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UNDERSTANDING THE FAILURES OF MARKET DISCIPLINE

DAVID MIN*

"Market discipline"—the theory that short-term creditors can efficiently rein in bank risk through their self-interested actions—has been a central pillar of banking regulation since the late 1980s, both in the United States and abroad. While market discipline did not prevent the buildup of bank risk that caused the recent financial crisis, the conventional wisdom has been that this failure was due to extrinsic factors that impeded the effective operation of market discipline, rather than any underlying problems with the theory itself. As a result, policymakers have increased regulatory reliance on market discipline, making this a central part of their reform efforts. This Article challenges the prevailing wisdom and makes two contributions to the literature. First, I demonstrate that market discipline failed more severely and completely than has previously been acknowledged. A foundational premise of market discipline is that investors will signal elevated bank risk through higher prices and lower liquidity. But as I illustrate, there was no such reaction until after the financial crisis had already begun, despite historically high levels of bank riskSecond, I attempt to explain why market discipline failed so completely and fundamentally. I contend that the theory of market discipline relies too

* Assistant Professor of Law, UC Irvine School of Law. I would like to thank Mehrsa Baradaran, Lissa Broome, John Crawford, Steven Davidoff Solomon, Jonathan Glater, James Kwak, Stephen Lee, Tom Lin, Patricia McCoy, Joshua Mitts, Saule Omarova, Daniel Sokol, Robert Solomon, Jane Stoever, and Shauhin Talesh for their incredibly helpful comments and suggestions. This Article also benefited tremendously from feedback from participants in the National Business Law Scholars 2013 Annual Conference, the University of Connecticut Insurance Law Center's 2013 Junior Scholars Workshop on Financial Services Law, the Cirano Institute's 2014 "Central Banking and Supervision, What Have We Learned Since 2008?" conference, and a 2015 workshop at Cornell Law School. Michael DeShong and Anees Naime provided excellent research support.

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heavily on investors that are relatively insensitive to risk and thus serve as particularly poor monitors of banks, and wrongly ignores the effects of bank shareholders, who are highly risk-sensitive but may have incentives adverse to those of public policy. Both of these flaws with the doctrine of market discipline arise from its conflation of capital market investors, who generally are quite sensitive to risk, and purchasers of money instruments, who generally are not. Despite these enormous flaws with the underlying doctrine, improving the conditions for market discipline continues to be seen as a panacea for reducing systemic risk, thus increasing the likelihood that regulators may again be blindsided by another financial crisis.

TABLE OF CONTENTS

I. INTRODUCTION 1423
II. THE LAW AND ECONOMICS OF MARKET DISCIPLINE 1427
A. *Federal Deposit Insurance and the Problem of Banking Panics* 1428
B. *Market Discipline as a Critique of Government Guarantees* 1432
C. *The Pre-Crisis Literature on Market Discipline* 1435
1. *Are Investors Able to Monitor Risky Banks?* 1435
2. *Does Market Discipline Affect Bank Risk-Taking?* 1440
3. *Strong Form vs. Weak Form Market Discipline* 1442
III. THE FAILURE OF MARKET DISCIPLINE 1444
A. *The Implementation of Weak Form Market Discipline* 1445
B. *Shadow Banking and the Reemergence of Strong Form Discipline* 1448
1. *Limited Government Intervention in Shadow Banking* 1449
2. *Shadow Banking Investors Are Institutional, Not Retail* 1452
3. *Delegated Monitors to Ameliorate Information Asymmetry Issues* 1453
C. *The Failure of Markets to Signal Excessive Risk* 1457
1. *Liabilities of Individual Banks Failed to Timely Identify Risk* 1458
2. *Interbank Borrowing Rates Failed to Timely Signal Systemic Risk* 1463
3. *Market Pricing of ABS Failed to Timely Signal Systemic Risk* 1465
4. *Clear Evidence of Bank Risk Prior to July 2007* 1466

IV. WHY DID MARKET DISCIPLINE FAIL? 1468
A. *Rejecting the Standard Accounts of Market Discipline's Failure* 1471
B. *Distinguishing Between Investment Securities and Money Instruments* 1475
C. *Market Discipline Relies Heavily on Money Instruments* 1479
D. *Market Discipline Ignores Risk-Sensitive Shareholders* 1483
E. *Procyclicality and Market Discipline* 1488
F. *Reconciling the Empirical Findings* 1491
V. TOWARDS A NEW MARKET DISCIPLINE 1492
A. *Implications for Financial Regulatory Reform* 1493
1. *Eliminating Expectations of Government Support is Unlikely to Fix Market Discipline* 1494
2. *Increasing Issuance of Long-Term Debt* 1495
3. *Improving Transparency* 1496
B. *Delinking the Incentives of Managers and Shareholders* 1498
C. *Reducing Reliance on Market Discipline* 1499
1. *Increasing Capital Requirements* 1499
2. *Reducing the Size and Complexity of Financial Institutions* 1500
VI. CONCLUSION 1501

I. INTRODUCTION

The theory of market discipline, which generally asserts that self-interested creditors can provide substantial assistance in reining in the risk-taking of banks, has been a foundational principle of bank prudential regulation since at least the late 1980s.[1] Since that time, this doctrine has become even more important as the principle of market discipline now stands as one of the three so-called "pillars" of banking regulation articulated by the influential Basel Committee, which sets the international standards for prudential regulation of financial firms.[2] Following the financial crisis of 2007–2008, market discipline has been utilized to an even greater extent as a way to augment and improve the regulation of financial intermediaries.[3] As financial institutions have become too large and complex for regulators to understand and oversee on their own,

1. *See infra* notes 37–101 and accompanying text.
2. *See infra* notes 112–15 and accompanying text.
3. *See infra* notes 299–305 and accompanying text.

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regulators have come to rely heavily on market discipline, both to directly rein in bank risk and to provide them with important pricing signals of which institutions may be seen as higher risk by the markets.[4]

Clearly, market discipline did not succeed in preventing the buildup of bank risk that caused the financial crisis. However, the consensus among most banking regulators and academics is that the failure of market discipline in this regard was due to some structural impediment, such as the presence of implicit guarantees creating moral hazard or informational asymmetries in financial intermediation, which impeded bank creditors from effectively monitoring and influencing bank behavior.[5] In other words, under this view, market discipline did not fail, but rather policymakers and regulators failed in establishing the predicate conditions for market discipline to be successful.

Based in large part on this diagnosis, one of the ways in which policymakers have sought to reform financial regulation has been to call for measures meant to improve the conditions for market discipline, with the goal of increasing its effectiveness. Both Dodd-Frank and Basel III explicitly call for enhanced market discipline, and federal banking regulators have unveiled a number of measures meant to increase reliance on market discipline, as described in greater detail below.[6]

But as this Article demonstrates, this conventional wisdom is wrong, as the doctrine of market discipline failed completely, in a manner inconsistent with these explanations. Investor and market reactions did not, as many advocates of market discipline predicted, prevent the buildup of risk that caused the crisis, a fact that is fairly indisputable. But more troublingly, as this Article demonstrates, the bank[7] creditors and

4. *See infra* Part V.C.

5. *See infra* Part IV.A.

6. *See infra* notes 303–20 and accompanying text.

7. The term "bank" is also used somewhat inconsistently in the literature. Using a functional approach, the term "bank" often refers to a financial firm that engages in the functions of banking—credit intermediation, money creation, payment services—but also frequently describes a more specific type of financial intermediary that takes deposits and utilizes these to fund an investment portfolio made up primarily of credit products (such as loans). *See* RICHARD SCOTT CARNELL, JONATHAN R. MACEY & GEOFFREY P. MILLER, THE LAW OF FINANCIAL INSTITUTIONS 38–48 (5th ed. 2013). The term "bank" is also used to describe financial institutions that perform the economic functions associated with banking—credit intermediation, liquidity transformation, maturity transformation. To some degree, the confusion over the parameters of the term "bank" is also a product of U.S. exceptionalism. The United States is unique among advanced economies insofar as it historically limited the activities that deposit-taking banks could engage in. *Id.* at 105–63. Thus, in the United States, terms like "traditional bank" or "commercial bank" are often used to distinguish deposit-taking financial intermediaries from investment banks, hedge funds, and other capital market-centric firms that have historically been focused on capital market activities. Conversely, in Europe and Asia, deposit-taking intermediaries were historically allowed to engage in a wide array of other activities,

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counterparties that were supposed to exert market discipline failed to even respond to heightened bank risk until it was too late.

As Part II of this Article describes, market discipline was supposed to reduce bank risk through two main effects. First, the reactions of interested investors—withdrawing funds and/or demanding higher rates of return from banks taking on greater levels of risk—were themselves supposed to act as a check on the behavior of bank managers, by providing a deterrent (less availability and a higher cost of funds) to taking on greater risk. Second, these market reactions would help to identify risky banks for regulators, who could use these pricing and liquidity signals as a basis for taking early regulatory action against risky institutions, before that risk manifested itself into insolvency. Part II also provides a general overview of the parameters of the doctrine of market discipline, and reviews the pre-crisis empirical and theoretical literature on market discipline and its effectiveness in reducing bank risk.

A foundational premise of this theory is that creditors can accurately and timely identify risky financial institutions. This should have been especially true for the period preceding the financial crisis, as the conditions were ripe for the success of market discipline, as I discuss in Part III. The explicit adoption of market discipline as a core pillar of traditional banking regulation beginning in the late 1980s facilitated greater transparency from banks and other financial firms, and created new classes of uninsured creditors who were expected to serve as potent new sources of market discipline. At the same time, the rise of "shadow banking"—credit intermediation that took place primarily in the capital markets and thus outside the prudential regulatory framework established for traditional banking—created arguably the optimal conditions for market discipline to succeed. Shadow banking lacks the distortive government guarantees of traditional banking, and moreover has other key aspects that improve conditions for market discipline, such as sophisticated counterparties and the presence of delegated monitors of risk.

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and so the term "bank" is often used in a much broader sense. *See generally* Hwa-Jin Kim, *Toward Transatlantic Convergence in Financial Regulation* (U. of Michigan Law & Economics, Research Paper No. 11-004, 2011). *See also* Charles W. Calomiris, *Universal Banking and the Financing of Industrial Development* (The World Bank Working Paper No. 1533, 1995). Of course, with the rise of bank holding companies and the expansion of the scope of permissible activities those firms have been allowed to engage in, the term "bank" has become even more muddled over time. For purposes of clarity, I describe financial intermediaries that rely heavily on deposits to fund their activities as "traditional" or "commercial" banks, whereas I use the term "bank" or "financial intermediary" to describe financial institutions that primarily engage in the economic activity of credit intermediation.

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But despite the best possible conditions to date for the success of market discipline, this theory failed systemically and completely, as Part III describes in some detail. Every significant market indicator that might have been relied upon by banking regulators utilizing the theory of market discipline—uninsured deposit rates, bank subordinated debt rates, interbank lending rates, credit default swap prices, and many others—failed to provide any indication of elevated levels of risk until after the 2007–2008 crisis had already started, at which point it was too late for regulators to react effectively.

This is problematic, insofar as there was clear, publicly available, and ample evidence of heightened bank risk, both at specific firms and across the broader banking system, as early as 2005. In short, market discipline failed more completely and systematically than has generally been understood, or at least acknowledged.

Part IV shifts to the question of *why* market discipline failed. It begins by rejecting the standard accounts for this failure, which largely center upon information asymmetry specific to shadow banking, and moral hazard created by legal or regulatory policies (such as implicit government guarantees for "too big to fail" institutions or bankruptcy laws that favored counterparties in certain types of transactions). As I go over in some detail, these accounts are inconsistent with the actual evidence of the actions (or inactions) taken by bank creditors and counterparties, and thus do not appear to be good explanations of why market discipline did not perform as regulators and policymakers had expected. If these theories were correct, we would have expected to see dampened market reactions to risk, both before and during the crisis. Instead, what we experienced was a nearly complete absence of market sensitivity to bank risk until July 2007, after which point markets became hypersensitive to risk.

Instead, I argue that market discipline failed for two reasons—first, relying on the insights of Eugene Fama's efficient markets hypothesis, the theory of market discipline assumes that all investors in banking liabilities are always risk-sensitive; second, it generally ignores the actions of bank shareholders and the effects these might have on bank risk-taking. Both of these failures are derived from a central problem with market discipline, namely, that it does not distinguish between capital market investors, who generally are quite risk-sensitive, and purchasers of money instruments, who generally are not. Market discipline relies most heavily on the latter, while largely ignoring the former.

While this Article does not aim to offer a comprehensive set of detailed policy prescriptions, it does briefly explore some of the obvious policy implications of these arguments in Part V. First, many of the post-crisis

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initiatives to reform the financial system are misguided. Among other things, Dodd-Frank and Basel III propose reducing investor expectations of government bailouts, increasing the issuance of long-term bank debt, and improving transparency. As I describe, these proposals are unlikely to result in the expected benefits, and may indeed be counterproductive to systemic stability. Second, contrary to the efforts of the corporate governance movement, this Article proposes delinking the incentives of managers and shareholders. Bank shareholders have unique incentives to increase risk-taking, particularly during periods of credit expansion. Aligning the incentives of bank managers with shareholders is thus not in the interests of prudential regulation, which seeks to limit bank risk-taking. Finally, the realization that market discipline is flawed establishes the need for more aggressive action in other areas, including increasing capital requirements and reducing the size and complexity of the largest financial institutions. Regulators have come to rely heavily on market discipline as a supplementary tool, and so reducing reliance on this third pillar of banking regulation necessarily means bolstering their ability to rein in bank risk in other areas.

II. THE LAW AND ECONOMICS OF MARKET DISCIPLINE

The theory of market discipline in banking is related to the efficient markets hypothesis[8] and generally asserts that depositors (and similarly situated investors)[9] can rein in the risk taken by banks through market-

8. As a pair of Federal Reserve Bank of New York economists have described, "In its most basic form, market discipline corresponds to the semi-strong form of the efficient markets hypothesis . . . as applied to traded bank securities, and implies that prices should reflect all available public information about risk." Adam B. Ashcraft & Hoyt Bleakley, *On the Market Discipline of Informationally Opaque Firms: Evidence from Bank Borrowers in the Federal Funds Market* 3 n.2 (Fed. Reserve Bank of N.Y., Staff Report No. 257, 2006). The efficient markets hypothesis was most notably advanced by Eugene Fama in 1970, who argued that markets immediately and accurately reflect information through the pricing of widely traded securities. Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, 25 J. FIN. 383 (1970).

9. As described in greater detail *infra* in Part II.C, the literature on market discipline has historically focused on the risk taken by commercial banks—institutions that accept demand deposits and use these to fund loans held to term—and has primarily described the discipline provided by bank depositors. *See, e.g.*, Helen A. Garten, *Market Discipline Revisited*, 14 ANN. REV. BANKING L. 187 (1995); Jonathan R. Macey & Elizabeth H. Garrett, Commentary, *Market Discipline by Depositors: A Summary of the Theoretical and Empirical Arguments*, 5 YALE J. ON REG. 215 (1988). Of course, similar types of discipline can be exercised by similarly situated investors (such as senior unsecured creditors) and can be applied to similarly situated types of financial institutions (such as so-called "shadow banks" that carry out the basic intermediation functions of banks). Generally, and consistent with the literature, I use the terms "depositor discipline" and "market discipline" interchangeably.

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based mechanisms.[10] Market discipline is derived from a broader literature, related to the efficient markets hypothesis, which argues that in the absence of transaction costs and informational asymmetries, markets reach efficient outcomes, and that governmental intervention can distort market incentives to reduce risk-taking and lead to less than optimal outcomes.[11] Advocates of this doctrine have argued that measures that increased market discipline would improve the safety and soundness of banks, both by exerting some increased measure of direct discipline, and by providing banking regulators with important market signals on bank risk.[12]

While market discipline is now one of the core paradigms in banking regulation, this was not always the case. In fact, until the 1980s, the basic precepts of this doctrine were considered and then explicitly rejected. This Part provides a brief overview of the theory of market discipline, and how it interrelates with federal deposit insurance and banking panics, before proceeding into a summary of the empirical and theoretical literature examining the efficacy of market discipline prior to the 2007–2008 financial crisis.

A. Federal Deposit Insurance and the Problem of Banking Panics

Banks are typically understood as having several key features that make them unique among market participants.[13] First, banks are primarily

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10. *See, e.g.*, Helen A. Garten, *Banking on the Market: Relying on Depositors to Control Bank Risks*, 4 YALE J. ON REG. 129, 129 n.1 (1986); Constantinos Stephanou, *Rethinking Market Discipline in Banking: Lessons from the Financial Crisis* 4 (The World Bank, Working Paper No. 5227, 2010); Macey & Garrett, *supra* note 9, at 223–29. As Kostas Tsatsaronis (2004) notes, "Market discipline can be viewed generally as the influence that 'outsiders' (that is, stakeholders with no executive decision making power) exert on 'insiders' (that is, the decision-makers in an economic unit) that encourages value enhancing behavior by the latter." Kostas Tsatsaronis, *Comments on the Theory of Market Discipline*, *in* MARKET DISCIPLINE ACROSS COUNTRIES AND INDUSTRIES 79, 79 (Claudio Borio et al. eds., 2004).

11. One famous application of this idea is seen in Sam Peltzman's controversial argument that government regulations mandating safety belts in automobiles had led drivers to increase their risk-taking. *See generally* Sam Peltzman, *The Effects of Automobile Safety Regulation*, 83 J. POL. ECON. 677 (1975). Peltzman was and remains a leading advocate of market discipline. *See, e.g.*, Sam Peltzman, *Capital Investment in Commercial Banking and Its Relationship to Portfolio Regulation*, 78 J. POL. ECON. 1 (1970) [hereinafter *Capital Investment*] (arguing that the introduction of federal deposit insurance and prudential regulation led to declines in bank capital).

12. *See* Mark J. Flannery, *The Faces of "Market Discipline*", 20 J. FIN. SERV. RES. 107, 109–10 (2001).

13. *See, e.g.*, Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983); Ben Bernanke & Mark Gertler, *Banking in General Equilibrium* 1–2 (Nat'l Bureau of Econ. Research, Working Paper No. 1647, 1985); V.V. Chari & Ravi Jagannathan, *Banking Panics, Information, and Rational Expectations Equilibrium* (Fed. Reserve

in the business of making idiosyncratic investments with high evaluation and monitoring costs, creating potential information asymmetries between banks and their outside investors.[14] Second, banks have a maturity mismatch between their assets and liabilities, insofar as they use short-term liabilities (such as deposits redeemable upon demand) to fund long-term assets (such as loans).[15] Third, banks are funded by an unusually high level of debt, with only a small amount of equity to serve as a buffer against losses on those debt obligations.[16] Collectively, these attributes make banks highly vulnerable to the problem of bank runs.[17]

The high level of debt means that a relatively small credit loss can render a bank insolvent. At the same time, the informational asymmetries inherent in banking mean that depositors do not know whether a particular sign of bank problems (such as long lines of people seeking to withdraw their funds) is an indication that the bank is insolvent. Finally, the maturity mismatch of bank assets and liabilities means a bank does not have sufficient liquid assets to pay off more than a very small fraction of its liabilities at any given time. If a large number of depositors simultaneously seek to withdraw their funds from the same bank, that bank must find new sources of liquidity, and this may entail selling off its loans in a "fire sale" environment. As Diamond and Dybvig famously demonstrated, bank runs can thereby cause even healthy, well-managed,

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Bank of Minneapolis, Working Paper No. 320, 1988). Money creation and payment services, which I discuss later in this Article, are also key functions of banks. *See* CARNELL ET AL., *supra* note 7, at 39–43.

14. *See* Bernanke & Gertler, *supra* note 13, at 1–2.

15. *Id*.

16. *See id.* at 2. As Bernanke and Gertler note, the high degree of debt used to fund bank lending is interconnected with the informational asymmetry inherent to banking. Since a bank has vastly superior information about the status of its loan portfolio, a principal-agent problem exists in which outsiders may be reluctant to accept equity shares that entitle them to a residual share of the bank's profits, since the value of these are contingent on this information. *Id*. at 2–4.

17. As Patricia McCoy succinctly states, "The unstable balance sheet of banks is not a quirk. Rather, it is inherent to a key economic function of banks, which is providing financial liquidity." Patricia A. McCoy, The Moral Hazard Implications of Deposit Insurance: Theory and Practice 4 (Feb. 18, 2007) (unpublished manuscript prepared for presentation at Seminar on Current Developments in Monetary and Financial Law), *available at* http://works.bepress.com/patricia_mccoy1/18/. The fact that banks are so fragile raises the question of whether banks are necessary. There is broad literature on the value provided by banks. Generally, banks are thought to serve several key functions in capitalist economies, whose benefits far outweigh the negative external costs created by bank runs and panics. The maturity or liquidity transformation provided by banks, which is a key factor in their vulnerability to runs and panics, takes unproductive excess capital and redirects it to productive purposes. Banks also play an essential role in the regulation of the money supply, as their core activity of financial intermediation is essentially one of creating money. Banks also serve a vital role in the payments system. *See, e.g.*, CARNELL ET AL., *supra* note 7, at 54–56; Morgan Ricks, *Regulating Money Creation After the Crisis*, 1 HARV. BUS. L. REV. 75, 76 (2011).

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well-capitalized banks to fail, by forcing them to liquidate profitable assets at a loss.[18] In the aftermath of a bank run, it is sometimes difficult to tell whether a bank's failure was because it was already insolvent from credit losses, or its insolvency was only caused by a lack of liquidity.

Because of this dynamic, bank runs can be self-fulfilling prophecies. As Bank of England Governor Sir Mervyn King has said, "it [is] not rational to start a bank run[,] but [it is] rational to participate in one once it has started."[19] Once a bank run has started, it does not matter whether this run is based on economic fundamentals or not, as the liquidity shortfalls created by a bank run can themselves cause insolvency. Depositors are not well positioned to know whether a bank being run upon has a weak or strong investment portfolio, but they do know that those who are last to withdraw their funds will find themselves with the largest losses.[20]

Moreover, bank runs can quickly lead to the problem of contagion, in which a run on one bank causes deteriorating confidence among depositors at other banks, leading to further bank runs. If these runs reach a critical mass, they can cause systemic dislocation and large economic losses, as banks across the system are forced to fire sale illiquid assets at a loss in order to meet increasing redemptions by depositors. In other words, contagion can quickly turn runs on individual banks into system-wide banking panics.[21] Such banking panics can lead to enormous costs across

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18. *See* Diamond & Dybvig, *supra* note 13. Diamond and Dybvig suggest that bank runs could be triggered by anything, such as a "bad earnings report, a commonly observed run at some other bank, a negative government forecast, or even sunspots." *Id.* at 410. This "sunspot" model of bank runs contrasts with the "information-driven" model of bank runs, in which runs are the result of some depositors responding to newly available information about the riskiness of an institution. *See generally* Charles W. Calomiris & Charles M. Kahn, *The Role of Demandable Debt in Structuring Optimal Banking Arrangements*, 81 AM. ECON. REV. 497 (1991); Chari & Jagannathan, *supra* note 13. Calomiris and Gorton have a good summary of the debate between advocates of the sunspot model and those arguing for the information-driven model of banking panics. Charles W. Calomiris & Gary Gorton, *The Origins of Banking Panics: Models, Facts, and Bank Regulation*, *in* FINANCIAL MARKETS AND FINANCIAL CRISES 109, 109–11, 120–29 (R. Glenn Hubbard ed., 1991). Regardless of which side of the debate is correct, it is worth noting that healthy banks are vulnerable to runs, as even under the information-driven view of bank runs, it is generally undisputed that false information can cause runs as easily as accurate information. *Id.*

19. Wolfgang Münchau, *Europe Is Risking a Bank Run*, FIN. TIMES (Mar. 17, 2013, 8:25 PM), http://www.ft.com/intl/cms/s/0/b501c302-8cea-11e2-aed2-00144feabdc0.html#axzz3X1eIf9RH.

20. *See generally* Diamond & Dybvig, *supra* note 13.

21. As Calomiris and Gorton note, the terms "bank run" and "banking panic" are somewhat ill-defined and occasionally used interchangeably. Calomiris & Gorton, *supra* note 18, at 112. Consistent with Calomiris and Gorton, this Article generally uses the term "bank run" to describe a sudden surge of redemption requests by depositors and other short-term liability holders of a *single* bank, and uses the term "banking panic" to describe an event where runs occur contemporaneously on a *large number* of banks. *Id.*

the broader economy, as we experienced in the Great Depression.[22]

Federal deposit insurance, which was first introduced in the 1930s,[23] effectively solves the problem of banking panics by providing depositors with a credible source of confidence their funds will be repaid and thus removing any credit risk-related reasons to withdraw their funds from banks. Indeed, the first several decades following the introduction of federal deposit insurance were an era of remarkable and unprecedented financial stability. Bank runs became virtually nonexistent,[24] and the U.S. banking system did not experience a banking panic until 2008.[25] There were also very few bank failures until the 1980s.[26] Perhaps as a result of

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22. The banking panics of the Great Depression led to unemployment rates near twenty-five percent, and real GDP declines of more than twenty-five percent from peak-to-trough. *See* Christina D. Romer, Lessons from the Great Depression for Economic Recovery in 2009 (Mar. 9, 2009) (unpublished remarks prepared for presentation at the Brookings Institution), *available at* www.brookings.edu/~/media/events/2009/3/09%20lessons/0309_lessons_romer.pdf. As Reinhart and Rogoff have observed in their comprehensive review of financial crises, banking panics inevitably lead to enormous macroeconomic costs, resulting in sharp decreases in tax revenues that, on average, cause government debt to increase by eight to six percent in the three years following such a panic. CARMEN M. REINHART & KENNETH S. ROGOFF, THIS TIME IS DIFFERENT: EIGHT CENTURIES OF FINANCIAL FOLLY 142 (2009).

23. Banking Act of 1933, Pub. L. No. 73-66, 48 Stat. 162 (codified as amended in scattered sections of 12 U.S.C.) (establishing the Federal Deposit Insurance Corporation to provide deposit insurance for banks). Federal deposit insurance for thrifts was introduced with the National Housing Act of 1934's creation of the Federal Savings & Loan Insurance Corporation (FSLIC), which offered deposit insurance that was mandatory for federally chartered thrifts and optional for state chartered thrifts. National Housing Act of 1934, 12 U.S.C. § 1716 et seq. (2012). *See also* H.R. REP. NO. 101-54, pt. 2, at 3 (1989), *reprinted in* 1989 U.S.C.C.A.N. 351; FEDERAL DEPOSIT INSURANCE CORPORATION, THE FIRST FIFTY YEARS: A HISTORY OF THE FDIC 1933–1983 3–5 (1984), *available at* http://www.fdic.gov/bank/analytical/firstfifty/index.html.

24. Bank runs became a rarity following the introduction of federal deposit insurance and were typically confined to uninsured creditors (such as senior unsecured bank creditors or depositors with holdings in excess of the deposit insurance limit). *See* McCoy, *supra* note 17, at 8. As Friedman and Schwartz stated, federal deposit insurance "has succeeded in achieving what had been a major objective of banking reform for at least a century, namely, the prevention of banking panics." MILTON FRIEDMAN & ANNA JACOBSON SCHWARTZ, A MONETARY HISTORY OF THE UNITED STATES 1867–1960, at 440 (1963).

