrated regulation’). In the U.S., meanwhile, responsibility remained split between a cacophony of federal regulators including, *inter alia*, the Federal Reserve Board, SEC, CFTC and FDIC.³

The GFC has dramatically disrupted this structural status quo. In the U.S., the *Dodd-Frank Act* envisions the creation of several new federal regulators, including the FSOC, CFPB and Federal Insurance Office (FIO).⁴ The GFC has also precipitated the break-up of the U.K.’s FSA⁵ and provided the impetus for a power shift within the

¹ And in many cases – including OTC derivatives markets – increasingly more *concentrated*; see [Chapter 2](#) at 75.

² See [Chapter 3](#) at 124-136.

³ Along with the OTS, OCC and state-level securities, banking, pension, and insurance regulators.

⁴ *Dodd-Frank Act*, ss. 111, 502 and 1101.

⁵ See H.M. Treasury, *A New Approach to Financial Regulation: Judgement, Focus and Stability* (July 2010), available at www.hm-treasury.gov.uk. See also Eilis Ferran, “The Break-up of the Financial Services Authority” (2011), 33:3 *Oxford J. Legal Stud.* 488; David Enrich and Laurence Norman, “U.K. Shakes Up Its Bank Regulation”, *The Wall Street Journal* (June 17, 2010), available at www.wsj.com and George Parker and Brooke Masters, “Osborne abolishes FSA and boosts Bank”, *The Financial Times* (June 16, 2010), available at www.ft.com. Under the proposals, scheduled to be implemented in 2013, the FSA’s current mandate will be split between the Bank of England and two new regulators: the Prudential Regulatory Authority (PRA) and Financial Conduct Authority (FCA).

E.U. away from national regulators and toward four newly created pan-European institutions: the ESRB, EBA, ESMA and EIOPA.⁶ Depending on your perspective, these structural reforms stand poised to influence financial regulation in the U.S., U.K. and Europe for decades to come or, alternatively, are tantamount to rearranging the deck chairs on the Titanic.

The increasing globalization and interconnectedness of modern financial markets has also spurred the development of a number of supranational institutions designed to enhance cross-border information flow, regulatory coordination and/or functional harmonization. This emerging global regulatory architecture includes international standard setters such as the Basel Committee on Banking Supervision (BCBS), International Organization of Securities Commissions (IOSCO), International Accounting Standards Board (IASB) and Committee on Payment Settlement Systems (CPSS), along with high level agenda setters such as the G20 Group of Finance Ministers and Central Bank Governors (G20) and its offshoot the Financial Stability Board (FSB).⁷ It also includes venerable institutions such as the IMF and World Bank.⁸ Despite their predominantly ‘soft law’ status, many observers view these institutions as playing an increasingly important role in building a new financial world order in the wake of the GFC.

This chapter explores prevailing theoretical claims respecting the optimal structure of regulation in light of the challenges posed by complexity and financial

⁶ For an overview of this new pan-European regime, see Eilis Ferran, “Understanding the New Institutional Architecture of EU Financial Market Supervision”, University of Cambridge Faculty of Law Research Paper No. 29/2011, available at www.ssrn.com.

⁷ For an overview of the mandates, composition, organization and activities of these bodies, see Chris Brummer, “How International Financial Law Works (And How It Doesn’t)” (2011), 99 *Georgetown L. J.* 257 and Heidi Mandanis Schooner and Michael Taylor, *Global Bank Regulation: Principles and Policies* (Elsevier, London, 2010).

⁸ *Ibid.*

innovation. If Chapters 4 and 5 were, respectively, about *who* should regulate modern financial markets and *how* they should be regulated – this chapter is about *where*. More specifically, it examines how the structure – or footprint – of financial regulation at both the domestic and international level can reduce (or exacerbate) information and coordination costs and foreclose (or generate) opportunities for regulatory arbitrage and the crystallization of systemic risks. It also examines the tension between increasingly globalized and interconnected financial markets and institutions and the fractured and predominantly domestic regulatory regimes which govern them. It then asks an important question: *to what extent can domestic (or even supranational) regulators effectively respond to what are, ultimately, truly global problems?*

This chapter proceeds as follows. Part I canvasses the theoretical claims respecting the optimal structure of financial regulation at the domestic level. Part II then tests these arguments against our real world observations regarding the efficiency and effectiveness of the pre-crisis regulatory regimes governing OTC derivatives markets in the U.S. and U.K. Part III shifts focus to the emerging global regulatory architecture and evaluates its potential utility and, more importantly, the latent information, coordination and agency cost problems which threaten to undermine it. Here, the emerging post-crisis regulatory regimes governing OTC derivatives markets under both the *Dodd-Frank Act* and EMIR offer a number of potentially valuable insights. Part IV concludes by identifying the lessons we can draw from this exploration of the optimal scope of financial regulation.

I. A Theoretical Perspective on the Optimal Structure of Financial Regulation at the Domestic Level

There are those who view the structure of financial regulation at the domestic level as, fundamentally, a second order issue.⁹ These observers argue that the key determinants of regulatory efficiency and effectiveness are not attributable to institutional structure but, rather, variables such as independence; accountability; financial and human capital; enforcement powers, and institutional philosophy.¹⁰ Ultimately, however, it is perhaps more accurate to envision these important variables as being intermingled with issues of institutional design.¹¹ As we shall see, while an efficient institutional structure might not represent a panacea, an inefficient structure can become a catalyst for regulatory dysfunction and ineffectiveness. Put simply, good law is less likely to emerge from poor institutions.

Historically speaking, the structure of financial regulation in most jurisdictions reflected the fragmented structure of the domestic financial services industry.¹² This in turn gave rise to a wide range of structural models characterized by the existence of multiple specialist regulators. Variants of this archetype include the institutional, functional and objectives-based models. The institutional model contemplates the allocation of responsibility amongst specialist regulators on the basis of distinctions between particular *species* of financial institution (i.e. banks, brokerage firms or insurance companies), irrespective of the specific lines of business or activities

⁹ Richard Abrams and Michael Taylor, “Issues in the Unification of Financial Sector Supervision”, IMF Working Paper WP/00/213 (2000) at 3, available at www.imf.org.

¹⁰ *Ibid.* at 6-9.

¹¹ Martin Cihak and Richard Podpiera, “Is One Watchdog Better Than Three? International Experience with Integrated Financial Sector Supervision”, IMF Working Paper WP/06/57 (2006) at 8, available at www.imf.org.

¹² Schooner and Taylor (n 7) at 260.

actually engaged in by individual firms.¹³ The institutional model can thus be understood as placing emphasis (and pressure) on the definitions given to different species of institution. The functional model, conversely, allocates regulatory responsibility on the basis of distinctions between *specific lines of business or activities*.¹⁴ It thus envisions that a single specialist agency might enjoy jurisdiction over, for example, the regulation of mortgage financing, credit rating or derivatives activities across all types of firms. As Charles Goodhart et. al. observe, the distinction between the institutional and functional models may prove relatively insignificant where the activities of individual institutions are concentrated within particular segments of the financial services industry.¹⁵ Where institutions are engaged in activities across multiple industry segments, however, the distinction becomes simultaneously more meaningful and more difficult to unpack.

The objectives-based model, meanwhile, allocates responsibility on the basis of *enumerated regulatory objectives*. Goodhart et. al., for instance, have advanced a model structured around six objectives: systemic risk; non-systemic prudential; retail conduct of business; wholesale conduct of business; financial exchange, and competition regulation.¹⁶ A second variant is the so-called ‘twin peaks’ model.¹⁷ The twin peaks model contemplates two regulators: one responsible for prudential supervision, the other for conduct of business regulation, consumer protection and

¹³ Charles Goodhart, Philipp Hartmann, David Llewellyn, Liliana Rojas-Suarez and Steven Weisbrod, *Financial Regulation: Why, How and Where Now?* (Routledge, London, 1998) at 144 and Schooner and Taylor (n 7) at 260-261.

¹⁴ Ibid.

¹⁵ Goodhart et. al. (n 12). And thus, for example, banks as an *institution* are primarily engaged in the *function* of providing retail and commercial banking and deposit-taking services.

¹⁶ Ibid. at 159. Ultimately, however, it is debatable whether some of these ‘objectives’ might not be more appropriately characterized as, *inter alia*, reflecting different functions or institutions.

¹⁷ See Michael Taylor, *Twin Peaks: A Regulatory Structure for the New Century* (Centre for the Study of Financial Innovation, London, 1995).

corporate governance. The division of responsibilities between ASIC and the Australian Prudential Regulation Authority (APRA) is thus an example of the twin peaks model – as is the proposed bifurcation of responsibilities between the U.K. Prudential Regulatory Authority and Financial Conduct Authority.¹⁸ Ultimately, of course, manifestations of each of these models vary widely in practice and – as illustrated by the current patchwork regulatory framework governing the U.S. financial services industry¹⁹ – may even be pursued concurrently.²⁰

Despite the historic predominance (and resulting path dependency) of structural models based on multiple specialist regulators, the decade or so leading up to the GFC was characterized by a pronounced shift toward integrated regulation.²¹ Evidence of this shift could be observed in jurisdictions with such diverse financial and political systems as Germany, Japan, Thailand, Iceland, Estonia and – before the recently announced break-up of the FSA – the U.K.²² Yet for all the attention surrounding this shift, the various manifestations of integrated regulation have not coalesced – either in theory or practice – around a single institutional model.²³ Broadly speaking, however, integrated regulation refers to the consolidation of rule-

¹⁸ See n 5.

¹⁹ And, indeed, the somewhat less patchwork regulatory regime in Canada.

²⁰ Indeed, I was thwarted in my attempts to identify a single jurisdiction which employed a regulatory structure premised *exclusively* on either the institutional or functional approaches.

²¹ Cihak and Podpiera (n 11) at 3-4.

²² *Ibid.* at 6-7.

²³ For a survey of some of the various manifestations of this model, see Abrams and Taylor (n 9). What is more, it must be observed that integrated regulators frequently exhibit important differences in terms of, *inter alia*, their regulatory objectives; supervisory responsibilities; independence; enforcement powers, and the scope of their jurisdiction; see Jose de Luna Martinez and Thomas Rose, “International Survey of Integrated Financial Sector Supervision”, World Bank Policy Research Working Paper 3096 (2003), available at www.worldbank.org.

making, supervision and enforcement of prudential²⁴, conduct of business²⁵ and investor protection regulation²⁶ governing each of the banking, securities, investment management, insurance and pension industries under the oversight of a single financial services regulator.²⁷

Table 6.1: Competing Structural Models			
Structural Model	No. of Regulators	Basis for Allocating Regulatory Responsibility	Examples
Integrated	One	n/a.	U.K. (current) Germany Japan
Institutional	Multiple	The species of financial institution (i.e. bank; brokerage firm; insurance company; investment fund, etc.)	U.S. China Canada
Functional	Multiple	The lines of business or activities pursued (i.e. commercial banking; investment banking; retail brokerage; proprietary trading; investment management; life insurance; pensions; mortgage financing, etc.)	U.S. China Canada
Objectives-based	Multiple	Enumerated regulatory objectives (i.e. prudential; conduct of business; consumer protection, etc.).	U.K. (proposed) Australia U.S. Canada

The shift toward integrated regulation took place within an environment characterized by two broad trends: (1) the increasing international mobility of capital

²⁴ Distilled to its essence, the objective of prudential regulation is to manage credit, liquidity and other related risks. *Micro*-prudential regulation refers to regulation aimed at managing these risks at the institutional level, while *macro*-prudential regulation is aimed at managing them at the systemic level.

²⁵ The objective of conduct of business regulation is, in effect, to ensure fair dealing between market participants.

²⁶ Conspicuous in their absence from this list are the monetary policy functions typically performed by central banks. The functions of central banks are clearly an integral aspect of financial regulation – especially in light of the GFC and the resulting emphasis on so-called ‘macro-prudential’ regulation. Nevertheless, central banks are excluded from this analysis for the reason that the information, coordination and agency cost problems surrounding the integration of the institutions responsible for monetary and financial policy are largely the same as those encountered in connection with the integration of multiple specialist regulators. Simultaneously, including central banks in the analysis would necessitate a discussion of, *inter alia*, the moral hazard problems stemming from the integration of prudential regulation and the lender of last resort function. Such issues reside beyond the scope of this thesis.

²⁷ Cihak and Podpiera (n 11) at 5.

and the resulting globalization of competition within the financial services industry and (2) the integration of banking, securities and insurance markets and, in many cases, the financial institutions at the center of these markets.²⁸ As we have already seen, these trends have generated complex linkages within and between financial markets and institutions. They have also blurred historical distinctions between many markets/instruments.²⁹ The widespread use of securitization, for example, has both strengthened and rendered more complex the relationship between traditional commercial banking and capital markets. Many credit derivatives, meanwhile, exhibit characteristics of securities, insurance and debt instruments. Collectively, these trends have made the gathering and analysis of information by – and coordination amongst – domestic regulators more vital to the delivery of effective regulation and, simultaneously, more costly.

It is within the context of such complex and dynamic modern financial markets that the theoretical arguments in support of integrated regulation most strongly resonate. Broadly speaking, these arguments are premised on the ability of integrated regulation to generate economies of scale and scope and, thereby, reduce the information, coordination and other transaction costs of regulation relative to structural models envisioning multiple specialist regulators.

The first of two principal theoretical arguments in support of integrated regulation is that it enables regulators to adopt more comprehensive or holistic

²⁸ Arthur Wilmarth, “The Transformation of the U.S. Financial Services Industry, 1975-2000: Competition, Consolidation and Increased Risks” (2002), 2 U. Ill. L. Rev. 215; Clive Briault, “The Rationale for a Single National Financial Regulator”, FSA Occasional Paper No. 2 (1999) at 5, available at www.fsa.gov.uk; Taylor (n 17); Goodhart et. al. (n 13) at 142-144, and Cihak and Podpiera (n 11) at 3.

