

*Regulating Shadow Banking*¹

Inaugural Address

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In this Inaugural Address, I will compare shadow and traditional banking, examining (i) shadow banking’s efficiencies and risks, and (ii) how shadow banking can be regulated to maximize those efficiencies and minimize those risks. We must, I believe, go beyond the tools of traditional bank regulation and focus more functionally on regulating the firms and markets that comprise the shadow-banking network.

To do that, we first need to understand what shadow banking means.

I. DEFINING SHADOW BANKING

However it is defined, shadow banking is huge. Some estimate that it “rivals the traditional banking system in the intermediation of credit to households and businesses.”³ The growth of shadow banking has also been rapid, estimated at “a gross size of nearly \$20 trillion in March 2008, which was significantly larger than the liabilities of the traditional banking system,”⁴ and at three times that level—\$60 trillion—in December 2011.⁵ These figures, however, are necessarily imprecise because there is no clear understanding of the scope of shadow banking.

A. The Scope of Shadow Banking

The origin of the term “shadow banking” is widely attributed to economist and investment manager Paul McCulley, who used the term to

³ Zoltan Pozsar et al., Federal Reserve Bank of New York Staff Reports, No. 458: Shadow Banking Abstract, 4-5 (2010).

⁴ *Id.*

⁵ Philip Halstrick, *Tighter Bank Rules Give Fillip to Shadow Banks* (Dec. 20, 2011), available at <http://uk.reuters.com//2011/12/20/uk-regulation-shadow-banking-idUKLNE7BJ00T20111220>.

refer to “the whole alphabet soup of levered up non-bank investment conduits, vehicles, and structures.”⁶ This roughly approximates the world of structured finance, which creates and utilizes these types of conduits, vehicles, and structures (collectively called special purpose entities or “SPEs”).⁷

More recent commentators have expanded the meaning of “shadow banking.” Federal Reserve economists, for example, have used the term to refer to “financial intermediaries that conduct maturity, credit, and liquidity transformation without access to central bank liquidity or public sector credit guarantees.”⁸ These intermediaries, they say, would include “finance companies, asset-backed commercial paper (ABCP) conduits, limited-purpose finance companies, structured investment vehicles [commonly known as SIVs], credit hedge funds, money market mutual funds, securities lenders, and government-sponsored enterprises [commonly known as GSEs].”⁹ Thus, in addition to SPEs—illustrated here by ABCP conduits, limited-purpose finance companies, and SIVs—this expansion of the term would include finance companies (such as Household Finance Corp.), hedge funds (such as BlackRock, Inc.), mutual funds (such as Fidelity Investments), GSEs (such as Fannie Mae and Freddie Mac), and many investment banks.

⁶ Paul McCulley, *Teton Reflections: PIMCO Global Central Bank Focus*, PIMCO (Sept. 2007), <http://www.pimco.com/EN/Insights/Pages/GCBF%20August-%20September%202007.aspx>.

⁷ See generally STEVEN L. SCHWARCZ, BRUCE A. MARKELL & LISSA LAMKIN BROOME, *SECURITIZATION, STRUCTURED FINANCE, AND CAPITAL MARKETS* (2004). SPEs are sometimes referred to, interchangeably, as special purpose vehicles or “SPVs.”

⁸ Pozsar et al., *supra* note 3, at 4-5.

⁹ *Id.*

Even with this expansion, the meaning of “shadow banking” so far has been limited to entities. That limited meaning might be adequate for a definition of “shadow banks”—in which case “shadow banking” presumably would mean what shadow banks do. But that presumption itself raises two questions.

The first question is whether shadow banking should refer to the provision of *any* financial products and services by shadow banks, or whether it should refer only to the provision by shadow banks of products and services that ordinarily are provided by traditional banks. At least one top regulator adopts that more limited meaning.¹⁰ I will adopt the broader meaning, however, because the essential point of shadow banking is that non-banks provide financial products and services. Moreover, the broader meaning is flexible enough to encompass the inevitable evolution of financial products and services over time.¹¹

The other question is a bit more metaphysical: Should shadow banking—or, at least, the concept of a shadow-banking network—be limited to the provision of financial products and services by shadow banks, or should it also embrace the mediums used by shadow banks to provide those

¹⁰ Paul Tucker, Deputy Governor, Financial Stability, Bank of England, Remarks at a BGC Partners Seminar: Shadow Banking, Financing Markets and Financial Stability (Jan. 21, 2010), *available at* <http://www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf>: “I am not . . . using ‘shadow banking’ to refer to any old channel for credit intermediation other than bank lending. The corporate bond markets do not amount to a shadow bank. Rather, I am interested this evening in those instruments, structures, firms or markets which, alone or in combination, and to a greater or lesser extent, replicate the core features of commercial banks: liquidity services, maturity mismatch and leverage.”

¹¹ *Cf.* Tucker, *supra* note 10 (acknowledging that we may “confront new variants of shadow banking in the future”).

products and services? The primary medium is the financial markets.¹² The core of shadow banking, structured finance,¹³ operates principally through these markets because securitization, which dominates structured finance,¹⁴ depends critically on SPEs being able to issue securities that satisfy the demands of capital-market investors.¹⁵ Another well-known example of shadow banking, repo lending, similarly operates through financial markets.¹⁶

My Address will include financial markets in the shadow-banking network. I therefore define shadow banking to mean not only the provision of financial products and services by shadow banks but also the financial markets used to provide those products and services. (In that context, I recognize the potential for regulatory overlap when regulated banks are active participants in shadow financial markets—as is the case in the repo markets¹⁷) By “shadow banks,” I include, in accordance with the

¹² Cf. Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 200 (2008) (observing that the ongoing trend towards disintermediation—which is facilitated by shadow banking; see *infra* note 26 and accompanying text—is making financial markets themselves increasingly central to any examination of systemic risk).