25. *See* Gary Gorton, Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007, at 2–3 (May 9, 2009) (unpublished paper prepared for the Federal Reserve Bank of Atlanta's 2009 Financial Markets Conference); Philippe Madiés, *An Experimental Exploration of Self-Fulfilling Banking Panics: Their Occurrence, Persistence, and Prevention*, 79 J. BUS. 1831, 1831–32 (2006) (stating that "[s]ince 1933, the United States has known a few isolated and sporadic bank runs but no further banking panics.").

26. *See* Michael C. Keeley, *Deposit Insurance, Risk, and Market Power in Banking*, 80 AM. ECON. REV. 1183, 1183–85 (1990); Alan J. Marcus, *Deregulation and Bank Financial Policy*, 8 J. BANKING & FIN. 557 (1984). As economist Alan J. Marcus described in 1984, the empirical evidence suggested that banks did not take on excessive risk as moral hazard theory would have predicted. Marcus, *supra*. A review of the empirical literature undertaken in 1990 by economist Michael C. Keeley came to a similar conclusion. Keeley, *supra*.

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the success of the U.S. experience, government deposit insurance programs were universally established throughout the developed world.[27]

B. Market Discipline as a Critique of Government Guarantees

Given the broad acceptance today of the theory of market discipline, it is easy to assume that market discipline has always been a core tenet of banking regulatory policy. But the primacy of this doctrine is actually a relatively recent phenomenon, which largely began as a criticism of the distortive effects of government guarantees of bank liabilities.[28] Beginning in the late 1960s, as U.S. banks began to take on increased risk,[29] a growing number of scholars began to criticize federal deposit insurance for eliminating the incentives of depositors to monitor and discipline banks, thus leading to a wholesale mispricing of bank risk.[30] The rise of market discipline paralleled the rise of the "efficient markets hypothesis," which

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27. By 2008, every developed country except Australia, New Zealand, and Israel had adopted explicit government-backed deposit insurance. *See* WORLD BANK, DEPOSIT INSURANCE AROUND THE WORLD: ISSUES OF DESIGN AND IMPLEMENTATION 5 (Asli Demirgüç-Kunt, Edward J. Kane & Luc Laeven eds., 2008). Moreover, as Demirgüç-Kunt et al. noted, "every country has a de facto implicit deposit insurance scheme (IDIS) in place since governments get pressed for relief at the breakout of a large systemic banking distress." Asli Demirgüç-Kunt, Baybars Karacaovali & Luc Laeven, *Deposit Insurance Around the World: A Comprehensive Database* 3 (The World Bank, Working Paper No. 3628, 2005). In response to the 2008 financial crisis, Australia and New Zealand installed temporary explicit government insurance for bank deposits and wholesale funding. *See generally* Ameeta Jain et al., *Insuring for a Crisis: Deposit Insurance and the GFC, the Australian and New Zealand Experience*, 31 ECON. PAPERS 359, 359 (2012).

28. It is worth noting that there were some proto-market discipline criticisms of federal deposit insurance at the time of its introduction, as some argued that this legislation would eliminate the natural incentives of depositors to monitor the quality of their bank's management. *See* Mark D. Flood, *The Great Deposit Insurance Debate*, 74 FED. RES. BANK ST. LOUIS REV. 51, 59–61 (1992). As Flood notes, the American Bankers Association argued at the time that federal deposit insurance would lead to a "lack of discrimination as between good and bad banking." *Id.* at 60–61 (internal quotation marks omitted).

29. *See* Keeley, *supra* note 26; Marcus, *supra* note 26. Keeley and Marcus have argued that the increased risk-taking in the banking industry that occurred during this period was the result of the reduced value of bank charters, due to increasing competition from money market funds and high inflation and interest rates.

30. *See, e.g.*, Kenneth E. Scott & Thomas Mayer, *Risk and Regulation in Banking: Some Proposals for Federal Deposit Insurance Reform*, 23 STAN. L. REV. 857, 861–68 (1971) (arguing that deposit insurance was mispriced); John H. Kareken & Neil Wallace, *Deposit Insurance and Bank Regulation: A Partial Equilibrium Exposition* (Fed. Reserve Bank of Minneapolis, Staff Rep. No. 16, 1977) (arguing that federal deposit insurance had led to increased risk-taking and a misallocation of resources); Mark J. Flannery, *Deposit Insurance Creates a Need for Bank Regulation*, FED. RES. BANK OF PHILADELPHIA BUS. REV., Jan.–Feb. 1982, at 17, 17 (arguing that restrictive bank regulations are best seen as "an effort to undo (or at least to limit) the distortive impact" of federal deposit insurance, which gives bankers an "artificial incentive to undertake more risk than they would in an unregulated and uninsured free market"); *Capital Investment*, *supra* note 11 (arguing that mispriced deposit insurance had effectively replaced bank capital, leading to increased risk).

generally asserts that financial prices accurately reflect all publicly available information.[31] Indeed, the theory of market discipline is best understood as a corollary of the efficient markets hypothesis, insofar as one of its core assumptions is that the pricing of banking liabilities reflects all publicly available information about the bank's risk.[32] More broadly, critics of the regulatory regime in place for banks increasingly challenged the prevailing wisdom, which had dominated banking economics since the Great Depression, that banks served a special function, arguing that the unique attributes of banking were a byproduct of the special regulatory treatment of banks rather than something intrinsic to financial intermediation.[33] In this view, the special treatment of banks was itself the problem with banking regulation, with the solution being to adopt the same capital markets-based approach to the regulation of banks that governed other financial actors.

The market discipline critique of federal deposit insurance gained rapid acceptance in the 1980s due in large part to the struggles of commercial banks and particularly the thrift industry. The stagflation of the late 1970s and early 1980s had put heavy competitive and earnings pressure on U.S. depository institutions, and the deregulation of the early 1980s allowed U.S. banks and thrifts to take on much greater risk.[34] The lower profitability and more lenient regulatory oversight that resulted led to a large number of failures of depository institutions, which became known as the savings and loan crisis.[35] The United States had not experienced so many failures since the 1930s.[36]

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31. *See* ROBERT J. SHILLER, IRRATIONAL EXUBERANCE 177 (2d ed. 2005). There are three different versions of the efficient markets hypothesis: a weak form, in which only historical price data is incorporated into financial prices; a semi-strong form, in which all publicly available data is incorporated into financial prices; and a strong form, in which all available information, including data available only to insiders, is incorporated into financial prices. *See generally* Fama, *supra* note 8.

32. *See* ASHCRAFT & BLEAKLEY, *supra* note 8. Eugene Fama, generally credited with developing the efficient markets hypothesis, has posited that a perfectly competitive, unregulated banking system would lead to accurate risk-based pricing of deposits, with deposit rates priced equivalently to similarly risky investments. Eugene F. Fama, *Banking in the Theory of Finance*, 6 J. MONETARY ECON. 39 (1980).

33. *See* Tim S. Campbell & William A. Kracaw, *Information Production, Market Signalling, and the Theory of Financial Intermediation*, 35 J. FIN. 863, 864 (1980) (noting that Fama and others had developed the hypothesis that banks "are merely portfolio managers which would, in an unregulated competitive market, earn a competitive management fee. It follows that the unique kind of financial intermediation industry observed in the United States is a product of the regulatory environment.").

34. *See generally* David Min, *How Government Guarantees Promote Housing Finance Stability*, 50 HARV. J. ON LEGIS. 437 (2013).

35. *Id.*

36. *See* Timothy Curry & Lynn Shibout, *The Cost of the Savings and Loan Crisis: Truth and Consequences*, 13 FDIC BANKING REV., no. 2, 2000, at 26, 33 ("The savings and loan crisis of the

Washington University Open Scholarship

By the 1990s, the theory of market discipline had come to dominate the banking literature, both in economics[37] and law.[38] As discussed in greater detail below, market discipline was formally introduced into both U.S. and international banking regulation with the enactment of the Federal Deposit Insurance Corporate Improvement Act of 1991 (FDICIA) and the announcement of Basel II, respectively.

Generally speaking, proponents of this doctrine have made two related assertions: first, that depositors and creditors could meaningfully rein in risk at banks by acting in their own self-interest; second, that government guarantees on bank liabilities[39] eliminated the incentives for these investors to provide such market discipline, creating a form of moral hazard.[40] In short, as Calomiris and Kahn wrote in one of the seminal papers on market discipline, in the absence of federal deposit insurance

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1980s and early 1990s produced the greatest collapse of U.S. financial institutions since the Great Depression. Over the 1986–1995 period, 1,043 thrifts with total assets of over $500 billion failed.”).

37. *See, e.g.*, Herbert Baer & Elijah Brewer, *Uninsured Deposits as a Source of Market Discipline: Some New Evidence*, FED. RES. BANK OF CHICAGO ECON. PERSP., Sept.–Oct. 1986, at 23 (suggesting that uninsured deposits and CDs could serve as an important source of market discipline for banks); EDWARD J. KANE, THE S&L INSURANCE MESS: HOW DID IT HAPPEN? (1989); Calomiris & Kahn, *supra* note 18 (arguing that demandable debt, such as demand deposits, serve an important role in disciplining banks); JAMES R. BARTH, THE GREAT SAVINGS AND LOAN DEBACLE (1991) (arguing that federal deposit insurance caused thrifts to take on greater risk); Richard J. Cebula, *The Impact of Federal Deposit Insurance on Savings and Loan Failures*, 59 S. ECON. J. 620, 627 (1993) (concluding that federal deposit insurance had “adversely impacted upon the economic health of the [savings and loan] industry”); Richard M. Salsman, *The Collapse of Deposit Insurance—and the Case for Abolition*, AM. INST. FOR ECON. RES. ECON. EDUC. BULL., Sept. 1993, at 1, 3 (arguing that federal deposit insurance was fatally flawed as a “perverse system that promoted excessive risk-taking”); *see also infra* notes 39–105.

38. *See, e.g.*, Richard Scott Carnell, *A Partial Antidote to Perverse Incentives: The FDIC Improvement Act of 1991*, 12 ANN. REV. BANKING L. 317, 319 (1993) (asserting that deposit insurance “impairs the discipline depositors would otherwise exert over depository institutions’ risk-taking”); Jonathan R. Macey & Geoffrey P. Miller, *Bank Failures, Risk Monitoring, and the Market for Bank Control*, 88 COLUM. L. REV. 1153, 1165 (1988) (arguing that deposit insurance removed the incentives for depositors to “demand that banks refrain from engaging in risky investment strategies” and thus encouraged excessive risk-taking by banks); Macey & Garrett, *supra* note 9 (arguing generally that deposit insurance diminishes market discipline and encourages greater risk-taking).

39. In addition to the guarantees explicitly offered to FDIC-insured depositors, it was widely believed that uninsured depositors and senior unsecured creditors, particularly those that were investors in large banks, enjoyed an implicit guarantee from the FDIC. This was a result of the FDIC’s protection of creditors at so-called “too big to fail” banks, as well as its general practice of promoting purchase-and-assumption transactions of failed banks, a practice which shielded uninsured depositors and creditors from losses, at the expense of the FDIC’s Deposit Insurance Fund. *See generally* John R. Hall et al., *Did FDICIA Enhance Market Discipline? A Look at Evidence from the Jumbo-CD Market* (Fed. Reserve Bank of St. Louis, Working Paper No. 2002–04), *available at* https://www.fdic.gov/bank/analytical/CFR/2004/sept/CFRCP_2004-11_Hall.pdf. The FDIC Improvement Act of 1991, discussed *infra* notes 107–11 and accompanying text, was in part meant to end this practice of making uninsured creditors whole.

40. *See, e.g.*, Baer & Brewer, *supra* note 37.

and its distortive effects, investors could discipline risky banks by '"vot[ing] with their feet'"—their "withdrawal of funds is a vote of no-confidence in the activities of the banker."[41] As described below, almost all of this literature has been focused on the market discipline exerted by depositors and senior unsecured creditors of banks.

C. The Pre-Crisis Literature on Market Discipline

Despite its ready acceptance into the mainstream following the aftermath of the savings and loan crisis, the theory of market discipline remained controversial for some time with many critics claiming that improving the conditions for market discipline would not actually reduce bank risk.[42] The question of whether market discipline actually works as hypothesized has subsequently been the subject of extensive empirical and theoretical research, with the analysis focusing on two key questions. First, are bank investors able to accurately monitor changes in bank risk and incorporate those assessments into the bank's security prices? Second, do these actions actually influence the behavior of bank managers in a way that reduces risk? [43]

In summary, the literature generally finds that despite the presence of information asymmetry issues, bank investors do exert market discipline once banks begin to exhibit clear signs of trouble. However, there is a dearth of evidence and significant dispute around the question of whether market discipline actually affects bank risk-taking. This is due in large part to the *ex post* nature of market discipline in banking, which typically is exerted only after credit losses begin to threaten a bank's solvency, long after risk is actually incurred.

1. Are Investors Able to Monitor Risky Banks?

One of the threshold criticisms of market discipline is the claim that bank investors are not well suited to monitor and act on changes in risk

41. Calomiris & Kahn, *supra* note 18, at 497.

42. *See, e.g.*, Garten, *supra* note 10, at 131 (concluding that market discipline as wielded by depositors would not reduce bank risk); Hall et al., *supra* note 39, at 1 (noting that the evidence to date is inconclusive that market discipline works as its advocates claim).

43. *See* Robert R. Bliss & Mark J. Flannery, *Market Discipline in the Governance of U.S. Bank Holding Companies: Monitoring versus Influencing*, *in* PRUDENTIAL SUPERVISION: WHAT WORKS AND WHAT DOESN'T 107, 140 (Frederic S. Mishkin ed., 2001) ("Market discipline implies two quite distinct notions, which we have tried to separate: private investors' ability to understand (monitor) a financial firm's true condition, and their ability to influence managerial actions in appropriate ways.").

Washington University Open Scholarship

due to the particular characteristics of investors in bank liabilities,[44] the collective action problem facing these investors, who tend to be heterogeneous and small,[45] and the information asymmetry inherent to banks, discussed above. Because many bank investors, particularly retail depositors, are unsophisticated, it has been argued that they are poorly equipped to receive risk-related information about their banks and likely to misinterpret such information because of a lack of financial literacy.[46]

There has been extensive empirical research on this topic, with the vast majority of studies concluding that, despite the information asymmetry problems they face, uninsured depositors do attempt to monitor and discipline risky banks either by withdrawing their funds or by demanding higher interest rates.[47] For example, Billet et al. (1998),[48] Park and Peristiani (1998),[49] Jordan (2000),[50] Goldberg and Hudgins (2001),[51] Calomiris and Wilson (2004),[52] Davenport and McDill (2005),[53] Maechler

44. *See, e.g.*, Garten, *supra* note 10, at 138 (arguing that for most retail depositors, risk is only one of many considerations in choosing (or choosing not to switch from) a bank, with other considerations including convenience, relationships with bank officers, and switching costs).

45. *See, e.g.*, S. Nagarajan & C.W. Sealey, *Can Delegating Bank Regulation to Market Forces Really Work?* (N.Y. Univ. Stern Sch. of Bus., Working Paper No. FIN-97-8, 1997) (finding that subordinated creditors and uninsured depositors will not provide optimal levels of market discipline because their interests are not large enough to monitor banks at an efficient level); Campbell & Kracaw, *supra* note 33, at 881 (concluding that the production of risk-related information about banks "will not be done efficiently or at least cost" in part because investors have limited resources).

46. *See* Maria Semenova, Market Discipline and Information Costs: Evidence from a Russian Depositor Survey 2 (2011) (unpublished manuscript), *available at* http://gdresymposium.eu/papers/SemenovaMaria.pdf.

47. *But see* Hall et al., *supra* note 39 (finding no evidence that jumbo CDs respond significantly to changes in bank risk, and arguing that past studies that have found such a relationship have potentially conflated the response of jumbo CD investors to regulatory actions with their response to market signals of risk).

48. Matthew T. Billett, Jon A. Garfinkel & Edward S. O'Neal, *The Cost of Market Versus Regulatory Discipline in Banking*, 48 J. FIN. ECON. 333, 349–51 (1998) (finding that banks experience a significant decline in uninsured liabilities around the time of credit ratings downgrades).

49. Sangkyun Park & Stavros Peristiani, *Market Discipline by Thrift Depositors*, 30 J. MONEY, CREDIT & BANKING 347, 351–63 (1998) (finding that uninsured depositors (and to a lesser extent, insured depositors) avoid failing depository institutions).

50. John S. Jordan, *Depositor Discipline at Failing Banks*, NEW ENG. ECON. REV., Mar.–Apr. 2000, at 15, 20–23 (finding that New England-area banks experienced a sharp decline in the volume of uninsured jumbo CDs (certificates of deposit) in the eight quarters prior to their failure).

51. Lawrence G. Goldberg & Sylvia C. Hudgins, *Depositor Discipline and Changing Strategies for Regulating Thrift Institutions*, 63 J. FIN. ECON. 263, 267–73 (2002) (finding that uninsured deposits declined sharply in the year preceding the resolution of a failing depository institution).

52. Charles W. Calomiris & Berry Wilson, *Bank Capital and Portfolio Management: The 1930s "Capital Crunch" and Scramble to Shed Risk*, 77 J. BUS. 421, 433–46 (2004).

53. Andrew Davenport & Kathleen McDill, *The Depositor Behind the Discipline: A Micro-Level Case Study of Hamilton Bank* 1, 14–20 (FDIC Ctr. for Fin. Research, Working Paper No. 2005-07). In

and McDill (2006),[54] and Shimizu (2009)[55] have found that banks on the verge of failure experience an exodus of uninsured deposits.[56] Their findings are supported by Baer and Brewer (1986),[57] Hannan and Hanweck (1988),[58] Cargill (1989),[59] Ellis and Flannery (1992),[60] Kutner (1992),[61] Cook and Spellman (1994),[62] Brewer and Mondschean (1994),[63] and Hess and Feng (2007),[64] who find that riskier banks pay higher rates on uninsured deposits.

In large part because of the concerns around information asymmetry for depositors, regulators have actively encouraged the issuance of bank subordinated debt with the intention of creating another, perhaps more powerful, source of market discipline.[65] Unlike demand deposits, subordinated debt is not insured, and its investors are typically more sophisticated than depositors. Thus, at least in theory, subordinated debt should provide a more effective form of market discipline than depositor

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addition to finding that uninsured depositors exert market discipline, Davenport and McDill also conclude, contrary to most of the literature, that *insured* depositors also exert market discipline. *Id.*

54. Andrea M. Maechler & Kathleen M. McDill, *Dynamic Depositor Discipline in US Banks*, 30 J. BANKING & FIN. 1871, 1879–93 (2006).

55. Katsutoshi Shimizu, *Is the Information Produced in the Stock Market Useful for Depositors?*, 6 FIN. RES. LETTERS 34, 36–38 (2009).

56. Generally speaking, uninsured deposits are those in excess of the FDIC's deposit insurance limit. *See* S. Blaire Bean & John F. Bovenzi, *Treatment of Uninsured Depositors and Other Receivership Creditors*, *in* MANAGING THE CRISIS: THE FDIC AND RTC EXPERIENCE 245, 254–56 (1998) ("Uninsured deposit claims are claims filed by depositors whose accounts exceeded the federally insured limit.").

57. Baer & Brewer, *supra* note 37, at 26–30.

58. Timothy H. Hannan & Gerald A. Hanweck, *Bank Insolvency Risk and the Market for Large Certificates of Deposit*, 20 J. MONEY, CREDIT AND BANKING 203, 208–11 (1988).

59. Thomas F. Cargill, *CAMEL Ratings and the CD Market*, 3 J. FIN SERVS. RES. 347, 352–57 (1989).

60. David M. Ellis & Mark J. Flannery, *Does the Debt Market Assess Large Banks' Risk?: Time Series Evidence from Money Center CDs*, 30 J. MONETARY ECON. 481, 489–501 (1992).

61. George W. Kutner, *CD Market Response to Continental Illinois' Liquidity Crisis and Its Subsequent Bailout*, 28 MID-ATLANTIC J. BUS. 133 (1992).

62. Douglas O. Cook & Lewis J. Spellman, *Repudiation Risk and Restitution Costs: Toward Understanding Premiums on Insured Deposits*, 26 J. MONEY, CREDIT & BANKING 439, 448–56 (1994).

63. Elijah Brewer III & Thomas H. Mondschean, *An Empirical Test of the Incentive Effects of Deposit Insurance: The Case of Junk Bonds at Savings and Loan Associations*, 26 J. MONEY, CREDIT & BANKING 146, 152–56 (1994).

64. Kurt Hess & Gary Feng, *Is There Market Discipline for New Zealand Non-Bank Financial Institutions?*, 17 J. INT'L FIN. MARKETS, INSTITUTIONS & MONEY 326 (2007).

65. *See* DANIEL K. TARULLO, BANKING ON BASEL: THE FUTURE OF INTERNATIONAL FINANCIAL REGULATION 231–37 (2008); *see also* Douglas D. Evanoff & Larry D. Wall, *Subordinated Debt and Bank Capital Reform* (Fed. Reserve Bank of Chicago, Working Paper No. 2000-07) (proposing that banks be required to issue subordinated debt to facilitate market discipline).

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discipline, all else being equal.[66] The empirical literature on subordinated debt discipline generally finds that subordinated debt holders, like uninsured depositors, do attempt to exert market discipline on high-risk banks.[67]

Market discipline exerted by other banks—so-called interbank discipline—has also been highlighted as a potentially strong source of market discipline for a number of reasons.[68] First, interbank loans are typically short duration (often overnight), which allows bank lenders to immediately react to new information by demanding higher yields or refusing to roll over their loans.[69] Second, interbank loans are uninsured and often uncollateralized, providing bank lenders with ample incentive to monitor the risk of their counterparties.[70] Third, it is generally believed that banks are in a better position than other types of investors to analyze the risks of other banks because they themselves well understand the business of banking.[71] Fourth, interbank loans are often utilized by smaller banks, whom often do not issue subordinated debt.[72] Fifth, interbank loan markets (such as repo) are fairly deep and liquid, which allows for more efficient market responses[73] While the empirical literature on interbank discipline is not as well developed as the literature on subordinated debt discipline, it has been consistent in finding that banks do attempt to

66. That being said, subordinated debt is better suited for large, systemically significant banks than it is for smaller institutions, because of the greater liquidity that exists for the former. *See* BD. OF GOVERNORS OF FED. RESERVE SYS. & U.S. DEP'T OF TREASURY, THE FEASIBILITY AND DESIRABILITY OF MANDATORY SUBORDINATED DEBT 7–20 (2000).

67. *See, e.g.*, Mark J. Flannery & Sorin M. Sorescu, *Evidence of Bank Market Discipline in Subordinated Debenture Yields: 1983–1991*, 51 J. FIN. 1347 (1996); Gary Gorton & Anthony M. Santomero, *Market Discipline and Bank Subordinated Debt*, 22 J. MONEY, CREDIT & BANKING 119 (1990); Donald P. Morgan & Kevin J. Stiroh, *Bond Market Discipline of Banks: Is the Market Tough Enough?* (Fed. Reserve Bank of N.Y., Staff Report No. 95, 1999). *But see* Robert B. Avery, Terrence M. Belton & Michael A. Goldberg, *Market Discipline in Regulating Bank Risk: New Evidence from the Capital Markets*, 20 J. MONEY, CREDIT & BANKING 597 (1988) (finding no relationship between bank bond yields and observable measures of risk); Diana Hancock & Myron L. Kwast, *Using Subordinated Debt to Monitor Bank Holding Companies: Is It Feasible?*, 20 J. FIN. SERVS. RES. 147 (2001) (finding that subordinated debt discipline is less consistent for illiquid bonds).

68. *See* Thomas B. King, *Discipline and Liquidity in the Interbank Market*, 40 J. MONEY, CREDIT & BANKING 295 (2008).

69. *See* Craig H. Furfine, *Banks as Monitors of Other Banks: Evidence from the Overnight Federal Funds Market*, 74 J. BUS. 33, 36 (2001).

70. *Id*.

71. *See* Isabelle Distinguin, Tchudjane Kouassi & Amine Tarazi, *Interbank Deposits and Market Discipline: Evidence from Central and Eastern Europe*, 41 J. COMP. ECON. 544, 546 (2013).

72. *Id*. at 737–38.

73. *See generally* Kathryn Judge, *Interbank Discipline*, 60 UCLA L. REV. 1262 (2013).

monitor and enforce market discipline with respect to their exposure to liabilities issued by other banks.[74]

In summary, while there are some empirical studies to the contrary, on the whole, most of the empirical research has found that market discipline may be an effective tool in monitoring and identifying firms that are at risk of failure.[75] It is, however, important to understand how this market discipline is exerted. As Bliss (2004) has noted, market discipline can potentially be either *ex post* or *ex ante*.[76] *Ex post* discipline arises in response to the actions of bank managers, whereas *ex ante* discipline occurs contemporaneously with the actions of bank managers (and thus incentivizes outcomes consistent with the markets' interests).[77]

It is well understood that the mechanisms by which market discipline in banking is exerted—an increase in the yields demanded by creditors and the withdrawal of funds—are *ex post* forms of discipline, insofar as they occur after the bank has already taken on risk.[78] Advocates of market discipline argue that such *ex post* discipline also provides some *ex ante* discipline, insofar as bank managers may consider the future effects of their decisions to take on greater risk, but acknowledge that any such *ex ante* effects are indirect and attenuated.[79]

The *ex post* nature of market discipline is further exacerbated by the fact that such discipline occurs in response to lagging indicators. As is well described in the theoretical and empirical literature, market discipline by depositors, subordinated creditors, and bank creditors generally occurs in response to signs of potential bank default, such as the amount of

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74. *See, e.g.*, Jean-Charles Rochet and Jean Tirole, *Interbank Discipline and Systemic Risk*, 28 J. MONEY, CREDIT AND BANKING 733 (1996); Distinguin, *supra* note 71 (concluding that market discipline is exerted with respect to interbank deposits); Furfine, *supra* note 69, at 34 (finding that "borrowing banks with higher profitability, higher capital ratios, and fewer problem loans pay lower interest rates on federal funds loans"); King, *supra* note 68 (finding that failing banks pay more for interbank loans and rely less on these interbank loans than healthy banks).

75. *See, e.g.*, Bliss & Flannery, *supra* note 43, at 109 ("Extensive evidence supports the hypothesis that markets can effectively identify a firm's true financial condition, at least on a contemporaneous basis.").

76. This taxonomy was originally proposed by Bliss (2004). Robert R. Bliss, *Market Discipline: Players, Processes and Purposes*, *in* MARKET DISCIPLINE ACROSS COUNTRIES AND INDUSTRIES 37, 38–39 (Claudio Borio et al. eds., 2004).

77. *Id*.