²⁹ Ibid.

approaches toward monitoring and enforcement.³⁰ First, the integration of registrant; compliance; reporting; disclosure; market surveillance and other information systems facilitates the aggregation of data across a broader range of sources.³¹ This in turn reduces information costs for regulators seeking to construct a more complete picture of the various risks manifest across firms, markets and the financial system as a whole – in effect increasing their tolerance for complexity.³² Second, the integration of management functions within a single regulator also holds the potential to break down institutional barriers to effective information flow and cooperation, thereby lowering the coordination costs associated with, for example: (1) the development and articulation of clear and coherent regulatory objectives; (2) the generation of integrated legal and regulatory frameworks which are both competitively neutral and free of exploitable gaps; (3) the evaluation and prioritization of risks, and (4) the allocation of scarce regulatory resources toward where they are likely to yield the greatest social benefits.³³ Integrated regulation can thus be seen as holding out an economy of scope equal to the attendant reduction in information and coordination costs relative to systems characterized by multiple specialist regulators.³⁴

³⁰ In essence reflecting the trends toward the globalization and integration of financial markets and institutions; *see* Eilis Ferran, “Examining the U.K.’s Experience in Adopting the Single Financial Regulator Model” (2003), 28 *Brook. J. Int’l L.* 257 at 277; Briault (n 28) at 12-17, and Cihak and Podpiera (n 11) at 3. In a survey conducted by Martinez and Rose, for example, 14 out of 15 respondent countries identified this issue as factoring into their decision to move toward integrated regulation; Martinez and Rose (n 23) at 9. *See* also the comments of then U.K. Chancellor of the Exchequer Gordon Brown upon the announcement of the creation of the FSA; H.M. Treasury, “Financial Services and Markets Bill: A Consultation Document. Part One. Overview of Financial Regulatory Reform”, H.M. Treasury Press Release (July 1998) at 8.

³¹ Abrams and Taylor (n 9) at 13-14; Briault (n 28) at 18, and Cihak and Podpiera (n 11) at 9.

³² Especially if combined with enhanced expertise; *see* [Chapters 4 and 5](#).

³³ Ferran (n 30) at 284; Cihak and Podpiera (n 11) at 9; Abrams and Taylor (n 9) at 11, and Martinez and Rose (n 23) at 7-8.

³⁴ As multiple specialist regulators would presumably need to negotiate and implement information sharing mechanisms in order to achieve the same level of data aggregation.

The second principal theoretical argument in support of integrated regulation is that the lower information and coordination costs derived from the integration of information systems and management functions enable integrated regulators to more swiftly and effectively identify, evaluate and respond to the emergence of new regulatory challenges.³⁵ This argument proceeds broadly as follows. First, insofar as integrated regulators are engaged in market surveillance across all firms and markets, they are in theory more likely to observe new market developments.³⁶ Second, once these developments have come to light, integrated regulators are – given their more holistic outlook and higher tolerance for complexity – more likely to appreciate the full nature and extent of both the relevant risks as well as the likely impact of regulatory (in)action. Indeed, one would expect this to be particularly true of developments which transcend historical distinctions between different species of financial markets or institutions or, perhaps more to the point, jurisdictional boundaries between multiple specialist regulators. Finally, where action is deemed necessary, integrated regulators are thought to be more likely to incur lower transaction costs in connection with the design and implementation of the desired regulatory response relative to the more complicated (and politically sensitive) process of doing so within a regime characterized by multiple regulators.

A third source of theoretical support for the integrated model is that it imbues regulators with high levels of *de facto* accountability. This view stems from the observation that – relative to models based on multiple (competing) regulators with

³⁵ Cihak and Podpiera (n 11) at 9.

³⁶ There exists a potentially persuasive counterargument that specialist regulators are – owing to the narrower (i.e. more focused) scope of their jurisdiction – more likely to identify emerging issues within their field of vision. Given the blurring of traditional distinctions between financial markets, institutions and instruments, however, specialist regulators are arguably increasingly likely to exhibit a form of regulatory myopia insofar as their limited purview may ultimately constrain the extent to which they are able to gather and analyze all of the information necessary to fully appreciate the emergence or significance of a particular development.

potentially overlapping jurisdictions – the opportunity for integrated regulators to shift the blame for regulatory failures is, effectively, foreclosed.³⁷ Proponents argue that this generates powerful incentives for integrated regulators to articulate clear mandates, to pursue these mandates vigorously, and to instill within market participants clear expectations about their obligations and the nature and level of regulatory protection they will receive.³⁸ Perhaps more importantly, high levels of *de facto* accountability (along with mechanisms which ensure sufficient *de jure* accountability) ameliorate concerns, examined in greater detail below, that integrated regulators may be particularly susceptible to abuses of power and regulatory capture.

Proponents also offer several other, arguably secondary, theoretical arguments in support of integrated regulation. It has been suggested, for example, that integrated regulators represent a ‘one-stop shop’³⁹: generating transaction cost savings for both regulated actors (who need only deal with a single point of regulatory contact) and consumers (who are spared the potentially daunting prospect of having to navigate through an alphabet soup of regulators in order to acquire information or lodge a complaint).⁴⁰ It has also been suggested that the scale enjoyed by integrated regulators enables them to pursue large infrastructure investments – such as new market surveillance or information technologies – which might be prohibitively costly for smaller specialist regulators.⁴¹ Finally, it has been argued that the integration of

³⁷ Ferran (n 30) at 295; Goodhart et. al. (n 13) at 152; Cihak and Podpiera (n 11) at 10, and Abrams and Taylor (n 9) at 12 and 15.

³⁸ Ferran (n 30) at 295.

³⁹ Ibid. at 279.

⁴⁰ Ibid.

⁴¹ Cihak and Podpiera (n 11) at 9 and Abrams and Taylor (n 9) at 13.

management functions provides integrated regulators with a comparative advantage in terms of the ability to pursue effective human resources strategies.⁴²

In theory, integrated regulators are thus well positioned to adopt more holistic regulatory outlooks; to more swiftly and effectively identify, evaluate and prioritize risks, and to take coordinated regulatory action in response to these risks. It is frequently argued, for example, that integrated regulators possess a comparative advantage in connection with the supervision of LCFIs insofar as they are better able to ensure, *inter alia*, that these firms (1) are adequately capitalized across their various business segments and (2) have put in place robust organization-wide risk management systems.⁴³ It is similarly argued that integrated regulators are ideally situated to address industry-wide issues such as money laundering; financing of terrorism; consumer education and, importantly for the present purposes, the regulation of OTC derivatives markets.⁴⁴ The same can equally be said of their ability to identify, monitor and respond to potential systemic risks.⁴⁵ Perhaps most importantly, however, integrated regulators are theoretically best positioned to monitor regulatory arbitrage activities and, where warranted, close the ‘gaps’⁴⁶, ‘weaknesses’⁴⁷ and ‘loopholes’⁴⁸ these activities seek to exploit.

⁴² Specifically, integrated regulators may be better positioned to offer their personnel more varied and challenging opportunities, along with bespoke internal training programs and career planning services; Abrams and Taylor (n 9) at 14. Given the importance of developing and retaining specialized human capital, this advantage – if realized – might prove very significant indeed.

⁴³ Abrams and Taylor (n 9) at 10 and Briault (n 28) at 14. Ultimately, this argument may be less persuasive in respect of jurisdictions with smaller or less mature financial markets; Abrams and Taylor (n 9).

⁴⁴ Clive Briault, “Revisiting the Rationale for a Single National Financial Regulator”, FSA Occasional Paper No. 16 (2002) at 6 and 19-21, available at www.fsa.gov.uk.

⁴⁵ Martinez and Rose (n 23) at 2 and 7.

⁴⁶ U.S. Treasury Department, *A New Foundation: Rebuilding Financial Supervision and Regulation* (June 17, 2009) at 2, available at www.treasury.gov.

⁴⁷ *Ibid.*

⁴⁸ *Ibid.* at 3.

The theoretical arguments in support of integrated regulation provoke three primary counterarguments.⁴⁹ First, critics argue that the economies of scale and scope described above may prove difficult to extract in practice. Second, they argue that the integration of management functions may undermine effective governance, leading to both diminished accountability and the suboptimal balancing of competing regulatory objectives. Finally, critics point to the fact that integrated regulators are, by their very nature, incapable of harnessing the potential benefits of regulatory competition at the domestic level. This third argument merits particular attention on the basis that it is the only critique which can be viewed as providing a measure of *positive* theoretical support – i.e. beyond path dependency and the perceived shortcomings of integrated regulation – for structural models which envision multiple specialist regulators. We begin, therefore, by examining the case for regulatory competition.

The welfare effects of regulatory competition at the domestic level have been the subject of intense debate for decades – especially in the context of inter-state competition for corporate charters.⁵⁰ Proponents argue that competitive pressures –

⁴⁹ A fourth response, not examined here, is that the transition costs of migrating toward integrated regulation (i.e. for those jurisdictions presently employing multiple specialist regulators) would likely outweigh any reduction in information, coordination or other transaction costs. These potential transition costs include those stemming from (1) the loss of key personnel and, as a result, human capital and institutional memory; (2) mismanagement of the integration process; (3) the prospect that the process would be captured by special interests, and (4) the integration of potentially divergent organizational and regulatory cultures; see John Palmer, “Review of the Role Played by the Australian Prudential Regulation Authority and the Insurance Superannuation Commission in the Collapse of the HIH Group of Companies”, APRA (2002), available at <http://trove.nla.gov.au/work/26611733>; Taylor and Abrams (n 9) at 16, and Cihak and Podpiera (n 11) at 11.

⁵⁰ See for example, William Cary, “Federalism and Corporate Law: Reflections Upon Delaware” (1974), 83 Yale L.J. 663; Ralph Winter, “Shareholder Protection and the Theory of the Corporation” (1977), 6 J. Legal. Stud. 251; Daniel Fischel, “The ‘Race to the Bottom’ Revisited: Reflections on Recent Developments in Delaware’s Corporation Law” (1982), 76 Nw. U. L. Rev. 913; Roberta Romano, “Law as a Product: Some Pieces of the Incorporation Puzzle” (1985), 1 J. of Law, Economics and Organization 225; Roberta Romano, “The State Competition Debate in Corporate Law” (1987), 8 Cardozo L. Rev. 709; Lucien Bebchuk, “Federalism and the Corporation: The Desirable Limits on State Competition in Corporate Law” (1992), 105 Harv. L. Rev. 1435; Lucien Bebchuk, Alma Cohen and Allen Ferrell, “Does the Evidence Favor State Competition in Corporate Law?” (2002), 90 Cal. L. Rev. 1775; Lucien Bebchuk and Assaf Hamani, “Vigorous Race or Leisurely Walk: Reconsidering the Competition Over Corporate Charters” (2002), 112 Yale L. J. 553; Roberta Romano, “The States as a

i.e. the omnipresent threat of regulatory arbitrage⁵¹ – within a system characterized by multiple regulators will enhance innovation, choice and efficiency, ultimately yielding the most desirable level of public regulatory intervention into privately ordered markets. Implicit within this line of reasoning is the conviction that – by generating incentives for regulators to avoid poor decision-making⁵² – regulatory competition can serve as an antidote to public choice problems and potential behavioral biases.⁵³ It is similarly argued that, insofar as multiple regulators are able to give voice to a broader range of constituencies (which might otherwise find themselves marginalized by an integrated regulator), regulatory competition represents a safeguard against both potential abuses of power and regulatory capture.⁵⁴ The case for regulatory competition can thus be seen as addressing concerns, discussed in greater detail below, that an integrated regulator may exhibit characteristics of a monopolistic ‘regulatory leviathan’. Indeed, its potential to constrain the actions of self-interested

Laboratory: Legal Innovation and State Competition for Corporate Charters” (2006), 23 Yale J. on Reg. 209. The theory has also been advanced (and rebuked) within the context of national and international securities – and specifically issuer disclosure and investor protection – regulation; *see* for example, John Coffee, “Competition Versus Consolidation: The Significance of Organizational Structure in Financial and Securities Regulation” (1995), 50 Bus. Law. 447 at 448; Merritt Fox, “Securities Disclosure in a Globalized Market: Who Should Regulate Whom?” (1997), 95 Mich. L. Rev. 2498; Stephen Choi and Andrew Guzman, “National Laws, International Money: Regulation in a Global Capital Market” (1997), 65 Fordham L. Rev. 1855; Roberta Romano, “Empowering Investors: A Market Approach to Securities Regulation” (1998), Yale L. J. 2359; Merritt Fox, “Retaining Mandatory Securities Disclosure: Why Issuer Choice Is Not Investor Empowerment” (1999), 85:7 Virginia L. Rev. 1335; Roberta Romano, “The Need for Competition in International Securities Regulation” (2001), 2 Theoretical Inquiries in Law 387 and John Coffee, “Racing Towards the Top?: The Impact on Cross-Listings and Stock Market Competition on International Corporate Governance” (2002), 102 Colum. L. Rev. 1757.

⁵¹ Regulatory competition implicitly relies on regulatory arbitrage as a mechanism for transmitting market information to regulators respecting the relative competitiveness of their ‘products’.

⁵² Stemming from the desire to capture (or not relinquish) the tax revenues, prestige and other benefits derived from offering a ‘competitive’ legal regime.

⁵³ Stephen Choi, “Channeling Competition in the Global Securities Market” (2002), 16 Transnational Lawyer 111 at 112 and 117-118 and Romano (1998) (n 50) at 2365.

⁵⁴ Roberta Karmel, “Reconciling Federal and State Interests in Securities Regulation in the United States and Europe” (2003), Brook. J. Int’l L. 495 at 544 and Coffee (1995) (n 50) at 454.

mega-regulators represents perhaps the most significant theoretical benefit of regulatory competition in this context.⁵⁵

Ultimately, however, the case for regulatory competition at the domestic level – and with it the positive case for structural models premised on multiple specialist regulators – is riddled with shortcomings.⁵⁶ Many of these shortcomings reflect the fact that the dynamics of regulatory competition for corporate charters do not map easily onto the dynamics of ‘competition’ between specialist financial regulators operating within a single jurisdiction. As a preliminary matter, it is not immediately clear how a competitive environment would materialize within a model characterized by multiple domestic regulators, each operating within clearly defined and mutually exclusive jurisdictional boundaries. Within such a system, one would expect the supply of regulation to be completely inelastic – thus eliminating the possibility of (welfare enhancing) regulatory arbitrage. That is, where boundaries between domestic regulators are clearly and completely demarcated, there should be no scope for these regulators to design and implement regulatory regimes intended to ‘attract’ regulated actors from their sister agencies. At the same time, there should be no room for market participants to structure their business or transactions so as to move between regulatory regimes. What this suggests, perhaps surprisingly, is that regulatory competition at the domestic level is dependent on the existence of a significant degree of jurisdictional ambiguity, overlap or gaps in order to generate a market for regulation. As we saw in Chapter 3, however, the sibling rivalries generated by such ambiguity/overlap/gaps can devolve to the point where they

⁵⁵ Choi (n 53) at 112.