¹³ See *supra* notes 6-7 and accompanying text.

¹⁴ See, e.g., Henry A. David, *The Definition of Structured Finance: Results from a Survey*, J. STRUCTURED FIN., Fall 2005, at 5, 7 (observing that “a large part of what is considered in today’s markets to be structured finance involves securitization”).

¹⁵ That ability is far more dependent, in turn, on the structure of the transaction and the securities than on the nature of the SPE itself. There are several reasons for this. For example, bankruptcy remoteness—a key element of many securitization transactions, depends first on true sale and only secondarily on the SPE’s bankruptcy remoteness. Furthermore, the acceptability of the SPE’s securities to investors depends less on the nature of the SPE and more on such structural matters as overcollateralization and credit enhancement.

¹⁶ Cf. *infra* notes 47-48 and accompanying text (discussing repo lending).

¹⁷ Cf. *id.* (observing that regulated banks are sometimes repo borrowers and lenders, even though the repo market is a well-known example of a shadow-banking market). *Also cf.*

commentary,¹⁸ not only SPEs but also finance companies, hedge funds, mutual funds, investment banks, and GSEs.¹⁹

Next consider shadow-banking's characteristics.

B. The Characteristics of Shadow Banking

Because shadow banking itself is not concretely defined, any discussion of its characteristics must necessarily be tentative. Nonetheless, several basic observations can be made.

First, because shadow banks are not traditional banks, and because traditional banks tend to be highly regulated, shadow banking tends to be less regulated than traditional banking. In discussing shadow banking, the media sometimes focuses on this characteristic.²⁰ The recent report of the Financial Crisis Inquiry Commission also emphasized this characteristic, referring to shadow banking's "bank-like financial activities that are

infra note 99 (observing that shadow banking's divergent components may require divergent regulatory responses).

¹⁸ See *supra* notes 8-9 and accompanying text.

¹⁹ Cf. Bryan J. Noeth, et al., *Is Shadow Banking Really Banking?*, REGIONAL ECONOMIST, Oct. 2011 at 8-9 (observing that "what was once accomplished under a single roof in the traditional banking system is now done over a sequence of steps in the shadow banking system, each performed by specialized entities that are not vertically integrated").

²⁰ See, e.g., Richard Cordray: *What his Appointment Means for the Consumer Financial Protection Bureau*, THE DIANE REHM SHOW (Jan. 9, 2012) at 10:09:40, 10:15:53, available at <http://thedianerehmshow.org/shows/2012-01-09/richard-cordray-what-his-appointment-means-consumer-financial-protection-bureau> (discussing "financial companies that aren't technically depository institutions, such as payday lenders or even mortgage companies" that lack federal oversight); Ben Protess, *Shadow Banking Makes a Comeback*, N.Y. TIMES: DEALBOOK (May 27, 2011), <http://dealbook.nytimes.com/2011/05/27/shadow-banking-makes-a-comeback/?scp=1&sq=%22shadow%20banking%22&st=cse> (explaining that shadow banks are not subject to many of the regulations put into place by the Dodd-Frank Act).

conducted outside the traditional commercial banking system, *many of which are unregulated or lightly regulated.*”²¹

Second, the fact that shadow banking tends to be less regulated than traditional banking inevitably means that shadow banking is, to some extent, driven by regulatory arbitrage. Therefore, increasing bank regulation will almost certainly increase shadow-banking opportunities.²² Shadow banking that is driven exclusively by regulatory arbitrage may not represent a public good. For instance, regulatory arbitrageurs might use deal structures with higher transaction costs than the regulated alternative, but that offer a net gain to parties because they avoid regulation.²³ Regulatory arbitrage also disadvantages market participants that lack the wealth, expertise, and, often, political connections to capitalize on arbitrage opportunities.²⁴

Third, to the extent shadow banking is not driven by regulatory arbitrage, it may well constitute a public good by helping to achieve efficiencies. It appears to be well accepted that “[w]hile shadow banking activities certainly include activities which appear to have limited purpose other than regulatory capital arbitrage, it also includes a range of

²¹ FINANCIAL CRISIS INQUIRY COMMISSION, PRELIMINARY STAFF REPORT: SHADOW BANKING AND THE FINANCIAL CRISIS 7 (2010), *available at* http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/2010-0505-Shadow-Banking.pdf (emphasis added).

²² *See, e.g.*, Halstrick, *supra* note 5 (observing that “[i]nternational regulators’ efforts to strengthen the financial system by tightening bank rules may inadvertently serve to boost opportunities for unregulated or ‘shadow’ financial players”).

²³ Victor Fleischer, *Regulatory Arbitrage*, 89 TEX. L. REV. 227, 275 (2010). *See also* Frank Partnoy, *Financial Derivatives and the Cost of Regulatory Arbitrage*, 22 J. CORP. L. 211, 240-42 (describing a dynamic economic model of the efficiency of derivatives regulation).

²⁴ Fleischer, *supra* note 23, at 280-82.

intermediation activities which appear to have significant economic value outside the traditional banking system.”²⁵ These activities notably include “disintermediation,” the removal of the need for bank intermediation between the sources of funds (the capital and other financial markets) and the users of funds (e.g., corporations that operate in the real economy, such as AT&T or General Motors).²⁶ They also include decentralization of the provision of financial products and services, which can increase efficiency but can also increase risk.²⁷

Finally, shadow banking can, if left unregulated, pose systemic risks to the financial system. It has been argued, for example, that “[m]aturity and credit transformation in the shadow banking system . . . contributed significantly to asset bubbles in residential and commercial real estate markets prior to the [2008] financial crisis. . . .”²⁸ Moreover, to the extent shadow banking provides short-term funding of long-term capital needs, it creates a risk of liquidity discontinuities.²⁹ Although some may regard short-term funding as a central characteristic of shadow banking,³⁰ shadow banking can (and does) provide both short- and long-term funding.³¹ Observers sometimes focus narrowly on short-term funding as a characteristic because of its potential for harm. In a larger perspective, however, short-term funding of long-term capital needs is a problem not of

²⁵ Pozsar et al., *supra* note 3.