78. *Id*. at 38–39. This taxonomy builds on prior work done by Bliss and Flannery, who articulated two distinct concepts in market discipline—the ability of investors to *monitor* bank risk (which occurs *ex post*), and the effect that investor actions can have in *influencing* bank behavior (which occurs *ex ante*). Bliss & Flannery, *supra* note 43.

79. *See, e.g.*, Flannery, *supra* note 12, at 114.

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nonperforming loans,[80] bond rating downgrades,[81] drops in profitability,[82] negative regulatory actions,[83] asset volatility,[84] and other measures that are seen as predictive of impending bank failure.[85] But of course, there is frequently a long lag between the decisions of bank managers to take on risk and the manifestation of those decisions into visible signs of bank distress. As such, even if market discipline is actually exerted by investors, it may not actually impact bank risk-taking. As one commentator has argued, it may be the case that creditors wield market discipline "as soon as a bad realization of the investment becomes apparent ex post, [but] their behavior will not prevent inefficiently high-risk choices by the bank ex ante."[86]

2. *Does Market Discipline Affect Bank Risk-Taking?*

The question of whether *ex post* market discipline can affect *ex ante* bank actions can be phrased another way: Does market discipline directly affect bank risk-taking?[87] Unfortunately, as a number of commentators

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80. *See, e.g.*, Flannery & Sorescu, *supra* note 67.

81. *See, e.g.*, Billett et al., *supra* note 48.

82. *See, e.g.*, Hirofumi Uchida & Mitsuhiko Satake, *Market Discipline and Bank Efficiency*, 19 J. INT'L FIN. MARKETS, INSTS. & MONEY 792 (2009).

83. *See, e.g.*, R. Alton Gilbert & Mark D. Vaughan, *Do Depositors Care About Enforcement Actions?* (Fed. Reserve Bank of St. Louis, Working Paper No. 2000-020A).

84. *See, e.g.*, Gorton & Santomero, *supra* note 67.

85. *See, e.g.*, Hall et al., *supra* note 39 (utilizing the Federal Reserve's System to Estimate Examination Ratings ("SEER") model, which estimates the probability that a bank will fail within the subsequent two years, as a proxy for risk); King, *supra* note 68 (also utilizing SEER as a proxy for risk); Park & Peristiani, *supra* note 49 (using a proprietary set of factors to predict the likelihood of failure in the following four quarters); Maria Soledad Martinez Peria & Sergio L. Schmukler, *Do Depositors Punish Banks for Bad Behavior? Market Discipline, Deposit Insurance, and Banking Crises*, 56 J. FIN. 1029, 1035 (2001) (utilizing a set of factors similar to the CAMEL ratings used by bank regulators to assess risk, which include capital adequacy, asset quality, management quality, earnings, and liquidity).

86. Jürg M. Blum, *Subordinated Debt, Market Discipline, and Banks' Risk Taking*, 26 J. BANKING & FIN. 1427, 1438 (2002).

87. This question has been described in the literature as the difference between "direct" versus "indirect" market discipline. As the Federal Reserve and Treasury Department have described, "[d]irect market discipline is exerted through debt instruments when expected funding costs are sufficiently risk-sensitive that the anticipation of higher funding costs provides an incentive *ex ante* for the depository institution to refrain from excessive risk-taking." BD. OF GOVERNORS OF FED. RESERVE SYS. & U.S. DEP'T OF TREASURY, *supra* note 66, at 24. By way of contrast, "[i]ndirect market discipline is exerted through risk-sensitive debt instruments when (1) private parties or government supervisors monitor secondary prices of that instrument to assess the riskiness of a depository institution, and (2) such parties then take actions in response to a perceived increase in depository institution risk." *Id.* at 25. In other words, direct market discipline describes the direct effects of market discipline on bank risk-taking, while indirect market discipline describes the effects of prudential oversight taken in response to market signals.

have noted, the vast majority of the empirical research conducted around market discipline has focused on whether depositors and other investors actually exert market discipline and not on whether this discipline influences bank behavior. For a number of reasons, including the difficulty of observing market influence, there is a relative paucity of research on the question of whether market discipline actually leads to reduced risk-taking by banks.[88]

The limited empirical research asserting that market discipline affects *ex ante* decision making is largely suppositional, lacking direct evidence of such a cause-and-effect relationship. For example, Maechler and McDill (2006) find that failing banks utilize less uninsured deposits and conclude that depositor discipline affects the availability of bank financing.[89] As they note, these findings do "not provide conclusive evidence on the effectiveness of depositor discipline in *reducing* banks' risk appetite," but do support the hypothesis that such discipline might affect bank behavior by "effectively constrain[ing] bank managers' behavior."[90] Other studies seeking to address the question of whether market discipline exerted by bank investors actually impacts bank risk have been similarly speculative in showing causation.[91]

In short, at this point there is no direct evidence that *ex post* market discipline affects the *ex ante* decisions of bank managers in taking on risk. The handful of studies that have sought to establish a causal relationship between market discipline and reduced risk have generally been limited to showing that market discipline could theoretically lead bank managers to reduce risk, without actually demonstrating that this occurs.

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88. *See* Bliss & Flannery, *supra* note 43, at 140 (stating that "specific tests of investor influence [on bank risk] have been . . . limited" and that "empirical evidence about bondholders' ability to influence firm behavior has been lacking"); *see also* Davenport & McDill, *supra* note 53, at 5 (noting that because of "the difficulty of observing market influence, the [market discipline] literature focuses on evidence of monitoring rather than evidence of influencing").

89. Maechler & McDill, *supra* note 54, at 1895–96.

90. *Id*. at 1873–77.

91. For example, Hoggarth et al. found that banks with higher levels of deposit insurance coverage and expectations of implicit government support have lower capital levels, and speculated that there might be a causal relationship between the former (which may reduce incentives for market discipline) and the latter (a potential sign of higher risk-taking). Glenn Hoggarth, Patricia Jackson & Erlend Nier, *Market Discipline and Financial Stability*, *in* THE FUTURE OF DOMESTIC CAPITAL MARKETS IN DEVELOPING COUNTRIES 125 (Robert E. Litan et al. eds., 2003). Similarly, Distinguin et al. establish that banks with greater levels of interbank deposits have lower default rates and higher capital levels, and hypothesize a causal relationship between interbank deposits (which they contend are a potent source of market discipline) and lower risk. Distinguin et al., *supra* note 74.

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3. *Strong Form vs. Weak Form Market Discipline*

The question of whether *ex post* market discipline affects *ex ante* bank behavior has largely divided advocates of market discipline into two camps, which I refer to herein as "strong form" and "weak form" discipline, as I think this classification helps to understand the theory of market discipline.[92] Advocates of what I call "strong form" market discipline believe that the self-interested actions of bank investors drive optimal *ex ante* outcomes, and thus assert that the modern banking regulatory regime is mostly unnecessary and counterproductive, displacing the efficient outcomes that would occur in the absence of governmental intervention.[93] Under this view, banking regulation is only justified because it counteracts the moral hazard effects of federal deposit insurance; in the absence of federal deposit insurance and the market distortions it creates, banking regulation would be largely or entirely redundant, as market participants would efficiently monitor and regulate their own interests. Former Federal Reserve Chairman Alan Greenspan neatly summed up strong form market discipline when he stated, "Except where market discipline is undermined by moral hazard, owing, for example, to federal guarantees of private debt, private regulation generally is far better at constraining excessive risk-taking than is government regulation."[94]

Notably and perhaps necessarily, strong form market discipline rejects many of the key assumptions that have been central to banking regulation since the Great Depression. It has been accompanied by a good deal of self-described historical revisionism, particularly with respect to the likelihood, costs, and causes of banking panics. Some advocates of this view have challenged the previously held wisdom that competition in banking had been a key cause of pre-New Deal financial instability.[95]

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92. It should be noted that Kwan enunciates his own concept of "strong form" market discipline, which is distinct from mine. Kwan uses the term "strong form" market discipline to describe the effects of constantly available public information about risk (such as with a publicly traded company). Simon Kwan, *Testing the Strong-Form of Market Discipline: The Effects of Public Market Signals on Bank Risk* 2–4 (Fed. Reserve Bank of S.F., Working Paper No. 2004-19).

93. *See infra* notes 95–99 and accompanying text.

94. Alan Greenspan, Chairman, Fed. Reserve Bd., Remarks at the 2003 Conference on Bank Structure and Competition (May 8, 2003), *available at* http://www.federalreserve.gov/boarddocs/speeches/2003/20030508.

95. *See, e.g.*, John H. Boyd et al., *Bank Risk-Taking and Competition Revisited: New Theory and New Evidence* (Int'l Monetary Fund, Working Paper No. 06/297, 2006); John H. Boyd & Gianni De Nicoló, *The Theory of Bank Risk Taking and Competition Revisited*, 60 J. FIN. 1329 (2005); Marie-Odile Yanelle, *Banking Competition and Market Efficiency*, 64 REV. ECON. STUD. 215 (1997).

Others have argued that the costs of banking panics were vastly overstated,[96] and that previous experiences with "free banking"—banking systems in which there was no federal deposit insurance and minimal regulation—were, contrary to conventional wisdom, quite successful.[97] A few have gone so far as to argue that banking panics—the *raison d'être* of federal deposit insurance and the modern banking regulatory regime—are a historical anachronism, rendered obsolete today by financial market innovations and the provision of liquidity by the Federal Reserve.[98]

Like strong form market discipline, weak form discipline is based on the assumption that interested bank investors do provide an important monitoring function, and that this monitoring is inhibited by the moral hazard problems associated with federal deposit insurance provided to traditional banks. But the weak form view disagrees with the notion that *ex post* market discipline actually impacts *ex ante* bank risk-taking, and it also rejects the argument that market discipline is better than government regulation at actually constraining risk.[99]

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96. *See, e.g.*, Gerald P. Dwyer Jr., *Wildcat Banking, Banking Panics, and Free Banking in the United States*, FED. RES. BANK OF ATL. ECON. REV., Dec. 1996, at 1.

97. Much of the historical revisionism of free banking centered upon the "free banking" era in the United States, a twenty-six year period between the closure of the Second Bank of the United States and the enactment of the National Bank Act of 1863. *See* Arthur J. Rolnick & Warren E. Weber, *Free Banking, Wildcat Banking, and Shinplasters*, FED. RES. BANK OF MINNEAPOLIS Q. REV., Fall 1982, at 10. In an attempt to replace the banking services provided by the Second Bank, many states enacted so-called "free banking" laws, which made bank charters readily available and imposed only minimal regulation on state-chartered banks. *Id*. at 10. This period was generally thought to be a catastrophe, as states with free banking laws experienced an extraordinarily high number of bank failures. For example, in Michigan, less than two years after free banking was implemented, "all but four of Michigan's free banks closed." *Id*. at 11. Eleven of the sixteen free banks chartered in Minnesota were closed within five years, and fifty-seven of the seventy-two free banks chartered in Indiana had failed in the first few years after free banking laws were passed. *Id*. at 11–12. Even in New York, which is considered the most successful free banking experience of the period, more than twenty of the eighty banks organized in the first year of free banking had failed within three years. *Id*. at 12–13. According to most historians and economists up until the 1980s, the failure of free banking was largely caused by "wildcat" banks, which engaged in widespread fraud and intentionally issued more bank notes than their assets could support. *Id*. at 13. The self-described revisionists pushed back against this conventional wisdom by arguing both that the effects of wildcat banks were overstated and that the ultimate losses to bank note holders were not nearly as severe as had been previously thought. *See generally* Arthur J. Rolnick & Warren E. Weber, *New Evidence on the Free Banking Era*, 73 AM. ECON. REV. 1080 (1983). This historical revisionism provided some measure of empirical support to the mostly theoretical arguments asserting the benefits of competition in banking.

98. *See, e.g.*, Macey & Miller, *supra* note 38, at 1157.

99. Thus, weak form market discipline also accepts the prevailing wisdom in banking economics that there are inherent inefficiencies in banking, including the problem of panics, which are understood to create negative external costs. Under the weak form view of market discipline, federal deposit insurance solves a real and important concern—banking panics—but also creates problems of its own that must be addressed—e.g., moral hazard.

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Weak form market discipline therefore calls for keeping federal deposit insurance in place and adopting market discipline as a *supplementary* prudential tool, meant to provide under-resourced regulators with important market signals (price and liquidity changes) on bank risk.[100] As one leading expert on market discipline has stated, "[i]t seems likely that investors have a comparative advantage in monitoring, while supervisors have a comparative advantage in influencing. If this is correct, then market price signals should be used primarily to assure that supervisors act more promptly when confronted with a firm that appears troubled."[101] In other words, weak form market discipline is predicated on the idea that investors in bank-issued liabilities can provide information, primarily through pricing and liquidity changes, that can "act as an early warning signal" of any problems at banks.[102]

III. THE FAILURE OF MARKET DISCIPLINE

The financial system from 2001–2007 was perhaps ideally situated for the success of market discipline. As this Part describes in greater detail, by the early 2000s, the conditions for both weak form and strong form market discipline to succeed had been firmly established. In traditional banking, a number of important regulatory developments intended to improve the conditions for weak form market discipline were implemented, which should have created new and robust sources of market discipline and armed investors with better and more frequently updated information about bank risk.

At the same time, the rise of shadow banking—credit intermediation that falls outside of the traditional banking regulatory umbrella, and thus does not have either the prudential oversight or governmental safety nets associated with traditional banking—also established arguably the ideal conditions for strong form market discipline. Because shadow banking does not have formal government backstops, the moral hazard problem that presents itself for governmentally insured deposits did not exist.[103]

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100. *See* Flannery, *supra* note 12, at 108 (noting that many analysts "both inside and outside the regulatory agencies" were pushing for the adoption of market discipline to "supplement" traditional banking regulation).

101. *Id.* at 116.

102. *See* Mark J. Flannery & Stanislava Nikolova, *Market Discipline of U.S. Financial Firms: Recent Evidence and Research Issues*, *in* MARKET DISCIPLINE ACROSS COUNTRIES AND INDUSTRIES 87, 93 (Claudio Borio et al. eds., 2004).

103. Of course, in hindsight, it appears that many shadow banking liabilities enjoyed an implicit guarantee by virtue of their being issued by a systemically significant, or "too big to fail," financial

Moreover, shadow banking was distinct from traditional banking in a number of ways that should have ameliorated the information asymmetry issues that were understood to have been a barrier to the effectiveness of market discipline in traditional banking. The sheer scale of shadow banking—which reached a peak of $20 trillion in global liabilities, a level that significantly exceeded the size of the traditional banking system—provided a broad-scale test of strong form discipline.[104]

In short, the decade preceding the recent financial crisis was a prime laboratory for evaluating the effectiveness of both weak and strong form market discipline. And yet what we experienced was a comprehensive and nearly total failure of market discipline, as detailed in this Part. Contrary to the predictions made by advocates of strong form market discipline, investors failed to rein in bank risk-taking in the period preceding the financial crisis. More curiously and problematically, neither strong nor weak form market discipline reacted to increasing bank risk until the financial crisis was already underway, as this Part describes in some detail. Whether it was bank debt, interbank liabilities, or asset-backed securities, neither the pricing nor liquidity of these instruments reacted in a way that would have indicated higher levels of risk until after July 2007.

A. The Implementation of Weak Form Market Discipline

Following the implosion of the thrift industry in the 1980s, which most commentators attributed at least in part to major regulatory failures,[105] policymakers and regulators, both in the United States and abroad, were

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institution, or because they were part of a "too big to fail" market. As I discuss *infra* in Part IV, subsection A, the presence of these implicit, *ex post* guarantees over some shadow banking liabilities does not affect the broader conclusion that strong form market discipline failed to rein in risk within the shadow banking sector.

104. *See* Bryan J. Noeth & Rajdeep Sengupta, *Is Shadow Banking Really Banking?*, FED. RES. BANK OF ST. LOUIS REGIONAL ECONOMIST, Oct. 2011, at 8, *available at* http://www.stlouisfed.org/publications/re/articles/?id=2165. In the United States, shadow banking accounted for $6.2 trillion in known short-term liabilities in 2007, as compared to $4.3 trillion in FDIC-insured deposits in the traditional banking system. *See* Ricks, *supra* note 17, at 85. There are a number of causes attributed to the sharp rise of shadow banking, including the expansion of bank powers, the Gramm-Leach-Bliley Act's repeal of the Glass-Steagall Act, the Commodity Futures Modernization Act's exemption of swap derivatives from regulatory oversight, a hands-off approach by regulators who saw the development of shadow banking as a positive event, the shift away from bank deposits that followed the deregulation of the financial services industry and the implosion of the thrift industry, and flawed capital requirements that encouraged capital arbitrage. *See, e.g.*, Saule T. Omarova, *The Quiet Metamorphosis: How Derivatives Changed the "Business of Banking"*, 63 U. MIAMI L. REV. 1041 (2009); FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT 27–37 (2011); Gorton, *supra* note 25; Min, *supra* note 34.

105. *See generally* Min, *supra* note 34.

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quite receptive to the view that market discipline could complement and improve bank oversight. They responded by explicitly adopting measures meant to improve and facilitate the market discipline of banks. Weak form market discipline also came into favor because of the increasing size and complexity of the largest banks, which were seen as too large and unwieldy for regulators to effectively supervise without assistance.[106]

Market discipline was first formally implemented into U.S. banking regulation with the passage of the Federal Deposit Insurance Corporation Improvement Act of 1991 ("FDICIA").[107] FDICIA implemented a number of key reforms to federal deposit insurance that aspired to enhance market discipline, including prompt corrective action,[108] risk-based deposit insurance premiums,[109] and least-cost resolution.[110] Risk-based premiums would create a regulatory analogue to market discipline, it was argued, by imposing a higher cost of funding on riskier banks, just as private creditors would do. Prompt corrective action and least-cost resolution, which removed regulatory discretion to forbear and extend the federal safety net, would directly foster market discipline by creating a large class of uninsured depositors and other uninsured creditors with no reasonable expectation of being rescued in the event of failure. These investors would

106. *See* Laurence H. Meyer, Governor, Fed. Reserve Bd., Remarks Before the Conference on Reforming Bank Capital Standards (June 14, 1999), *available at* http://www.federalreserve.gov/boarddocs/speeches/1999/19990614.htm; Simon Kwan, *supra* note 92, at 1; Douglas D. Evanoff, Julapa A. Jagtiani & Taisuke Nakata, *Enhancing Market Discipline in Banking: The Role of Subordinated Debt in Financial Regulatory Reform*, 63 J. ECON. & BUS. 1, 2 (2011).

107. Pub. L. No. 102-242, 105 Stat. 2236 (1991) (codified in scattered sections of 12 U.S.C.).

108. Prompt corrective action refers to the capital-based classification of depository institutions (well-capitalized, adequately capitalized, undercapitalized, significantly undercapitalized, and critically undercapitalized) and the progressively more stringent and less discretionary regulatory restrictions and requirements that apply as an institution falls into one of the lower capital categories. 12 U.S.C. § 1831 (2012). For example, an undercapitalized institution faces limits on asset growth and must submit a plan for restoring its capital; a significantly undercapitalized institution must recapitalize by selling stock or subordinated debt; and a critically undercapitalized institution faces receivership or conservatorship. Prior to the implementation of prompt corrective action, bank regulators had discretion in dealing with institutions that had capital levels lower than desired. *See* Carnell, *supra* note 38, at 327–28.

109. FDICIA required the FDIC to set up a system of risk-based deposit insurance premiums, in which the premiums charged to an individual institution reflected the relative likelihood of losses that each institution would cause to the FDIC's Deposit Insurance Fund. 12 U.S.C. §1823(c)(4)(A)(ii) (2012). Previously, the FDIC charged the same premiums to all firms, regardless of the risks they posed. *See* Carnell, *supra* note 38, at 358–59.

110. FDICIA requires the FDIC to adopt the resolution method "least costly to the Deposit Insurance Fund of all possible methods . . . ." 12 U.S.C §1823(c)(4)(A)(ii) (2012). Previously, the FDIC was subject to a less onerous "less-than-liquidation" requirement, which allowed the FDIC to use any resolution method so long as it was less costly than liquidation. *See* Carnell, *supra* note 38, at 363.

have ample incentives to actively monitor and discipline the banks in which they invested.[111]

FDICIA's efforts to promote market discipline were subsequently bolstered by the Basel Committee on Bank Supervision's 2001 release of the New Basel Capital Accord, more commonly known as Basel II (because it updated the original 1988 Basel Capital Accord). Basel II, which set forth international standards as to the prudential regulation of financial institutions, explicitly incorporated market discipline as one of its three "pillars" of banking supervision.[112] The FDICIA primarily sought to promote market discipline by creating new classes of uninsured depositors and unsecured creditors who would have the incentives to monitor their investments and take action against riskier banks. Basel II aimed to increase the scope, frequency, and quality of bank disclosures about risk, in order to better equip depositors and senior creditors with information with which to wield market discipline.[113] While Basel II was never fully implemented in the United States,[114] federal banking regulators incorporated the market discipline pillar of Basel II. This improved existing SEC disclosure requirements for banks (and bank holding companies) with publicly traded securities by demanding that they provide more and better information, such as loan-level data and information on off-balance sheet risk exposures, in their regulatory Reports of Condition and Income.[115]

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111. *Id*. FDICIA's goal of creating additional sources of market discipline was re-emphasized several years later, with the passage of the Gramm-Leach-Bliley Act of 1999. While Gramm-Leach-Bliley is most famous for formally ending the Glass-Steagall wall between core banking and riskier investment activities, it also required that the Board of Governors of the Federal Reserve and the Department of the Treasury conduct a study on the feasibility and desirability of requiring subordinated debt issuances by banks. Gramm-Leach-Bliley Act of 1999, Pub. L. No. 106-102, § 108, 113 Stat. 1338.

112. *See* BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT'L SETTLEMENTS, PILLAR 3 (MARKET DISCIPLINE) (2001), *available at* http://www.bis.org/publ/bcbsca10.pdf; *see also* BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT'L SETTLEMENTS, THE NEW BASEL CAPITAL ACCORD (2001), *available at* http://www.bis.org/publ/bcbsca03.pdf [hereinafter THE NEW BASEL CAPITAL ACCORD]. The Basel Committee, which is hosted by the Bank for International Settlements in Basel, Switzerland, does not possess any formal authority, so it relies on its members to implement the banking supervisory standards it develops. *See generally* BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT'L SETTLEMENTS, CHARTER (2013), *available at* http://www.bis.org/bcbs/charter.pdf.

113. *See* THE NEW BASEL CAPITAL ACCORD, *supra* note 112, at 114–33.

114. Basel II was applied to the nineteen largest U.S. banking institutions on a trial basis, with the final and full implementation scheduled to occur in April 2008. Basel II's adoption was delayed by the onset of financial turmoil in 2007, and U.S. banking regulators subsequently moved to adopt Basel III, which was released on September 12, 2010. *See generally* DARRYL E. GETTER, CONG. RESEARCH SERV., R42744, U.S. IMPLEMENTATION OF THE BASEL CAPITAL REGULATORY FRAMEWORK (2012).

115. *See, e.g.*, Thomas M. Hoenig, President, Fed. Reserve Bank of Kansas City, Should More

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In summary, an increasing emphasis on market discipline by bank regulators and scholars, coupled with several notable legislative initiatives to improve the conditions for market discipline, meant that the conditions for the success of weak form discipline were as good as they had ever been. Policymakers, regulators, and academics alike emphasized the importance of encouraging or compelling traditional banks to issue uninsured liabilities with the goal of creating new sources of market discipline. They also emphasized the importance of encouraging or compelling banks to release more detailed, frequent, and usable disclosures, so as to help investors make more accurate determinations of bank risk. As importantly, regulators were increasingly open to using such data to help guide their supervision of banks.[116]

B. Shadow Banking and the Reemergence of Strong Form Discipline

At the same time that weak form discipline was being broadly implemented for traditional banks, a set of parallel developments in the capital markets—the rise of the so-called "shadow banking" system—were creating fertile conditions for strong form discipline.

The term "shadow banking" was coined by Pacific Investment Management Company, LLC ("PIMCO") Managing Director and economist Paul McCulley as a term to describe the enormous amount of credit intermediation occurring outside of the balance sheets of regulated depository institutions.[117] Since that time, there has been a large and growing literature attempting to describe the theoretical and practical underpinnings of the shadow banking system.[118] As with traditional

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Supervisory Information Be Publicly Disclosed? (May 8, 2003).

116. *See, e.g.*, Kevin Warsh, Governor, Fed. Reserve Bd., Financial Markets and the Federal Reserve (Nov. 21, 2006) (describing the Federal Reserve's efforts to improve the quality of pricing signals to use as a prudential tool). *See also* Frederick T. Furlong & Robard Williams, *Financial Market Signals and Banking Supervision: Are Current Practices Consistent with Research Findings?*, FED. RES. BANK OF S.F. ECON. REV. 17 (2006), *available at* http://www.frbsf.org/economic-research/publications/economic-review/2006/er17-29-2.pdf (describing how financial market information has been incorporated into the bank supervision process).

117. Paul McCulley, *Teton Reflections*, PIMCO GLOBAL CENT. BANK FOCUS (2007), *available at* http://www.pimco.com/EN/Insights/Pages/GCBF%20August-%20September%202007.aspx. The definition offered by McCulley has been broadly accepted. For example, the Financial Stability Board similarly defines "shadow banking" as '"credit intermediation involving entities and activities outside the regular banking system."' Fin. Stability Bd., Shadow Banking: Scoping the Issues (Apr. 12, 2011) (background note), *available at* http://www.financialstabilityboard.org/2011/04/shadow-banking-scoping-the-issues/.

118. *See, e.g.*, Zoltan Pozsar et al., *Shadow Banking* (Fed. Reserve Bank of N.Y., Staff Report No. 458, 2012), *available at* http://www.newyorkfed.org/research/staff_reports/sr458.pdf;Morgan Ricks, *A*

banking,[119] shadow banking is understood as performing maturity and liquidity transformation by utilizing short-term liquid liabilities (similar to demand deposits) to invest in long-term illiquid assets (such as loans).[120] Thus, shadow banking creates additional sources of funding for borrowers and offers investors alternatives to traditional bank deposits.

While shadow banking resembles traditional banking at a high level, there are some important differences that make shadow banking a much better environment for market discipline. First, because shadow banking utilizes a complex structure of capital markets funding, rather than deposits, to finance its credit intermediation, it is not subject to the robust governmental intervention that accompanies traditional banking. Unlike traditional banking, shadow banking does not have formal government safety nets or strong prudential oversight by government regulators. Second, there are fairly profound differences between the typical investor in the deposits issued by traditional banks and the typical investor in shadow banking liabilities, and this has important implications for the information asymmetry issues discussed above. Finally, shadow banking has a number of delegated monitors in place, whose role is specifically to monitor shadow banking risk. I discuss each of these differences below.

1. Limited Government Intervention in Shadow Banking

Shadow banking utilizes a variety of capital market conduits and instruments, particularly money market mutual funds, short-term repurchase agreements, asset-backed commercial paper, and asset-backed securitization.[121] Like traditional banking, shadow banking uses short-term, high-quality, liquid liabilities to fund long-term, illiquid loans.[122]

Regulatory Design for Monetary Stability, 65 VAND. L. REV. 1287 (2012); FIN. CRISIS INQUIRY COMM'N, *supra* note 104; Gorton, *supra* note 25.