⁵⁶ The shortcomings of regulatory competition at the international level are discussed in greater detail in Part III.

produce regulatory regimes which are perceived by market participants as unduly complex, uncertain, unresponsive and costly.⁵⁷

A second and rather glaring shortcoming of the case for regulatory competition is the blind spot it manifests with respect to potential negative externalities – in particular those associated with pervasive regulatory arbitrage.⁵⁸ It seems reasonable to suggest that the benefits derived from regulatory competition will flow primarily to (1) the financial institutions which engage in regulatory arbitrage; (2) the clients of these financial institutions, and/or (3) the regulators who offer the most competitive legal and regulatory frameworks.⁵⁹ At the same time, however, and as vividly evidenced by the fallout from the GFC, the costs of regulatory failure within a globally interconnected financial system are all too often borne by a far broader cross-section of society.

Finally, it is worth observing that the theoretical benefits of competition between multiple specialist regulators at the domestic level have not been empirically established and, as examined in greater detail below, do not appear to have translated well into the practical realm.⁶⁰ Accordingly, assertions that systems characterized by regulatory competition possess a comparative advantage in terms of their ability to

⁵⁷ The Bloomberg Report at 15-17, 62, 65 and 78 and Coffee (1995) (n 50) at 465.

⁵⁸ Fox (1999) (n 50). For a particularly good example of this myopia, see Roberta Romano, “Against Financial Regulation Harmonization: A Comment” (November 20, 2010), available at www.ssrn.com. Perhaps most baffling is Romano’s assertion that balance sheet arbitrage under Basel II was one of the proximate causes of the GFC (at 17), but that ‘regulatory arbitrage is not a source of grave concern’ (at 2). Ultimately, this view is flawed for several reasons, perhaps most importantly because it (1) assumes regulatory arbitrage is limited to choice of law questions *as between jurisdictions* and (2) reflects an underlying assumption that the dynamics of regulatory competition in the field of financial regulation at both the domestic and international level are fully analogous to those of state-level competition for corporate charters (where, perhaps most importantly, the prospect for huge negative externalities is rather limited). As we shall see in Part III, this analogy is strained to the point of breaking in the context of the regulation of OTC derivatives markets.

⁵⁹ Although it must be conceded that enhanced innovation, choice and efficiency are likely to generate potential positive externalities as well.

⁶⁰ Fox (1999) (n 50); Coffee (1995) (n 50) at 450 and 457, and Karmel (n 54) at 545.

generate more efficient regulation, ameliorate public choice and regulatory capture problems, and counteract potential behavioral biases should be approached with a health dose of skepticism.

Beyond the positive case for regulatory competition, critics of integrated regulation highlight a number of potentially significant shortcomings. First, they argue that the theoretical economies of scale and scope derived from the integration of management functions may prove difficult to harness in practice. Indeed, one would expect the extraction of these economies to be at least partially contingent upon the extent to which integrated regulators can successfully foster both (1) healthy and functioning management structures and decision-making processes, and (2) shared organizational cultures.⁶¹ Ultimately, however, encouraging the development of these organizational traits may prove to be amongst the most difficult challenges facing integrated regulators⁶² – especially where integration is achieved by way of the merger of multiple specialist agencies. Along a similar vein, critics argue that the size of integrated regulators may result in excessive bureaucracy and other diseconomies of scale.⁶³

Critics further argue that the theoretical case for integrated regulation overstates the magnitude of the potential economies of scale and scope. For example, a number of observers have cautioned against overstating the trend toward the integration of financial institutions.⁶⁴ Indeed, while there certainly exists a

⁶¹ Abrams and Taylor (n 9) at 17 and Ferran (n 30) at 291-292.

⁶² Abrams and Taylor (n 9) at 18.

⁶³ Ibid. and Cihak and Podpiera (n 11) at 11. Although, as Abrams and Taylor observe, this is perhaps more likely to reflect the quality of management than the size of the organization.

⁶⁴ Interestingly, while integration of this sort might have once been considered *horizontal* consolidation, the blurring of traditional distinctions raises the question of whether, for example, the

(shrinking) cadre of true financial conglomerates, the business models of the vast majority of financial institutions are still built around core specialties in banking, securities brokerage, investment management or insurance.⁶⁵ Simultaneously, however, recent history suggests that it is precisely these large, opaque and interconnected institutions – and the markets in which they trade – which pose the greatest systemic risks and, accordingly, warrant the lion’s share of regulatory scrutiny. Nevertheless, insofar as this trend is only observable across a narrow range of markets and institutions (or is ephemeral), there exists a legitimate question as to the expected quantum of the real world benefits generated by integrated regulation. Moreover, as Eilis Ferran observes, any potential economies of scale or scope extracted by regulated actors – stemming from, for example, a reduction in compliance costs – are likely to hinge not on the prevailing structural model (i.e. the number and complexity of rulebooks), but rather on the substantive requirements imposed thereunder (i.e. what the books say and how they are enforced).⁶⁶ Indeed, this observation finds tentative support in preliminary findings which suggest that the savings associated with integrated regulation may in fact be relatively small when compared with the overall costs of regulation.⁶⁷

More fundamentally, critics question whether the adoption of a holistic regulatory outlook necessarily requires the establishment of an integrated institutional

merger of a commercial bank (originating loans) and an investment bank (repackaging and distributing these loans via securitization) might not actually be considered a form of *vertical* consolidation.

⁶⁵ Ferran (n 30) at 277 and Wilmarth (n 28) at 254-257.

⁶⁶ Ferran (n 30) at 284.

⁶⁷ Kenneth Mwenda and Alex Fleming, “International Developments in the Structure of Financial Services Supervision”, presented at a seminar hosted by the World Bank Financial Sector Vice-Presidency (September 20, 2001), available at www.worldbank.org; Ferran (n 30) at 284, and Goodhart et. al. (n 13) at 154.

architecture.⁶⁸ Theoretically, integrated regulation is by no means the only structural model which holds out the potential to reduce information and/or coordination costs. Specifically, so-called ‘colleges’ of regulators, memoranda of understanding, and models premised on a ‘lead regulator’ may also prove effective in both these regards.⁶⁹ Yet to the extent it can be expected to yield a marginal reduction in information and/or coordination costs relative to these alternative institutional structures – and avoid the dysfunction which often accompanies them⁷⁰ – integrated regulation can still be seen as enjoying a comparative (if ultimately contingent) advantage.

Finally, and perhaps most persuasively, critics argue that the integration of management functions under the umbrella of a single regulator can give rise to significant, unintended and decidedly negative governance consequences. These consequences flow from two sources. First, the same concentration of power which imbues integrated regulators with such high levels of *de facto* accountability gives rise to a concomitant risk that they will become, in the words of one observer, ‘an over-mighty bully, a bureaucratic leviathan divorced from the industry it regulates’.⁷¹ Somewhat paradoxically, this concentration of power also gives rise to an opposing concern that integrated regulators are particularly prone to regulatory capture. Indeed, both logic and experience suggest that these risks are very real. In order to address these concerns, the *de facto* accountability associated with integrated regulation must therefore be augmented by mechanisms which ensure sufficient *de jure*

⁶⁸ Coffee (1995) (n 50) at 450.

⁶⁹ Briault (n 28) at 15 and Martinez and Rose (n 23) at 8-9.

⁷⁰ See Parts II and III for examples of this dysfunction in the U.S., U.K. and on the international scene.

⁷¹ Taylor (n 17) at 15. See also Goodhart et. al. (n 13) at 153-154.

accountability.⁷²

Second, the integration of management functions raises legitimate concerns about the suboptimal balancing of competing regulatory objectives. It is unavoidable that integrated regulators will be charged with responsibility for pursuing a broad range of regulatory objectives. It is equally unavoidable that these objectives will, on occasion, come into conflict with one another. Take, for example, the case of a potential bank failure. While public disclosure of the potential failure would advance the objectives of market transparency and (potentially) consumer protection, disclosure might also threaten to undermine financial stability.⁷³ A more omnipresent conflict, examined in greater detail in Part II, is that between maintaining market confidence, protecting consumers and deterring financial crime, on the one hand, and promoting globally competitive domestic financial markets, on the other.⁷⁴ Ultimately, wherever an integrated regulator is faced with the complex task of balancing competing regulatory objectives, there exists a risk that a suboptimal balance will be struck or that one or more of these objectives will be outright subordinated.⁷⁵

⁷² While somewhat beyond the scope of the present inquiry, these mechanisms might conceivably include: (1) clearly articulated regulatory objectives; (2) mechanisms which ensure that these objectives are pursued in a transparent manner (e.g. public reports, consultation processes, etc.); (3) objective benchmarks against which the performance of the regulator can be evaluated; (4) formal reporting and performance review processes overseen by the legislature, and (5) an independent body with the jurisdiction to review regulatory decisions (e.g. a judicial review process).

⁷³ By triggering a run on the assets of the bank (and, potentially, other institutions perceived by the marketplace as being in a similar position).

⁷⁴ Indeed, as Ron Suskind observes, there exists a latent conflict between projecting the impression of market confidence and actually taking measures to enhance financial stability; see Ron Suskind, *Confidence Men: Wall Street, Washington, and the Education of a President* (HarperCollins, New York, 2011). See also comments of U.K. MP Andrew Tyrie in Brooke Masters, “MPs Seek Revised Role for Financial Regulator”, *The Financial Times* (January 13, 2012), available at www.ft.com.

⁷⁵ See the comments of SEC Commissioner Luis Aguilar, posted on the Harvard Law School Forum on Corporate Governance and Financial Regulation (June 10, 2009), available at <http://blogs.law.harvard.edu/corpgov/>. At the same time, however, it is debatable whether striking the optimal balance between competing regulatory objectives is a challenge at all unique to integrated

Having canvassed the theoretical claims regarding the desirability of integrated regulation – along with the case for structural models which envision multiple specialist regulators – the next step is to compare these claims against our real world observations respecting the pre-crisis regulatory regimes governing OTC derivatives markets in the U.S. and U.K. As we shall see, this comparison generates more questions than answers.

II. From Theory to Practice: The Curious Case of OTC Derivatives Regulation

The regulation of OTC derivatives markets in both the U.S. and U.K. confound many of the theoretical claims about the most desirable structure of financial regulation at the domestic level. In the U.S. case, this should perhaps come as no surprise: its highly fragmented structure having long been acknowledged as a source of chronic regulatory failure. As a starting point, the existence of multiple federal regulators with overlapping and often uncertain fiefdoms contributed to (rather than reduced) overall costs of regulation.⁷⁶ These costs include those arising from the relatively frequent jurisdictional disputes chronicled in [Chapter 3](#) and, as a corollary, the opportunity costs associated with the diversion of resources away from – to take just one example – the design, implementation, monitoring and enforcement of regulation which might have more effectively responded to the myriad of risks posed by OTC derivatives. They also include the compliance costs incurred by market participants with a view to navigating the morass of complicated rules generated effectively (if somewhat counterintuitively) with the objective of exempting OTC derivatives markets from public regulatory oversight. Collectively, these costs undermined both

regulators or whether, perhaps more realistically, it is one which haunts regulators of all institutional stripes.

⁷⁶ See [Chapter 3](#) at 97-124. See also the Bloomberg Report.

the efficacy of the U.S. regulatory regime and the competitiveness of its domestic financial services industry.⁷⁷

The trajectory and substance of OTC derivatives regulation in the U.S. also undermines the case for regulatory competition at the domestic level. Specifically, the non-interventionist posture adopted by federal regulators prior to the GFC resulted in a form of *de facto* convergence in the market for regulation. In effect, market fundamentalism was the only item on the regulatory menu – especially during the critical years between 2000 and 2010.⁷⁸ What is more, where regulators such as CFTC Chairwoman Brooksley Born attempted to deviate from this status quo – in effect by raising the prospect of a new regulatory product – they were quickly marginalized.⁷⁹ Predictably, this *de facto* regulatory convergence effectively foreclosed the prospect of welfare enhancing regulatory competition.

Finally, the swift and decisive actions of the U.S. Congress, Treasury Department and Federal Reserve Board in response to the CFTC’s attempt to even *contemplate* regulating OTC derivatives markets provide a powerful (albeit inferential) rebuttal to claims that structural models based on multiple specialist regulators are less prone to capture. As we saw in Chapter 3, these actions were motivated by an unwavering belief in the ability of markets to generate socially desirable outcomes. In reality, of course, the principal beneficiary of these actions was the U.S. financial services industry. Ultimately, this observation lends support to

⁷⁷ Indeed, these costs continue to mount in the wake of the GFC insofar as jurisdiction over OTC derivatives under the *Dodd-Frank Act* is still split between the Federal Reserve Board, SEC and CFTC.

⁷⁸ As described in Chapter 3, between 2000 and 2010 the *CFMA* prohibited the SEC and CFTC from taking action in response to the risks posed by OTC derivatives.

⁷⁹ See Chapter 3 at 113-117.

the soft capture thesis – developed by Simon Johnson, James Kwak and others⁸⁰ – that Wall Street succeeded during this period in convincing both federal regulators and their political masters that free markets were the bedrock of economic growth and rising living standards for all Americans.