²⁶ See *infra* Part II.A (discussing disintermediation).

²⁷ See *infra* Part II.B (discussing decentralization).

²⁸ Pozsar et al., *supra* note 3.

²⁹ See *infra* notes 47-50 and accompanying text.

³⁰ This was a perception, for example, of some of the panelists at the Inaugural Symposium referenced *supra* note 2.

³¹ In securitization transactions, for example, the issued securities often have long-term maturities.

shadow banking per se but of the financial system.³² Even traditional banks fund themselves through short-term deposits, with resulting liquidity discontinuities being called “bank runs.”

I next will assess shadow banking’s efficiencies and risks. Before doing that, however, it is useful to consider what motivated the development of shadow banking.

I believe the main catalyst was technology. To some extent, shadow banking delivers more diverse and, arguably, innovative financial products than traditional banking. But even traditional banks have the capacity to respond, sooner or later, to investor demand for products. Technology, however, has enabled non-bank financial market participants, such as hedge funds, to compete with traditional banks in the ability to provide these products, sometimes more quickly and at lower cost:

At the risk of gross oversimplification, the presence of such a high level of institutional demand for (especially) short-term debt instruments *plus the technological evolution in ways of structuring these products meant that the work traditionally done by the banking system gradually moved to Wall Street—* hence it became known as the “shadow banking system.”³³

A contributing factor for the emergence of shadow banking, of course, has been regulatory arbitrage. Highly regulated banks could not provide

³² Cf. February 24, 2012 comments of Morgan Ricks, Visiting Assistant Professor, Harvard Law School, at the Inaugural Symposium referenced *supra* note 2 (arguing that the instability of short-term “money-like” securities is the central problem for financial regulatory policy) (notes on file with author).

³³ Donald C. Langevoort, *Global Securities Regulation After the Financial Crisis*, 13 J. INT’L ECON. L. 799, 802-03 (2010) (emphasis added and citations omitted).

financial products and services as cheaply as could non- or lightly-regulated shadow banks.³⁴

II. ASSESSING SHADOW BANKING

Shadow banking therefore has the potential to increase economic efficiency but also to increase risk. I first address disintermediation, the primary mechanism by which shadow banking increases efficiency. I then address the decentralization created by shadow banking, which increases both efficiency and risk.

A. Disintermediation

Shadow banking's disintermediation has almost certainly increased economic efficiency. Banks are intermediaries of funds. They themselves borrow (from depositors and capital market investors) the funds that they subsequently lend out.³⁵ As profit-making institutions, banks must observe the fundamental maxim of "buy-low, sell high"—the price of "buying" funds being the interest rates at which banks borrow and the price of

³⁴ *Id.* (observing that "[t]he intense safety and soundness regulation for banks, particularly capital adequacy rules, simply did not apply in the USA to financial products intermediated by securities firms").

³⁵ *See, e.g.*, CHRISTOPHER VINEY, FINANCIAL INSTITUTIONS, INSTRUMENTS AND MARKETS 54–55 (5th ed., 2007). Although commercial banks borrow some of their funds from depositors, they also borrow a significant portion of their funding from the capital markets. *Id.* at 54 (noting that commercial banks "are no longer dependent on their deposit base for lending" because they can typically borrow sufficient funds from domestic and international capital markets to meet their forecast loan demands).

The decentralization created by shadow banking, however, has the potential to cause both positive and negative consequences. Decentralization can increase consumer welfare by expanding the menu of funds and financial products available to individual investors, allowing them to tailor portfolios to their own preferences.³⁸ A decentralized financial system may also be more robust in the face of negative shocks.³⁹ If losses are distributed among many small financial institutions, some firms should be able to fail without threatening market stability.⁴⁰ To the extent decentralization helps to reduce the size of firms, it also can mitigate the “too big to fail” problem.

Shadow banking’s decentralization, however, can also increase risk. For example, to the extent it is relatively harder to control shadow banking’s market failures or there are more such failures in shadow banking, that itself could increase systemic risk because uncorrected market failures not only can lead to inefficiencies in the allocation of capital within the financial system but also can contribute to systemic failures.⁴¹ Moreover, as I next

³⁸ Franklin Allen & Douglas Gale, *A Welfare Comparison of Intermediaries and Financial Markets in Germany and the U.S.*, 39 EUR. ECON. REV. 179, 189 (1994) (comparing the decentralized U.S. financial system to Germany’s bank-dominated financial system).

³⁹ Cf. Halstrick, *supra* note 5 (observing that “shadow banks may now play the role of white knights for lenders trying to offload risky assets to comply with European regulatory capital targets by the middle of 2012”).

⁴⁰ For instance, the FDIC managed the vast majority of the more than 400 bank failures since 2008 without generating negative feedback effects in the financial system. See Federal Deposit Insurance Corporation, COMPLETE FAILED BANK LIST (Jan. 20, 2012), <http://www.fdic.gov/bank/individual/failed/banklist.html>.

⁴¹ Steven L. Schwarcz, *Controlling Financial Chaos: The Power and Limits of Law*, 2012 WIS. L. REV. issue no. 3 (forthcoming) (arguing that these four types of market failures are inherent in the financial system overall and showing how market failures can contribute to systemic failures; for example, information failure, principal-agent failure, and incentive failure could, individually or in combination, cause one or more large firms

explain, shadow banking might increase the likelihood that systemic risk will be triggered. Although less clear, shadow banking might also increase the transmission of systemic risk.