119. A traditional bank is understood as an institution that issues short-term deposits and deposit-equivalents (such as certificates of deposit) and uses those to finance the bank's investment in longer-term loans (such as business loans and home mortgages). *See* ANTHONY SAUNDERS & LINDA ALLEN, CREDIT RISK MEASUREMENT IN AND OUT OF THE FINANCIAL CRISIS: NEW APPROACHES TO VALUE AT RISK AND OTHER PARADIGMS 3 (3d ed. 2010).

120. *See* David Luttrell et al., *Understanding the Risks Inherent in Shadow Banking: A Primer and Practical Lessons Learned* 5 (Fed. Reserve Bank of Dall., Staff Paper No. 18, 2012).

121. *See generally* Pozsar et al., *supra* note 118.

122. This process is often described as credit intermediation, or alternatively as credit, maturity, and liquidity transformation. As Pozsar et al. explain:

> Credit transformation refers to the enhancement of the credit quality of debt issued by the intermediary through the use of priority of claims. For example, the credit quality of senior deposits is better than the credit quality of the underlying loan portfolio due to the presence of junior equity. Maturity transformation refers to the use of short-term deposits to fund long-

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But whereas traditional banking does this all '"under one roof,"' shadow banking performs this intermediation "through a daisy-chain of non-bank financial intermediaries in a multi step process."[123]

So, for example, when we think of traditional banking, we think of a loan being held to term by the originating bank, with the funding for this loan coming from the bank's deposits. But in shadow banking, the originator of a loan[124] sells it off to a bankruptcy-remote securitization conduit (typically either a special-purchase vehicle ("SPV") or a structured investment vehicle ("SIV")), which pools a number of other loans and sells off securities representing the cash flows from the loan pool.[125] The origination and securitization of these loans is financed predominantly through short-term funding coming from the issuance of asset-backed securities ("ABS"), asset-backed commercial paper ("ABCP"), short-term repurchase agreements ("repos"), and similar debt or structured credit instruments.[126] These debt instruments are purchased by money market mutual funds ("MMFs"), bond funds, and other entities, including other securitization conduits that then issue new debt obligations based on the cash flows from these liabilities.[127] The end effect is functionally the same—long-term loan assets funded by short-term liquid liabilities—but shadow banking utilizes a potpourri of capital market structures to conduct this intermediation.

> term loans, which creates liquidity for the saver but exposes the intermediary to rollover and duration risks. Liquidity transformation refers to the use of liquid instruments to fund illiquid assets. For example, a pool of illiquid whole loans might trade at a lower price than a liquid rated security secured by the same loan pool, as certification by a credible rating agency would reduce information asymmetries between borrowers and savers.

Id. at 5.

123. *Id.* at 10.

124. The origination and sale of loans is performed by a number of different types of actors, which are generally divided into two camps: traditional banks and non-bank lenders. Despite the fact that traditional banks are one important source of loans for securitization, this particular function is generally understood to be included in shadow banking and outside of traditional banking. This is in large part because the origination and sale of mortgages is not a long-term investment and does not require capital to be held against it (other than a temporary hold).

125. *See* SAUNDERS & ALLEN, *supra* note 119, at 5–11. SPVs are static entities that purchase loans (and other assets) and issue asset-backed securities representing the cash flows from those loans. The investment-grade ABS issued by these SPVs are then utilized as collateral what in repo markets, derivatives transactions, and other types of transactions. SIVs are more dynamic, insofar as they purchase assets on an ongoing basis and continuously fund their activities through the issuance of asset-backed commercial paper, which must be regularly rolled over.

126. *See generally* Noeth & Sengupta, *supra* note 104.

127. *Id.* at 9–10

Because shadow banking does not directly involve bank deposits, it lacks the explicit governmental support provided to traditional banks.[128] While some shadow banking liabilities are sponsored by or held by traditional banks or bank holding companies, these liabilities, unlike bank deposits, are not backed by government deposit insurance, and they do not privilege their issuers with access to public sources of liquidity, such as the Federal Reserve's discount window for depository institutions.[129]

The lack of government guarantees in shadow banking also means that shadow banks are not subject to the stringent prudential regulation that is in place for traditional banks. Prudential regulation in the United States, prior to the financial crisis, historically covered traditional banks,[130] those that take demand deposits and use them to fund longer-term investments (such as loans).[131] Most of the credit intermediation that occurs in shadow banking involves entities that were unconnected to the balance sheets of traditional banks, including investment banks, broker-dealers, insurance companies, money market mutual funds, hedge funds, and special purpose entities sponsored by bank holding companies.[132] As a result, at least up until the 2007–2008 financial crisis, the credit intermediation performed by these firms fell outside the regulatory umbrella that governs traditional

128. *See* Luttrell et al., *supra* note 120, at 6 ("the distinguishing characteristic [of shadow banking] remains the absence of explicit public sector backstops. . . ."). Instead of public sector guarantees, the shadow banking system relies upon a number of private third-party guarantees, including guarantees on the underlying loans (such as mortgage insurance), third-party guarantees on ABS (such as monoline bond insurance or credit default swaps), and the "representations and warranties" offered by the sponsors of ABS securitization conduits. *See*John W. Uhlein, *Breakdown in the Mortgage Securitization Market: Multiple Causes and Suggestions for Reform*, 60 SYRACUSE L. REV. 503, 508–11 (2010); Pozsar et al., *supra* note 118, at 2–4, 21–23. As the 2007–08 financial crisis made clear, these private guarantees were insufficient to protect shadow banking from the old problem of runs and panics. *See generally* Marcin Kacperczyk & Philipp Schnabl, *When Safe Proved Risky: Commercial Paper during the Financial Crisis of 2007–2009*, J. ECON. PERSP., Winter 2010, at 29; Pozsar et al., *supra* note 118.

129. That being said, governmental support can indirectly enhance shadow banking as traditional banks can fund some of these shadow banking activities with FDIC-insured deposits or funds borrowed from the Federal Reserve. *See* Lutrell et al., *supra* note 120, at 6.

130. I use the term traditional bank to refer to depository institutions with bank, thrift, and credit union charters. Certain other types of financial institutions were also subject to prudential regulation, with the most notable being the government-sponsored housing securitization enterprises Fannie Mae and Freddie Mac.

131. *See* CARNELL ET AL., *supra* note 7, at 11–34.

132. *See generally* Lutrell et al., *supra* note 120. Many SPVs and SIVs were sponsored by traditional bank holding companies, but their legal structure kept them "bankruptcy remote" from the balance sheets of their sponsors. As a result, they were not subject to prudential regulation. *See* Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, BROOKINGS PAPERS ON ECON. ACTIVITY, Fall 2010, at 261, 272.

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banks.[133] While these institutions were usually supervised by some type of financial regulator, such as the Securities and Exchange Commission or a state insurance commissioner, they were generally not subject to the strict prudential oversight that is the hallmark of banking regulation.[134]

2. Shadow Banking Investors Are Institutional, Not Retail

Another important difference between traditional banks and shadow banks lies in who predominantly funds their activities. Investors in shadow banking are universally large, sophisticated financial institutions with access to detailed information about the risk characteristics of their investments and counterparties. This contrasts with traditional bank depositors, who are typically less sophisticated retail investors who lack both the capacity and the information to accurately assess risk. As such, these differences have important implications for the information asymmetry issues that typically are thought to plague banking.

Much as with traditional banking, intermediation in shadow banking is characterized by information asymmetries between insiders and outside investors.[135] For example, asset-backed securitization, which is at the heart of the shadow banking system, involves a series of information asymmetries at each stage of the intermediation process.[136] Similarly, the asset-backed commercial paper market has steep "information asymmetries between investors and asset managers."[137] As discussed

133. During the financial crisis, the largest investment banks engaging in shadow banking either failed, were acquired by commercial banks, or converted to bank holding company charters. *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 280–352.

134. *See generally* Fin. Stability Bd., *supra* note 117. There was some attempt by the Securities and Exchange Commission (SEC) to implement prudential regulation over the largest investment banks under its regulatory purview, but this was so light touch and inept as to be almost nonexistent. In November 2003, the SEC implemented a voluntary prudential oversight regime for the five largest U.S. investment banks called the Consolidated Supervised Entity (CSE) program. This prudential regulation was generally considered light touch, as it was laxer than the regulation provided by the traditional U.S. banking regulators, relied more heavily on the firms' own internal risk regulations, and required far less capital. The CSE program officially ended in September 2008 as all of the firms under the SEC's supervision had either failed (Lehman Brothers), been acquired by bank holding companies (Bear Stearns and Merrill Lynch), or converted into bank holding companies (Morgan Stanley and Goldman Sachs). *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 280–352.

135. *See generally* Steven L. Schwarcz, *Regulating Shadows: Financial Regulation and Responsibility Failure*, 70 WASH. & LEE L. REV. 1781 (2013); Tobias Adrian & Adam B. Ashcraft, *Shadow Banking Regulation* (Fed. Reserve Bank of N.Y., Staff Report No. 559, 2012).

136. *See* Adam B. Ashcraft & Til Schuermann, *The Seven Deadly Frictions of Subprime Mortgage Credit Securitization*, THE INVESTMENT PROF. 2, 2 (2008).

137. *See* Adrian & Ashcraft, *supra* note 135, at 13. Because shadow banking does not enjoy formal government guarantees on its liabilities, it has been forced to develop alternative mechanisms to assuage investor concerns about these information asymmetry issues. Several of these mechanisms

previously, these information asymmetries present a central problem for banking regulation, both because they are a critical factor in causing bank runs, and because they are thought to be impediments for the effective operation of market discipline.

That being said, the characteristics of shadow banking are perhaps ideal for ameliorating these informational issues.[138] Investors in shadow banking liabilities enjoy access to detailed risk-related information, which is much better than the publicly available information depositors rely upon to discipline traditional banks.[139] Moreover, because these investors are themselves large financial institutions, such as commercial banks,[140] investment banks, hedge funds, pension funds, and money market mutual funds, they have the capacity to efficiently process and interpret this information, certainly much more so than the average retail depositor.

3. Delegated Monitors to Ameliorate Information Asymmetry Issues

Shadow banking also has in place a number of important mechanisms that, at least in theory, should provide strong market-based risk assessments and further assuage the informational concerns of investors. In particular, there are a number of well-situated monitors who possess both the interest and wherewithal to provide accurate risk assessments of shadow banking liabilities.[141] Three such sets of monitors are worth mentioning.

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are notable: first, the subordinated tranching structure for asset-backed securitization that effectively makes the senior tranches of bonds issued safer than the underlying pool of assets; second, the use of credit enhancements, such as those provided by insurers or credit default swap counterparties; and third, the use of credit ratings provided by the credit rating agencies.

138. As I discuss later in Part IV, Subsection A, one notable criticism of the claim that shadow banking has better mechanisms to deal with information asymmetry is that shadow banking has many more potential nexuses in which information asymmetries can arise, due to the much greater complexity of the structures and markets used for intermediation in shadow banking. These informational "frictions" have been identified as a major problem in shadow banking. *See generally* Ashcraft & Schuermann, *supra* note 136*; see also* BD. OF GOVERNORS, FED. RESERVE SYS., REPORT TO THE CONGRESS ON RISK RETENTION 14–15 (2010).

139. *See, e.g.*, Nora Colomer, *ABS Industry Makes Sense of Loan Level Data*, ASSET SECURITIZATION REPORT, Dec. 4, 2009, at 10.

140. Many commercial banks expanded beyond traditional banking to participate in a number of activities, such as repos, the sale and purchase of commercial paper, and the underwriting and purchase of asset-backed securities, which were part of the shadow banking system. *See generally* FIN. CRISIS INQUIRY COMM'N, *supra* note 104.

141. Some have coined the term "financial gatekeeper" to refer to this role in the context of equity investments. *See generally* FINANCIAL GATEKEEPERS: CAN THEY PROTECT INVESTORS? (Yasuyuki Fuchita & Robert E. Litan eds., 2006).

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First, there are the sponsors of asset-backed securitization conduits, typically investment banks, such as Goldman Sachs, or bank holding companies, such as Citigroup. These firms provide a number of different types of guarantees to ABS and ABCP investors, all of which should give them incentives to closely monitor the credit quality of the assets in the pool. ABS conduit sponsors typically provide representations and warranties as to the quality of the assets collateralizing these securities.[142] They also often purchase the most subordinated securities, ensuring that they will take the first loss on any asset degradation and thus providing a buffer against losses for other investors.[143] Moreover, even though ABS conduits are technically independent, off-balance sheet entities, their sponsors often provide implicit "reputational" guarantees on losses.[144] ABCP sponsors usually provide full or partial support to their conduits, which includes an arrangement with a bank (often the sponsor itself) to provide liquidity to the conduit as necessary, and, most importantly, a guarantee to cover credit losses on the underlying assets (either all losses, in the case of fully supported ABCP conduits, or losses in excess of a prespecified amount, in the case of partially supported ABCP conduits).[145] Because of these factors, securitization sponsors have ample incentives to ensure that their conduits do not suffer large credit losses, and they possess the necessary information to effectively monitor these conduits.[146]

Second are the third-party providers of credit enhancement on shadow banking liabilities, the bond insurers, and credit default swap counterparties. Because bond insurers and credit default swap (CDS) counterparties agree to cover credit losses on shadow banking obligations

142. These reps and warranties are made by the sponsor to the conduit (SPV or SIV) itself, which is controlled by a trustee. The trustee is legally obligated to act in the best interests of the investors in the trusts. *See generally* Adam J. Levitin & Tara Twomey, *Mortgage Servicing*, 28 YALE J. ON REG. 1 (2011). These representations and warranties have been the basis for a spate of litigation and settlements in the aftermath of the financial crisis. *See, e.g.*, Dan Fitzpatrick, *BofA Nears Huge Settlement*, WALL ST. J., June 29, 2011, at A1; Alison Frankel, *Monolines Accuse Credit Suisse of Misleading Financial Reports*, REUTERS, Sept. 20, 2011, *available at* http://blogs.reuters.com/alison-frankel/2011/09/20/monolines-accuse-credit-suisse-of-misleading-financial-reports/, *archived at* http://perma.cc/GND7-W9U6.

143. *See* Mei Cheng et al., *Asset Securitization, Securitization Recourse, and Information Uncertainty*, 86 ACCT. REV. 541, 545 (2011).

144. *Id*.

145. SWASI BATE ET AL., MOODY'S INVESTORS SERV., THE FUNDAMENTALS OF ASSET-BACKED COMMERCIAL PAPER 18–20 (2003).

146. Section 941 of the Dodd-Frank Act of 2010 attempts to further align the incentives of securitization sponsors and ABS investors by requiring that sponsors carry some portion of the credit risk from their conduits. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub L. No. 111-203, § 941, 124 Stat. 1376 (2010).

in the event of defaults or similar events, they have significant incentives to monitor the credit risk underlying these instruments.[147] Moreover, prior to the financial crisis, these guarantees were often critical for attracting investors as they were used to enhance the credit ratings provided to a particular security, and because some investors would only invest in securities that carried such credit enhancements.[148]

Both bond insurers and CDS counterparties provide an important monitoring function for shadow banking liabilities. Bond insurers have access to considerable amounts of information about the securities they are insuring—arguably all the relevant information they need.[149] Additionally, they have developed significant expertise in assessing the credit risk associated with bonds and structured financial products (such as ABS and CDOs), as this has been their core business for several decades.[150] While CDS counterparties do not enjoy the same access to inside information as bond insurers, they are universally large and sophisticated financial institutions, such as banks, securities firms, hedge funds, and bond insurers.[151] The development of the CDS market in particular was heralded as an important means of improving market discipline since it provides a clear external measure of risk.[152]

Collectively, bond insurers and CDS counterparties have a large footprint on the shadow banking system. Bond insurers guaranteed more than $1 trillion in ABS (including over $700 trillion in U.S. ABS) and some $300 billion in CDOs as of September 30, 2007.[153] CDS reached a

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147. *See Product Descriptions and Frequently Asked Questions*, INT'L SWAPS & DERIVATIVES ASS'N, http://www.isda.org/educat/faqs.html#26 (giving the product description for credit default swaps).

148. *See* Sebastian Schich, *Challenges Related to Financial Guarantee Insurance*, ORG. FOR ECON. COOPERATION & DEV. FIN. MKT. TRENDS, no. 94, 2008, at 81, 88.

149. *See, e.g.*, N.Y. Bankers Ass'n, *Financial Guaranty Insurance and Representations and Warranties in Securitized Debt Transactions* (Feb. 16, 2011) (written testimony).

150. In fact, bond insurers are often referred to as "monoline bond insurers" because they are legally limited to guaranteeing these types of financial products. *See generally* BAIRD WEBEL & DARRYL E. GETTER, CONG. RESEARCH SERV., RL34364, BOND INSURERS: ISSUES FOR THE 110TH CONGRESS (2008).

151. *See* EDWARD VINCENT MURPHY, CONG. RESEARCH SERV., RS22932, CREDIT DEFAULT SWAPS: FREQUENTLY ASKED QUESTIONS (2008).

152. *See* FIN. SERVS. AUTH., THE TURNER REVIEW: A REGULATORY RESPONSE TO THE GLOBAL BANKING CRISIS 45 (2009). As I discuss later, Mark J. Roe raises an important objection to the argument that CDS counterparties provide market discipline, arguing that the bankruptcy code's prioritization of collateral used to satisfy the margin requirements of CDS effectively obviated any need for CDS sellers to perform due diligence, since most potential credit losses would be covered by the pledged collateral. *See infra* note 207 and accompany text.

153. *See The State of the Bond Insurance Industry: Hearing Before the United States House of Representatives Subcomm. on Capital Markets, Insurance, & Gov't Sponsored Enter. of the Comm. on*

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peak of $58.2 trillion in notional value (the total amount guaranteed against) and $2.02 trillion in gross value (the outstanding mark-to-market value of CDS contracts) at the end of 2007.[154] At least in theory, the self-interest and expertise of bond insurers and CDS counterparties should have served an important market disciplining role on the ABS, CDOs, and other liabilities that funded shadow banking intermediation.

Third are the credit rating agencies, who are tasked with providing alphabetically-based credit quality assessments for fixed income obligations, including most of the liabilities that were central to funding shadow banking intermediation. Credit rating agencies are paid by the issuer of the securities they rate,[155] and utilize a detailed methodology to rate structured products like ABS and CDOs, which involves looking at a number of attributes at both the loan level, including loan-to-value ratio, borrower credit score, borrower debt-to-income ratio, originator quality, loan characteristics (such as interest-only or adjustable-rate), and documentation status, to name just a few, and at the pool level, looking at external credit support (bond insurance and CDS as described above) and internal credit support (how much subordinated debt and equity supports the top tranches).[156] After providing an initial credit rating, the rating agencies then continue to monitor the securities they rated on an ongoing basis to determine whether downgrades are appropriate.[157]

Rating agencies have access to all of the relevant risk-related information about the securities they rate, and have developed significant amounts of expertise in doing so given that providing credit ratings is and has been their core business for many decades. Prior to the financial crisis, the credit ratings provided by these institutions were a critical part of the shadow banking systems, as investors largely relied upon AAA ratings as a proxy for safety.[158]

Fin. Servs., 110th Cong. (2008) (statement of Patrick M. Parkinson, Deputy Director, Division of Research and Statistics, Federal Reserve Board).

154. *See generally* FIN. CRISIS INQUIRY COMM'N, OVERVIEW ON DERIVATIVES 3 (2010), *available at* http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/2010-0630-psr-derivative-overview.pdf.

155. The fact that credit rating agencies are paid by issuers has been a source of much criticism as it is argued that this creates a conflict of interest in the ratings process. *See generally* FIN. CRISIS INQUIRY COMM'N, CREDIT RATINGS AND THE FINANCIAL CRISIS 8 (2010), *available at* http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/2010-0602-Credit-Ratings.pdf.

156. *Id*. at 14–19.

157. *Id*. at 20–21.

158. *See, e.g.*, FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 118–22 (describing the importance of AAA ratings for fixed income investors); *see also* Frank Partnoy, *How and Why Credit Rating Agencies Are Not Like Other Gatekeepers*, *in* FINANCIAL GATEKEEPERS, *supra* note 141, at 59,

In the aggregate, shadow banking serves the key credit, maturity, and liquidity transformation functions of banking, but without the regulatory encumbrances or access to governmental safety nets (particularly central bank liquidity and governmental deposit insurance) that accompany traditional banks. This structure leaves shadow banking vulnerable to the runs and panics that federal deposit insurance is meant to prevent. However, it should also remove any moral hazard concerns, as holders of shadow banking liabilities are uninsured against loss and thus have ample incentives to exercise market discipline.[159] Moreover, shadow banking should be far better equipped than traditional banking to deal with informational asymmetry, both because its investors are much more sophisticated than retail depositors, and because shadow banking developed a number of mechanisms intended specifically to address these information issues.

C. The Failure of Markets to Signal Excessive Risk

Despite the presence of conditions that may be described as close to ideal, market discipline failed to prevent the financial crisis. Heightened market discipline in both traditional banking and shadow banking did not stop firms from building up historically high levels of credit and liquidity risk.[160] As the United Kingdom's Financial Services Authority (FSA) concluded in its review of the financial crisis, "A reasonable conclusion is that market discipline expressed via market prices cannot be expected to play a major role in constraining bank risk-taking, and that the primary constraint needs to come from regulation and supervision."[161]

59–62 (describing how credit rating agencies play a "gatekeeper" function by providing credit ratings that are relied upon heavily by investors).

159. As I discuss below in Part IV, subsection A, one response to this line of reasoning is to point out that many shadow banking liabilities were, at least after the fact, seen as effectively insured by the federal government by virtue of the fact that they, or their issuers, were deemed too systemically important to be allowed to fail without support.

160. As the FCIC Report has described, large bank holding companies between 2000 and 2007 generally had leverage ratios between 16:1 and 22:1. FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 65. Investment banks saw their leverage ratios reach even higher levels, with Goldman Sachs having a leverage ratio of 32:1, and Morgan Stanley and Lehman Brothers reaching leverage ratios of 40:1. *Id*. at 65–66. The liquidity risk for commercial banks is limited by the Federal Reserve's lending facilities and the FDIC's deposit insurance, both of which are meant to ensure a steady supply of liquid funding for these entities, even during periods of financial market distress. But the liquidity risk for investment banks reached historically high levels. *Id*. at 296–98. Two key measures of liquidity risk for investment banks are the total percentage of liabilities funded by repo, and the ratio of short-term repo funding to total repo funding. *Id*. All of the major investment banks had high levels of repo funding and short term repo funding during the pre-crisis period. *Id*.

161. FIN. SERVS. AUTH., *supra* note 152, at 47.

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But more troublingly, bank investors failed to even *respond* to heightened bank risk until it was too late.[162] While investors clearly reacted to the systemic problems that arose beginning with the subprime liquidity crisis in July 2007, they failed to provide any price signals or other indicia of heightened risk prior to that time, even as there had been increasing evidence of that risk prior to July 2007.[163] This was true across a wide array of markets and instruments, as I describe below.

It was not until July 2007, following the credit ratings downgrade of over 1000 subprime-related securities by the rating agencies Moody's and Standards & Poor's,[164] that market discipline began to operate as theory would have predicted, where banks perceived as having higher risk were punished more severely than banks perceived as having less risk, as discussed in this Section.

The failure of bank investors to respond to elevated bank risk was at odds with the core assumption of both weak and strong form market discipline—that market discipline can identify risky banks through price and liquidity signals. This Part outlines the failures of market discipline in identifying banking and shadow banking risk prior to the crisis, focusing on a series of relevant indicators.

1. Liabilities of Individual Banks Failed to Timely Identify Risk

Several studies have looked at the market discipline exerted by investors in the non-guaranteed liabilities of both banks and investment banks. Stephanou (2010) looked at the market discipline exerted on various liabilities of major shadow banks from 2006 to 2009 and found that none of the key market metrics that should have theoretically provided signals on the risk of these financial firms showed any indications of elevated risk until August 2007 or later—long after these firms had actually taken on this risk.[165]

Stephanou's findings are consistent with the observations of Lee, Miller, and Yeager (2013), who looked at the yields on subordinated debt issues from 2002–2007 and compared those to a number of commonly used risk metrics (such as the ratio of non-performing loans to total assets,

162. *See infra* Part III.C.1–4.

163. *See id.*

164. *See* KATHLEEN C. ENGEL & PATRICIA A. MCCOY, THE SUBPRIME VIRUS: RECKLESS CREDIT, REGULATORY FAILURE, AND NEXT STEPS 72 (2011); S. PERMANENT SUBCOMM. ON INVESTIGATIONS, 112TH CONG. WALL STREET AND THE FINANCIAL CRISIS: ANATOMY OF A FINANCIAL COLLAPSE 31 (2011) [hereinafter ANATOMY OF A FINANCIAL COLLAPSE].

165. Stephanou, *supra* note 10, at Appendices I-II.

the total leverage ratio, and ratio of real estate investments to total assets).[166] Lee, Miller, and Yeager did not find a correlation between subordinated debt yields and higher risk, and thus concluded that "[m]arket participants rewarded good performance but did not punish increased risk. Overall, these results do not show strong evidence of market discipline of banks during the period leading up to the financial crisis."[167] They are also supported by the findings of the United Kingdom's FSA, which looked at CDS prices for sixteen prominent U.S. and European financial firms and found that these prices "did not provide forewarning of the scale of problems ahead . . . [and instead] suggested that risks were at historically low not historically high levels."[168]

These findings are bolstered by Figures 1–6 below, which illustrate the CDS prices, senior debt yields, and subordinated debt yields from 2004 to late 2008 for Citigroup, a bank holding company that also had significant investment banking activities, and Merrill Lynch, an investment bank.[169] Both of these firms had accumulated very high levels of mortgage-related risk and consequently suffered major losses.[170] These charts, which are representative of the data for all large commercial and investment banks,[171] demonstrate quite clearly that the investors in these individual bank liabilities did not react until after July 2007, and often not until quite later.

What is particularly striking about these findings, and the findings of Stephanou and Lee, Miller, and Yeager, is the clear evidence that these key market-based price signals, which were generally understood as highly reliable quantitative indicators of insolvency risk,[172] failed to provide *any* indication of higher risk during the period preceding the financial crisis. Even as financial firms took on high levels of exposure to U.S. mortgages, U.S. households became historically overleveraged, and

166. Kevin K. Lee et al., *Market Discipline and Bank Subordinated Debt Yields During the Lead up to the Financial Crisis* (unpublished manuscript, 2013), *available at* http://cbt2.nsuok.edu/kwok/conference/submissions/swfa2013_submission_65.docx.

167. *Id*. at 14.

168. FIN. SERVS. AUTH., *supra* note 152, at 46.

169. Of course, Merrill Lynch was acquired by Bank of America, a bank holding company, in a deal that was first announced on September 14, 2008. *See* Charlie Gasparino, *Bank of America to Buy Merrill Lynch for $50 Billion*, CNBC (Sept. 14, 2008, 7:42 PM), http://www.cnbc.com/id/26708319.