On the surface, the U.K.’s non-interventionist stance toward the regulation of OTC derivatives markets stands out as somewhat more surprising. As we have seen, the risks posed by OTC derivatives span the entire spectrum of objectives pursued by financial regulators: from market efficiency, to consumer protection, to the amelioration of potential systemic risks. What is more, OTC derivatives defy traditional categorization as banking, securities or insurance instruments. Indeed, they are the very embodiment of the globalization, integration and complexity which characterize modern financial markets. In theory, each of these traits plays strongly to the advantages of integrated regulation. In practice, however, integrated regulators such as the FSA seem to have proven no more effective in responding to the challenges of regulating OTC derivatives markets than their more fragmented counterparts in the U.S. and elsewhere. The salient question thus becomes: *why, despite the numerous theoretical advantages of integrated regulation, did the FSA generate and adhere to a non-interventionist (and arguably suboptimal) approach toward the regulation of OTC derivatives markets?*

On first blush, the FSA appears well positioned to harness the theoretical advantages of integrated regulation. In contrast with the fragmented U.S regulatory regime, the *FSMA* has been framed broadly enough so as to clearly capture OTC

⁸⁰ See Simon Johnson and James Kwak, *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (Random House, New York, 2010). See also Robert Weber, “New Governance, Financial Regulation and Challenges to Legitimacy: The Example of the Internal Models Approach to Capital Adequacy Regulation” (2010), 62 Admin. L. Rev. 783.

derivatives within the perimeter of the FSA's jurisdiction. Through the articulation of regulatory objectives and principles of good regulation, the *FSMA* also provides the FSA with a single, clear and, in many respects, coherent mandate.⁸¹ Simultaneously, it confers upon the FSA a great deal of flexibility in terms of how it goes about pursuing this mandate. Importantly, the *FSMA* also includes a number of mechanisms designed to ensure the *de jure* accountability of the FSA to both the U.K. Parliament⁸² and citizenry.⁸³

The FSA has also successfully capitalized on a number of the potential economies of scale associated with integrated regulation. It has, for example, pursued large infrastructure projects such as the Integrated Regulatory Reporting (IRR) system⁸⁴ and Advanced Risk Responsive Operating Framework (ARROW).⁸⁵ The cost savings generated by these and other initiatives have been touted as one of the key drivers behind the growth of the U.K. financial services industry in the years

⁸¹ Although, as examined below, different elements of this mandate may come into conflict with one another.

⁸² These mechanisms include a requirement that the FSA exercise its powers in a way which is compatible with its regulatory objectives; *FSMA*, s. 2(1)(a). As Briault observes, this requirement provides the foundation for the political and legal accountability of the FSA; Briault (n 28) at 12. Other accountability mechanisms established by the *FSMA* include: (1) a requirement that the FSA make annual reports to H.M. Treasury which must be put before Parliament and (2) the allocation of power to H.M. Treasury to appoint the FSA chairperson and board, order independent reviews of the FSA's financial affairs, and commission independent inquiries into financial failures; *FSMA*, ss. 1, 12 and 14 and Schedule 1.

⁸³ These mechanisms include a requirement that the FSA engage in public consultation – including the publication of draft rules and cost-benefit analyses – before exercising its rulemaking powers; *FSMA*, ss. 65, 121 and 155. In addition, FSA decisions are subject to review by an independent financial services tribunal (*see FSMA*, s. 55), while the effects of FSA regulation on competition are subject to review by the Director General of Fair Trading and the Competition Commission (*see FSMA*, ss. 95, 159-164, 302-310 and Schedule 14).

⁸⁴ For a more detailed description, *see* FSA, Better Regulation Action Plan, Progress Report (2006) at 13, and FSA, IRR Consultation Paper, CP06/11 (2006), both available at www.fsa.gov.uk. IRR is linked to the FSA's Gathering Better Regulatory Information Electronically (or GABRIEL) reporting system for registrants; *see* www.fsa.gov.uk/Pages/Doing/Regulated>Returns/IRR/gabriel/index.shtml.

⁸⁵ In a nutshell, ARROW is the FSA's integrated model for assessing risk, supervising registrant firms and targeting thematic work relating to consumers, sectors and multiple firms; *see* www.fsa.gov.uk/Pages/About/What/Approach/Assessment/index.html.

leading up to the GFC.⁸⁶ Finally, although not attributable to integration *per se*, the FSA arguably exhibits many of the other key determinants of regulatory efficiency and effectiveness: a high level of political and financial independence; robust financial resources, and a comprehensive arsenal of enforcement powers. One could be forgiven, therefore, for touting the desirability of the FSA's integrated institutional model – in particular relative to the fractured, and in many respects dysfunctional, U.S. regulatory regime.

Upon closer inspection, however, it would be unwise to hold up the FSA as the very model of a modern financial regulator. The FSA is frequently described by market participants as overly bureaucratic, intrusive and insensitive.⁸⁷ In addition, the internal organization of the FSA immediately prior to the GFC – especially within what was then the Risk Business Unit⁸⁸ – reflected in many respects historical divisions between the banking, insurance and securities industries.⁸⁹ Indeed, for much of its existence, the FSA's organizational structure revolved more fundamentally around such sectoral divisions. There is also reason to question the extent to which the FSA was, in practice, accountable to either the U.K. Parliament or its constituents. In terms of *de jure* accountability, the *FSMA* precluded H.M. Treasury from directly interfering with the affairs of the FSA outside the limited circumstance in which FSA regulation was found by the U.K. Competition

⁸⁶ See Bloomberg Report.

⁸⁷ “The Regulator Who Wasn't There”, *The Economist* (May 16, 2002), available at www.economist.com. See also Julia Black, Martyn Hopper and Christa Band, “Making a Success of Principles-based Regulation” (2007), *Law and Fin. Markets Rev.* 191 at 198.

⁸⁸ The FSA's other major regulatory business unit, the Supervisory Business Unit, was organized on what might be characterized as a functional basis between small firms, retail firms, major retail groups and wholesale firms.

⁸⁹ Indeed, the Risk Group was divided on both a sectoral basis (between banking, insurance, asset management and capital markets) and an objectives-based basis (between prudential and conduct of business regulation). The FSA has since undergone an internal restructuring to reflect its impending split into the PRA and FCA; see www.fsa.gov.uk/Pages/About/Who/Management/index.shtml.

Commission to have had a significant and unjustified adverse effect on competition. In terms of *de facto* accountability, meanwhile, the fact that the FSA was (and is) wholly funded by industry levies constrained the ability of Parliament to exert influence over its affairs via the power of the purse string.⁹⁰ Perhaps even more importantly, this funding model gave (and gives) rise to the prospect that the FSA (as a supplier of regulation) may be influenced by an acute degree of *de facto* accountability to market participants (as important consumers), thus raising the specter of welfare-reducing public choice and regulatory capture problems.

Ultimately, however, these problems collectively offer a fundamentally incomplete – and thus unpersuasive – account of why, despite the numerous theoretical advantages of integrated regulation, the FSA did not take a more proactive approach toward the regulation of OTC derivatives markets. A more compelling potential explanation for the FSA’s non-interventionist stance is that it was a product of one – or, perhaps more likely, a combination of – the following factors: (1) poor coordination; (2) the need to balance competing regulatory objectives; (3) incentive problems, and/or (4) the inherent limitations of regulation within highly complex and dynamic global financial markets.

Poor Coordination. There is little doubt that the FSA has at times struggled to promote intra-agency coordination. An internal report of the FSA’s handling of the Equitable Life Assurance Company affair, for example, identified poor communication between FSA personnel as a deficiency in its regulatory approach

⁹⁰ Although, simultaneously, this structure did limit the threat of legislative pre-emption.

between 1999-2000.⁹¹ Similar criticisms were levied by market participants in 2001 in relation to the FSA's failure to coordinate the approaches of its various specialist teams in connection with the implementation of the Integrated Prudential Sourcebook.⁹² More recently, the internal audit report of the Northern Rock crisis identified poor internal communication and information flow within the FSA, along with inconsistent implementation of rules and procedures, as contributing toward the staggeringly anemic supervisory strategy which allowed warning signs of the pending crisis at the bank to go undetected.⁹³

Given the FSA's record in this respect, it seems at the very least possible that the information necessary to fully evaluate the risks associated with the growth, proliferation and complexity of OTC derivatives markets may not have been gathered, analyzed and/or directed to the personnel capable of evaluating the probability and potential impact of these risks and, thereafter, initiating appropriate regulatory action. Ultimately, however, it is difficult to evaluate the extent to which poor coordination was responsible for the FSA's failure to respond to the mounting risks within OTC derivatives markets.⁹⁴ What is more, coordination problems likely represent at best only one piece of the puzzle.

⁹¹ Ferran (n 30) at 295, citing Ronnie Baird, *Report of the Financial Services Authority On the Review of the Regulation of the Equitable Life Assurance Society from 1 January 1999 to 8 December 2000* (The Stationery Office, London, 2001).

⁹² *Ibid.*, citing the response of the British Bankers Association to FSA, CP 97 – The Integrated Prudential Sourcebook (December 2001). To the extent that the events giving rise to these criticisms (along with the Equitable Life affair) transpired within the first few years of the FSA's existence, however, one might reasonably attribute any coordination problems to the growing pains (i.e. start-up costs) of a new and institutionally complex regulator.

⁹³ FSA, *Lessons Learned Review of the Supervision of Northern Rock plc during the period 1 January 2005 to 9 August 2007* (2008), Executive Summary at 4-7, available at www.fsa.gov.uk. Notably, the report also identified, *inter alia*, (1) poor allocation of expertise; (2) a lack of proper training for supervisory personnel, and (3) lack of expertise in prudential banking and financial analysis as contributing factors; *ibid.* at 4 and 7.

⁹⁴ My request to interview relevant FSA personnel was refused.

Competing Regulatory Objectives. A potentially more compelling explanation for the FSA's pre-crisis approach toward the regulation of OTC derivatives markets is that it was a product of the regulator's attempt to balance competing objectives. As the FSA itself acknowledges, its broad and complex remit invariably generates situations in which its statutory objectives will come into conflict with one another.⁹⁵ As described in Chapter 3, these statutory objectives are to maintain market confidence; promote public awareness; secure consumer protection, and reduce financial crime. Beneath these objectives, however, reside a second tier of regulatory objectives consisting of principles of good regulation, strategic aims and outcomes of which the FSA is expected to have regard in pursuing its statutory mandate.

It is within this second tier that potential conflicts arose between the FSA's statutory objectives and the objectives of promoting efficient and internationally competitive financial markets. The principles of good regulation articulated in the *FSMA* mandate, for example, that the FSA discharge its functions with regard to, amongst other matters: (1) the desirability of facilitating innovation; (2) maintaining the competitive position of the U.K. within financial services and markets; (3) minimizing adverse effects on competition, and (4) the desirability of facilitating competition between those subject to FSA regulation.⁹⁶ The FSA has further identified as strategic aims promoting efficient, orderly and fair markets and improving its business capability and effectiveness.⁹⁷ Amongst the FSA's desired outcomes flowing from these strategic aims are that (1) the U.K. is internationally

⁹⁵ FSA, *How We Evaluate Our Performance – The Outcomes Performance Report and Developments in Our Approach Since 2002* (2007), available at www.fsa.gov.uk.

⁹⁶ *FSMA*, s. 2(3)(d), (e), (f) and (g).

⁹⁷ See www.fsa.gov.uk/Pages/About/Aims/Performance/opr/index.shtml.

attractive and (2) the FSA is easy to do business with.⁹⁸ Indeed, the FSA has historically taken great pains to communicate to the marketplace that its general approach is to regulate in ways which support competition and innovation with financial markets – with the promotion of competition, minimizing regulatory costs, making life easier for regulated actors, and restraint in regulatory intervention permeating FSA guidance and other literature prior to the GFC.⁹⁹ Ultimately, this approach should not come as much of a surprise given that, as we have already seen, the enactment of the *FSMA* – and with it the migration toward integrated regulation – was largely motivated by the desire to enhance the international competitiveness of U.K. financial markets.¹⁰⁰

The dual trends toward globalization and integration have sparked intense international competition within the financial services industry. This competition has in turn fueled a transatlantic rivalry between New York and London for supremacy in the lucrative markets for investment banking, sales and trading services. While New York has long been acknowledged as the global leader in these markets, the period immediately preceding the GFC saw Europe – and London in particular – attract an increasing share of global investment banking revenues.¹⁰¹ This shift was most pronounced within the markets for new public issuances of equity and debt and, importantly, the structuring of OTC derivatives transactions.¹⁰² On the eve of the GFC, Europe (with London as its primary trading hub) accounted for 56% of the estimated \$USD52 billion in global investment banking revenues derived from OTC

⁹⁸ Ibid.

⁹⁹ See for example, FSA, *Better Regulation Action Plan* (December 2005), available at www.fsa.gov.uk.

¹⁰⁰ See [Chapter 3](#) at 131.

¹⁰¹ Bloomberg Report at 10-13.

¹⁰² Ibid. at 54.

derivatives transactions.¹⁰³ Simultaneously, the growing synergies between derivative and underlying spot markets conferred upon London an important strategic advantage vis-à-vis New York.¹⁰⁴

London's resurgence as a global financial powerhouse has been largely attributed to the relative attractiveness of the U.K.'s legal and regulatory environment. Specifically, the FSA's integrated regulatory framework – along with its perceived responsiveness, flexibility and accountability – has been identified as a key competitive advantage.¹⁰⁵ Viewed from this perspective, the risks associated with the growth, proliferation and complexity of OTC derivatives markets generated an acute conflict between the FSA's regulatory objectives. More specifically, any unilateral deviation from its non-interventionist stance in order to maintain market confidence, protect consumers, and/or reduce financial crime would potentially have jeopardized the U.K.'s global competitiveness – thus threatening a significant source of tax revenues, employment, international prestige and other benefits. The U.K.'s approach can thus be understood, at last in part, as the by-product of the FSA's attempt to balance these competing objectives. Perhaps most disconcerting in this respect is the lack of transparency accompanying this process: the FSA's integrated structure having effectively driven this balancing act underground. That this balancing act may – with the benefit of hindsight – have proven socially suboptimal provides further fodder for critics of integrated regulation.

¹⁰³ Ibid. at 13.

¹⁰⁴ Ibid. at 54.

¹⁰⁵ Ibid. at ii, 10, 12, 17, 54, 65, 80-81 and 86.

The nature of the conflict between the FSA's regulatory objectives dovetails with Johnson and Kwak's soft capture thesis.¹⁰⁶ The FSA's principles of good regulation, strategic aims and outcomes are infused with language designed to emphasize the importance of minimizing the impact of FSA regulation on (what is implicitly assumed to be) the efficient operation of financial markets and institutions. This language reflects what was at the time a broader prevailing sentiment that markets – free from the costly constraints of public regulation – represented the most desirable means of allocating society's resources. Indeed, even if U.K. regulators did not worship in the church of market fundamentalism, the fact that their largest competitor clearly did would have placed considerable pressure on them to mirror the U.S.'s non-interventionist approach.¹⁰⁷ Further compounding the potential for soft capture may have been both the FSA's funding model (which, as described above, relies on industry levies) and its adherence to a 'more principles-based' institutional philosophy (which, as we have seen, contemplates a high level of interaction and cooperation between regulators and regulated actors).¹⁰⁸ It is thus hardly surprising that FSA policy ultimately came to reflect a free market ethos.