Shadow banking might increase the likelihood that systemic risk will be triggered by making panics, which often serve as the trigger that commences a chain of systemic failures,⁴² more likely. Professor Dan Awrey thus argues, implicitly due to decentralization, that shadow banking creates market fragmentation, interconnectedness, and opacity,⁴³ making it difficult for market participants to effectively process information.⁴⁴ This allows risks to accumulate unnoticed and unchecked.⁴⁵ When hidden risks suddenly become apparent, market participants effectively panic.⁴⁶

Gary Gorton and Andrew Metrick also argue, although for different reasons, that shadow banking might increase the likelihood that systemic risk will be triggered. They contend that certain short-term shadow-banking activities, such as repo lending, can create the shadow-banking equivalent of

to overinvest, leading to bankruptcy; and rationality failure could cause prices of securities in a large financial market to collapse).

⁴² *Systemic Risk*, *supra* note 12, at 199-201.

⁴³ See Dan Awrey (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1916649) (arguing that these factors make shadow banking especially prone to endogenous shocks); Jon Danielsson, Hyun Song Shin, and Jean-Pierre Zigrand (<http://www.riskresearch.org/files/JD-HS-JZ-37.pdf>) (same).

⁴⁴ *Cf.* Awrey, *supra* note 43, at 9-10 (defining complexity as a function of information costs and bounded rationality).

⁴⁵ *Id.* at 12. Awrey argues that these pathologies may lead not only to inefficient contracting among market participants, but also to “fraud, misconduct, and other opportunistic behavior” by financial institutions. *Id.* at 48.

⁴⁶ *Id.* at 27-28. See also Danielsson, et al., *supra* note 43 at 4-6.

bank runs.⁴⁷ In the recent financial crisis, for example, the precipitous decline in value of mortgage-backed securities used as collateral for short-term repo loans prompted repo lenders to demand additional collateral.⁴⁸ Gorton and Metrick maintain that these demands approximated bank runs—in which panicked depositors withdraw funds from their banks—to the extent bank repo-borrowers were forced to sell assets to generate the additional collateral.⁴⁹ These forced asset sales also further depressed asset prices, creating a shock that spread rapidly through the interconnected financial system, impacting shadow-banking entities (like SIVs and money-market mutual funds) that relied on short-term debt.⁵⁰

The net impact of shadow banking on increasing the transmission of systemic risk is less clear than its impact on triggering systemic risk. It probably is not feasible to identify all systemic risk transmission mechanisms in advance. Consider, however, the impact of shadow banking

⁴⁷ Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, at 1 (2010), available at SSRN: <http://ssrn.com/abstract=1676947>. The above observations of Professors Gorton and Metrick should be placed into perspective, however. Shadow banking also provides significant long-term funding, which does not have the impact they describe. See *supra* note 31 32 and accompanying text. Moreover, short-term funding of long-term capital needs is a larger problem of the financial system. See *supra* note 32 and accompanying text.

⁴⁸ *Id.* at 15 (and also identifying these demands as the “epicenter” of the financial crisis). Cf. Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo*, 2012 J. FIN. ECON. 1, 23 (forthcoming 2012) (arguing that these demands were caused primarily by opacity about the exposure of different borrowers to the flagging real estate market and the value of borrowers’ collateral in the event of defaults).

⁴⁹ Gorton & Metrick, *supra* note 47, at 15.

⁵⁰ *Id.* at 15-16 (observing that SIVs relied on short-term debt to finance purchases of asset-backed securities and money-market mutual funds were forced to liquidate assets to repay panicked investors who redeemed their shares). I have made similar arguments in *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 232-33 (2010) (discussing information uncertainty through the example of mark-to-market accounting and margin calls by broker-dealers).

on at least one such mechanism, described by Professor Iman Anabtawi and myself.⁵¹ We argue that two otherwise independent correlations can combine to transmit localized economic shocks into broader systemic crises. The first is an intra-firm correlation between a firm's financial integrity and its exposure to risk from low-probability adverse events that either constitute or could lead to economic shocks. The second, which is more relevant to shadow banking, is a system-wide correlation among financial firms and markets.

Because it uses financial markets to provide products and services and also increases interconnectedness, shadow banking might increase the system-wide correlation among financial firms and markets.⁵² To that extent, shadow banking could increase systemic risk transmission.⁵³ On the other hand, by increasing the number of financial firms and diversifying their functions,⁵⁴ shadow banking might actually diminish the correlation among such firms, thereby reducing systemic risk. There is insufficient information to determine which effect will predominate.⁵⁵

⁵¹ Iman Anabtawi & Steven L. Schwarcz, *Regulating Systemic Risk: Towards an Analytical Framework*, 86 NOTRE DAME LAW REVIEW 1349 (2011).

⁵² See *supra* note 12 and accompanying text (discussing that correlation).

⁵³ Cf. Hyun Song Shin, *Financial Intermediation and the Post-Crisis Financial System*, B.I.S. Working Papers No. 304 at 9 (2010) available at <http://www.bis.org/publ/work304.pdf> (arguing that when financial intermediaries draw on a limited pool of external funds, expanding balance sheets inevitably leads institutions to transact with one-another, deepening interconnectedness).

⁵⁴ With shadow banking, financial firms are no longer primarily banks but also SPEs, finance companies, hedge funds, mutual funds, investment banks, and GSEs. See *supra* note 9 and accompanying text.

⁵⁵ Cf. Jon Danielsson, Hyun Song Shin & Jean-Pierre Zigrand, *Endogenous and Systemic Risk 2* (Working Paper, 2011), available at <http://www.riskresearch.org/files/JD-HS-JZ-37.pdf>. (attempting to theorize which effect will predominate).