170. *See generally* FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 257–64.

171. Additional data and charts illustrating the changes in yields on financial instruments issued by other large financial institutions are available from the author.

172. *See* Apanard P. Prabha et al., *Market Discipline for Financial Institutions and Markets for Information*, *in* RESEARCH HANDBOOK ON INTERNATIONAL BANKING AND GOVERNANCE 238 (James R. Barth et al. eds., 2012).

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evidence of a housing bubble became clear, the major price signals that should have alerted regulators to the existence of potential problems were nonreactive, as the below charts clearly illustrate.

FIGURE 1

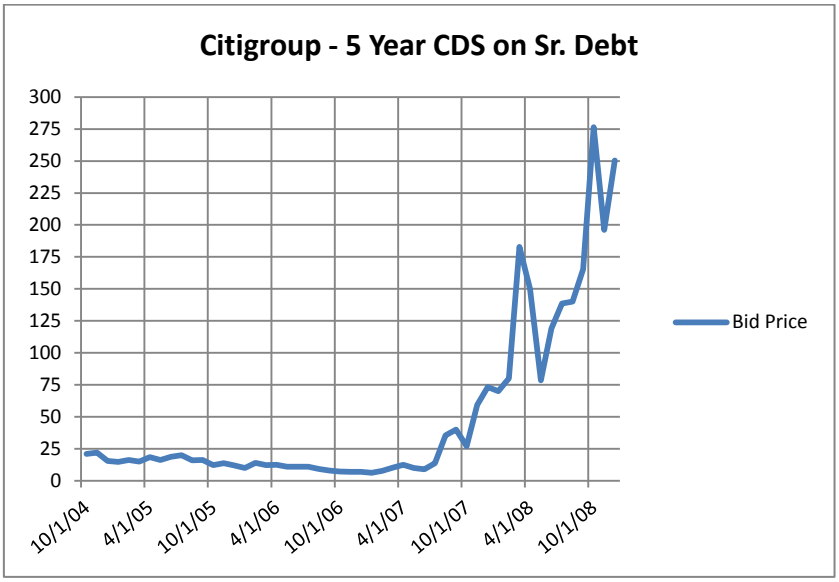


FIGURE 2

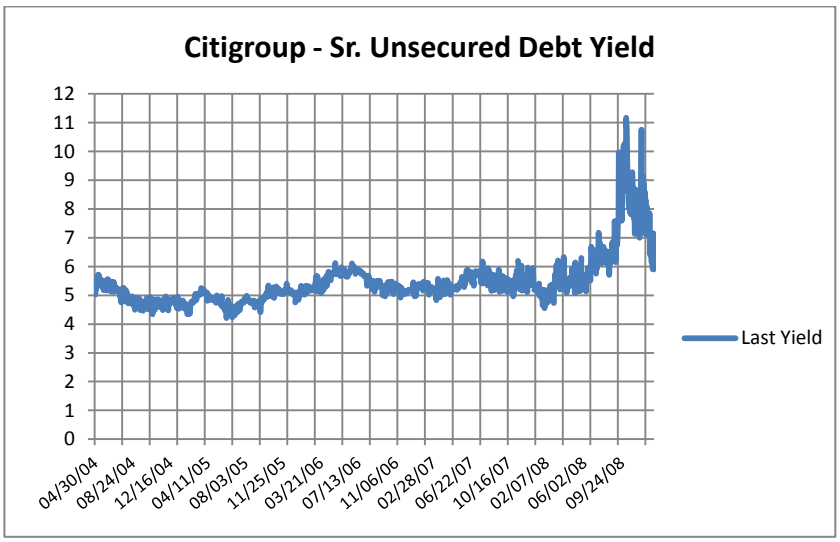


FIGURE 3

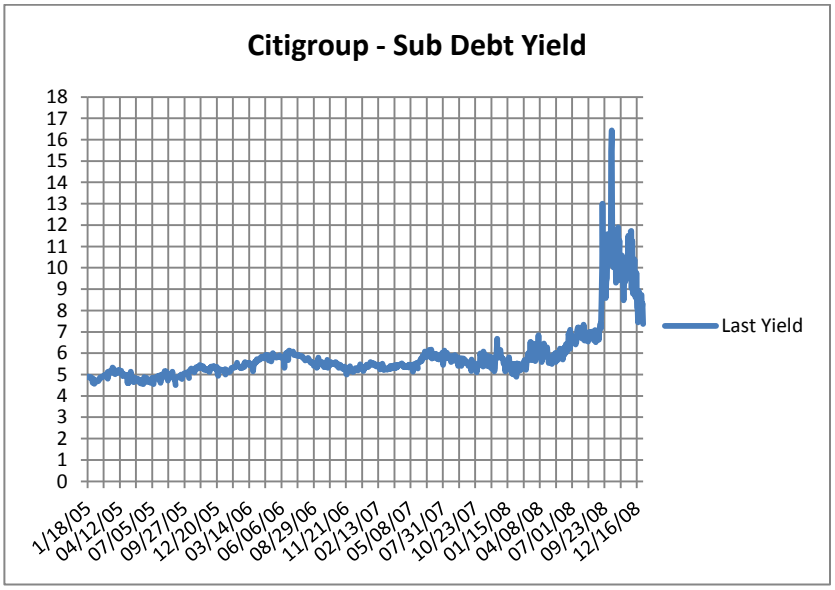


FIGURE 4

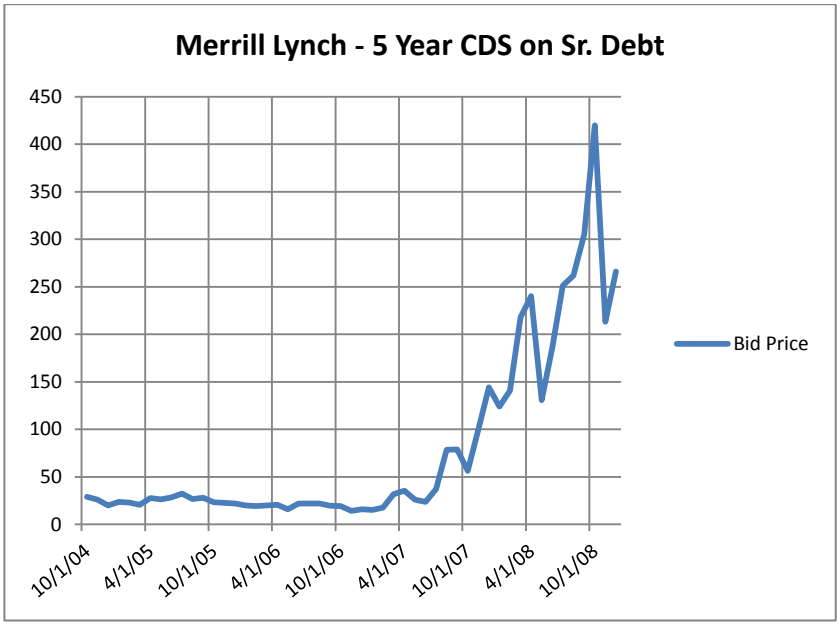


FIGURE 5

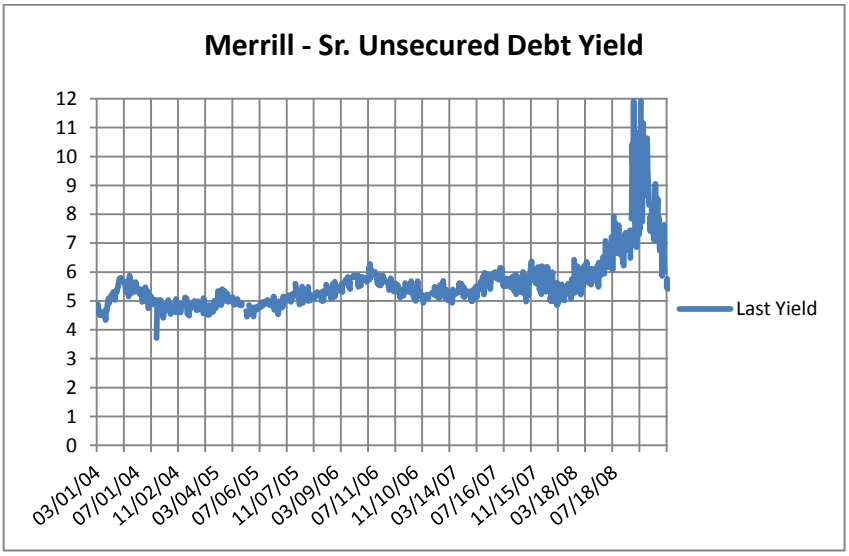
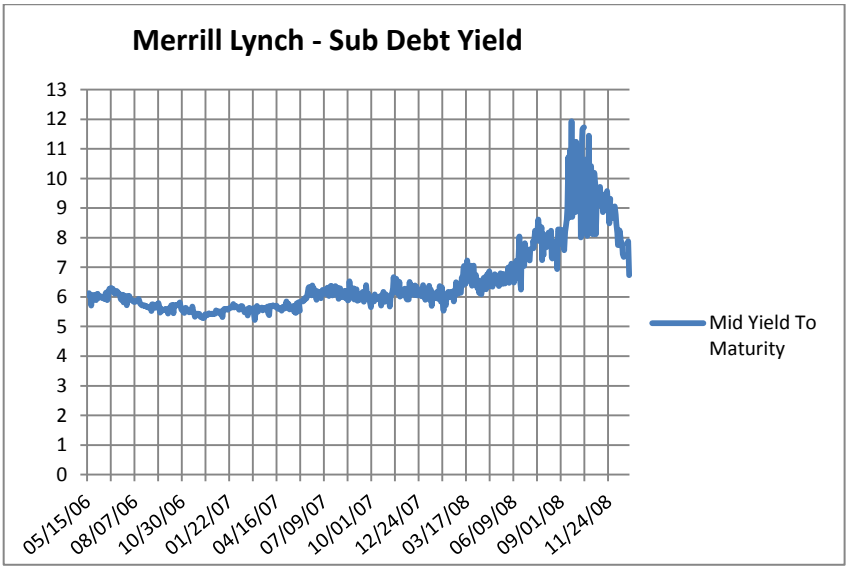


FIGURE 6



2. Interbank Borrowing Rates Failed to Timely Signal Systemic Risk

Market discipline also failed in identifying systemic risk. A key market indicator of systemic (as opposed to bank-specific) risk is the general rate at which banks are willing to lend to one another. The term LIBOR-OIS spread, which represents the difference between the London interbank offer rate (LIBOR)—the rate at which banks are willing to lend to one another—and the overnight indexed swap (OIS) rate—the rate on a derivative of the overnight risk-free rate, is considered a leading measure of bank health, as it neatly captures banks' perceptions of the credit risk of lending to other banks.[173] As discussed previously in Part II, interbank discipline is thought to be an important and particularly powerful source of market discipline, and the interbank borrowing rate, captured by LIBOR, is a key metric for interbank discipline.[174] As former Federal Reserve Chairman Alan Greenspan has said, "LIBOR-OIS remains a barometer of fears of bank insolvency."[175]

LIBOR-OIS is also a critical metric for shadow banking, insofar as it was typically used as the reference rate for virtually all subprime mortgages outstanding in the United States.[176] Additionally, LIBOR is used as a reference rate for a number of other financial products critical to the shadow banking system, including more than $10 trillion in corporate loans, floating rate notes, and adjustable rate mortgages, and some $350 trillion in notional value of interest rate swaps.[177]

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173. Daniel L. Thornton, *What the Libor-OIS Spread Says*, FED. RES. BANK OF ST. LOUIS ECON. SYNOPSES, May 2009.

174. Of course, revelations about bank manipulation of LIBOR have called into question the integrity of this benchmark rate. *See* James Surowiecki, *Bankers Gone Wild*, THE NEW YORKER, July 30, 2012. That being said, LIBOR has tracked closely with other measures of bank borrowing costs, both before, during, and after the crisis, so it still appears to be a useful measure of bank borrowing costs and perceived interbank credit risk. *See generally* Dennis Kuo, David Skeie & James Vickery, *A Comparison of Libor to Other Measures of Bank Borrowing Costs* (unpublished manuscript, 2012), *available at* http://www.newyorkfed.org/research/economists/vickery/LiborKSV_staff_webpage.pdf. *But see* Rosa M. Abrantes-Metz & D. Daniel Sokol, *The Lessons from LIBOR for Detection and Deterrence of Cartel Wrongdoing*, 3 HARV. BUS. L. REV. ONLINE 10 (2012) (arguing that the long period of LIBOR stability prior to August 2007 was the result of LIBOR manipulation, and thus LIBOR is not an appropriate measure of actual interbank borrowing costs or perceived interbank risk).

175. Gavin Finch & Liz Capo McCormick, *Greenspan's Libor Barometer Shows Markets Stay Frozen*, BLOOMBERG, Feb. 23, 2009.

176. *See* DAVID GREENLAW ET AL., LEVERAGED LOSSES: LESSONS FROM THE MORTGAGE MARKET MELTDOWN 12–13 (2008).

177. *See* David M. Ellis, *LIBOR Manipulation: A Brief Overview of the Debate* (Apr. 20, 2011) (unpublished manuscript), *available at* http://www.fticonsulting.com/global2/media/collateral/united-states/libor-manipulation.pdf.

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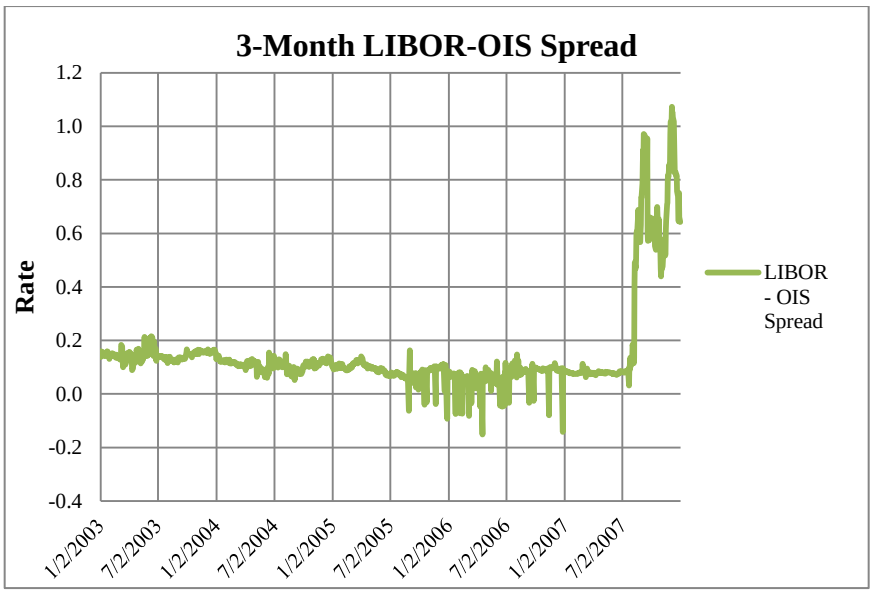
As with the more bank-specific sources of market discipline (CDS, senior debt, subordinated debt) described above, LIBOR-OIS did not provide any indications of credit risk until after the onset of the subprime related financial markets turmoil of July 2007, as Figure 7 illustrates.[178]

FIGURE 7



LIBOR-OIS was not the only interbank lending signal that followed this pattern of unresponsiveness prior to the crisis, followed by extreme volatility after the onset of the crisis. For example, as Gorton and Metrick (2009) point out, the haircuts on interbank repurchase agreement ("repo") lending (short-term lending collateralized by assets) did not indicate any systemic risk until after July 2007, with most of the volatility in these haircuts coming in 2008.[179]

178. Abrantes-Mentz et al. argue that the triggering event occurred on August 9, 2007, when a number of troubling events for financial markets—intervention by the Federal Reserve and European Central Bank, a public warning by AIG that "defaults were spreading beyond the subprime sector," and the suspension of three subprime funds by BNP Paribas—were announced. Rosa M Abrantes-Metz et al., LIBOR Manipulation? (Aug. 4, 2008) (unpublished paper), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1201389.

179. *See generally* Gary B. Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo* (Nat'l Bureau of Econ. Research, Working Paper No. 15223, 2009). As Gorton and Metrick state,

3. Market Pricing of ABS Failed to Timely Signal Systemic Risk

The ABX.HE indices, which measure CDS perceptions of risk associated with a representative series of private-label[180] mortgage-backed securities, were another important measure of market discipline that should have provided timely and accurate market signals of risk associated with the securities at the heart of the shadow banking system.[181] ABX.HE price information was widely used by the financial markets to gauge and hedge risk related to subprime mortgage backed securities ("MBS"), which were at the heart of the shadow banking system during the past decade.[182] For example, UBS, Citigroup, and Morgan Stanley all used ABX.HE indices to justify their write-downs of subprime-related holdings, and Goldman Sachs utilized ABX.HE prices in setting the CDO prices it quoted when demanding collateral payments from AIG.[183]

As with LIBOR, these ABX.HE price indices did not provide any meaningful signals of credit risk up until 2007. The price indices for the investment-grade (AAA or AA) rate securities in ABX.HE 06-01, which is the oldest ABX vintage and consists of asset-backed securitization deals issued in the second half of 2005, traded near full value ("par") up until July 2007, at which point these securities experienced high price

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"haircuts" describe the difference between the value of the assets pledged to collateralize the loan and the value of the loan itself. *Id.*

180. "Private-label" or "non-agency" MBS are so called to distinguish them from "Agency MBS," with the latter referring to mortgage-backed securities guaranteed by the government-sponsored enterprises Fannie Mae and Freddie Mac, or the governmental agency Ginnie Mae. Private-label MBS have several key differences from Agency MBS, including a lack of government guarantees and absence of capital requirements for their issuers. *See* Min, *supra* note 34.

181. The ABX.HE indices were created by the financial information services company Markit and began trading in January 2006. They consist of "a series of equally-weighted, static portfolios of credit default swaps referencing 20 [home equity loan] MBS transactions," and are meant to be used as a benchmark for the performance of subprime MBS. Ingo Fender & Martin Scheicher, *The Pricing of Subprime Mortgage Risk in Good Times and Bad: Evidence From the ABX.HE Indices* 5 (Eur. Cent. Bank Working Paper Series, Paper No. 1056, 2009).

182. *Id*. at 5 ("Despite some shortcomings, ABX price information appears to have been widely used by banks and other investors as a tool for hedging and gauging valuation effects on subprime mortgage portfolios more generally."). Private-label subprime MBS were central to shadow banking on both the assets and liabilities side. On the assets side, subprime MBS conduits were critical to funding mortgage originations. On the liabilities side, investment-grade ABS were used as collateral in the repo and ABCP markets, which provided short-term liquid funding that was seen as the shadow banking sector's equivalent to demand deposits for retail banking. Repos and ABCP were themselves purchased by money market funds, which also provided an alternative to bank deposits. *See* Gorton, *supra* note 25; Min, *supra* note 34.

183. *See* Richard Stanton & Nancy Wallace, *The Bear's Lair: Index Credit Default Swaps and the Subprime Mortgage Crisis*, 24 REV. FIN. STUDIES 3250, 3251–52 (2011).

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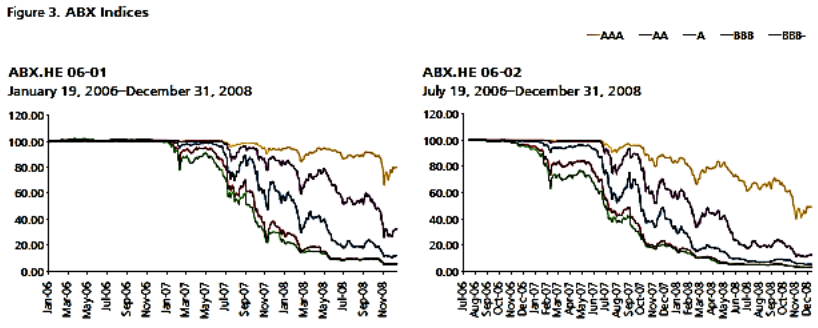
volatility.[184] So for example, as of June 2007, the AAA tranches of ABX.HE 06-01 and ABX.HE 06-02 (the next oldest ABX vintage, which consisted of deals issued in the first half of 2006) traded at close to 100 (par) in June 2007, whereas they declined significantly to trade at 92 and 69, respectively, by June 2008.[185]

ABX price signals were consistent with other market-based measures of risk, insofar as they did not indicate any concerns about credit risk[186] until 2007, with the investment-grade tranches not showing any price movements until the subprime mortgage crisis of July 2007.

FIGURE 8: ABX INDICES (SOURCE: SABRY AND COHEN-COLE)



4. Clear Evidence of Bank Risk Prior to July 2007

These market signals failed to respond to heightened bank risk until after July 2007, but there were some clear and publicly available signs of such risk, both at particular institutions and across the financial system, which should have been of great concern to investors in bank and shadow bank liabilities. By 2005, home sales had begun to drop.[187] By 2006, housing prices had started to decline after years of tremendous growth.[188]

184. *See* Fender & Scheicher, *supra* note 181, at 12–13. The riskier BBB and BBB- rated securities began to experience price declines earlier in 2007. *See* FATEN SABRY & ETHAN COHEN-COLE, THE USE OF ABX DERIVATIVES IN CREDIT CRISIS LITIGATION 10 (2012).

185. Fender & Scheicher, supra note 181, at 13.

186. *But see* Stanton & Wallace, *supra* note 183 (arguing that ABX price indices do not accurately reflect credit risk).

187. *See* Prabha et al., *supra* note 172, at 249, 252 fig.13.1.

188. *See S&P/Case-Shiller U.S. National Home Price Index*, S&P DOW JONES https://us.spindices.com/indices/real-estate/sp-case-shiller-us-national-home-price-index (last visited Apr. 15, 2015).

And by early 2007, the number of subprime mortgage originations plummeted,[189] even as subprime delinquency rates began to soar.[190]

This led to severe issues in the subprime mortgage lending industry. In December 2006, Ownit Mortgage Solutions, the eleventh largest subprime lender, collapsed.[191] In January 2007, Mortgage Lenders Network, another large subprime lender, announced that it would no longer accept applications for new loans; it filed for bankruptcy in February.[192] Also in February 2007, New Century, one of the largest subprime lenders, reported larger-than-expected losses, and HSBC, the largest subprime lender in the United States, "announced a $1.8 billion increase in its quarterly provision for losses."[193] New Century filed for bankruptcy two months later, in April 2007,[194] and HSBC ultimately incurred some $60 billion in losses from bad loans originated in North America.[195] These were the first, but not last, in a long string of failures of subprime lenders. Ownit, Mortgage Lenders Network, and New Century, like most other subprime lenders, had close relationships with major financial firms such as Merrill Lynch, Lehman Brothers, and Citigroup, which typically financed the loans originated by these non-bank lenders through warehouse loans, and in return received the right to buy and securitize the loans being originated.[196] The fact that these subprime lenders began to fail *en masse* should have been reflected in higher risk premia being attributed to the financial firms that bought and securitized mortgages originated by these lenders.

Problems with residential mortgages, particularly subprime mortgages, led to severe turmoil in the markets in ABS and collateralized debt obligations ("CDO") by the summer of 2007. In June 2007, Bear Stearns suspended redemptions from a hedge fund it had sponsored, which had invested heavily in subprime CDOs,[197] and then followed that up with a

189. *See* Prabha et al., *supra* note 172, at 252 fig.13.1.
190. *See* ANATOMY OF A FINANCIAL COLLAPSE, *supra* note 164, at 4–9.
191. *See* ENGEL & MCCOY, *supra* note 164, at 69.
192. *Id*. at 69.
193. *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 233.
194. *Id*.
195. *See* Steve Slater, *End in Sight for HSBC's U.S. Subprime Loans Disaster*, REUTERS, Aug. 5, 2014, *available at* http://www.reuters.com/article/2014/08/05/hsbc-subprime-idUSL6N0Q74P520140805.
196. *See* ENGEL & MCCOY, *supra* note 164, at 69.
197. *See* Matthew Goldstein, *Bear Stearns' Subprime Bath*, BLOOMBERG BUSINESS WEEK, June 12, 2007.

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$3.2 billion bailout of the fund.[198] These actions were insufficient to prevent this fund and another Bear-sponsored hedge fund focusing on subprime-related investments from failing in July 2007.

Indeed, while market discipline failed to warn regulators of the large buildup of risk that was occurring at individual financial firms and across the broader banking system, there were a number of individuals who did precisely that. Robert Shiller, who has since won the Nobel Prize in Economics for his work on asset bubbles and irrational exuberance, repeatedly stated that housing prices were unsustainably high prior to 2007.[199] Economist Dean Baker argued that a housing bubble emerged as early as 2002.[200] Beginning in early 2006, hedge fund manager John Paulson began to bet heavily against mortgage-related financial instruments, convinced that rating agencies and other investors had underestimated the risk of these securities.[201] These and many other observers identified the high levels of risk being accrued in the financial system and at specific firms. In other words, there was sufficient publicly available information to recognize heightened risk—and indeed, many market observers and participants did recognize this risk—but this was not reflected in the pricing or liquidity of bank-related instruments, as the theory of market discipline would have predicted.

IV. WHY DID MARKET DISCIPLINE FAIL?

In hindsight, it is clear that bank investors did not actually rein in the risk taken by banks and other financial institutions as strong form market discipline would have predicted. More surprisingly, and in contradiction to the central assumptions of weak form market discipline, markets did not provide any signals of elevated risk, either with respect to individual firms or on a systemic level. Indeed, it was only after a mass downgrade of

198. *See* Julie Creswell & Vikas Bajaj, *$3.2 Billion Move by Bear Stearns to Rescue Fund*, N.Y. TIMES, June 23, 2007, at A1. This fund later failed in March 2008.

199. *See, e.g.*, David Leonhardt, *Be Warned: Mr. Bubble's Worried Again*, N.Y. TIMES, Aug. 21, 2005, at B1, B4 (describing how Shiller warned people about a potential forty percent drop in home prices); David Washburn, *Housing Boom Could Be Sputtering in California*, SAN DIEGO UNION-TRIB., Dec. 25, 2004 (citing Shiller as predicting a housing decline in California due to the high number of short-term adjustable-rate mortgages originated there).

200. Dean Baker, *The Run-Up in Home Prices: Is It Real or Is It Another Bubble?* (Ctr. for Econ. & Policy Research, Briefing Paper, 2002), *available at* http://www.cepr.net/documents/publications/housing_2002_08.pdf; *see also* Holden Lewis, *The Bubble Sitters: Dean Baker*, BANKRATE.COM (Aug. 25, 2005), http://www.bankrate.com/brm/news/mortgages/bakerfamily.asp, *archived at* http://perma.cc/8ZX3-Z6BH.

201. *See* Gregory Zuckerman, *Trader Made Billions on Subprime*, WALL ST. J., Jan. 15, 2008.

credit ratings on major shadow banking liabilities that market discipline began to exert itself as theory would have predicted. So the question we are faced with, and which this Part attempts to answer, is: *Why* did market discipline experience such a broad and complete failure in the period immediately preceding the 2007–2008 financial crisis?