Incentive Problems. The U.K.'s regulatory outlook was also likely influenced by a structurally entrenched incentive problem. Prior to the GFC, few would have argued that the U.K. had not reaped significant benefits – in the form of, *inter alia*, enhanced employment, personal incomes and investment banking (and, ultimately, tax) revenues¹⁰⁹ – from the FSA's non-interventionist approach toward the regulation

¹⁰⁶ Johnson and Kwak (n 80).

¹⁰⁷ Pressure exacerbated by the fact that the FSA was statutorily *compelled* to take into account the competitiveness of U.K. financial markets; see [Chapter 6](#) at 263-265.

¹⁰⁸ See [Chapter 5](#) for a discussion of how 'more principles-based' regulatory regimes may prove more susceptible to capture.

¹⁰⁹ See Bloomberg Report.

of OTC derivatives markets. At the same time, however, as the effects of the crisis sent ripples through the global economy, the crystallization of systemic risk imposed substantial costs on market participants (and, ultimately, taxpayers) residing outside the U.K. This negative externality exposes a third, and potentially powerful, explanation for the FSA's approach: namely, domestic regulators are likely to possess insufficient incentives to take unilateral action in response to systemic risks. Indeed, domestic regulators face a bleak calculus. While they bear all the direct¹¹⁰ and indirect¹¹¹ costs stemming from any attempt to address systemic risks, the benefits thereby generated are likely to be negligible insofar as the jurisdiction will remain exposed to negative spillovers generated by the failure of regulators in other jurisdictions to adopt equivalent measures.¹¹² Viewed in this light, it becomes possible to see how the FSA might have (not unreasonably) dismissed unilateral intervention to ameliorate systemic risks as being fundamentally unappealing from a cost-benefit perspective.¹¹³ The impact of this incentive problem at the international level is examined in Part III.

The Complexity Frontier. While poor coordination, incentive problems and the challenge of balancing competing regulatory objectives provide potentially compelling explanations for the FSA's non-interventionist approach, there exists a far more fundamental – and, ultimately, troubling – explanation. The frequency and complexity of interactions within and between financial markets and institutions –

¹¹⁰ Stemming from, for example, the promulgation, monitoring and enforcement of systemic risk regulation.

¹¹¹ Stemming from, for example, the marginal flight of business and capital from the jurisdiction.

¹¹² And, simultaneously, any positive spillovers will flow at least in part to other jurisdictions.

¹¹³ Although in fairness to the FSA the incentive problems manifest within this cost-benefit calculus were, arguably, compounded by a degree of ambiguity surrounding the extent to which the FSA had abrogated responsibility for systemic risk regulation to both the Bank of England and E.U. policymakers.

along with the nature and pace of financial innovation – make the timely and comprehensive evaluation of potential risks an exceedingly difficult, if not entirely unrealistic, prospect. Within such an environment, it is all but inevitable that regulators will be called upon to evaluate the probability and potential impact of a myriad of risks armed with imperfect information and deploying cognitive frameworks which exhibit elements of bounded rationality.

The GFC provides a vivid illustration of the informational challenges posed by the complexity and dynamism of modern financial markets. It is certainly the case that many of the factors which contributed to the onset and perniciousness of the crisis – global trade imbalances; the growth and systemic importance of the shadow banking system, and increasing leverage within the financial system, for example¹¹⁴ – were more or less readily observable. Other factors, however – such as the flaws within the structure of derivatives markets and their pricing; over-reliance on sophisticated quantitative techniques for measuring and managing risk; hardwired procyclicality; the recycling (i.e. concentration) of risk within the financial system, and the broader systemic implications of a liquidity crisis within wholesale credit markets¹¹⁵ – were less apparent until fairly late in the day. Furthermore, even in the circumstance where all relevant information was sufficiently observable *ex ante*, accurately predicting the probability, timing and impact of the confluence of these factors would have still required a truly sophisticated understanding of the complex interactions within and between financial markets and institutions. Viewed from this vantage point, it seems hardly surprising that the failure initially to identify and then

¹¹⁴ See Turner Review at 11-22.

¹¹⁵ Ibid. at 11-23.

to accurately assess the probability and likely impact of the growing systemic risks¹¹⁶ – indeed, in thinking that many of these factors were actually *enhancing* systemic resiliency¹¹⁷ – was a global one.¹¹⁸ That this failure was not only one of public regulation but also of private markets (as arguably evidenced by, *inter alia*, the failure of pre-crisis CDS spreads on the senior debt of financial institutions to accurately reflect the underlying probabilities of default¹¹⁹) only serves to further drive home the informational challenges arising from the complexity of modern financial markets.

To its credit, the FSA did in fact identify a number of the risks stemming from the growth, proliferation and complexity of OTC derivatives markets. FSA Annual Reports and Financial Risk Outlooks published between 2003 and 2007 identified, *inter alia*: (1) the growth of credit derivatives markets¹²⁰; (2) the backlog of confirmations and other operational risk issues within OTC derivatives markets¹²¹, and (3) the complexity of OTC derivatives and attendant risk management problems

¹¹⁶ As of January 2007, for example, while the FSA was of the view that a market correction was ‘likely’, it attached a very low probability to a tightening of the speed, duration and scale which eventually occurred; FSA, *Memorandum to the Treasury Committee, Recent Turbulence in Global Financial Markets and Northern Rock’s Liquidity Crisis* (October 9, 2007) at 2, available at www.fsa.gov.uk.

¹¹⁷ The pre-crisis conventional wisdom in this respect was perhaps best (and now most infamously) encapsulated by the IMF in its April 2006 Global Financial Stability Report: ‘the dispersion of credit risk by banks to a broader and more diverse set of investors, rather than warehousing such risk on their balance sheets, has helped make the banking and overall financial system more resilient.’; IMF, *Global Financial Stability Report* (2006) at 51, available at www.imf.org.

¹¹⁸ Turner Review at 85.

¹¹⁹ *Ibid.* at 46. In fact, until the summer of 2007, CDS spreads within the financial services sector suggested that risks were at historically low levels. Indeed, it now seems that CDS prices – much like the insurance markets they so closely resemble – may systemically understate risk in upswings and overstate risk in downswings; *ibid.* at 109. This is not to suggest, however, that CDS spreads were a completely ineffective ‘early warning system’ for impending distress; see Oliver Hart and Luigi Zingales, “A New Capital Regulation for Large Financial Institutions” (2010), Fondazione Eni Enrico Mattei Research Paper No. 124.2009 at 27, available at www.ssrn.com.

¹²⁰ See FSA Annual Reports for the years 2003-2006 and Financial Risk Outlooks for the years 2002-2006, available at www.fsa.gov.uk.

¹²¹ See FSA Annual Reports for the years 2003-2007 and Financial Risk Outlooks for the years 2005-2007, available at www.fsa.gov.uk.

as issues of concern.¹²² Ultimately, however, the FSA failed both to foresee the role that OTC derivatives would play in the crisis or attach a sufficiently high probability and/or potential impact to the attendant risks. Yet it must be remembered that all of this is apparent only with the benefit of hindsight. Moreover, few (if any) regulators correctly foresaw the impending crisis and/or fully grasped the magnitude of the potential consequences. Accordingly, rather than viewing these failures as such, it may be more appropriate to view them (at least in part) as reflecting the complexity and dynamism of modern financial markets.

This explanation – in effect that the FSA had reached the complexity frontier – is perhaps the most difficult from which to draw potential lessons. On one level, the FSA’s integrated ‘risk-based’ approach to regulation – premised on evaluating the impact and probability of risks as a means of prioritizing them and allocating resources – seems a prudent course of action within such an environment. On another level, however, and as amply illustrated by the GFC, complexity and financial innovation will almost inevitably undermine our attempts to accurately assess the probability and likely impact of potential risks. That the FSA has perhaps not fully grasped this possibility is evidenced by its recent statement that the crisis was ‘the crystallization of a low probability, high impact risk.’¹²³ Ultimately, it may not have been that the crisis was the realization of a low probability risk, but rather that the FSA – along with other regulators and market participants – fundamentally *misjudged* its probability. Viewed in this light, perhaps one of the most important lessons we can take away from this analysis is that we need to recalibrate our expectations of what financial regulation – irrespective of its source, form or scope – is capable of

¹²² See FSA Financial Risk Outlooks for the years 2002-2007, available at www.fsa.gov.uk.

¹²³ FSA (n 116), Executive Summary at 1.

achieving. As the FSA itself has long acknowledged, there will always be failures, and it would be both impossible and, in any event, undesirable to seek to eliminate all risk from within financial markets.

So *what other lessons can we draw from this analysis in terms of the most desirable structure of financial regulation at the domestic level?* First, as critics suggest, integrated regulators such as the FSA are by no means immune to the information and coordination problems which plague structural models premised on multiple specialist regulators. Second, the FSA's experience lends credence to concerns that integrated regulators might strike a suboptimal balance between competing regulatory objectives. It also provides a measure of anecdotal (and inferential) support for concerns respecting the vulnerability of integrated regulators to public choice and regulatory capture problems. Collectively, these lessons serve to illuminate the potential desirability of proposals – such as those currently being pursued by the coalition government in the U.K. – which would see responsibility for prudential, conduct of business and competition regulation split between multiple specialist regulators.¹²⁴ Finally, and perhaps most importantly, the structurally entrenched incentive problems facing domestic regulators suggest that the advantages of integration may be the greatest if implemented not at the *national* but, rather, the *international* level.

III. Global Problems, Domestic Solutions: The Optimal Structure of Financial Regulation at the International Level

The GFC has powerfully illustrated how globalization and interconnectedness undermine the ability of domestic regulators to successfully identify, monitor and

¹²⁴ See n 5. Although the effectiveness of these proposals will ultimately also hinge on their funding models; the mechanisms employed to ensure *de facto* and *de jure* accountability, etc.

respond to many of the risks encountered within modern financial markets. While capital might flow increasingly freely across national borders, domestic regulators face inherent jurisdictional constraints and are often hamstrung by both their incomplete access to information and finite financial, political and human resources.¹²⁵ These limitations have been one of the driving forces behind the emergence of various international fora designed to enhance global regulatory coordination.¹²⁶ Indeed, the rise to prominence of soft law institutions such as the BCBS, IOSCO, IASB, CPSS and, most recently, the FSB reflects the inherent tension between the global nature of the risks and the limitations of domestic regulators to effectively respond to them. Table 6.2 summarizes the membership and stated purpose of some of the key players in this emerging global regulatory architecture.

<u>Table 6.2: Key Players in the Emerging Global Regulatory Architecture</u>			
Institution	Est.	Membership	Stated Purpose
FSB	2009 ¹²⁷	Regulators from 24 countries; international organizations such as the BIS, EC, IMF, World Bank and OECD; international standard setters such as the BCBS, IOSCO, IASB and CPSS.	Coordinating the work of national financial authorities and international standard setting bodies and developing and promoting the implementation of effective regulatory, supervisory and other financial sector policies.
BCBS	1974	Central bank governors and national banking supervisors from 27 countries.	Enhancing the understanding of key supervisory issues and improving the quality of banking supervision worldwide.
IOSCO	1983	Securities regulators from approximately 115 countries.	Promoting high standards of securities regulation; facilitating the exchange of information; establishing standards for international securities transactions, and promoting enforcement of standards.

¹²⁵ Howell Jackson, “Centralization, Competition, and Privatization of Financial Regulation” (2001), 2:2 Theoretical Inquiries in Law 1 at 8. *See also* Guzman and Choi (n 50) at 1857.

¹²⁶ Jackson (n 125) at 16 and 22. The other principal driver being the potential externalities stemming from this globalization and interconnectedness.

¹²⁷ The FSB’s much maligned predecessor, the Financial Stability Forum, was established in 1999.

IASB	2001	15 members, representing 9 countries.	Developing high quality and enforceable global accounting standards.
CPSS	1990	Central banks from 24 countries.	Strengthening the financial market infrastructure through the promotion of sound and efficient payment and settlement systems.

Predictably, the GFC has galvanized support for the view that we need to further strengthen this global regulatory architecture. Perhaps most importantly, the crisis has forged an ostensible consensus within the G20 respecting the importance of more *robust* and globally *consistent* regulation and oversight of, *inter alia*, banks, credit rating agencies, hedge funds, the shadow banking system and OTC derivatives markets.¹²⁸ In the case of OTC derivatives, this consensus is a product of the view that the interconnectedness of these markets – combined with their historical opacity – generate (and mask) potential systemic risks.¹²⁹ It is in response to these risks that the U.S., E.U. and several other G20 member states have undertaken to pursue an ambitious agenda of regulatory reforms. As described in Chapter 3, the primary thrust of these reforms has been to (1) move clearing and settlement of ‘standardized’ OTC derivatives onto CCPs; (2) impose higher capital and margin requirements on ‘non-standardized’ derivatives, and (3) require market participants to register and provide prescribed transaction data to regulators and third party SDRs/TRs.¹³⁰ Crucially, while the consensus is a multilateral one, the all-important details of these

¹²⁸ See G20 Seoul Summit Leaders Declaration (November 11-12, 2010); G20 Toronto Summit Leaders Declaration (June 26-27, 2010); G20 Pittsburgh Summit Leaders Statement (September 25, 2009) and G20 Progress Report on the Actions to Promote Financial Regulatory Reform (September 25, 2009), all available at www.g20.org/pub_communiques.aspx.

¹²⁹ *Ibid.*

¹³⁰ For further details respecting these and other related reforms under the *Dodd-Frank Act* and EMIR, see Chapter 3, Part III.

reforms are being hammered out and implemented predominantly at the national level, by domestic regulators.¹³¹

Ultimately, however, the complexity of modern financial markets and the nature and pace of financial innovation dictate that the success or failure of these reforms will hinge on the ability of domestic regulators – and their political masters – to achieve comprehensive and sustained coordination across at least three dimensions: (1) cross-border information flow; (2) crisis response, and (3) functional harmonization. A high level of global regulatory coordination across each of these dimensions is imperative because the greater financial stability which reforms such as the *Dodd-Frank Act* and EMIR seek to is a public good: while domestic constituencies will pay all the direct and indirect costs of implementing these reforms, they will only enjoy a fraction of any benefits. Moreover, in a world of globally interconnected financial markets and institutions, these domestic constituencies will remain exposed to the negative externalities generated by excessive risk taking, regulatory arbitrage and lax supervision in other jurisdictions. In the absence of effective global coordination, therefore, one might expect to observe chronic underinvestment in the infrastructure systemic risk regulation.