Shadow banking thus operates as a double-edged sword: increasing both efficiencies and risks. I next examine how regulation can maximize those efficiencies and minimize those risks.

III. REGULATING SHADOW BANKING

Because of the potential to increase efficiency, regulation should not necessarily be focused on limiting shadow banking per se. Instead, regulation should be focused on maximizing that increase and on minimizing shadow banking's potential to increase risk.⁵⁶ I next examine how that can be done.

A. Regulation Focused on Maximizing Economic Efficiency

Regulation can maximize economic efficiency by correcting “market” failures. In our case, the “market” is the entire non-bank network—the financial firms (whether SPEs or profit-making entities) and the markets in which they operate—that comprises shadow banking. I believe that at least four types of partly interrelated market failures can occur within that network: information failure, rationality failure, principal-agent failure, and incentive failure.⁵⁷ Although none of these failures is unique to shadow banking, all can be exacerbated by shadow banking's complexity.

1. *Information Failure.*

⁵⁶ For a critical discussion of the rationale of financial regulation generally, see EMILIOS AVGOULEAS, GOVERNANCE OF GLOBAL FINANCIAL MARKETS: THE LAW, THE ECONOMICS, THE POLITICS (2012).

⁵⁷ Cf. *Controlling Financial Chaos*, supra note 41 (arguing that these four types of market failures are inherent in the financial system overall).

The shadow-banking network is incredibly complex.⁵⁸ Complexity can undermine disclosure,⁵⁹ which has been the chief regulatory response to information failure.⁶⁰ Although the Dodd-Frank Act puts great stock in the idea of improving disclosure,⁶¹ I fear its efficacy will be limited. Some parts of the shadow-banking network are so complex that they are viewed as incomprehensible.⁶²

One question, therefore, is whether regulation should attempt to simplify or standardize shadow banking to minimize its complexity. One of the goals of the Dodd-Frank Act, for example, is to standardize the portion of the shadow-banking network involving derivatives transactions.⁶³ But standardization can backfire. Standardizing derivatives transactions, for example, might inadvertently increase systemic risk by concentrating derivatives exposure at the clearinghouse level.⁶⁴ The overall economic

⁵⁸ For a general discussion of information failure resulting from complexity, *see* *Regulating Complexity in Financial Markets*, *supra* note 50.

⁵⁹ *See* Steven L. Schwarcz, *Disclosure's Failure in the Subprime Mortgage Crisis*, 2008 UTAH LAW REVIEW 1109, 1110 (2008).

⁶⁰ *See, e.g.*, Langevoort, *supra* note 33, at 803 (observing that “[r]egulation remained largely disclosure-oriented on the sell-side, even as the products increased in complexity”); Cynthia A. Williams, *The Securities and Exchange Commission and Corporate Social Transparency*, 112 HARVARD LAW REVIEW 1197 (1999) (discussing the general purpose of disclosure in the Exchange Act and the Securities Act).

⁶¹ *See, e.g.*, Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 1103, 124 Stat. 1376, 2118 (2010) (requiring additional disclosure).

⁶² *See, e.g.*, David Barboza, *Complex El Paso Partnerships Puzzle Analysts*, N.Y. TIMES, July 23, 2002, at C1 (discussing that “one industry giant, the El Paso Corporation, is growing ever more reliant on deals [using SPEs] so complex that securities experts call them incomprehensible”).

⁶³ Dodd-Frank Act sec. 723(a), § 2 (requiring many derivatives to be centrally cleared through clearinghouses).

⁶⁴ Iman Anabtawi & Steven L. Schwarcz, *Regulating Systemic Risk: Towards an Analytical Framework*, 86 NOTRE DAME LAW REVIEW 1349, 1395 (2011) (observing that although “central clearing [of derivatives] reduces counterparty risk posed by individual firms, it is an incomplete approach to systemic risk management in several respects. First,

impact of standardization is also unclear because standardization can stifle innovation and interfere with the ability of parties to achieve the efficiencies that arise when firms craft financial products tailored to the particular needs and risk preferences of investors.

Dodd-Frank also attempts to reduce information failure in the portion of the shadow-banking network involving securitization transactions.⁶⁵ Sellers of securitization products are required to retain a minimum unhedged position in each class of securities they sell—the so-called “skin in the game.”⁶⁶ This too can backfire. By retaining residual risk portions of certain complex securitization products they were selling, underwriters who did not fully understand those products may have fostered false investor confidence, contributing to the 2008 financial crisis.⁶⁷

In the shadow-banking network, some amount of information failure will therefore be inevitable.

it may have the perverse effect of increasing systemic risk by concentrating derivatives exposure at the clearinghouse level. Central clearing merely shifts counterparty risk to a clearinghouse, reducing that risk only to the extent that clearinghouses can manage risk better or are more creditworthy than individual firms.”).

⁶⁵ I use securitization and derivatives as examples throughout this Address, consistent with the FINANCIAL CRISIS INQUIRY COMMISSION, PRELIMINARY STAFF REPORT, *supra* note 21, which references shadow banking’s dominance in the “markets for securitized products, structured products, commercial paper, asset-backed commercial paper, repurchase agreements, and derivatives”).

⁶⁶ See Dodd-Frank Act sec. 941, § 15G (directing the SEC to require sponsors of asset-backed securities to retain at least five percent of the credit risk of the underlying assets). A recent Federal Reserve Bank staff report identifies this credit-risk retention as one of the most important “aspects of proposed [Dodd-Frank Act] rules in light of shadow banking.” Tobias Adrian, Abstract to *Dodd-Frank One Year On: Implications for Shadow Banking*, Federal Reserve Bank of New York Staff Rep. No. 533 (Dec. 2011).