Conventional wisdom argues that market discipline failed because some necessary condition precedent, such as sufficiently detailed disclosures or insufficient incentives for investors, was lacking. As I describe below, these lines of argument fail to acknowledge or explain the particular ways in which market discipline failed. Under these explanations, market discipline should have been dampened, but not nonexistent, not only in the period preceding the financial crisis, but also during and after the financial crisis. Yet what we saw in the period up until July 2007 was a complete absence of any signals of heightened risk from likely sources of market discipline, as described in Part II. This argument also fails to explain why market reactions became so suddenly and violently sensitive to risk-related information following the ratings downgrades of July 2007.

Instead, this Article argues that the failures of market discipline are attributable to its conflation of two highly distinct types of financial instruments—those that serve as a form of investment ("investment securities"), and those that serve as a form of money ("money instruments"). Like other types of firms, banks issue investment securities, such as equity shares or bonds, which are meant for investment purposes. The purchasers of these types of securities closely monitor and react to risk, in accordance with the efficient markets hypothesis, as described previously. But banks are unique in that they also issue money instruments, such as demand deposits, that serve as a transactional medium.

The theory of market discipline generally assumes that these money instruments are also risk-sensitive securities, insofar as the purchasers of these money instruments monitor and promptly react to new risk-related information. But there are strong economic reasons to question this assumption. As economist Gary Gorton and others have argued, because money instruments are primarily acquired and held as a transactional medium, they are most efficient when they are *informationally insensitive*, meaning when they are not reacting in price or liquidity to new

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information about bank risk.[202] While constant risk-based adjustments to pricing may be efficient from the perspective of capital investors, this is not necessarily the case for those seeking to use monetary instruments to conduct commercial transactions. For these investors, such constant fluctuations in pricing (and the costs and efforts of diligence entailed in monitoring the correct risk-adjusted price) are economically inefficient.

The confusion between money instruments and investment securities has led to two critical flaws in the theory of market discipline. First, this doctrine tends to rely heavily on the market actions of investors in money instruments (such as depositors), but these investors are generally insensitive to new risk-related information and thus would serve as particularly poor monitors. Second, market discipline largely ignores the monitoring and disciplining conducted by shareholders (and similarly situated investors), who are arguably the most important and diligent type of bank investor, but who may have incentives adverse to those of banking regulators. Indeed, in the aftermath of the 2007–2008 financial crisis, a number of studies have made clear that shareholder pressure played a key role in banks' decisions to take on greater risk, as I describe in this Part.

Collectively, these two critiques of the theory of market discipline suggest a broader problem—namely, that market discipline may have the effect of exacerbating bank procyclicality, encouraging banks to take on too much risk during growth periods and too little risk during downturns. To the extent that money market investors may be informationally insensitive during most parts of the economic cycle, they should not be expected to provide effective and consistent market discipline. On the other hand, the market discipline exerted by shareholders and similarly situated investors, who are quite sensitive to risk-related information at all times, is likely to encourage greater risk-taking, particularly during expansionary periods. During credit contractions, both creditors and shareholders are likely to be excessively risk-averse, encouraging banks to shed more risk than is socially optimal. Thus, efforts to increase market

202. *See* Tri Vi Dang et al., Ignorance, Debt and Financial Crises (Feb. 13, 2012) (unpublished manuscript), *available at* http://www.econ.cuhk.edu.hk/dept/chinese/seminar/12-13/1st-term/Paper_Ignorance.pdf; Gary B. Gorton et al., *The Safe-Asset Share* (Nat'l Bureau of Econ. Research, Working Paper No. 17777, 2012); Gary B. Gorton & Guillermo Ordonez, *Collateral Crises* (Nat'l Bureau of Econ. Research, Working Paper No. 17771, 2012); Gary Gorton & George Pennacchi, *Financial Intermediaries and Liquidity Creation*, 45 J. FIN. 49 (1990); James Lindley et al., The Nature of Banking, Information-Insensitive Balance Sheets, and Excess Reserves After the Bank Holiday of 1933 (Nov. 19, 2009) (unpublished working paper); Gorton, *supra* note 25, at 4; Gorton & Metrick, *supra* note 132, at 267; Gorton & Metrick, *supra* note 179; *see also* Ricks, *supra* note 17.

discipline may lead to greater procyclicality and, perversely, may lead to more bank risk-taking during credit expansions.

This Part proceeds in five sections. First, it recounts and rejects the standard explanations for the failures of market discipline during the pre-crisis period. Second, it points out that the bank investors relied upon to provide market discipline are a heterogeneous group, as holders of money instruments are situated quite differently than other types of investors. Third, this Part argues that the heavy reliance of market discipline on investors in money instruments is flawed, insofar as these investors are generally informationally insensitive to risk. Fourth, I describe how market discipline tends to ignore the effects of bank shareholders, as these investors are seen as having interests that are misaligned with those of regulators, and argue that this is a critical oversight. Finally, I show that these explanations, currently overlooked in the literature on market discipline, help to explain and resolve the empirical findings, both pre-crisis and post-crisis, around market discipline, and discuss the potential problem of procyclicality that may result from efforts to increase market discipline.

A. Rejecting the Standard Accounts of Market Discipline's Failure

The typical explanation for the pre-crisis failures of market discipline has been that market discipline was dampened due to structural problems in shadow banking and securitization, which prevented market forces from reaching efficient outcomes. Among the problems that have been identified are misaligned incentives[203] (particularly for the credit rating agencies),[204] a lack of sufficiently detailed or clear information,[205] and moral hazard that eroded the incentives for investors to monitor banks, either emanating from the existence of implicit guarantees[206] or from the

203. *See, e.g.*, Simon Potter, Exec. Vice President, Fed. Reserve Bank of N.Y., Remarks on the Role of Central Bank Interactions with Financial Markets (Nov. 27, 2012) (arguing that "market discipline failed in the period before the crisis," due to a "failure for incentives to be appropriately aligned").

204. *See, e.g.*, Xavier Freixas & Christian Laux, *Disclosure, Transparency, and Market Discipline* (Ctr. for Fin. Studies, Goethe Univ., Working Paper No. 2011/11).

205. *See e.g.*, Robert P. Bartlett, III, *Making Banks Transparent*, 65 VAND. L. REV. 293, 298–300 (2012) (arguing that a lack of disclosures that were useful for credit risk modeling prevented market discipline from operating effectively); Lee et al., *supra* note 166 (contending that opacity was a key factor in the failure of debt yields to signal increasing risk from 2001 to 2007).

206. *See, e.g.*, Viral V. Acharya et al., The End of Market Discipline? Investor Expectations of Implicit State Guarantees (Dec. 2013) (unpublished manuscript); Prabha et al., *supra* note 172.

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bankruptcy code's strong protections for the collateral held by CDS and repo counterparties.[207]

But these explanations for the failures of market discipline do not well describe the actual performance of market discipline before and during the financial crisis. It is indisputable that there were agency and information problems in shadow banking and asset securitization, and it seems likely that these detracted from the perfect operation of market discipline. It is also fair to point out that moral hazard may have suppressed the incentives for investors to monitor banks, particularly those that were seen as enjoying implicit government guarantees by virtue of being "too big to fail." But even if we assume that these conditions served as significant barriers to effective market discipline, this does not explain the particular market reactions we observed during the period in the years before and after the onset of the financial crisis—longstanding and complete investor complacency, followed by a sudden and violent spate of activity beginning in July 2007.

Of course, one important rebuttal to the argument that imperfect information was primarily to blame for the lack of market discipline was that plenty of good information about the riskiness of financial firms was publicly available. As one proponent of this argument acknowledges:

> [O]ne of the more difficult aspects of the Financial Crisis was that the very institutions whose subprime exposures were so opaque were the same institutions producing enormous quantities of mandatory disclosures. For publicly traded firms such as Citigroup, these disclosures included the periodic reporting obligations imposed by the Securities Exchange Act of 1934, as well as quarterly and annual banking reports required to be filed by all banks and bank-holding companies. Additionally, international banks, subject to the Basel Accord, were required to make quarterly and annual public disclosures pursuant to the Accord's "Pillar 3" Market Discipline provisions.[208]

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207. *See generally* Mark J. Roe, *The Derivatives Market's Payment Priorities as Financial Crisis Accelerator*, 63 STAN. L. REV. 539 (2011). Roe argues that the preferential treatment given to these counterparties means that they bear less risk, which dulls their incentives to engage in market discipline. *Id.* at 555–60.

208. Bartlett, *supra* note 205, at 297 (footnotes omitted). As Davidoff and Hill and Ricks (2011) point out, regardless of what we think investors should be doing, it is fairly clear that investors in safe shadow banking liabilities such as MMFs or AAA-rated CDOs were not paying attention to risk disclosures. *See generally* Steven M. Davidoff & Claire A. Hill, *Limits of Disclosure*, 36 SEATTLE U. L. REV. 599, 601–02, 608–23 (2013); Ricks, *supra* note 17, at 84–89.

But even if we ignore this fact and accept the argument that informational asymmetries were significantly muting market discipline, it is difficult to reconcile this argument with what happened in the period preceding the financial crisis. After all, by 2006, home prices had begun to decline and the rate of delinquencies for subprime mortgages had begun to spike, doubling over the previous year.[209] These indicia of risk were publicly available to investors, and it is certain that these were sufficiently abundant and clear in indicating that bank risk was rising, both systemically and at certain firms that had taken on uniquely high exposure to U.S. mortgages. And yet the pricing signals relied upon by market discipline did not react in any way until July 2007, as described in Part II.

The moral hazard argument also fails to convincingly explain what actually happened in the period preceding the financial crisis. Moral hazard has generally been identified as arising from implicit "too big to fail" guarantees or from preferential treatment afforded by the bankruptcy code. But implicit guarantees are by their very nature *ex post*, *ad hoc*, and poorly defined, with a lack of clarity as to which liabilities are covered and under what circumstances. *Ex ante*, most investors are not certain whether and to what extent they might be protected against loss.[210] Similarly, investors in liabilities that enjoy preferential treatment under the federal bankruptcy code are not shielded against all losses, and *ex ante* bear a good amount of uncertainty, including litigation uncertainty, on their investments. Thus, while it may seem that moral hazard exists for many shadow banking obligations, it is also clear that the investors affected by this moral hazard are not *fully* insulated against the prospect of credit losses.

This logic is supported by the empirical research done on the value of implicit guarantees accruing to "systemically important financial

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209. *See* Allan N. Krinsman, *Subprime Mortgage Meltdown: How Did It Happen and How Will It End?*, J. STRUCTURED FIN., Summer 2007, at 14–15.

210. This logic is supported by the empirical research on implicit guarantees for systemically important financial institutions ("SIFIs"), which generally finds that investors demand lower prices on securities issued by SIFIs, but that SIFIs' funding costs are still substantially higher than the government's cost of funding, indicating that investors still maintain a significant degree of uncertainty about the likelihood of recovery. *See, e.g.*, BANK FOR INT'L SETTLEMENTS, 80TH ANNUAL REPORT 23–32, 78–87 (2010); Andrew G. Haldane, Exec. Dir., Fin. Stability, Bank of England, The $100 Billion Question 2–3 (Mar. 30, 2010); Morris Goldstein & Nicolas Véron, *Too Big to Fail: The Transatlantic Debate* (Bruegel Working Paper No. 2011/03). In other words, investors in debt issued by SIFIs are less sensitive, but not necessarily insensitive, to risk. *See* Andrea Sironi, *Testing for Market Discipline in the European Banking Industry: Evidence from Subordinated Debt Issues*, 35 J. MONEY, CREDIT & BANKING 443 (2003).

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institutions" ("SIFIs").[211] While these studies generally find a cost-of-funding advantage for SIFIs, which is attributed to the implicit guarantees thought to exist for these institutions, they also are quite clear in finding that the liabilities issued by SIFIs trade at a significant spread over the price of government debt issued by the SIFI home country, reflecting a degree of uncertainty on the degree of recovery in the event that a SIFI becomes insolvent.[212] In other words, investors in SIFI liabilities are found to be *less* sensitive but not *insensitive* to risk.[213]

What we would expect to see, then, if moral hazard were the primary barrier to the effective operation of market discipline, is at least some degree of market discipline taking place, as investors uncertain about their degree of recovery would provide some (albeit less than the optimal) degree of monitoring. But again, what we actually experienced was a total lack of any pricing of risk of bank debt or other signals that could be understood as market discipline, up until July 2007. In other words, even if we accept at face value the claim that moral hazard on SIFI-issued liabilities *diminished* investor incentives to monitor their investments, this line of reasoning still fails to explain the *complete* absence of market discipline in the period leading up to the financial crisis.

Moreover, even if we assumed that the combination of moral hazard and informational frictions in securitization were so significant as to prevent *all* market discipline from operating, we still struggle to explain why markets suddenly and violently started reacting to bank risk *after* the onset of the financial crisis in July 2007. After all, moral hazard and informational frictions were still present after the ratings downgrades of July 2007. So if they were preventing market discipline from operating before that point, why did they cease to prevent market discipline from occurring after that time? The standard theories of market discipline fail to explain why its role in banking was curiously dormant for so long, and then suddenly became extremely sensitive and volatile as the financial crisis took hold.

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211. *See, e.g.*, Haldane, *supra* note 210; Sironi, *supra* note 210.

212. *See, e.g.*, Sebastian Schich & Byoung-Hwan Kim, *Developments in the Value of Implicit Guarantees for Bank Debt: The Role of Resolution Regimes and Practices*, FIN. MKT. TRENDS, Mar. 2013, at 35, 49; Sebastian Schich & Sofia Lindh, *Implicit Guarantees for Bank Debt: Where Do We Stand?*, 2012 OECD JOURNAL: FIN. MKT. TRENDS 1, 5–7; ZAN LI ET AL., QUANTIFYING THE VALUE OF IMPLICIT GOVERNMENT GUARANTEES FOR LARGE FINANCIAL INSTITUTIONS (2011), *available at* http://www.moodysanalytics.com/~/media/Insight/Quantitative-Research/Credit-Valuation/2011/2011-14-01-Quantifying-the-Value-of-Implicit-Government-Guarantees-for-Large-Financial-Institutions-20110114.ashx; Acharya et al., *supra* note 206, at 1.

213. *See, e.g.*, Acharya et al., *supra* note 206; Sironi, *supra* note 210.

B. Distinguishing Between Investment Securities and Money Instruments

But if moral hazard and informational frictions are inadequate to explain the failures of market discipline, then how do we understand what happened? One key flaw in the current theoretical construction of market discipline is that it generally considers all bank investors to be homogeneous with respect to their risk sensitivity. As described above in Part I, the vast bulk of the theoretical and empirical literature on market discipline assumes that investors in bank-issued money instruments, such as bank depositors, closely monitor and react to risk-related information, and that any insensitivity to such risk is caused by the moral hazard created by government guarantees. But in fact, as the literature on banking economics and law has long recognized, banks are unique among firms insofar as they issue both traditional investment securities, such as stocks and bonds, as well as money instruments, such as checking accounts and demand deposits.

As a growing literature has described, money instruments are not necessarily risk-sensitive in the same way as other securities, and in fact may be informationally insensitive, insofar as they are designed to be nonreactive to changes in bank risk.[214] Under this view, money instruments are designed to trade at par so as to facilitate their core monetary function of serving as a transactional medium. During most periods, these securities are informationally insensitive, in that they (in contrast with investment securities) do not react in price or liquidity based on new information. It is only after some shock occurs, calling into doubt the safety of the issuer, when holders of these money instruments become sensitive to risk.[215] As a result of this shift from informational *insensitivity* to informational *sensitivity*, investors no longer simply assume that the safety of their bank liabilities (such as deposits) is above reproach and suddenly begin to seek information that might tell them the riskiness of their bank.[216]

As investors scramble to acquire risk-related information, the steep informational problems inherent to banking create a "lemons market" in

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214. *See* Gorton, *supra* note 25, at 3–4**;** Ricks, *supra* note 17; Lindley et al., *supra* note 202. Federal Reserve Chairman Ben Bernanke, when asked what literature he recommended reading about the crisis, cited a number of papers written by Gorton. *See* David Ignatius, Editorial, *Quiet Tiger at the Fed*, WASH. POST, May 28, 2009, at A19.

215. *See generally* Gorton, *supra* note 25**.**

216. Gary B. Gorton, *Some Reflections on the Recent Financial Crisis* 20–22 (Nat'l Bureau of Econ. Research, Working Paper No. 18397, 2012). I also discuss this issue *supra* note 18.

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which information must be produced, but the general lack of expertise in producing or interpreting this information, coupled with the complexity of the underlying assets, leads to sharp illiquidity.[217] As discussed above, a sudden lack of liquidity can cause otherwise healthy banks to become insolvent, due to the liquidity and maturity mismatch between their assets and liabilities.[218] This dynamic can lead to a banking panic in which investors all rush to withdraw their funds.[219] It is worth noting that this model of banking panics, describing a situation in which informationally insensitive investors suddenly become informationally sensitive, is largely consistent with the classic Diamond and Dybvig model of banking panics described above in Part II.

The idea that many bank liabilities serve as a form of money has long been a core part of banking economics, as it is well understood that "[b]anks play a central role in creating and destroying money."[220] Indeed, some scholars have gone so far as to argue that money creation is "the *essential* function of banking."[221] As one recent article on the topic describes:

> It is a truism of finance that banks are in the *money-creation* business. This is not a mere figure of speech. Most bank deposits are included in "M1," the Federal Reserve's narrowest measure of the money supply . . . And the vast majority of deposited funds are redeployed by banks into loans and other forms of credit. Consequently, banks' actual cash reserves typically amount to only a small fraction of their outstanding deposits. . . . Banks, then, really do augment the money supply—they create deposits that are not backed by ready cash. . . . To say that banks create money is just

217. This concept was famously coined by George Akerlof to describe a market in which asymmetric information between the seller and buyers exists, resulting in buyers being unable to distinguish between "good" and "bad" products, and thus pricing all products as if they were lemons. *See generally* George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q. J. ECON. 488 (1970).

218. *See* Gorton, *supra* note 25, at 36–37.

219. As discussed above, the causes of runs and panics is a matter of some debate, with some scholars claiming that these can be caused by random events such as sunspots, yet others claiming they are based in generalized information. Gorton falls into the latter camp, but given the self-fulfilling nature of bank runs, the cause may be less relevant than the economic self-interest of joining a bank run. Some may also note that the shocks that cause informationally insensitive debt to become informationally sensitive under Gorton's model resemble the eponymous "Minsky moment" described by Hyman Minsky. *See generally* Hyman P. Minsky, *The Financial Instability Hypothesis: An Interpretation of Keynes and an Alternative to "Standard" Theory*, 16 NEB. J. ECON. & BUS. 5 (1977).

220. CARNELL ET AL., *supra* note 7, at 48.

221. Gorton, *supra* note 25, at 3 (emphasis added) (citing Gorton & Pennacchi, *supra* note 202).

> another way of saying that deposits *function* as money. Deposits serve as a common substitute for legal tender. Businesses and individuals use deposit accounts to "store" liquid cash reserves and make payments.[222]

As a growing number of observers have noted, the creation of money is no longer limited to traditional banks taking deposits, but now includes the so-called shadow banking system described above in Part II.[223] Like traditional banking, shadow banking appears to have served the core banking function of creating deposit-like liabilities that can serve as a form of money. As Ricks (2011),[224] Gorton and Metrick (2011),[225] Stein (2012),[226] Gorton (2013),[227] and Sunderam (2013),[228] among others, describe, these shadow banking liabilities, such as ABCP and repos, effectively function as a cash substitute, insofar as they are safe, liquid, and do not fluctuate in value.[229] Institutional investors typically refer to these instruments as "cash" and generally accepted accounting standards designate them as "cash equivalents."[230] In a variety of legal contexts, including federal bankruptcy and securities laws, these instruments are treated in ways that are consistent with other forms of money.[231] In other

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222. Ricks, *supra* note 17, at 76. Ricks distinguishes between money claims and safe assets, arguing that the term "safe assets" simply describes debt instruments with negligible credit risk, whereas money claims refer only to safe assets with very short durations. *See* Ricks, *supra* note 118, at 1300–02.

223. *See, e.g.*, Dang et al., *supra* note 202, at 3; Gorton, *supra* note 25; Ricks, *supra* note 17; Robin Greenwood, Samuel G. Hanson & Jeremy C. Stein, *A Comparative-Advantage Approach to Government Debt Maturity* 4, 22 (Harv. Bus. Sch., Working Paper No. 11-035, 2010); Adi Sunderam, Money Creation and the Shadow Banking System (Sept. 2013) (unpublished manuscript), *available at* http://www.hbs.edu/faculty/Publication%20Files/money_20130901_main_ca1766cc-fb1c-4b7d-b382-2bd926d3c518.pdf; Arvind Krishnamurthy & Annette Vissing-Jorgensen, Short-Term Debt and Financial Crises: What We Can Learn from U.S. Treasury Supply 2, 19 (May 17, 2013) (unpublished manuscript), *available at* http://www.cepr.org/sites/default/files/events/papers/KRISHNAMURTHY_cover%20-%20Short-term%20Debt%20and%20Financial%20Crisis.pdf; Jeremy C. Stein, *Monetary Policy as Financial Stability Regulation*, 127 Q. J. ECON. 57, 59–60, 86 (2012).

224. Ricks, *supra* note 17, at 76, 79–80.

225. Gorton & Metrick, *supra* note 179, at 10–12.

226. Stein, *supra* note 223, at 59–60, 86.

227. Gary Gorton, *The Development of Opacity in U.S. Banking* 10–13 (Nat'l Bureau of Econ. Research, Working Paper 19540, 2013).

228. Sunderam, *supra* note 223, at 1, 6–7, 13, 15–17, 22, 27–29.

229. Ricks, *supra* note 17.

230. *See* Ricks, *supra* note 17, at 89; *see also* FIN. ACCOUNTING STANDARDS BD., STATEMENT OF FINANCIAL ACCOUNTING STANDARDS NO. 95: STATEMENT OF CASH FLOWS 6 (1987).

231. Ricks, *supra* note 17, at 89–90. As Ricks describes, shadow banking money claims are treated as "cash collateral" under bankruptcy laws. *Id.* at 90 (citing 11 U.S.C. § 363(a) (2006)). They are exempt from SEC registration and not counted as securities in determining whether a firm must register as an investment company. *Id.* at 90.

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words, the short-term liabilities issued in shadow banking, particularly ABCP and repos, are functionally equivalent to bank deposits, and like bank deposits, they serve as a form of money.

Shadow banking's money creation is largely built around "safe" AAA-rated structured financial products such as ABSs and CDOs, which are used as collateral for repos and ABCP.[232] Like bank deposits, these AAA-rated securities are protected by subordinated securities that absorb first losses,[233] and can be used as a form of payment—that is to say that they can be repurposed ("rehypothecated") as collateral in other transactions.[234] As described above in Part III, the short-term liabilities issued by the shadow banking system grew to surpass traditional bank deposits. This reflected an enormous demand for the private money instruments created by the shadow banking system, which in turn created a large demand for AAA-rated structured securities and the assets that went into these securities, most notably subprime and Alt-A mortgages, but also student loans and credit card receivables.[235] Put simply, private money claims created by the shadow banking system displaced bank deposits to a large degree in becoming a significant part of the overall money supply.[236]

A central premise of the theory of market discipline is that all bank investors are highly sensitive to risk, and thus, in the absence of federal deposit insurance and the moral hazard these guarantees create, the prices of bank-issued securities tend to accurately reflect all publicly available information about risk.[237] This assumption is closely related to the

232. Gorton, *supra* note 25, at 18, 30.

233. In the case of bank deposits, they are protected by equity and any unsecured debt that might also be issued by the bank. AAA-rated structured securities are protected by subordinated tranches, which include equity tranches, which receive the residuals and thus have significant upside, and mezzanine tranches, which receive a pre-specified rate of return so long as principal and interest payments are sufficient to pay the higher tranched securities. As discussed above, credit rating agencies and third party credit enhancements (such as monoline insurance and CDSs) are also heavily relied upon in shadow banking, and these can be understood as helping to promote informational insensitivity in this regard.

234. Gorton, *supra* note 25, at 14, 30. *See also* Manmohan Singh & James Aitken, *The (Sizable) Role of Rehypothecation in the Shadow Banking System* 3–7, 10–12 (IMF, Working Paper 10/172, 2010).

235. *See* Gorton & Metrick, *supra* note 179.

236. Gorton et al. (2012) note that the ratio of "safe" assets to GDP has remained relatively constant over time. *See* Gorton et al., *supra* note 202, at 1. Krishnamurthy and Vissing-Jorgensen (2013) provide some insight into why this might be the case, finding an inverse relationship between the amount of governmentally issued short-term safe and liquid debt and the amount of privately issued short-term safe and liquid debt. In other words, publicly backed money claims (such as Treasuries) crowd out private money claims, suggesting that there is a relatively constant demand for these types of instruments. Krishnamurthy & Vissing-Jorgensen, *supra* note 223.

237. *See supra* notes 29–32 and accompanying text.

efficient markets hypothesis put forth by Eugene Fama in 1970.[238] As such, the literature on market discipline fails to distinguish between money instruments and investment securities. Deconstructing market discipline into its component parts—discipline provided by the purchasers of investment securities and discipline provided by purchasers of money instruments— illustrates at least two major problems with how market discipline is currently understood.

C. Market Discipline Relies Heavily on Money Instruments

One problem with market discipline revealed by this analysis is that it relies mostly upon the monitoring and reactions of investors in liabilities that are best characterized as money instruments. As described above in Part I, market discipline has historically focused mainly upon the reactions of investors in bank deposits and other short-term liquid debt obligations, which are understood to be forms of money. While regulators have encouraged banks to issue other types of debt obligations, with the goal of creating other sources of market discipline, deposits remain by far the largest source of debt funding for traditional banks, accounting for over eight-five percent of all liabilities at FDIC-insured institutions.[239] Similarly, in the realm of shadow banking, the most obvious candidates for market discipline are investors in securities that are thought to function as money instruments. In short, the overwhelming bulk of the market discipline currently thought to be wielded upon banks comes from investors in money instruments.

The problem with the emphasis on this particular type of market discipline is that investors in money instruments are not particularly risk-sensitive in the same way that investors in investment securities. Indeed, it is fairly clear that in the period leading up to the financial crisis, investors in money claims issued by shadow banks were not closely monitoring or reacting to risk. Whatever we may think money market investors should have been doing, it is clear that they were not actually engaging in independent risk analysis, relying instead on the credit ratings provided by the rating agencies.[240] Moreover, as Ricks (2012) describes, the failure of money market investors to conduct credit analysis in the period preceding the financial crisis was not some aberration, but rather was seen as

238. *See* Fama, *supra* note 8.

239. FED. DEPOSIT INS. CORP., SEP. 30, 2013 STATISTICS ON DEPOSITORY INSTITUTIONS, *available at* http://www2.fdic.gov/SDI/main.asp.

240. *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 155 , at 15, 31, 36.