Cross-border Information Flow. The free flow of information across borders is the backbone of systemic risk regulation. Without it – i.e. where information is fragmented along jurisdictional lines – it will be next to impossible for either domestic regulators or international bodies such as the FSB to identify and monitor

¹³¹ The notable exception being EMIR which, while being designed at the E.U. level, will ultimately be implemented at the national level by each member state.

the location, nature and extent of potential risks.¹³² Reflecting this, both the *Dodd-Frank Act* and EMIR seek to facilitate cross-border information flow by, for example, requiring SDRs/TRs to provide information to foreign authorities when requested to do so by their domestic regulators.¹³³ Regulators have also been working through the auspices of an informal group called the OTC Derivatives Regulators' Forum (ODRF) to establish common practices respecting, *inter alia*, the nature, format, frequency and origin of information to be provided by SDRs/TRs.¹³⁴

Simultaneously, however, there is ample reason to question how effective these information sharing arrangements are likely to be in practice. First, insofar as their legal force is grounded in the domestic law of the jurisdiction providing the information (or left subject to the discretion of domestic regulators), these arrangements are inevitably subject to the vagaries of domestic politics. Indeed, the relevant provisions of the *Dodd-Frank Act* seem to have been designed by Congress with the intention of *impeding* the free flow of information between regulators rather than *facilitating* it. The *Dodd-Frank Act*, for example, stipulates that TRs must receive an indemnity from domestic and foreign regulators as a pre-condition to the provision of information.¹³⁵ Perhaps tellingly, an identical provision was subsequently inserted into EMIR.¹³⁶ Second, experience suggests that these arrangements will not guarantee the timely aggregation, synthesis or dissemination of

¹³² Indeed, the U.S. Treasury Department identified the fragmentation of information between regulators as contributing to the GFC; see U.S. Treasury Department, *Blueprint for a Modernized Financial Regulatory System* (2008), available at www.treasury.gov.

¹³³ *Dodd-Frank Act*, s. 728 and EMIR, Art. 62 and 63.

¹³⁴ For a more fulsome description of the work being undertaken by the ODRF, see www.otcdrf.org/work/index.htm.

¹³⁵ *Dodd Frank Act*, s. 728.

¹³⁶ See Lukas Becker, "EC Official: Don't Enforce Trade Repository Indemnity Rules", *International Financial Law Review* (June 16, 2010), available at www.iflr.com.

information – least of all during periods of market turmoil.¹³⁷ Finally, there remains the question of how to address the inescapable free rider problem stemming from the fact that, in practice, different domestic regulators possess different capacities (and incentives) to collect and share the information needed to effectively monitor systemic risks.

Crisis Response. The ability to identify and monitor the build-up of systemic risks is of undeniable importance. More important, however, is the ability to take timely, decisive and coordinated action to avoid (or contain) a developing crisis.¹³⁸ The crystallization of systemic risk within OTC derivatives markets – precipitated by, for example, the failure of a major CCP – would almost certainly have significant cross-border implications. These implications could be very significant indeed where the CCP cleared transactions which originated outside the jurisdiction in which it was regulated; involved counterparties which were domiciled outside this jurisdiction, and/or dealt with collateral located or issued in different jurisdictions or denominated in different currencies. The prospect of CCP interoperability, cross margining and other linkages raise the systemic stakes (and the complexity of any resolution) even further. There is, accordingly, a manifest need for cross-border contingency plans designed to minimize the systemic effects arising from the failure of a CCP.

At present, any globally coordinated action to address systemic risks arising within OTC derivatives markets – or anywhere else for that matter – would be predicated on the existence of a high level of both positive and normative consensus

¹³⁷ The failure of E.U. banking and securities regulators to share information or coordinate their actions during the crisis – despite the existence of coordinating mechanisms such as CESR and the Committee of European Banking Supervisors (CEBS) – being a representative case in point.

¹³⁸ Indeed, as amply illustrated by the recent crisis, unilateral action (such as extending blanket guarantees over retail deposits or money market funds) can in many cases exacerbate matters.

amongst domestic regulators. In reality, however, it is not difficult to envision any number of circumstances in which different regulators – facing different domestic political, fiscal or institutional pressures; being differentially exposed to the potential effects of an impending crisis, or being asked to shoulder a different proportion of the financial burden – may find themselves at odds with each other respecting the diagnosis and/or the appropriate course of treatment. What is more, building consensus invariably takes time – perhaps the most precious commodity in the face of a potential financial crisis. There currently exists no mechanism – no institution – manifestly capable of overcoming this acute coordination problem.¹³⁹

Functional Harmonization. By far the most contentious dimension of international coordination is functional harmonization. There are those who view functional harmonization as a source of potential systemic instability.¹⁴⁰ According to this view, harmonization amplifies the systemic impact of (inevitable) regulatory failures – in effect by incentivizing regulated actors in different jurisdictions to pursue similar business strategies.¹⁴¹ Proponents of this ‘herding’ argument draw on regulatory competition theory to argue that regulatory diversity – and the regulatory arbitrage on which implicitly relies – can thus be understood as representing a valuable hedge against systemic regulatory miscalculation.¹⁴² Moreover, proponents assert, competition enhances innovation, choice and efficiency in the provision of financial regulation.

¹³⁹ While the FSB provides a forum for such coordination, its ability to leverage its predominantly soft law powers to bring the parties to the table and then make them agree on a course of action in the face of a crisis is, as yet, untested.

¹⁴⁰ See for example, Romano (n 58).

¹⁴¹ Ibid. at 16.

¹⁴² Ibid. at 20.

There is no question that functional harmonization can generate significant (unintended) costs – especially where the regulatory apparatus has been captured by vested interests. The underlying problem, however, is *capture* – not the absence of meaningful *competition*. Indeed, regulatory competition in this context would in all likelihood increase overall societal costs. First, as we have already seen, regulatory competition theory is blind to the potential negative externalities generated by pervasive regulatory arbitrage.¹⁴³ Perhaps most importantly, however, it fails to appreciate how ostensibly ‘successful’ regulatory products can change the flow of capital in ways which put pressure on fragile parts of the financial system, leading to the build-up and, ultimately, crystallization of systemic risk.

Second, and more broadly, whether regulatory competition promotes the development of socially desirable regulatory products will depend upon the equilibrium reached in what is, effectively, a joint maximization problem. Once again, however, the traditional regulatory competition debate is of limited application in this context. In the context of this debate, the central issue is typically framed as stemming from a perceived conflict of interest between investors and issuers (or managers) with respect to the costs and benefits of, for example, shareholder protection mechanisms or public disclosure requirements. As Stephen Choi explains:

‘Once in a competitive environment, issuers will have a strong incentive at the time they raise capital from the public markets to install credible and effective forms of investor protection. Issuers that fail to do so may be forced to accept a larger discount from investors. Conversely, once protected, investors are more likely to price an offering higher. Issuers will then select a level of investor protection – whether provided through private contract or through a regulatory regimes – where the benefit from receiving a higher offering price outweighs the added costs of such protection. *Competition in theory, therefore, may lead to joint maximization of the wealth of issuers and investors.*’¹⁴⁴

¹⁴³ Or at least assumes these costs will be fully internalized by the market.

¹⁴⁴ Choi (n 53) at 113-114 [emphasis added]. This joint maximization problem is also at the heart of John Coffee’s ‘bonding’ hypothesis; *see* Coffee (2002) (n 50).

This stands in stark contrast, however, with the great many areas of financial regulation where, crucially, no such joint maximization problem exists. Indeed, as we saw in Chapter 5, the regulation of OTC derivatives markets offers a compelling example: CCPs, dealers, and end-users all arguably sharing a community of interest with respect to, *inter alia*, the imposition of the least onerous capital, margin and collateral requirements.¹⁴⁵ In the circumstances, one would expect regulatory competition to devolve into a welfare-reducing race-to-the-bottom accompanied by a corresponding increase in systemic risk.

Viewed from this perspective, functional harmonization – or at the very least harmonized minimum standards – becomes clearly desirable for effective systemic risk regulation. Reflecting this, post-crisis regulatory reforms have emphasized the importance of substantive convergence. The *Dodd-Frank Act*, for example, instructs U.S. regulators to consult with their foreign counterparts with respect to the establishment of international standards governing OTC derivatives markets.¹⁴⁶ To date, these consultations have primarily taken place under the auspices of soft law institutions such as the IOSCO/CPSS joint working groups on CCPs and TRs, the ODRF and the BCBS. As the principal hubs of derivatives trading activity, the U.S. and E.U. have also coordinated their efforts on a bilateral basis.¹⁴⁷

Ultimately, while these efforts have yielded an impressive level of policy convergence, it is nevertheless possible to identify a (growing) number of technical

¹⁴⁵ See Chapter 5 and Sean Griffith, “Incentive Problems in Derivatives Trading: Towards a New Corporate Governance Structure for Clearinghouses” (June 1, 2010) [working paper on file with author].

¹⁴⁶ *Dodd-Frank Act*, s. 752.

¹⁴⁷ Although, based on my own observations at various international fora, this coordination might best be described as perfunctory, with neither jurisdiction keen to highlight areas of substantive divergence between the *Dodd-Frank Act* and EMIR (let alone discuss ways to close the resulting gaps).

areas – CCP governance being perhaps the most prominent¹⁴⁸ – where the U.S. and E.U. appear poised to adopt divergent substantive requirements. As these more granular reforms are implemented, it seems likely that this rift will be amplified by longstanding and well documented differences in terms of, *inter alia*, their respective philosophical approaches toward supervision and enforcement and endowments of human and financial capital. Compounding matters, the nature and pace of change within OTC derivatives markets will demand that regulators coordinate their efforts on an *ongoing* basis to ensure that substantive regulation (and approaches to supervision and enforcement) remain harmonized over time. It remains to be seen, however, whether domestic regulators will be able to sustain this coordination after the political consensus of the GFC has faded into memory.¹⁴⁹

The salient question thus becomes: *what, if anything, can be done from a structural perspective to promote coordination across each of these three dimensions?* At one end of the spectrum are those who would view any attempt to strengthen the current global regulatory architecture as either unnecessary or, at the very least, politically unfeasible.¹⁵⁰ At the other end of the spectrum, meanwhile, are authors like John Eatwell and Lance Taylor who argue that a globally integrated financial system necessitates the creation of a global financial regulator – underpinned by formal legal powers – with responsibility for, *inter alia*, supervising large banks and other systemically important institutions.¹⁵¹ Along a similar vein, Barry

¹⁴⁸ See Chapter 5.

¹⁴⁹ Moreover, there remains the nagging question of how to address the fact that many jurisdictions have not signed up to – or may in the future deviate from – the G20's professed consensus.

¹⁵⁰ See Schooner and Taylor (n 7) at 292.

¹⁵¹ See John Eatwell and Lance Taylor, *Global Finance at Risk: The Case for International Regulation* (New Press, New York, 2000).

Eichengreen has proposed a treaty-based ‘World Financial Organization’.¹⁵² Pursuant to Eichengreen’s proposal, jurisdictions seeking access to the capital markets of other signatories¹⁵³ would be required to implement harmonized substantive requirements and meet prescribed standards in terms of the quality of financial sector supervision and enforcement. Disputes as to whether a jurisdiction had complied with these requirements would then be subject to adjudication by a panel of independent experts.¹⁵⁴

Proposals for both a global financial regulator and World Financial Organization hold out a number of potential advantages in terms of information sharing, crisis response, and functional harmonization. Simultaneously, however, both manifest (potentially fatal) shortcomings. With respect to a global financial regulator, for example, there exist a series of thorny questions surrounding, *inter alia*, burden sharing¹⁵⁵; democratic legitimacy, and the prospect of regulatory capture.¹⁵⁶ At the heart of each of these questions is the inescapable reality that, in many cases, the domestic constituencies from which the authority of a global regulator would necessarily derive will not share a single community of interest.¹⁵⁷ With respect to a World Financial Organization, meanwhile, the time consuming and politically

¹⁵² Barry Eichengreen, “Not a New Bretton Woods but a New Bretton Woods Process” in Barry Eichengreen and Richard Baldwin (eds.), *What G20 Leaders Must Do to Stabilise Our Economy and Fix the Financial System* (Centre for Economic Policy Research, London, 2008), available at vox.eu.org.

¹⁵³ That is, seeking to secure access to the capital markets of other signatories *for their domestic financial institutions*.

¹⁵⁴ Not unlike the dispute resolution processes of the World Trade Organization (WTO) upon which the proposal is largely based.

¹⁵⁵ Schooner and Taylor (n 7) at 292. Especially where (as would almost certainly need to be the case) the global regulator was responsible for making decisions respecting whether to bail out failing financial institutions.

¹⁵⁶ See Ngaire Woods (ed.), *The Political Economy of Globalization* (Palgrave MacMillan, New York, 2000).

¹⁵⁷ Generating the prospect of both *ex ante* hold-up problems and *ex post* ‘renegotiation’ of the agreement(s) creating the global regulator.

delicate process of negotiating (and continually *renegotiating*) multilateral treaties would seem fundamentally at odds with the often frenetic pace of change within modern financial markets.¹⁵⁸ Moreover, it is not entirely clear how sanctions – including, theoretically, restricting market access – could be imposed without generating potential significant knock-on effects. Finally, using market access as a carrot (or, indeed, as a stick) would arguably give larger and more developed capital markets such as the U.S., E.U. and perhaps even China a *de facto* veto over both substantive policy and dispute resolution. The desirability of both proposals is thus undermined by deeply imbedded and intractable political economy problems.

So how, then, do we move forward? Once again, incrementalism holds out a number of potential advantages. In this respect, it may be useful to approach each dimension of international coordination independently. The obvious place to start is cross-border information flow. More specifically, the imperative of fostering cross-border information flow points to the desirability of establishing a global information repository (GIR), potentially under the auspices of the FSB.¹⁵⁹ A GIR could be charged with responsibility for (1) collecting market and institutional information from domestic regulators (who, in turn, would need to be legally bound to provide it¹⁶⁰); (2) aggregating and synthesizing this information¹⁶¹, and (3) disseminating the

¹⁵⁸ Carmen Reinhart and Kenneth Rogoff, “Regulation Should Be International”, *The Financial Times* (November 18, 2008), available at www.ft.com. The current crisis facing the E.U. is a dramatic illustration of the frictions generated by this divergence.