⁶⁷ See *Regulating Complexity in Financial Markets*, *supra* note 50, at 241-42 (referring to this as a “mutual misinformation” problem).

2. Rationality Failure.

Humans have bounded rationality. Moreover, the more complex something is, the less certain we are about it and the harder it is to understand. We then tend to focus on the simpler and more straightforward elements with which we're familiar. We also tend to believe what we want to believe.⁶⁸

This helps to explain why, in light of the complexity of shadow banking, market participants have sometimes acted without full understanding. For example, investors were prepared to believe, based on mathematical models they did not fully understand, that the investment-grade rated securities issued in highly complex second-generation securitization transactions,⁶⁹ offering much higher returns than other similarly rated securities, represented good investments even though they were at least partly backed by subprime mortgages. Furthermore, many of these mathematical models were, at best, only rough approximations.⁷⁰

⁶⁸ *Id.* at 71. Cf. J. Barkley Rosser Jr., *Alternative Keynesian and Post Keynesian Perspectives on Uncertainty and Expectations*, 23 J. POST KEYNESIAN ECON. 545, 554–57 (2001) (arguing that uncertainty leads to self-fulfilling mistakes).

⁶⁹ These transactions included securitizations of collateralized-debt-obligation securities, or “ABS CDO” transactions. See, e.g., David Milliken & Richard Barley, *ABS CDOs, at heart of crisis, may disappear*, REUTERS NEWS, April 1, 2008, at 1 (“The use of credit derivatives in fact allowed more exposure to be created than the amount of underlying bonds issued”). Cf. Joshua Coval, Jakub Jurek, & Erik Stafford, *The Economics of Structured Finance*, 23 J. ECONOMIC PERSPECTIVES 3 (2009) (finding that complex securitization transactions such as collateralized debt obligations (“CDO”s) amplified the errors in evaluating the risk of the underlying securities); David Reilly, *Center of a Storm How CDOs Work*, WALL ST. J., June 23, 2007, at 1 (“CDOs have generated debate because they are complex, and pose a risk because they are several steps removed from the actual asset, or debt, that is being packaged”).

⁷⁰ THOMAS S. Y. HO & SANG BIN LEE, *THE OXFORD GUIDE TO FINANCIAL MODELING: APPLICATIONS FOR CAPITAL MARKETS, CORPORATE FINANCE, RISK MANAGEMENT, AND*

3. *Principal-Agent Failure.*

This type of failure is widely acknowledged in the context of conflicts of interest between managers and owners of firms. At least in the shadow-banking network, however, the more serious conflict is intra-firm: secondary managers, such as investor analysts and investment-bank vice presidents, are almost always paid under short-term compensation schemes, misaligning their interests with the long-term interests of the firm.⁷¹ Although this intra-firm principal-agent failure is not unique to shadow banking, the complexity of shadow banking, combined with the very technology that enables shadow banking to thrive,⁷² can exacerbate the failure.⁷³

This principal-agent failure can be solved by paying managers, including secondary managers, under longer-term compensation schemes—e.g., deferred compensation based on long-term results. In practice, however, that solution must overcome a collective action problem: firms that offer their secondary managers longer-term compensation may not be able to hire as competitively as firms that offer more immediate compensation.⁷⁴

FINANCIAL INSTITUTIONS 348–49 (2004) (discussing Monte Carlo simulations, which condition prepayment risk upon hypothetical interest rate fluctuations); *see also* *Advanced Analytics, Inc. v. Citigroup Global Mkts., Inc.*, No. 04 Civ. 3531 (LTS) (HBP), 2008 WL 2557421, at *1 (describing as “complex” the computerized process used to estimate prepayment risk); *See also* *Regulating Complexity in Financial Markets*, *supra* note 50, at 217; Erik F. Gerding, *Code, Crash, and Open Source: The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis* 127 WASH. U. L. REV. 127, 170-71 (2009).

⁷¹ *See* Steven L. Schwarcz, *Conflicts and Financial Collapse: The Problem of Secondary-Management Agency Costs*, 26 YALE JOURNAL ON REGULATION 457 (2009).

⁷² *See supra* note 33 and accompanying text.

⁷³ *Conflicts and Financial Collapse*, *supra* note 71.

⁷⁴ *See, e.g.*, Kimberly D. Krawiec, *The Return of the Rogue*, 51 ARIZ. L. REV. 127, 157-58 (2009) (arguing that financial institutions have had trouble balancing the

Regulation will be needed to solve this collective action problem not only within nations but also across nations, because good secondary managers can work in financial centers worldwide.

4. *Incentive Failure.*

I've observed that technology has enabled the shadow-banking network to produce more diverse and innovative financial products than traditional banking.⁷⁵ In securitization transactions, for example, these products often include securities that allocate the return to investors based on finely calibrated risk levels that are intended to meet specific investor risk appetites. This can be structured in various ways, such as through tranching, which allocates repayment to different classes of securities that have different repayment priorities; or through asset stripping, which allocates repayment to classes of securities from specific cash flows of underlying financial assets (such as principal-only or interest-only securities). Advanced technology, including computerization, enables this by making it possible to track the allocated cash flows.⁷⁶

This enables investment risk to be finely dispersed, and in theory investment diversification is beneficial. However, risk can sometimes be marginalized by becoming so widely dispersed that rational market

discouragement of excessive risk-taking against the need to create profit-maximizing incentives and preferences).

⁷⁵ See *supra* notes 28-33 and accompanying text.