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standard industry practice.[241] Money market managers typically do not do independent credit analysis.[242]

The pricing of money instruments also supports the idea that these securities are not risk sensitive in the same way as investment securities. As fairly robust literature has found, the pricing of short-term, liquid, and safe securities that function as cash equivalents (such as short-term Treasury bills) is higher than would be suggested by standard risk-based pricing models, indicating that there is some independent value—beyond the standard risk-reward calculation that governs capital market investments—that accrues to money instruments.[243] This pricing premium also extends to money instruments issued by the shadow banking system, such as ABCP and repo.[244]

The relative risk insensitivity of money instruments can be justified in economic terms. As described above in Part I, it is well settled that the economic efficiency of investment securities is best measured by the expected risk-adjusted return, and so risk-based pricing of these securities is efficient. But money instruments serve a different (or at least additional) function than providing investment returns, acting as a medium of exchange, a unit of account, and a store of value.[245] As a number of economists have argued, bank-issued money instruments are *designed* to be informationally insensitive[246] so as to better facilitate their core monetary functions of serving as a store of value and as a transactional medium.

Under this view, the risk insensitivity of money instruments is a feature and not a bug. Risk-based pricing, which results in constant changes in value based on changes in the perception of the issuer's risk, is quite

241. *See* Ricks, *supra* note 118, at 1320–21.

242. *Id.*

243. *See, e.g.*, Gregory R. Duffee, *Idiosyncratic Variation of Treasury Bill Yields*, 51 J. FIN. 527, 529–37, 547–48 (1996); Arvind Krishnamurthy & Annette Vissing-Jorgensen, *The Aggregate Demand for Treasury Debt*, 120 J. POL. ECON. 233, 234–37 (2012); Refet S. Gurkaynak, Brian Sack & Jonathan H. Wright, *The U.S. Treasury Yield Curve: 1961 to the Present* 25–28 (Fed. Reserve Bd., Working Paper No. 2006-28); Robin Greenwood & Dimitri Vayanos, *Bond Supply and Excess Bond Returns* (Nat'l Bureau of Econ. Research, Working Paper No. 13806, 2008).

244. *See* Sunderam, *supra* note 223.

245. *See* Irena Asmundson & Ceyda Oner, *What is Money?*, 49 FIN. & DEV. 13 (2012), *available at* http://www.imf.org/external/pubs/ft/fandd/2012/09/basics.htm.

246. *See generally* Gary Gorton & George Pennacchi, *Financial Intermediaries and Liquidity Creation*, 45 J. FIN. 49 (1990); Tri Vi Dang et al., Ignorance, Debt and Financial Crises (Feb. 13, 2012) (unpublished manuscript), *available at* http://www.econ.cuhk.edu.hk/dept/chinese/seminar/12-13/1st-term/Paper_Ignorance.pdf; Gorton, *supra* note 25; Gorton & Metrick, *supra* note 179; Gorton & Metrick, *supra* note 132; Gorton & Ordonez, *supra* note 202; Gorton et al., *supra* note 202; *see also* Lindley et al., *supra* note 202; Ricks, *supra* note 17.

inefficient for instruments meant to be used primarily for monetary purposes. To understand why, it may be helpful to think about what informationally *sensitive* money instruments might look like. We need not speculate about this, as we have an example, from the so-called "free banking era,"[247] during which time there was no central currency and each bank issued its own notes, redeemable upon demand for specie that served the function of currency. During this period, bank notes did not necessarily trade at par, but rather were priced according to a number of factors, including the geographic distance from the issuing bank (representing the time it would take to get to that bank and redeem the note), and the age and usage of the notes (representing both how long the bank had been in good health and how many other merchants had accepted its notes).[248]

In short, during the free banking period, money was, to some degree, informationally sensitive, with its pricing reacting to certain types of risk-related information. Significant to this Article, this risk-based pricing of bank notes created significant costs on commercial transactions, due to the inconvenience of constantly researching and discounting the notes received.[249] Thus, while these markets were relatively efficient in terms of pricing risk, they were quite inefficient from the perspective of conducting commercial transactions.

The idea that risk insensitivity is efficient for money instruments is consistent with the history of banking. Banks have always gone to great lengths to make sure that certain of their liabilities are considered "safe" and do not fluctuate in response to new information about risk in the way that other securities do. Prior to the introduction of federal deposit insurance, banks made great efforts to assure investors about the safety of their liabilities.[250] Bank deposits were insulated against losses by a layer of equity held by shareholders, who would absorb the first losses taken by the bank and typically were subject to double liability (twice the amount of the par value of their shares).

Pre-FDIC banks also organized themselves into private clearinghouses, in order to promote greater access to liquidity and thus create more confidence among depositors. These clearinghouses developed a number of different methods to head off banking panics, including the collective suspension of convertibility of deposits into currency, the cessation of publishing bank-specific accounting information, and the issuance of

247. *See supra* note 97.
248. *See* Gorton, *supra* note 227, at 2–5.
249. *Id.*
250. Gorton, *supra* note 25.

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clearinghouse loan certificates, which were joint liabilities of all members of the clearinghouse, in lieu of currency.[251] Taken together, these clearinghouse mechanisms used to fight off banking panics are best understood as efforts meant to restore the informational insensitivity of bank liabilities by effectively fusing all of the individual banks into one large, presumably safe, super-bank and blurring the informational distinctions between "good" and "bad" banks within the clearinghouse.[252] Notably, these measures are inconsistent with the efficient markets hypothesis that undergirds market discipline, which suggests that good banks would seek to differentiate themselves from bad banks so that investors could more effectively discern which banks they should punish. They are, however, consistent with the idea that banks were seeking to create safe, informationally insensitive debt that could serve the role of private money.

Similarly, shadow banking has in place several mechanisms to assuage potential concerns about the safety of its money claims, as described previously in Part II. Like bank deposits, many shadow banking liabilities are protected by subordinated investors (akin to bank equity investors) who stand to absorb first losses.[253] Shadow banking also relies heavily on third party guarantees against losses, provided by bond insurers or credit default swap counterparties.[254] The apparent safety of shadow banking liabilities is further bolstered by the assurances of third party monitors, such as credit rating agencies and ABS sponsors, who have staked their own reputations on the safety of these instruments.[255] All of these mechanisms appear to clearly serve the purpose of assuring investors of the safety of the securities they hold.

In summary, there are a number of fairly persuasive reasons to think that bank-issued money instruments (such as bank deposits in the traditional banking sector, and repos in the shadow banking sector) are not sensitive to risk in the same way that investment securities are.

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251. Gorton, *supra* note 25, at 18–21.

252. *Id*. This general idea may have been the basis for the "Super-SIV" proposal floated by Henry Paulson during the early days of the financial crisis, in which investment banks would effectively create a clearinghouse to back the liabilities of all of their participants' SIVs and SPVs. *See* Eric Dash, *Banks May Pool Billions to Avert Securities Sell-off*, N.Y. TIMES, Oct. 14, 2007, at A30.

253. The subordinated tranches of structured securities act as a form of equity, protecting the senior AAA security, which is at the heart of most of the money instruments created by the shadow banking system. *See* John W. Uhlein, *Breakdown in the Mortgage Securitization Market: Multiple Causes and Suggestions for Reform*, 60 SYRACUSE L. REV. 503, 508–11 (2010); Pozsar et al., *supra* note 118, at 2–4, 21–23.

254. *Id*.

255. *See supra* notes 142–59 and accompanying text.

Unfortunately, investors in these money instruments are supposed to be the primary source of market discipline of banks, suggesting a huge flaw in the theory.

D. Market Discipline Ignores Risk-Sensitive Shareholders

Another factor that may help explain the failures of market discipline in the period preceding the financial crisis is the role of "bad" market discipline—that is, market actions that may have the effect of encouraging *greater* risk-taking by banks.[256] In particular, market discipline, as that concept is currently understood, mostly ignores the market discipline wielded by bank shareholders (and similarly situated investors), who are understood to sometimes have incentives to wield such bad discipline.

The literature on market discipline, as described above, mostly focuses on the monitoring and discipline provided by bank creditors—primarily uninsured depositors, subordinated debt holders, and bank lenders—and largely ignores the discipline provided by equity holders.[257] This oversight is in large part because, unlike creditors, equity holders are seen as having interests that are misaligned with, and often directly opposed to, the interests of regulators and others seeking to promote banking stability.[258] Moreover, corporate finance theory stresses that in a world without information frictions and transaction costs, "there is no difference between using bond prices or equity prices in providing information for market discipline purposes."[259] Thus, looking solely at the market discipline of creditors, while ignoring shareholders, is thought to be consistent with policy purposes.

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256. The term "bad market discipline" is not one that has been used in the literature, which, as discussed in this Part, largely ignores the problem of market reactions that may encourage greater risk-taking by banks.

257. *See* Flannery & Nikolova, *supra* note 102, at 92 (stating that "most of the research has evaluated market discipline by examining debt prices or quantities," with only "a few studies [that] have looked at equity prices"). *See also* Anat R. Admati & Martin F. Hellwig, *Does Debt Discipline Bankers? An Academic Myth About Bank Indebtedness* (Rock Ctr. for Corporate Governance, Working Paper No. 132, 2013), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2216811.

258. *See, e.g.*, Anthony Saunders, *Comments on Evanoff and Wall/Hancock and Kwast*, 20 J. FIN. SERVICES RES. 189, 190 (2001); Blum, *supra* note 86, at 1428 (noting that the heavy emphasis on subordinated debt in market discipline is due to the insight that these creditors bear losses but, "[i]n contrast to shareholders . . . they do not participate in the upward gains from such risky activities").

259. *Id*. at 190.

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Of course, it is well recognized that equity investors may have interests that are adverse to those of debt investors.[260] There is a broad and deep literature, in both corporate finance and banking, discussing the potentially opposed incentives of different stakeholders within a single firm, particularly when that firm is a bank. As one leading academic has stated, "Equity holders have a more complex attitude towards firm risk [than creditors]. Equity holders have both upside potential, if the firm prospers, and downside potential, if the firm fails."[261]

Robert Merton famously showed that equity value is increased when firms invest in assets with higher volatility, even as this creates greater default risk for creditors.[262] The potential conflicts between shareholders and creditors are exacerbated in the case of banks, as bank shareholders are thought to have incentives that may lead them to prefer greater risk-taking than other types of shareholders.[263] The problem of shareholder appetite for higher risk has been arguably exacerbated by corporate governance measures that have increasingly aligned the interests of shareholders and managers over the past several decades,[264] as managers have been encouraged to take on higher levels of risk.[265]

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260. *See, e.g.*, Clifford W. Smith, Jr. & Jerold B. Warner, *On Financial Contracting: An Analysis of Bond Covenants*, 7 J. FIN. ECON. 117 (1979) (describing some of the contractual covenants used by debt investors to help control this misalignment of interests). Moreover, as Richard Squire notes, the problem of shareholder influence is also exacerbated by the problem of "correlation-seeking," insofar as they may seek to encourage risks that only materialize upon the event of an uncertain future event. *See generally* Richard Squire, *Shareholder Opportunism in a World of Risky Debt*, 123 HARV. L. REV. 1151 (2010).

261. Bliss, *supra* note 76, at 43 (emphasis omitted).

262. Robert C. Merton, *On the Pricing of Corporate Debt: The Risk Structure of Interest Rates*, 29 J. FIN. 449 (1974). Merton uses the Black-Scholes model of option pricing to reach his conclusions. *Id*. *But see* Bliss, *supra* note 76, at 43–44 (arguing that the use of the Black-Scholes model is overly simplistic, and that share prices should theoretically also consider the reduced value of future dividends and increased cost of funding that accompanies higher default risk).

263. *See* A. Sinan Cebenoyan et al., *Deregulation, Reregulation, Equity Ownership, and S&L Risk-Taking*, 24 FIN. MGMT. 63 (1995). Bliss (2004) and Marcus (1984) argue that this view of bank shareholders as parties unilaterally seeking to increase risk is overly simplistic, albeit for different reasons. Bliss argues that this analysis fails to consider that higher risk jeopardizes future cash flows and higher debt funding costs, both of which lower shareholder value. *See* Bliss, *supra* note 76, at 43–44. Marcus points out that banks enjoy subsidized federal insurance, limited competition, and other economic rents that make their charters quite valuable, and that this excess charter value makes shareholders more inclined to want reduced risk. *See* Marcus, *supra* note 26.

264. Bratton and Wachter (2010) and Rock (2013) have good summaries of the efforts to improve corporate governance by better aligning the interests of shareholders and managers. *See* William W. Bratton & Michael L. Wachter, *The Case Against Shareholder Empowerment*, 158 U. PA. L. REV. 653, 669–75 (2010); Edward B. Rock, *Adapting to the New Shareholder-Centric Reality*, 161 U. PA. L. REV. 1907 (2013).

265. *See* John C. Coffee, Jr., *The Political Economy of Dodd-Frank: Why Financial Reform Tends to Be Frustrated and Systemic Risk Perpetuated*, 97 CORNELL L. REV. 1019, 1051–56 (2012) (arguing

Despite these findings, up until the financial crisis, there was a notable dearth of research on the effects of "bad" market discipline exerted by shareholders.[266] To the extent that shareholder discipline was discussed in the pre-crisis market discipline literature, it was almost entirely with respect to the "good" discipline provided by these investors, with a particular focus on equity-related market signals that might aid prudential regulators in identifying risky firms.[267]

But as Bratton and Wachter (2010) have noted, during the 2002–2007 period, "bad" market discipline clearly played a major role in the systemic buildup of risk that led to the financial crisis as bank managers responded to shareholder pressure to maximize earnings through higher risk and higher growth strategies.[268] Banks with managers that did not fall in line with the paradigm of higher risk and higher returns were "stuck with a low stock price."[269] Managers who did toe the line were rewarded with higher profits, larger performance bonuses, and greater equity-based compensation.[270] This dynamic was particularly problematic at banks in which shareholders held greater power, as a number of empirical studies undertaken after the financial crisis have made clear.[271]

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that the alignment of shareholder and manager interests through executive compensation changes led to outcomes that were optimal for shareholders and managers but not for the broader financial system); Cebenoyan et al., *supra* note 263, at 63 (stating "any mechanism that aligns the interests of managers to those of shareholders . . . may result in greater bank risk").

266. Saunders, Strock, and Travlos (1990), Cebenoyan, Cooperman and Register (1995), and Cebenoyan, Cooperman, and Register (1999) find a positive relationship between owner control of banks and risk-taking. *See* Anthony Saunders et al., *Ownership Structure, Deregulation, and Bank Risk Taking*, 45 J. FIN. 643 (1990); Cebenoyan et al., *supra* note 263; A. Sinan Cebenoyan et al., *Ownership Structure, Charter Value, and Risk-Taking Behavior for Thrifts*, 28 FIN. MGMT. 43 (1999). *But see* Carl R. Chen et al., *Risk-Taking Behavior and Management Ownership in Depository Institutions*, 21 J. FIN. RES. 1 (1998) (finding a negative relationship between owner control of management and bank risk-taking between the period of 1988 and 1993).

267. *See, e.g.*, Timothy J. Curry et al., *Using Market Information to Help Identify Distressed Institutions: A Regulatory Perspective*, FDIC BANKING REV., 2003 no. 3, at 1; Jeffery W. Gunther et al., *Can the Stock Market Tell Bank Supervisors Anything They Don't Already Know?*, FED. RES. BANK OF DALL. ECON. & FIN. REV., Second Q. 2001, at 2; Richard H. Pettway, *Potential Insolvency, Market Efficiency, and Bank Regulation of Large Commercial Banks*, 15 J. FIN. & QUANT. ANAL. 219 (1980); Greg Caldwell, *Best Instruments for Market Discipline in Banking* (Bank of Canada, Working Paper 2007-9); John R. Hall et al., *What Can Bank Supervisors Learn from Equity Markets? A Comparison of the Factors Affecting Market-Based Risk Measures and BOPEC Scores* (Fed. Reserve Bank of St. Louis, Working Paper No. 2002-06, 2001); John Krainer & Jose A. Lopez, *Incorporating Equity Market Information into Supervisory Monitoring Models* (Fed. Reserve Bank of S.F., Working Paper No. 2001-14).

268. Bratton & Wachter, *supra* note 264, at 690.

269. *Id*. at 720–21.

270. *Id*. at 723.

271. For example, Beltratti and Stulz (2009) found financial firms with more shareholder-friendly boards of directors took on greater risk during the pre-crisis period. Andrea Beltratti & René M. Stulz,

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The quantitative evidence showing that shareholder pressure was driving greater risk-taking among financial firms is bolstered by some anecdotal evidence. In July 2007, Chuck Prince, then the CEO of Citigroup, famously stated, while asserting that his company would continue to play a significant role in subprime mortgage securitization despite growing concerns about the risks associated with these activities, "When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing."[272] This comment was widely understood as an acknowledgement of the strong market pressures to take risks, even in the face of strong indications that those risks were likely to lead to high losses.[273]

Merrill Lynch was another financial firm that made a conscious decision to plunge into high-risk, high-margin activities to try to gain market share and improve its returns to shareholders. As the FCIC

Why Did Some Banks Perform Better During the Credit Crisis? A Cross-Country Study of the Impact of Governance and Regulation (Nat'l Bureau of Econ. Research, Working Paper No. 15180, 2009). Laeven and Levine (2009) found that financial firms with more powerful shareholders, either because of investment size, shareholder protection laws, or corporate governance structures, also took on higher risk prior to the crisis. Luc Laeven & Ross Levine, *Bank Governance, Regulation and Risk Taking*, 93 J. FIN. ECON. 259 (2009). Cheng, Hong, and Scheinkman found that financial firms with higher performance-based pay (such as equity options or bonuses) incurred greater risk, both from 1995–2000 and from 2001–2008, than other firms, indicating that managers with greater incentives to maximize short-term share value took on greater risk. Ing-Haw Cheng et al., *Yesterday's Heroes: Compensation and Creative Risk-Taking* (Nat'l Bureau of Econ. Research, Working Paper No. 16176, 2010). Gropp and Köhler (2010) found shareholder-controlled banks experienced higher losses during the financial crisis than banks controlled by independent managers. Reint Gropp & Matthias Köhler, *Bank Owners or Bank Managers: Who Is Keen on Risk? Evidence from the Financial Crisis* (Eur. Bus. Sch., Working Paper No. 10-02, 2010). Fahlenbrach and Stulz (2011) found that banks with chief executive officers (CEOs) whose incentives were more closely aligned with shareholders incurred greater losses during the financial crisis, suggesting that "CEOs with better incentives to maximize shareholder wealth took risks that other CEOs did not." Rüdiger Fahlenbrach & René M. Stulz, *Bank CEO Incentives and the Credit Crisis*, 99 J. FIN. ECON. 11, 12, 25 (2011). Erkens, Hung, and Matos (2012) found that firms with higher levels of institutional investors as shareholders took on higher risk during the pre-crisis period, and contended that this was due to the higher level of shareholder pressure exerted by these sophisticated and powerful investors. David H. Erkens et al., *Corporate Governance in the 2007–2008 Financial Crisis: Evidence from Financial Institutions Worldwide*, 18 J. CORP. FIN. 389 (2012).

272. Michiyo Nakamoto & David Wighton, *Citigroup Chief Stays Bullish on Buy-Outs*, FIN. TIMES, July 9, 2007.

273. *See, e.g.*, FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 175 (noting that in a followup interview with the FCIC staff, Prince clarified this comment by explaining that "banks individually had no credibility to stop participating in this lending business. It was not credible for one institution to unilaterally back away from this leveraged lending business."); Cheng et al., *supra* note 271, at 1 (stating that the Prince "quote is often attributed as market pressure (presumably being fired by impatient shareholders) forcing Citi's managers to take on such risks, whether or not they fully understood them").

documents, in July 2003, Merrill Lynch made a conscious decision to improve its market share in the high-margin CDO business, where it had fallen behind its competitors. In the following months, Merrill Lynch quickly became a leader in CDO underwriting, rising from 15th to 2d in market share between 2002 and 2004, and then became the market leader in CDO originations in 2006 and 2007.[274] Merrill Lynch continued to dive deeply into CDOs despite the clear signs that the CDO market was souring, including a report by one of Merrill Lynch's own analysts warning that its heavy exposure to subprime CDOs could threaten its earnings.[275]

Bank executives who did take action to limit risk-taking were often punished for their actions. As the FCIC documents, two senior executives at Lehman Brothers, the head of Lehman's fixed income group, and the chief risk officer, "warned against taking on too much risk in the face of growing pressure to compete aggressively against other investment banks."[276] One left the firm shortly thereafter based on "philosophical differences," and the other was demoted to a policy position working with government regulators.[277] In a similar example, Citi's chief underwriter, concerned that Citi was taking on too much risk and '"join[ing] the other lemmings headed for the cliff,"' made a series of vociferous warnings, including to Citi's Chairman and other top executives, expressing his concern that Citi was facing billions of dollars in losses from poorly underwritten loans. After he made these warnings, he was transferred to a new position, was downgraded in his performance review, saw a bonus reduction, and went from supervising 220 employees to supervising only two.[278]

Even those banks that stayed out of the high-risk, high-return activities that led to the financial crisis did so despite strong pressure from shareholders. Wells Fargo was one prominent example of a firm that stayed away from subprime mortgages and other risky loan products during the 2002–2007 period, even as most of its peers entered into these markets. John Stumpf, CEO of Wells Fargo, stated, "These were 'hard decisions to make at the time . . . we did lose revenue, and we did lose volume.'"[279] Toronto Dominion Bank (TD Bank) had a similar experience

274. FIN. CRISIS INQUIRY COMM'N, *supra* note 104, at 202–04.
275. *Id*. at 204.
276. *Id*. at 18.
277. *Id*. at 18–19.
278. *Id*. at 19.
279. *Id*. at 108.

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in 2006, when it decided, at the behest of its CEO Edmund Clark, that it would cease its activities in structured financial products. Clark, who justified this move by saying that he did not understand the business and was concerned about the potential for serious losses, recalled that stock analysts at the time wrote that he was an "idiot" for exiting the structured products marketplace.[280]

The view of shareholder discipline as increasing, rather than reducing, risk is reinforced by the findings of the FSA's Turner Review, which concluded that bank stock prices "failed to indicate that risks were increasing, but rather delivered strong market price reinforcement to management's convictions that their aggressive growth strategies were value creative."[281] In short, while the literature on market discipline tends to ignore the effects of bad market discipline exerted by shareholders seeking higher risk, there is ample evidence that such bad discipline played a major role in bank risk-taking in the period preceding the financial crisis.

E. Procyclicality and Market Discipline

The previous sections suggest two key flaws with the market discipline framework as it is currently understood. First, market discipline may overestimate the risk-reducing effects of creditor discipline, because it fails to contemplate the possibility that investors in many bank liabilities may be informationally insensitive. Second, market discipline overlooks the risk-increasing effects of shareholder discipline, which may seek to increase risk-taking by firms, particularly during periods of economic growth. Taken together, these flaws suggest a potentially broader problem with market discipline—namely, that it may encourage and exacerbate procyclicality in banking.

A central focus of regulators and policymakers following the 2007–2008 financial crisis has been addressing the procyclicality of banks—that is to say, the tendency of banking intermediaries to chase trends in the business cycle, maximizing risk-taking during economic expansions (and thus creating or exacerbating bubbles) and shying away from risk during

280. *See* Ed Clark, President & CEO, Toronto Dominion Bank, Remarks at National Bank 2010 Financial Services Conference 3 (Mar. 30, 2010), *available at* https://www.td.com/document/PDF/investor/2010/td-investor-2010-nbf-2010-transcript.pdf; *see also* THOMAS H. STANTON, WHY SOME FIRMS THRIVE WHILE OTHERS FAIL: GOVERNANCE AND MANAGEMENT LESSONS FROM THE CRISIS 52–54 (2012).

281. FIN. SERVS. AUTH., *supra* note 152, at 46.

economic downturns (thus reinforcing the drop in economic activity and potentially creating a vicious circle problem).[282] Procyclicality is seen as problematic, insofar as it tends to create or exacerbate bubble-bust cycles in asset prices,[283] and the process by which it operates has been famously described as the "financial accelerator."[284] Banking procyclicality has been identified as an important and perhaps central factor in the boom-bust cycle that led to the 2007–08 financial crisis. Thus, a consensus has developed that legislators and regulators should seek to mitigate banking procyclicality by developing "cycle-proof" regulation.[285]

While the procyclicality of banking is a well-documented phenomenon, its causes still remain somewhat unknown. There is well-developed literature describing the relationship between monetary policy and procyclicality.[286] Others have looked to the procyclical effects of banking regulation, particularly regulatory capital requirements.[287] And of course, there has been significant focus on the factors inherent to banking that are thought to encourage procyclicality, including limitations on the ability of bank managers to measure and understand risk,[288] the existence of

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282. *See, e.g.*, BANK FOR INT'L SETTLEMENTS, ADDRESSING FINANCIAL SYSTEM PROCYCLICALITY: A POSSIBLE FRAMEWORK 1 (2008) (stating that "[t]he term 'procyclicality' is generally used to refer to the mutually reinforcing ('*positive feedback*') mechanisms through which the financial system can *amplify* business fluctuations and possibly cause or exacerbate financial instability").

283. *See generally* Barry Eichengreen & Kris J. Mitchener, *The Great Depression as a Credit Boom Gone Wrong*, *in* 22 RESEARCH IN ECONOMIC HISTORY. 183 (Susan Wolcott & Christopher Hanes eds., 2004).

284. As Borio et al. (2001) describe, the financial accelerator theory has a "long history, reaching back at least to Fisher (1933), and has recently been subject to extensive theoretical modeling by, amongst others, Bernanke and Gertler (1995) and Kiyotaki and Moore (1997)." Claudio Borio et al., *Procylicality of the Financial System and Financial Stability: Issues and Policy Options* 1 n.2 (Bank for Int'l Settlements, Working Paper No. 1, 2001); *see also* Irving Fisher, *The Debt-Deflation Theory of the Great Depressions*, 1 ECONOMETRICA 337 (1933); Ben S. Bernanke & Mark Gertler, *Inside the Black Box: The Credit Channel of Monetary Policy Transmission*, J. ECON. PERSPECTIVES, Fall 1995, at 27; Nobuhiro Kiyotaki & John Moore, *Credit Cycles*, 105 J. POL. ECON. 211 (1997).

285. *See, e.g.*, FIN. STABILITY FORUM, REPORT OF THE FINANCIAL STABILITY FORUM ON ADDRESSING PROCYCLICALITY IN THE FINANCIAL SYSTEM (2009); JOCHEN ANDRITZKY ET AL., INT'L MONETARY FUND, POLICIES TO MITIGATE PROCYCLICALITY (2009); Raghuram G. Rajan, *The Credit Crisis and Cycle-Proof Regulation*, 5 FED. RES. BANK OF ST. LOUIS REV. 397 (2009).

286. *See supra* note 284.