¹⁵⁹ Indeed, the FSB is in some respects already performing this role, albeit utilizing soft law tools and collecting information from a smaller subset of jurisdictions, financial institutions and markets than would ideally be the case under a GIR.

¹⁶⁰ This would likely need to be enshrined in a multilateral treaty. Unlike the treaty process for a World Financial Regulator, for example, one would arguably expect a treaty institutionalizing information sharing arrangements to be both more politically feasible and necessitating far less subsequent amendment than a treaty covering more substantive policy matters.

¹⁶¹ Although the extent of any ‘synthesis’ would obviously be a function of the human and financial resources to which the GIR had access. This, in turn, would be a product of, *inter alia*, its funding model.

resulting output to domestic regulators and international standard and agenda setters.¹⁶² Consistent with this incrementalist approach, the scope of any GIR could initially be limited to, for example, the aggregation, synthesis and dissemination of information collected by domestically regulated SDRs/TRs.¹⁶³

In addition to being (relatively) feasible from a domestic political perspective, a GIR would provide regulators with a common informational foundation from which to engage in enhanced dialogue respecting, *inter alia*, potential systemic risks and the impact of regulatory arbitrage. It would also lower the information and coordination costs of mounting effective international policy responses to new market developments and developing crises. Put differently, a GIR would enhance the tolerance for complexity of the emerging global regulatory architecture along with each of its constituent members. While not a panacea, a GIR would thus seem to represent a logical (and valuable) next step toward the ultimate goal of addressing the tension between the global nature of many of the problems arising within modern financial markets and the domestic regulatory regimes which govern them.

IV. Conclusion

Does the structure of financial regulation matter? At the domestic level, the answer appears to be ‘yes’ – but only to a point. Specifically, while integrated regulation offers a number of theoretical advantages, experience suggests that it is not immune to the information, coordination and regulatory capture problems which plague competing institutional models. At the international level, meanwhile, the

¹⁶² Much like the work currently being undertaken by the ODRF with respect to OTC derivatives markets, any treaty would need to stipulate the timing and format of the data to be collected and disseminated.

¹⁶³ Thus eliminating barriers to the free flow of information created by the SDR/TR indemnity provisions of the *Dodd-Frank Act* and EMIR.

complexity of modern financial markets; pervasive regulatory arbitrage (often masquerading as financial innovation), and the omnipresent threat of huge negative externalities stemming from the crystallization of systemic risk render the prospect of a more robust global regulatory architecture theoretically attractive. Simultaneously, however, divergent domestic interests – combined with the realpolitik of international relations – represent formidable obstacles to the emergence of a full-fledged global regulatory regime. Indeed, the current soft law framework is more a reflection of prevailing consensus about what *can* be achieved at the international level, than it is a statement about what *should* be done. In this respect, incrementalism – starting, perhaps, with the creation of a GIR for global OTC derivatives markets – offers a way to test the strength (and validity) of this consensus and, in the process, begin to address the regulatory challenges posed by the complexity of modern financial markets and the nature and pace of financial innovation.

CONCLUSION

Regulating Complexity and Financial Innovation: Common Themes and Caveats

We have seen how complexity and financial innovation shape the ongoing debates surrounding the optimal source, form and scope of OTC derivatives regulation. We have also seen that there are no silver bullets – no policy prescriptions capable of completely eliminating the pervasive information, agency, coordination and other problems arising in connection with the regulation of modern financial markets.¹ There are, in other words, no first-best solutions: tradeoffs are inescapable. The salient questions thus become: *what common themes can we extract from the preceding exploration?* And, simultaneously: *what caveats does prudence demand we place on these themes as potential drivers of public policy?* The objective of this concluding chapter is to synthesize this exploration with a view to offering potential answers to these important questions. Ultimately, of course, and consistent with the tenor of this exploration thus far, these answers must themselves be viewed as highly provisional. Indeed, if change is the only constant, then all answers to questions about *who* regulates modern financial markets, *how* they are regulated, and *where* must be continually re-examined, revised and (where appropriate) rejected. In many cases, old dogmas will provide an incomplete roadmap for successfully navigating new regulatory challenges.

I. Common Themes: Information, Incentives and the Rube Goldberg Question

Information is important. Information is a necessary condition for both optimal private contracting and effective public oversight. To many, this statement may seem

¹ At least not without a corresponding (if very difficult to quantify) adverse impact on capital formation and allocation and, consequently, economic growth.

uncontentious – perhaps even banal. Yet financial policymakers have too often been content to simply assume that market participants are fully informed², rather than engage in the rigorous study of how financial markets work (and, sometimes, do not work) in practice.³ In the case of OTC derivatives markets, as we have seen, this market fundamentalism historically translated into a policy of non-interventionism which effectively disregarded the regulatory challenges stemming from the complexity of modern financial markets. In the real world, meanwhile, suboptimal contracting – as arguably evidenced by, *inter alia*, the (1) systemic underpricing of risk in connection with both subprime MBS and the CDOs into which they were repackaged⁴ and (2) significant under-collateralization of bilateral derivatives exposures⁵ – was often pervasive. Moreover, when the crisis hit, neither the marketplace nor regulators fully understood the location, nature or extent of the potential counterparty credit (and thus systemic) risks associated with OTC derivatives. Information failure can thus be viewed as having played an important role in the thick of the GFC.

The *Dodd-Frank Act* and EMIR introduce a number of mechanisms designed to subsidize the production and dissemination of information for use by both market participants and regulators. CCPs, for example, can be understood as simplifying the

² And, by extension, that public regulators need not be informed at all.

³ A notable exception to the former – and quintessential example of the latter – being Ron Gilson and Reinier Kraakman’s analysis of the roles played by universally informed trading, professionally-informed trading, derivatively informed trading and uninformed trading in the context of public equity markets; see Ron Gilson and Reinier Kraakman, “The Mechanisms of Market Efficiency” (1984), 70:4 *Virginia L. Rev.* 549.

⁴ See Gary Gorton, “The Panic of 2007”, prepared for the Federal Reserve Bank of Kansas City, Jackson Hole Conference (August 2008) at 20-34, available at www.ssrn.com and Joshua Coval, Jakub Jurek and Eric Stafford, “The Economics of Structured Finance” (2009), 23:1 *J. of Econ. Perspectives* 3.

⁵ See Miguel Segoviano Basurto and Manmohan Singh, “Counterparty Risk in the Over-the-Counter Derivatives Market”, IMF Working Paper No. 08/258 (November 2008) and Manmohan Singh, “Collateral Netting and Systemic Risk in the OTC Derivatives Market”, IMF Working Paper 10/99 (April 2010), both available at www.ssrn.com

complex and constantly evolving network of bilateral derivatives exposures – theoretically making it less costly for end-users, dealers and regulators to evaluate counterparty credit risk in connection with centrally cleared swaps.⁶ SDRs and TRs will, likewise, serve as important nodes for the aggregation and dissemination of derivatives trading data in respect of both centrally and bilaterally cleared instruments.⁷ The enhanced disclosure requirements for ABS and other securitizations imposed under the *Dodd-Frank Act* are, similarly, a step in the right direction.

Simultaneously, however, considerable work remains to be done to shine a more powerful light on some of the darker corners of the global financial system. Almost two years after the enactment of the *Dodd-Frank Act*, the Office of Financial Research – the new federal agency charged with the task of improving the quality of financial information available to U.S. policymakers – has yet to produce any meaningful research or market data.⁸ More fundamentally, finalizing the legislative frameworks governing CCPs, SDRs, TRs and other major market participants has been an extremely slow – and often opaque – process in many jurisdictions.⁹ Indeed, the projected timeframes for full implementation of these reforms in the U.S., Europe

⁶ In effect by transforming a complex ‘web’ of exposures into a simpler ‘hub and spoke’ network; see Prassna Gai, Andrew Haldane and Sujit Kapadia, “Complexity, Concentration and Contagion” (2012), 58:5 J. of Monetary Econ. [forthcoming] at 22-23, available at www.bankofengland.co.uk.

⁷ Although this will ultimately depend on the type and format (and thus usability) of the information which must be made available to regulators and the public. For a discussion of the relevant issues in this regard, see CPSS/IOSCO, “Report on OTC Derivatives Data and Reporting Requirements: Final Report” (January 2012), available at www.bis.org.

⁸ Having produced only two working paper – including a survey of existing quantitative measures of systemic risk – and no actual financial data as of September 14, 2012; see www.treasury.gov/initiatives/Pages/ofr.aspx.

⁹ For an overview of the status of these reforms, see FSB, “Overview of Progress in the Implementation of the G20 Recommendations for Strengthening Financial Stability”, Report to G20 Leaders (November 4, 2011) at 2 and 16-18 and FSB, “OTC Derivatives Market Reforms”, 2nd Progress Report on Implementation (October 11, 2011), both available at www.financialstabilityboard.org.

and elsewhere (originally slated for December 2012) are now far from clear.¹⁰ Moreover, *uneven* implementation – in terms of both timing and substantive content – may actually serve to increase information costs.¹¹ Finally, as we have already observed, the fragmentation of regulation at the international level continues to represent a significant barrier to timely and comprehensive cross-border information flow.¹² While progress has been measurable, we are thus still some distance from realizing the objective of meaningfully reducing information costs within OTC derivatives markets and, ultimately, leveling the informational playing field.

More information is not a panacea. While timely and comprehensive access to information is undoubtedly a *necessary* condition for both optimal private contracting and effective public oversight, it is by no means *sufficient*. As soberly illustrated by the collapse of the U.S. MBS market in 2007-2008¹³; the subsequent run in the repo market at the epicentre of Lehman’s demise¹⁴, and Robert Bartlett’s event study involving the derivatives disclosures of Ambac Financial¹⁵, the sheer volume of information available within modern financial markets – combined with the rapid pace of change – can overwhelm the powerful incentives of even the most sophisticated market participants. Regulators, likewise, have struggled with what is,

¹⁰ Ibid.

¹¹ And, of course, generate opportunities for regulatory arbitrage.

¹² See [Chapter 6](#) at 270-272.

¹³ See Gary Gorton, “The Subprime Panic” (2009), 15:1 *European Financial Management* 10 and Gorton (n 4).

¹⁴ See Gary Gorton and Andrew Metrick, “Securitized Banking and the Run on Repo”, National Bureau of Economic Research Working Paper No. w15223 (August 2009); Gary Gorton, “Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007”, Working Paper (May 2009), and Gary Gorton, “Information, Liquidity and the (Ongoing) Panic of 2007”, National Bureau of Economic Research Working Paper No. w14649 (January 2009), each available at www.ssrn.com.

¹⁵ Robert Bartlett III, “Inefficiencies in the Information Thicket: A Case Study of Derivatives Disclosures During the Financial Crisis” (2010), 36:1 *J. Corp. Law* 1; see [Chapter 1](#) at 27-28 for further discussion.

in effect, information overload.¹⁶ As we have seen, this dense ‘information thicket’¹⁷ is rendered even more impenetrable by other drivers of complexity including technology, interconnectedness, fragmentation, regulation and reflexivity. Viewed from this perspective, the marginal benefits of simply generating *more* information may be very limited indeed.¹⁸

One intuitively appealing policy response – especially if we believe that the complexity of modern financial markets contributes to market failure and other socially suboptimal outcomes – is to enhance the resources, incentives and expertise of public regulators.¹⁹ Thus, for example, we can take steps to ensure that front-line supervisors such as the SEC, CFTC and FSA are better funded and, concomitantly, that their sources of funding are sufficiently insulated from undue political interference.²⁰ We can also re-examine how we compensate supervisory personnel with a view to both attracting and retaining top talent and better aligning their private incentives with the pursuit of public regulatory objectives.²¹ Lastly, we can employ forms of regulation, such as MPBR, which seek to leverage the superior information and expertise of market participants. Ultimately, each of these measures can thus be

¹⁶ See Gillian Tett, “Guiding Light Needed to Cut Through Data Fog”, *The Financial Times* (March 8, 2012), available at www.ft.com.

¹⁷ *Ibid.*

¹⁸ That is, beyond the disclosure of, for example: (1) price, volume and counterparty information in respect of centrally and bilaterally cleared swaps and (2) more granular portfolio information in connection with ABS and other securitization vehicles.

¹⁹ Another potential response, discussed in greater detail below, is to *reduce* complexity within the financial system itself through what might be characterized as ‘product regulation’ and other reforms; see ‘The Rube Goldberg Question’ at 288.

²⁰ Admittedly, this is more of a problem in the U.S. (where regulators such as the SEC and CFTC rely on Congressional funding) than in the U.K. (where the FSA’s funding is derived principally from industry levies).

²¹ Frederick Tung and Todd Henderson, for example, have proposed a compensation structure for bank supervisors which, *inter alia*, links their compensation to the value of equity and debt in the banks they oversee; see Frederick Tung and Todd Henderson, “Pay for Regulator Performance”, Working Paper (January 16, 2012), available at www.ssrn.com. For a discussion of some of the potential pitfalls of this particular proposal, see *ibid.* at 61-70.

understood as sharing a common objective: namely, improving regulators' tolerance for complexity.²²

At present, however, the trajectory of financial regulation in many jurisdictions appears to be heading in the opposite direction.²³ The CFTC's budget, for example, has been under almost constant threat from Congressional Republicans since the *Dodd-Frank Act* expanded the agency's mandate to include (joint) oversight of OTC derivatives markets.²⁴ Moreover, while financial sector compensation practices have figured prominently in the post-crisis debate²⁵, relatively little time or attention has been paid to how we compensate the public regulators which oversee this vast, powerful and socially important industry.²⁶ The FSA, meanwhile, has taken great pains to distance itself from MPBR.²⁷ Given the enormity of the stakes, there exists a strong case for re-evaluating these (and other similar) decisions in terms of their likely impact on both the capacity and incentives of public regulators to effectively monitor modern financial markets.

Incentives are destiny. So long as some actors enjoy a higher tolerance for complexity, opportunities will exist for them to extract quasi-rents in the marketplace and undercut the best efforts of regulators to monitor their activities and constrain

²² Integrated regulation and more timely and comprehensive cross-border information flow would, similarly, contribute to lower information costs and a more holistic view of the risks manifest across the financial system as a whole; see [Chapter 6](#).

²³ Subject to a number of noteworthy exceptions including, perhaps most importantly, the newly reinvigorated FSB; see [Chapter 6](#).