⁷⁶ Jason Kravitt, *Foreword: Some Thoughts on What Has Happened to the Capital Markets and Securitization and Where Securitization is Going* 9 (Aug. 7, 2008), <http://www.pli.edu/public/17984/foreword.pdf>.

participants individually lack the incentive to monitor it.⁷⁷ Undermonitoring caused by this incentive failure appears to have contributed, at least in part, to the 2008 financial crisis.⁷⁸

I have recently shown, however, that the problem of incentive failure may be difficult to solve.⁷⁹

In short, shadow banking can exacerbate market failures. Regulation can help to control but cannot completely eliminate those failures.⁸⁰ On the other hand, shadow banking might provide a social good, notwithstanding its market failures, because it brings positives to the financial system, such as

⁷⁷ See Steven L. Schwarcz, *Marginalizing Risk*, 89 WASH. U. L. REV. issue no. 3 (forthcoming 2012), available at <http://ssrn.com/abstract=1721606>.

⁷⁸ Cf. Jean-Claude Trichet, President of the European Central Bank, Speech before the Fifth ECB Central Banking Conference (Nov. 13, 2008) (arguing that ‘the root cause of the [financial] crisis was the overall and massive undervaluation of risk across markets, financial institutions and countries’); Joe Nocera, *Risk Mismanagement*, N.Y. TIMES, Jan. 4, 2009, § 6 (Magazine).

⁷⁹ For example, regulation could require—perhaps for certain large issuances of complex securities—that a minimum unhedged position be held by a single sophisticated investor in each class of securities. *Marginalizing Risk*, *supra* note 77. Regulatory attempts to limit risk dispersion would have tradeoffs. Securitization sellers are thus required by the Dodd-Frank Act to keep “skin in the game” by retaining risk in the form of at least a 5% unhedged vertical slice of risk. Problematically, such retention would only mitigate conflicts between the parties retaining and those taking on the risk, not between financial market participants and the non-financial market participants who bear the burden of externalized risk in a systemic collapse of the financial system. *Id.* Cf. Kevin Villani, *Risk-Retention Rules Set Up the Private Investor for Failure*, AM. BANKER (Aug. 29, 2011), <http://www.americanbanker.com/bankthink/QRM-qualifying-residential-mortgage-risk-retention-housing-private-investor-1041645-1.html> (arguing that lack of “skin in the game” was not responsible for financial institutions’ “astronomical leverage”).

⁸⁰ Although regulation cannot completely eliminate market failures even within the broader financial system (*see Controlling Financial Chaos*, *supra* note 41), there might be more market failures in shadow banking and they might be harder to control.

disintermediation and increased efficiency.⁸¹ The net effect of balancing these failures and benefits is, at present, indeterminate.

B. Regulation Focused on Minimizing Systemic Risk

I have also observed that regulation should be focused on minimizing shadow banking's potential to create systemic risk. Recall that shadow banking might increase that potential by increasing the likelihood that systemic risk will be triggered and, although less clear, by also increasing the transmission of systemic risk.

Shadow banking may increase the likelihood that systemic risk will be triggered by making panics more likely.⁸² Targeted regulation is probably not feasible to reduce that likelihood because it is impossible to identify all the causes of panics.⁸³ And except in the context of particular fact patterns,⁸⁴ it is difficult to see how regulation could directly reduce shadow banking's fragmentation, interconnectedness, and opacity, which increase the potential for panic.⁸⁵

Regulation could indirectly reduce fragmentation, interconnectedness, and opacity, however, by limiting the factors that give rise to shadow banking. It would almost certainly be futile, if not counter-productive, to try to impose regulatory limits on technology, the first such factor.⁸⁶ Therefore,

⁸¹ See *supra* Part II.

⁸² See *supra* notes 42-43 and accompanying text.

⁸³ *Systemic Risk*, *supra* note 12, at 199-201.

⁸⁴ See, e.g., Gorton & Metrick, *supra* note 47 (proposing repo-collateral requirements to reduce information problems).

⁸⁵ See *supra* notes 42-43 and accompanying text.

⁸⁶ See *supra* notes 28-34 and accompanying text.

the answer—if there is one—lies with limiting regulatory arbitrage, the other factor giving rise to shadow banking.⁸⁷

Regulatory arbitrage could be limited either by regulating traditional banks less or by regulating shadow banks more.⁸⁸ At least currently, it does not appear to be politically feasible to regulate traditional banks less.⁸⁹ If anything, the trend appears to be in the opposite direction.⁹⁰ On the other hand, there does appear to be sentiment to regulate at least some shadow banks more. For example, Dodd-Frank subjects non-bank financial firms designated systemically significant to enhanced prudential regulation, including capital requirements, limits on leverage and short-term debt, liquidity requirements, and increased regulatory disclosures.⁹¹

⁸⁷ *Id.*

⁸⁸ Recall that shadow banks are SPEs, finance companies, hedge funds, mutual funds, investment banks, and GSEs. *See supra* notes 18-19 and accompanying text.

⁸⁹ *Cf.* Communiqué, G-20, Communiqué of the Finance Ministers and Central Bank Governors of the G-20 (Sept. 22, 2011) (resolving to “ensure that banks are adequately capitalized and have sufficient access to funding to deal with current risks and that they fully implement Basel III along the agreed timelines”).

⁹⁰ *See supra* note 22. Several observers believe that Dodd-Frank may actually fuel the growth of shadow banking by increasing the regulatory burden on the traditional banking sector. *See* Eugene Ludwig, *Shadow Banking Will Flourish as Dodd-Frank Squeezes Banks*, AMERICAN BANKER: BANK THINK (July 19, 2011, 5:22 P.M.), <http://www.americanbanker.com/bankthink/shadow-banking-system-Dodd-Frank-Ludwig-1040318-1.html> (“[T]he shadow banking sector has become more attractive due to the virtual lack of regulatory increase it has experienced.”); Stephen Gandel, *Is Dodd-Frank Reviving the Shadow Banks?*, TIME (Jun. 27, 2011), <http://business.time.com/2011/06/27/is-dodd-frank-reviving-the-shadow-banks/> (“[I]t appears, shadow banks . . . seem to be making a comeback.”). *Cf.* Daniel K. Tarullo, Federal Reserve Board Governor, Comments on “Regulating the Shadow Banking System” at the Brookings Panel on Economic Activity (Sept. 17, 2010), *available at* <http://www.federalreserve.gov/newsevents/speech/tarullo20100917a.htm> (“[M]ore will need to be done in this area, particularly as new constraints applicable to large regulated institutions push more activity into the unregulated sector.”).