287. *See, e.g.*, Michael B. Gordy & Bradley Howells, *Procyclicality in Basel II: Can We Treat the Disease Without Killing the Patient?*, 15 J. FIN. INTERMEDIATION 395 (2006); José L. Fillat & Judit Montoriol-Garriga, *Addressing the Pro-Cyclicality of Capital Requirements with a Dynamic Loan Loss Provision System* (Fed. Reserve Bank of Bos., Working Paper No. QAU10-4, 2010); ANDRITZKY ET AL., *supra* note 285, at 10–13.

288. *See* BANK FOR INT'L SETTLEMENTS, *supra* note 282. As the IMF staff has noted, the quantitative models used to measure risk, particularly the Value at Risk (VaR) model that currently

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negative externalities that prevent banks from bearing the full costs of their risk,[289] and the strong bias towards short-term horizons that is thought to dominate bank incentives.[290]

In the aftermath of the financial crisis, concerns about banking procyclicality have primarily manifested themselves into a focus on the role of regulatory capital requirements in exacerbating the procyclical tendencies of banks.[291] Thus, the Dodd-Frank Act of 2010 requires federal banking regulators to develop and recommend countercyclical capital requirements.[292] Similarly, Basel III proposes a discretionary countercyclical capital buffer.[293] But neither the U.S. nor the international regulatory response to the recent financial crisis contemplates the idea that market discipline, or efforts to increase market discipline, might exacerbate procyclicality. On the contrary, both Dodd-Frank and Basel III explicitly call for enhanced market discipline.[294]

The previous two sections, along with the empirical evidence on the performance of market discipline from 2002–2008, suggest that market discipline may exacerbate procyclicality. During periods of credit expansion, informationally insensitive investors in money instruments provide minimal market discipline, while informationally sensitive shareholders may encourage greater risk-taking. Conversely, during credit downturns, when bank creditors become informationally sensitive, they

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dominates risk management, are highly procyclical. *See* ANDRITZKY ET AL., *supra* note 285, at 4; FIN. SERVS. AUTH., *supra* note 152, at 45.

289. *See* Viral Acharya & Hassan Naqvi, *The Seeds of a Crisis: A Theory of Bank Liquidity and Risk Taking over the Business Cycle*, 106 J. FIN. ECON. 349, 361 (2012); BANK FOR INT'L SETTLEMENTS, *supra* note 282.

290. *See* BANK FOR INT'L SETTLEMENTS, *supra* note 282, at 2; Borio et al., *supra* note 284, at 2.

291. Regulatory capital requirements have increasingly become "risk-weighted" insofar as they utilize internal modeling and market-based assessments of risk to determine the appropriate level of regulatory capital. This is thought to potentially increase the procyclicality of bank credit allocation, as bank capital requirements fluctuate in sync with the business cycle. During a period of economic growth or stability, risk models tend to value assets as low risk, thus providing banks with a lower capital requirement and increasing the amount of credit. Conversely, during an economic downturn, risk models tend to value assets as high risk, leading to an increased capital requirement, which effectively constricts the flow of credit. *See generally* Rafael Repullo & Javier Suarez, *The Procyclical Effects of Bank Capital Regulation*, 26 REV. FIN. STUDIES 452 (2013); *see also* Frank Heid, *The Cyclical Effects of the Basel II Capital Requirements*, 31 J. BANKING & FIN. 3885 (2007).

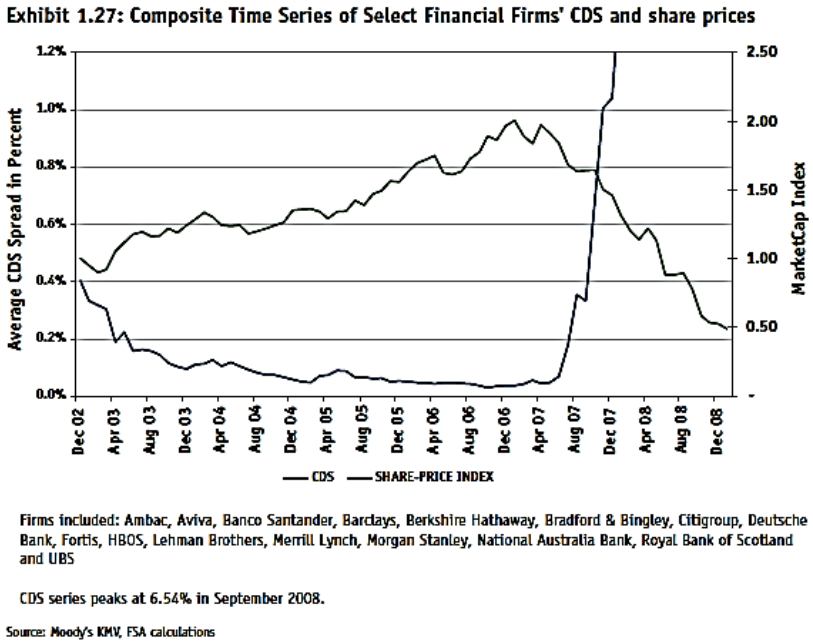
292. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub L. No. 111-203, 124 Stat. 1376 (2010)

293. Basel III proposes a countercyclical capital buffer to protect against procyclicality. BASEL COMM. ON BANKING SUPERVISION, BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS 5 (2011) [hereinafter BASEL III].

294. *Id.* at 2, 27; 12 U.S.C. § 5322 (2012) (stating that one of the three purposes of the newly created Financial Stability Oversight Council is to "promote market discipline"); 12 U.S.C. § 5394 (2012) (mandating a study on the market discipline effects of haircuts for secured creditors).

may excessively and inefficiently discourage bank risk-taking. In other words, as the United Kingdom's FSA stated in describing Figure 9 below, the combination of weak creditor discipline (such as that expressed through bank CDS prices) and strong shareholder encouragement rewarding higher risk leads to the conclusion "that market pressures from investors . . . were far more [procyclical]" than other factors.[295]

FIGURE 9[296]



F. Reconciling the Empirical Findings

Importantly, this explanation for the failures of market discipline provides a coherent narrative for the empirical results around market discipline. As discussed in Part II, the pre-crisis empirical literature generally finds that market discipline is exerted by bank depositors, but that this discipline is *ex post* and usually only in response to indications of imminent bank failure. These findings are consistent with the idea that

295. FIN. SERVS. AUTH., *supra* note 152, at 46.
296. *Id.* at 46.

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money instruments are informationally insensitive until some shock occurs (such as a sign of imminent failure) causing them to question the value of their money. Similarly, the experience of market discipline in the period leading up to and during the 2007–2008 financial crisis, described above in Part III, is also consistent with this Article's argument. Despite rising levels of risk, investors in shadow banking money instruments were complacent up until July 2007, when the major credit rating agencies downgraded over 1000 AAA-rated subprime securities. This mass ratings downgrade created an informational shock, causing investors who were previously insensitive to risk to become suddenly sensitive, and creating a "lemons market."[297] This in turn led to a systemic panic, as investors, who were unable to distinguish between good and bad securities, simply "ran" on all money instruments issued by the shadow banking system.[298] As previously described in Part III, this is exactly what we observed in the period from 2002 up until the financial crisis.

V. TOWARDS A NEW MARKET DISCIPLINE

This Article provides a framework to try to explain why market discipline failed in the period preceding the financial crisis, positing that the understanding of market discipline held by most academics and regulators is critically flawed in two ways—it relies most heavily upon investors in money instruments who are relatively insensitive to risk, and ignores the very risk-sensitive investors who may seek to encourage greater risk. This framework leads to some important implications for the current banking regulatory regime, which I lay out in broad strokes below. It should be emphasized that most of the prescriptions below are extremely preliminary, and require further research. Illustrating that the current consensus around market discipline is wrong, which is the primary focus of this Article, provides us with some obvious next steps, but further research is required to help us understand when and to what extent market discipline may be useful in the regulation of financial institutions.

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297. *See supra* note 217.

298. A traditional banking panic involves depositors running to their bank to withdraw their funds. The shadow banking panic of 2007–2008 involved institutional investors demanding higher levels of overcollateralization and/or refusing to roll over short-term debt liabilities. The end result, of course, was the same, with shadow banks struggling to find short-term liquidity to meet their obligations. *See* Gorton, *supra* note 25, at 32–37.

http://openscholarship.wustl.edu/law_lawreview/vol92/iss6/5

A. Implications for Financial Regulatory Reform

Any critical analysis of market discipline would represent a significant departure from the current stance of regulators and policymakers. Since the financial crisis, Ben Bernanke, who was Chairman of the Federal Reserve from 2006 up until January 31, 2014, has repeatedly stressed the need to improve the conditions for market discipline in banking.[299] This sentiment has been echoed by other senior Federal Reserve officials[300] and banking regulators.[301] The *Squam Lake Report*, a set of recommendations on financial regulatory reform created by some of the leading banking and financial experts in the country, including current Federal Reserve Governor Jeremy Stein and recent Nobel Prize winner Robert Shiller, explicitly lauds the "disciplining effect of short-term debt," which it states "makes management more productive" and prevents bank laxity in risk management.[302] Most short-term debt issued by banks and shadow banks serves the function of money, as described above.[303]

This emphasis on greater market discipline is evident in all of the major attempts to reform financial regulation, most notably Basel III, Dodd-Frank, and the rulemaking being undertaken by U.S. financial regulators. Generally, the post-crisis efforts to enhance market discipline have taken three forms: eliminating expectations of government support, increasing issuance of long-term debt, and improving transparency.

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299. *See, e.g.*, Ben S. Bernanke, Chairman, Fed. Reserve Bd. of Governors, On the Implications of the Financial Crisis for Economics (Sept. 24, 2010), *available at* http://www.federalreserve.gov/newsevents/speech/bernanke20100924a.htm; Ben S. Bernanke, Chairman, Fed. Reserve Bd. of Governors, The Crisis as a Classic Financial Panic (Nov. 8, 2013), *available at* http://www.federalreserve.gov/newsevents/speech/bernanke20131108a.htm; Ben S. Bernanke, Chairman, Fed. Reserve Bd. of Governors, The Federal Reserve: Looking Back, Looking Forward (Jan. 3, 2014), *available at* http://federalreserve.gov/newsevents/speech/bernanke20140103a.htm.

300. *See, e.g.*, *Examining How the Dodd-Frank Act Could Result in More Taxpayer-Funded Bailouts: Hearing Before the H. Comm. on Fin. Servs.*, 113th Cong. (2013) (statement of Jeffrey M. Lacker, President, Fed. Reserve Bank of Richmond); Esther L. George, President, Fed. Reserve Bank of Kansas City, Effective Supervision: Balancing New and Traditional Approaches (Nov. 22, 2013), *available at* http://www.kc.frb.org/publicat/speeches/2013-george-Paris-11-22.pdf; Daniel Tarullo, Member, Fed. Reserve Bd. of Governors, Towards Building a More Effective Resolution Regime: Progress and Challenges (Oct. 18, 2013), *available at* http://www.federalreserve.gov/newsevents/speech/tarullo20131018a.htm.

301. *See, e.g.*, Mike Konczal, *Sheila Bair: Dodd-Frank Really Did End Taxpayer Bailouts*, WASH. POST WONKBLOG (May 18, 2013), http://www.washingtonpost.com/blogs/wonkblog/wp/2013/05/18/sheila-bair-dodd-frank-really-did-end-taxpayer-bailouts, *archived at* http://perma.cc/43NH-RX2Z (an interview with former FDIC Chair Sheila Bair, in which she describes the importance of increasing market discipline going forward).

302. KENNETH R. FRENCH ET AL., THE SQUAM LAKE REPORT: FIXING THE FINANCIAL SYSTEM 44 (2010).

303. *See generally* Sunderam, *supra* note 223.

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1. *Eliminating Expectations of Government Support is Unlikely to Fix Market Discipline*

Financial regulators attempting to implement Dodd-Frank's Orderly Liquidation Authority[304] have sought to create a resolution process for SIFIs that convincingly ends creditor expectations of being "bailed out" by the government in the event of a crisis. The idea here, as Federal Reserve Governor Daniel Tarullo has stated, is to eliminate moral hazard and restore market discipline wield by these creditors.[305] The underlying premise of this approach is that expectations of bailouts by bank investors are the primary barrier to the effective operation of market discipline.

But if the analysis in this Article is correct, this approach of ending bailouts is unlikely to be successful in addressing the failures of market discipline we saw in the past decade.[306] As discussed above, market discipline is generally expected to operate through the reactions of investors in certain short-term banking liabilities, such as deposits, repos, and ABCP, which serve the function of money. To the extent that these instruments are structurally designed to be "safe," with subordinated securities, credit ratings, and third party guarantees to assuage investor concerns about credit risk, as described above in Part IV, it is not clear that expectations of government support actually impact the risk sensitivity of investors in these liabilities. Thus, ending bailouts does not appear to be a panacea to the failures of market discipline.

At the same time, it is worth noting that the share of bank-issued obligations that serve the function of money, what Gorton et al. called "safe assets," has remained relatively constant over time.[307] This suggests that even if regulators go further and manage to convince investors that certain shadow banking liabilities currently understood to function as money (such as repos and ABCP) are not actually safe and liquid instruments, this will simply drive these investors into other financial instruments that they perceive as safe and liquid. Thus, the findings of this

304. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub L. No. 111-203, §§ 201–217, 124 Stat. 1376 (2010).

305. Tarullo, *supra* note 300, at 2.

306. Of course, there are other reasons for eliminating implicit "too big to fail" guarantees. For example, implicit guarantees may be seen as unfair, transferring dollars from taxpayers to bank investors, or they may be seen as creating an unwieldy political and regulatory environment. *See, e.g.*, William C. Dudley, President and Chief Executive Officer, Fed. Res. Bank of N.Y., Ending Too Big to Fail, Remarks at the Global Economic Policy Forum (Nov. 7, 2013) (describing some of the reasons why implicit government guarantees are seen as problematic).

307. Gorton et al., *supra* note 202, at 4.

Article suggest that the strong drive to eliminate expectations of government bailouts is unlikely to be effective in fostering greater market discipline.

2. Increasing Issuance of Long-Term Debt

Regulators have also proposed increasing the amount of long-term debt, such as subordinated debt or senior unsecured debt that banks must issue. Basel III strongly encourages traditional banks to issue more subordinated debt by allowing this type of obligation to be considered Tier 1 capital.[308] The Federal Reserve has also proposed imposing a capital surcharge on wholesale funding to encourage shadow banks to utilize more long-term debt funding.[309] The rationale behind this approach is to discourage short-term funding and the risk of runs it creates, but by fostering more investments in long-term debt, it may, at least in theory, provide more effective market discipline since long-term debt investors should be more risk-sensitive than investors in short-term liquid liabilities.

The theoretical arguments made in this Article would support the issuance of more long-term debt. Subordinated debt is not a money instrument, and thus its investors would potentially be more sensitive to risk than would owners of money liabilities. Moreover, unlike shareholders, investors in subordinated debt and other long-term debt have interests that are largely aligned with those of regulators, insofar as they want to efficiently minimize risk, particularly systemic risk. Thus, encouraging or requiring financial institutions to issue more subordinated debt (and other long-term debt) would theoretically enhance the effectiveness of market discipline.

But there are a couple of reasons to temper our optimism about the potential for subordinated debt. First, subordinated debt is relatively expensive, and so efforts to merely encourage rather than require its issuance may not lead to enough issuance such that it can be relied upon to provide an effective source of market discipline. Following the passage of the Gramm-Leach-Bliley Act, the Federal Reserve and Treasury Department undertook a joint study on the feasibility of requiring banks to

308. BASEL III, *supra* note 293, at 15–17.

309. *See* Daniel K. Tarullo, Governor, Fed. Reserve Bd. Of Governors, Shadow Banking and Systemic Risk Regulation 12–13 (Nov. 22, 2013), *available at* http://www.federalreserve.gov/newsevents/speech/tarullo20131122a.htm; *see also* Noam Noked, *Fed Outlines Proposals to Limit Short-Term Wholesale Funding Risks*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Jan. 3, 2014, 9:00 AM), https://blogs.law.harvard.edu/corpgov/2014/01/03/fed-outlines-proposals-to-limit-short-term-wholesale-funding-risks/, *archived at* http://perma.cc/Y4HD-YUX2.

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issue subordinated debt.[310] This study concluded that while there were likely to be market discipline-related benefits from more subordinated debt, the uncertain nature of these, along with the high costs of subordinated debt, did not justify requiring bank subordinated debt.[311] Indeed, at the end of 2013, FDIC-insured institutions had issued only $99.7 billion in subordinated debt, as compared to $11.2 trillion in deposits.

Second, subordinated debt has a decidedly mixed record in promoting market discipline. As described above in Part II, the pre-crisis empirical studies on subordinated debt discipline had mixed results. While most (although not all) studies found that subordinated debt investors did exert market discipline,[312] there is very little evidence that this market discipline actually impacted bank behavior.[313] Perhaps more importantly, long-term debt prices (such as subordinated debt and senior unsecured debt) completely failed to respond to heightened bank risk prior to the financial crisis.[314]

In summary, encouraging the issuance of more subordinated debt and other long-term unsecured debt may enhance market discipline, but given the failures of subordinated debt in the recent pre-crisis period, more research on the effectiveness of such efforts in promoting market discipline is necessary before coming to a conclusion on this matter.

3. Improving Transparency

Third, financial reform efforts have sought to increase the quantity and quality of disclosures made by banks to help reduce the information asymmetries thought to be holding back market discipline. Basel III purports to increase the transparency of bank capital by requiring more detailed disclosures around what kinds of capital are being held.[315] U.S. banking regulators have implemented Basel III's recommended disclosure requirements relating to capital structure, as well as a number of other requirements relating to credit risk exposures.[316]

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310. *See generally supra* note 66.
311. *Id*. at 56.
312. *See supra* note 67.
313. *See, e.g.*, Blum, *supra* note 86 and text accompanying note 87.
314. *See, e.g.*, *supra* FIGURE 2, FIGURE 3, FIGURE 5, FIGURE 6; Lee et al., *supra* note 166.
315. BASEL III, *supra* note 293, at 27.
316. Regulatory Capital Rules: Regulatory Capital and Implementation of Basel III, 78 Fed. Reg. 62,018, 62,128–131 (Oct. 11, 2013) (to be codified at 12 C.F.R. pts. 3, 5, 6, 165, 167, 208, 217, and 225).

The idea that greater transparency supports public policy purposes has long been a guiding principle of capital markets regulation, but this has not been the case for the prudential regulation of banks, in which opacity was long preferred, because of the fear that greater transparency might cause bank runs.[317] Indeed, it is notable that the original 1933 Securities Act specifically exempted from its disclosure requirements any security issued by "any national bank, or by any banking institution organized under the laws of any State or Territory or the District of Columbia, the business of which is substantially confined to banking . . . ."[318] Historically, banking regulators discouraged the disclosure of bank information to the investing public[319] because they did not want to trigger bank runs with the release of adverse information.[320] It was only beginning with the enactment of FDICIA in 1991 that banking regulation began to embrace disclosure and transparency.

The arguments raised in this Article suggest another reason, besides the fear of bank runs, why greater opacity may be preferable for banks. During periods of credit expansion, greater transparency may serve to increase bank risk-taking. If most bank creditors, who are understood to prefer less risk, are informationally insensitive, the production and disclosure of additional information would be essentially useless for these investors. At the same time, risk information is highly useful for bank shareholders and similarly situated investors, who may prefer greater risk-taking. Thus, more transparency may, perversely, lead to greater risk-taking by banks under some circumstances. Obviously, this hypothesis needs further research, but despite the fact that it goes against the general preference for greater transparency, it appears to be supported by a good deal of recent empirical evidence, including the absence of good market discipline from informationally insensitive creditors, and the large amount of bad market discipline from shareholders, described above in Part III. Adding to this argument is the research of Kwan (2004), who found that banks take on more risk when they are publicly traded (and thus have more consistent market discipline from stock and bond prices) than when they are privately

317. *See* Donald C. Langevoort, *Global Securities Regulation After the Financial Crisis*, 13 J. INT'L ECON. L. 799, 810–11 (2010).

318. 15 U.S.C. § 77c (2012).

319. *See* Robert Charles Clark, *The Soundness of Financial Intermediaries*, 86 YALE L.J. 1, 83 (1976).

320. *See* Robert E. Barnett et al., *Deposit Insurance: The Present System and Some Alternatives*, 94 BANKING L.J. 304, 316–17 (1977); Herbert D. Miller, *Banks and the Securities Act of 1933*, 84 BANKING L.J. 95, 97 (1967).

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owned.[321] These findings are consistent with the hypothesis that greater disclosures may actually encourage higher risk-taking at banks.

B. Delinking the Incentives of Managers and Shareholders

The arguments made in this Article also lead to some important recommendations for additional reforms, above and beyond those offered by Dodd-Frank and Basel III. One of these recommendations is to delink the incentives of bank managers and shareholders.

As Part III describes, policymakers have increasingly sought to align the incentives of managers and shareholders over the past several decades as part of the broader movement to improve corporate governance. Beginning in the 1970s, scholars began to question the then-existing paradigm for corporate management, in which managers were seen as loyal to the corporation as a whole, with fiduciary duties to all stakeholders, not just shareholders.[322] These scholars argued managers should be seen as agents of the corporate "owners," namely, the shareholders of the company. Thus, the focus shifted to looking at the principal-agent relationship between shareholders and owners and the lack of alignment of incentives between the two as a classic agency cost problem.[323]

Shareholder advocates began a robust campaign to improve the rights of shareholders and minimize agency costs in the 1980s through new legislation, rules, common law, and best practices standards, which still continue today.[324] These include shareholder-friendly changes to corporate voting practices, greater ability to propose changes to corporate charters, and say-on-pay votes,[325] as well as increasing use of equity- or performance-based compensation of managers, increasing managerial turnover, and greater shareholder activism.[326] The result of these changes was to more closely link the interests of managers and shareholders across all industries, including financial services and banking.

But as Part IV illustrates, bank shareholders have incentives that are not aligned with those of public policy. Thus, the move to unify the incentives of shareholders and managers is one that may be adverse to the

321. Kwan, *supra* note 92, at 6.
322. *See* Rock, *supra* note 264, at 1911–17.
323. *See generally id*.
324. *See* Bratton & Wachter, *supra* note 264, at 669–73.
325. *Id*.
326. *See* Rock, *supra* note 264, at 1917–26

interests of bank safety and soundness. Moreover, if, as this Article contends, outside creditor discipline does not provide a significant check on bank risk-taking, then this unification of shareholder and manager interests becomes even more concerning, particularly during periods of credit expansion when shareholders typically want to take on much greater risk.

The arguments in this Article would strongly suggest that delinking the incentives of managers from those of shareholders is an important step towards reducing bank risk and procyclicality.[327] This includes eliminating or reducing equity- or performance-based compensation, establishing greater managerial independence from shareholders, and other measures meant to more aptly emphasize long-term franchise value rather than be fixated with short-term share value.

C. Reducing Reliance on Market Discipline

Another policy prescription that clearly follows from the arguments in Part IV is a reduced reliance on market discipline as a supplementary prudential tool. Regulators have relied heavily on market discipline to assist them in their oversight of increasingly large and complex financial institutions. As a result, deemphasizing market discipline has at least two fairly radical implications for banking regulation: increasing capital requirements and reducing the size and complexity of financial institutions.

1. Increasing Capital Requirements

If market discipline is less effective and reliable than has been generally understood, then it is necessary to compensate by strengthening other prudential tools. Given that capital requirements are the most important regulatory device in constraining risk, it stands to reason that increasing capital requirements is an important, and perhaps necessary,

327. As has been noted by a number of scholars, one important structural feature that may have served to constrain bank risk-taking in the past is expanded shareholder liability, in which shareholders could lose not only the value of their shares but also an additional amount (typically double the par value of the share, and sometimes even more than that). *See generally* Kris James Mitchener & Gary Richardson, *Does "Skin in the Game" Reduce Risk Taking? Leverage, Liability and the Long-Run Consequences of New Deal Banking Reforms* (Nat'l Bureau of Econ. Research, Working Paper No. 18895, 2013). Bringing back expanded liability to bank shareholders might help to align the interests of shareholders and regulators, but it would need to be beyond par value, which typically makes up only a very small fraction of a bank's share price today. Moreover, this idea would seem to be politically impracticable.

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measure in response to the failures of market discipline. To put it another way, market discipline was theorized as providing regulators with an early warning system that would identify risky institutions. If this detection is flawed, as this Article suggests, then the obvious conclusion is that regulators must increase protections against bank risk. Capital requirements are the most effective means of doing so.

2. Reducing the Size and Complexity of Financial Institutions

One of the main reasons why market discipline has been increasingly emphasized over the past several decades is that the growing size and complexity of financial firms has left regulators feeling outmatched. As one leading scholar has stated:

> Financial institutions have become increasingly complex and opaque. This is particularly true of the largest financial organizations with large derivatives positions and off-balance-sheet activities. Securitizations and associated residuals present challenges to both accountants and supervisors attempting to value the firm's assets and liabilities. This is coupled with the increasing concentration in the financial markets, particularly for derivatives. Thus, while the largest firms are becoming difficult to examine and supervise prudentially, the potential adverse impact of their failure is also increasing. . . . Regulators have become increasingly uncomfortable with shouldering the primary burden for supervising large financial institutions. They realize that the complexity and valuation of modern financial engineering products may be beyond the ken of most examiners. This problem is exacerbated by a scarcity of regulatory resources. The regulatory logic for increased market discipline presumes that market participants may be collectively more able to monitor banks activities than understaffed regulators or at least to provide a more continuous oversight.[328]

If market discipline cannot be relied upon to consistently provide timely warnings of high levels of bank risk, then we are faced with an alarming dilemma. Regulators are unequipped to understand and oversee large and complex financial institutions by themselves, so they have increasingly relied upon market signals to assist them in their prudential oversight responsibilities. But these market signals are flawed, for the reasons

328. Bliss, *supra* note 76, at 39.

outlined in this Article. The unsettling conclusion of this logic, then, is that regulators are unable to effectively supervise large and complex financial institutions for safety and soundness.

What this suggests is that we may have reached a point where banks are not only "too big to fail," but are also "too big to regulate." So far, in the aftermath of the financial crisis, policymakers and regulators have been reluctant to take overly aggressive measures to reduce bank concentration and complexity. But if it is true that bank regulators are simply not capable of effectively understanding and constraining risk at large and complex financial institutions, this presents a new and powerful reason for taking this course of action.

VI. CONCLUSION

Market discipline has become an essential pillar of banking regulation in the past several decades. However, the law and economics literature has overlooked the fact that during the period preceding the 2007–2008 financial crisis, market discipline failed to provide any warnings of the impending problems ahead. These failures make clear that a major rethinking of market discipline theory is necessary. This Article attempts to provide a two-pronged explanation to help explain the experience of market discipline from 2002 to 2008, in a way that is consistent with the existing research on market discipline. Under this framework, market discipline may fail to provide timely warnings of risk, to the extent that it is based on informationally insensitive securities, and shareholder discipline may lead to heightened risk-taking, the effects of which should not be ignored by regulators. It is my hope that the findings and arguments in this Article spark a critical reexamination of the use of market discipline as a prudential tool along the lines suggested herein.

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