²⁴ See Shahien Nashiripour, "Tight Budget Set for US Markets Regulator", *The Financial Times* (November 16, 2011), available at www.ft.com.

²⁵ For a small sampling of this research, see Lucian Bebchuk and Holger Spamann, "Regulating Bankers' Pay" (2010), 98:2 *Georgetown L. J.* 247; Lucian Bebchuk, Alma Cohen and Holger Spamann, "The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000-2008" (2010), 27 *Yale J. on Reg.* 257, and Rüdiger Fahlenbrach and René Stulz, "Bank CEO Incentives and the Credit Crisis" (2011), 99:1 *J. of Fin. Econ.* 11.

²⁶ With the notable exception of Tung and Henderson (n 21).

²⁷ See [Chapter 5](#) at 218.

socially suboptimal risk-taking. In the context of OTC derivatives markets, the actors in question are, principally, the financial intermediaries which (1) make markets in bilateral swaps; (2) structure and distribute ABS, CDOs and other structured finance vehicles, and/or (3) own or effectively control CCPs. In many respects, the regulatory challenges stemming from complexity and financial innovation can thus be understood as boiling down to a single question: *how can we reduce the number (and potential value) of the opportunities for these intermediaries to exploit their informational advantage in socially undesirable ways?*²⁸

Once again, information is an important part of the answer. Indeed, insofar as CCPs, TRs and SDRs can successfully promote more informed private contracting and effective public oversight, we would expect to observe a reduction in the anticipated payoffs from opportunistic behaviour²⁹ – and thus a corresponding reduction in its frequency. Simultaneously, however, regulatory intervention above and beyond that presently contemplated by the *Dodd-Frank Act* and EMIR may ultimately yield important benefits. A GIR, for example, would enhance cross-border information flow: making it less costly for regulators to effectively monitor (systemic) risks; evaluate the flow and impact of regulatory arbitrage and, where warranted, take coordinated regulatory action. Along a similar vein, a TAAR would compel market participants to bring new innovations to the attention of regulators, while at the same time help to ameliorate the deleterious effects of faux customization disguised as

²⁸ Acknowledging, simultaneously, that the ability to monetize any informational advantage is also what incentivizes financial intermediaries to ferret out new information in the first place. Insofar as these activities enhance the informational efficiency of markets, they should be viewed as – *ceteris paribus* – socially desirable and, accordingly, encouraged (or at least not discouraged).

²⁹ Attributable to a higher probability of detection.

financial innovation.³⁰ More broadly, and illusively, redoubling efforts to establish credible commitments to intensive supervision and targeted (yet vigorous) enforcement – whether in the context of enforced self-regulation, MPBR or more rules-based regimes³¹ – would assist regulators in constraining the myriad of agency cost problems which pervade modern financial markets.³² While each of these proposals would no doubt entail significant direct and indirect costs, the more important question is ultimately how these costs stack up against the counterfactual in which the incentives of private actors go unchecked.

The Rube Goldberg Question. Reuben (‘Rube’) Goldberg was an American cartoonist and inventor known for his depictions of complex machines which performed simple, everyday tasks.³³ The Rube Goldberg question can thus be understood as asking: *have modern financial markets become too complex?* If we believe the answer is yes, yet another potential policy response is to impose greater *simplicity* on some of the more complex elements of the financial system. David Scharfstein and Adi Sunderam, for example, have identified a number of potential options for reducing complexity within the U.S. residential mortgage and MBS

³⁰ Indeed, it may be desirable to re-examine the governance of CCPs under the *Dodd-Frank Act* and EMIR in recognition of the fact that the dealers and other market participants which own and/or effectively control these institutions are unlikely to internalize the full social costs of their risk-taking; see Sean Griffith, “Incentive Problems in Derivatives Trading: Towards a New Corporate Governance Structure for Clearinghouses” [working paper on file with author].

³¹ The analog for intensive supervision and vigorous enforcement in the context of enforced self-regulation being the willingness to intervene quickly and forcefully in response to the failure of regulation generated by private actors.

³² Indeed, the FSA has made a concerted effort to enhance its credibility – at least in terms of vigorous enforcement – in the wake of the crisis; see Tracey McDermott, FSA Acting Director of the Enforcement and Financial Crime Division, “An Update on the FSA’s Investigations and Enforcement Regime”, speech to The City and Financial Conference (February 23, 2012), available at www.fsa.gov.uk.

³³ See for example, the ‘self-operating napkin’ reproduced in Lee Buchheit, “Did We Make Things Too Complicated?”, *Int’l Fin. L. Rev.* (March 1, 2008), available at www.iflr.com.

markets.³⁴ These options include: (1) limiting the availability of (or altogether prohibiting) mortgages with ‘risky’ characteristics such as high loan-to-value ratios, self-financed down-payment assistance, adjustable rates or negative amortization; (2) prohibiting the securitization of such risky mortgages; (3) simplifying the capital structures which can be used in connection with securitization vehicles, and (4) prohibiting the re-securitization of junior tranches of MBS into CDOs.³⁵ An analogous set of measures for bilaterally cleared swaps might conceivably include: (1) restrictions on the types of swaps available to non-financial end-users³⁶; (2) mandating that counterparties post higher (and higher quality) collateral³⁷, and (3) prohibiting the re-hypothecation of pledged collateral.

Theoretically, more invasive regulatory intervention of this kind would serve at least two purposes. First, restrictions on the availability of risky mortgages or more complex swaps, for example, would insulate those with lower tolerances for complexity from the negative consequences of both their own suboptimal decision-making and the sharp practices of more sophisticated financial intermediaries. Second, by simplifying the arcane plumbing of these markets, such measures would reduce information costs for both market participants (investing in swaps, MBS and CDOs and posting or receiving these instruments as collateral³⁸) and regulators (attempting to identify, monitor and respond to the attendant risks). As a corollary,

³⁴ David Scharfstein and Adi Sunderam, “The Economics of Housing Finance Reform: Privatizing, Regulating and Backstopping Mortgage Markets” (February 2011), available at www.brookings.edu.

³⁵ *Ibid.* at 40-45.

³⁶ Articulating a clear (and yet un-arbitragable) boundary between permitted and prohibited swaps would obviously be an important and difficult task in connection with the implementation of any such proposal.

³⁷ Indeed, regulators in both the U.S. and Europe have signaled their desire to impose such requirements in connection with the implementation of the *Dodd-Frank Act* and EMIR, respectively; see [Chapter 3](#) for further details.

³⁸ Thus potentially ameliorating the adverse selection problem which triggered the run on repo; see Gorton and Metrick (n 14).

one might also expect these measures to have a positive impact on financial stability.³⁹

Ultimately, of course, the welfare implications of Sharfstein and Sunderam's proposals – indeed of all policy prescriptions – are difficult to evaluate. While they might serve to reduce information and agency costs and promote greater financial stability, they are also likely to have an adverse impact on the ability of counterparties to effectively hedge commercial risks.⁴⁰ They are also likely to have an impact on the flow of credit to the real economy. Indeed, as we have seen, this welfare indeterminacy is itself an important driver of complexity. In the end, this indeterminacy points to the desirability of regulatory strategies – like the various proposals for reform put forward in this thesis – which embrace both incrementalism and experimentation in response to the complexity and dynamism of modern financial markets.

II. Caveats: Regulatory Capture, Coordination Problems and the Complexity Frontier

Any promise we might initially perceive in further regulatory reform must ultimately be tempered against the harsh and largely inescapable realities of the real world. These realities not only constrain our ability to *implement* socially desirable regulation but, perhaps more importantly, actually serve to *alter* the welfare implications of potential reforms. Amongst the myriad of significant real-world constraints encountered in the preceding chapters, three stand out in terms of their ubiquity, intractability and importance. These constraints are (1) regulatory capture;

³⁹ Sharfstein and Sunderam (n 34).

⁴⁰ At least in the case of bilaterally cleared swaps.

(2) coordination problems, and (3) the challenge of regulating beyond the complexity frontier.

Regulatory Capture. The prospect of regulatory capture casts a long shadow over our exploration of the optimal source, form and scope of financial regulation. The length of this shadow can be attributed in no small measure to the complexity of modern financial markets and the consequent reliance of public regulators on a relatively small cadre of market participants as important sources of information and expertise. We might predict that these market participants would attempt to exploit this privileged position – and their higher tolerance for complexity – in order to influence both the substance of regulation and the approaches adopted by regulators toward monitoring and enforcement.⁴¹ Indeed, this prediction appears to have been borne out within the context of OTC derivatives regulation. Prior to the GFC, the financial services industry helped persuade policymakers in both the U.S. and Europe that public regulatory intervention into OTC derivatives markets was, in effect, unnecessary.⁴² In its wake, meanwhile, the industry has successfully lobbied for commercial/non-financial end-user exemptions from the central clearing requirements under the *Dodd-Frank Act* and EMIR, amongst other concessions.⁴³ As the crisis fades from memory – and thus political salience – it seems all but inevitable that the industry will continue to press its case for further carve-outs from these important reforms.⁴⁴

⁴¹ We might also expect them to leverage the politics of economic growth during a time of economic stagnation to dissuade politicians from backing reforms which might have an adverse effect on the flow of credit to the real economy. And, once again, this is precisely what we have seen.

⁴² See Simon Johnson and James Kwak, *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (Random House, New York, 2010) and Chapter 3 at 136-148.

⁴³ See Chapter 5 at 191-192.

⁴⁴ Indeed, we can already observe this happening; see Gregory Meyer, “Regulators to Raise Trigger for Rules on Derivatives”, *The Financial Times* (February 16, 2012) and Silla Brush, “Goldman Sachs Among Banks Fighting to Exempt Half of Swaps Books”, *The Financial Times* (January 30, 2012),

Compounding matters, many of the proposals for regulatory reform examined above may actually be seen as generating fresh opportunities for market participants to exert undue influence on regulators. Perhaps most conspicuously, the frequency and intensity of interactions between regulators and regulated actors within the context of MPBR could conceivably open the door to both ‘hard’ and ‘soft’ capture.⁴⁵ As we have seen, the prospect of capture is also a live issue in the ongoing debates surrounding the optional structure of financial regulation at both the domestic and international level.⁴⁶ Ultimately, while the combination of institutional safeguards and more expert regulators can help reduce regulatory capture problems, it thus seems unrealistic to suggest that it is possible to altogether eliminate them.

Coordination Problems. Regulators in different jurisdictions enjoy different endowments of financial, human and other capital and, simultaneously, face different demands on these resources. As a consequence, we would expect to observe some variance in terms of their tolerances for complexity. At the same time, these regulators operate within divergent domestic political and institutional environments and, importantly, find the jurisdictions under their oversight asymmetrically exposed to the effects various market developments – including potential systemic crises. Some jurisdictions will be net exporters of, for example, financial services, financial innovation and/or systemic risk. Others, conversely, will be net importers. This divergence of initial endowments, interests and incentives creates an acute set of coordination – e.g. free rider, assurance, and ‘battle of the sexes’ – problems which

both available at www.ft.com. See also John Coffee, Jr., “The Political Economy of Dodd-Frank: Why Financial Reform Tends to be Frustrated and Systemic Risk Perpetuated” (2012), 97 *Cornell L. Rev.* 1019.

⁴⁵ See [Chapter 5](#) at 228-230 for a discussion of the (heightened) prospect of regulatory capture within the context of a more principles-based regime.

⁴⁶ Albeit with more ambiguous implications in terms of the prospect of regulatory capture than in the case of MPBR; see [Chapter 6](#) at 224-258 and 274.

threaten to undermine collective efforts to address the regulatory challenges posed by complexity and financial innovation.⁴⁷

Thus, for example, the desirability of implementing MPBR or a TAAR *at the domestic level* will hinge not only on a jurisdiction's own position but, crucially, on the presence (or absence) of a credible commitment *at the international level* to adopt functionally equivalent reforms.⁴⁸ Along a similar vein, any meaningful attempt to establish GIR for OTC derivatives would inevitably have to address thorny issues around domestic burden sharing. As we have seen, strategic incrementalism can theoretically help alleviate these coordination problems in some cases. However, both logic and experience suggest that, especially in a globally interconnected world, these problems will continue to represent an important obstacle to reform.

The Complexity Frontier. The complexity of modern financial markets – combined with the nature and pace of financial innovation – make it exceedingly difficult, if not impossible, for regulators to identify, evaluate and respond to risks in a timely and comprehensive fashion. In many cases, regulators will thus be called upon to approach their task armed with imperfect information and deploying cognitive frameworks which exhibit elements of bounded rationality. Put differently, they will be forced to regulate *beyond* the complexity frontier. There are at least two important implications flowing from this observation. First, we would expect this constraint to further undermine effective public monitoring and, thus, enforcement. In turn, market participants may be emboldened to shroud their suboptimal risk-taking in yet further layers of complexity. Second, we would expect this complexity to undercut our

⁴⁷ For an in depth discussion of these coordination problems and their impact on financial regulation at the international level, see Chris Brummer, “How International Financial Law Works (And How It Doesn't)” (2011), 99 *Georgetown L. J.* 257.

⁴⁸ See [Chapter 6](#) at 273-276.

ability to evaluate the welfare consequences of both market developments and the potential policy responses. Ultimately, it is not entirely clear what we can (or should) take away from this observation. *Do we embrace proposals such as those advanced by Sharfstein and Sunderam which would seek to reduce complexity within modern financial markets? Conversely, do we throw our hands in the air and admit that we can no longer understand (let alone control) our own creation?* In the end, it is in the nature of complexity to generate more questions than answers.

III. Looking Back

Complexity and innovation define modern financial markets. Together, they also generate a host of regulatory challenges. As we have seen, these challenges stem from high information costs; deeply entrenched asymmetries of information and expertise, and the acute agency cost problems these asymmetries generate for both private and public actors. These challenges underscore the need for mechanisms which subsidize the production and dissemination of information as a means of promoting both more efficient private contracting and more effective public oversight. Paradoxically, they also suggest that simply producing and disseminating more information will not be enough where some actors lack the endowments to effectively process it. Simultaneously, these challenges point to the desirability of regulation capable of responding to the inherent dynamism of modern financial markets and, more specifically, the nature and pace of financial innovation. In the end, while recent regulatory reforms under the *Dodd-Frank Act* and EMIR have arguably gone some distance in addressing these challenges, considerably more work remains to be done before modern financial markets fully resemble the perfect markets envisioned by conventional financial theory.

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