⁹¹ Dodd-Frank Act § 115(b)(1). The Group of Thirty also recommends that money-market mutual funds be forced to choose between becoming “special-purpose banks”

Efforts to increase the regulation of shadow banks must grapple with the question, though, of whether the regulation optimally minimizes the risk of systemic harm while preserving shadow banking's efficiency. Some have argued, for example, that leaving the regulation of systemically significant firms to the discretion of the Financial Stability Oversight Council⁹² could create a "boundary problem" in determining which firms are swept into the enhanced prudential regulatory regime, thereby creating new opportunities for regulatory arbitrage.⁹³ I have also questioned in another context whether regulating systemically important firms (such as by limiting financial leverage) can reduce systemic risk at the cost of impairing efficiency.⁹⁴

There may be an even more targeted regulatory approach that would reduce the systemic impact of shadow banking while preserving shadow banking's efficiency: protecting directly against systemic consequences that could result from shadow banking.⁹⁵ One way to do this would be to limit

subject to prudential regulation and government insurance (and having access to central bank liquidity), or else investing only in stable, low-risk assets and abandoning guarantees to investors of being able to withdraw their funds "on demand at a stable" net asset value. GROUP OF THIRTY, FINANCIAL REFORM: A FRAMEWORK FOR STABILITY 29 (2009), available at http://www.group30.org/images/PDF/Financial_Reform-A_Framework_for_Financial_Stability.pdf. Gorton and Metrick adopt this proposal in their own recommendations for regulating shadow banking. Gorton & Metrick, *supra* note 47, at 20. Net asset value, often abbreviated "NAV," is usually \$1.00. If a fund's NAV falls below \$1.00, the fund is said to "break the buck." Gorton and Metrick also suggest new limits for repo transactions, including a licensing requirement for non-bank entities seeking repo funding, strict quality requirements for collateral, position limits, and mandatory overcollateralization. Gorton & Metrick, *supra* note 47, at 23-24.

⁹² Dodd-Frank Act § 113(a).

⁹³ Rosa María Lastra, *Systemic Risk, SIFIs and Financial Stability*, 6 CAP. MARKETS L.J. 197, 209-10 (2011).

⁹⁴ *Systemic Risk*, *supra* note 12, at 211, 240.

⁹⁵ *Id.* at 240-43.

the transmission of systemic risk resulting from shadow banking. Chaos theory holds that in complex engineering systems—and, I have argued, also in complex financial systems—failures are almost inevitable.⁹⁶ Therefore regulatory remedies should focus on breaking the transmission and limiting the consequences of these failures.⁹⁷ In other contexts, I have shown how regulation could accomplish this, such as by ensuring liquidity to systemically important firms and markets and by privatizing sources of liquidity in order to help internalize externalities and motivate private-sector monitoring.⁹⁸

IV. CONCLUSIONS

Due to regulatory arbitrage and the increasing technological ability of non-banks to compete with traditional banks in the ability to provide financial products and services, shadow banking appears to be here to stay. I therefore have focused on how shadow banking should be regulated to try to maximize its efficiencies while minimizing its risks.

My analysis is inherently limited by the fact that shadow banking is itself not well defined. I have attempted to tentatively define it by identifying its overall scope and basic characteristics. Keying into those fundamentals,

⁹⁶ See *Regulating Complexity in Financial Markets*, *supra* note 50, at 248-49. One aspect of chaos theory is deterministic chaos in dynamic systems, which recognizes that the more complex the system, the more likely it is that failures will occur. Thus, the most successful (complex) systems are those in which the consequences of failures are limited. In engineering design, for example, this can be done by decoupling systems through modularity that helps to reduce a chance that a failure in one part of the system will systemically trigger a failure in another part.

⁹⁷ *Id.*

⁹⁸ See *Controlling Financial Chaos*, *supra* note 41.

my regulatory analysis is more conceptual than applied. A question for future inquiry will be the extent to which actual regulation of shadow banking should tie more closely to particular factual patterns.⁹⁹

My Address also does not purport to examine *who* should regulate shadow banking. I merely note, in closing, that traditional financial regulatory agencies tend to be compartmentalized, each focusing on its specific mandate—for example, regulation of specific types of financial institutions, such as banks; or regulation of specific types of financial products, such as securities or derivatives.¹⁰⁰ Because shadow banking cuts across these categories, its regulation may well require a more holistic effort or, at least, better cross-agency coordination than currently exists for financial regulation.

Thank you.

⁹⁹ *Cf. supra* note 84 and accompanying text (proposing actual regulation tied to a particular fact pattern). *Also cf.* e-mail from Dan Awrey, University Lecturer in Law & Finance, University of Oxford, to the author (Jan. 24, 2012; emphasis in original) (saying that he is “increasingly of the view that the prevailing notion of ‘shadow banking’—which throws a number of divergent institutions, instruments and markets into the same bucket—has become a meaningful obstacle to regulatory reform in a number of key areas (esp. wholesale funding markets). There are many different *objects* of (potential) regulation wrapped up in this definition, each manifesting different *issues* and requiring different regulatory *responses*.”).

¹⁰⁰ *See, e.g.*, Dodd-Frank Act § 712 (dividing regulatory jurisdiction for “swaps” and “security-based swaps” between the CFTC and SEC, respectively).